

Veles Water Weekly Report

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VelesWater



WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell

CLICK THE LINK BELOW

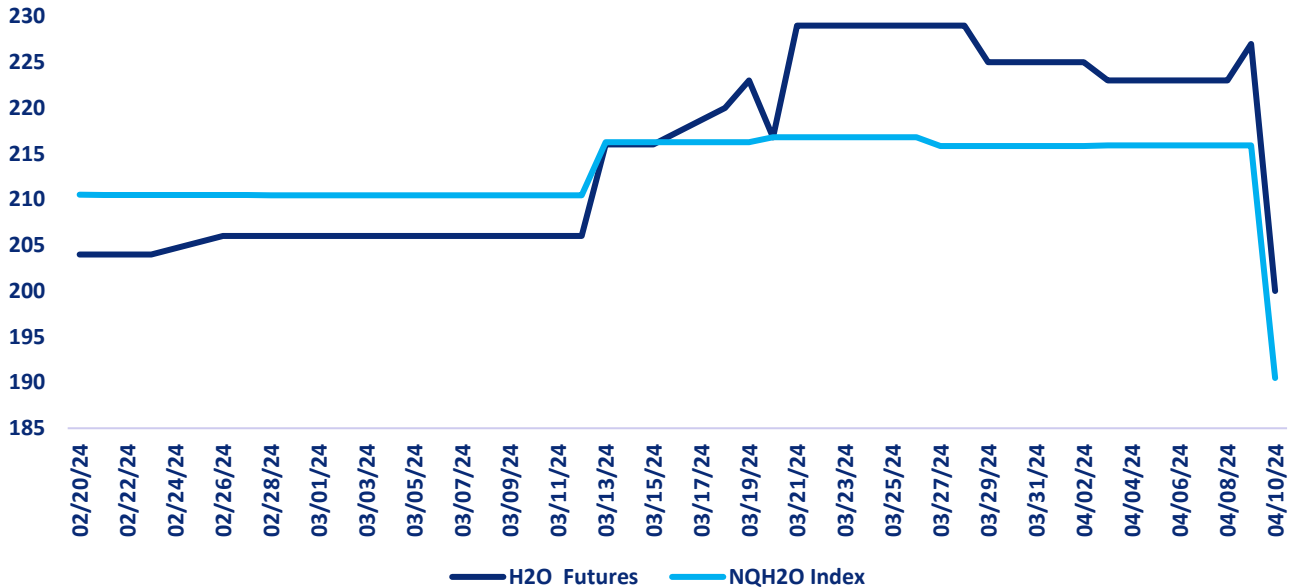
“A 2 minute technical analysis video of H2O futures”

<https://vimeo.com/933174291?share=copy>



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 \$190.49 was published on April 10th down \$25.43 or 11.78% from the previous week. The April contract is considered the front month. The futures have been closing at a premium of \$7.08 to \$11.08 versus the index over the past week.

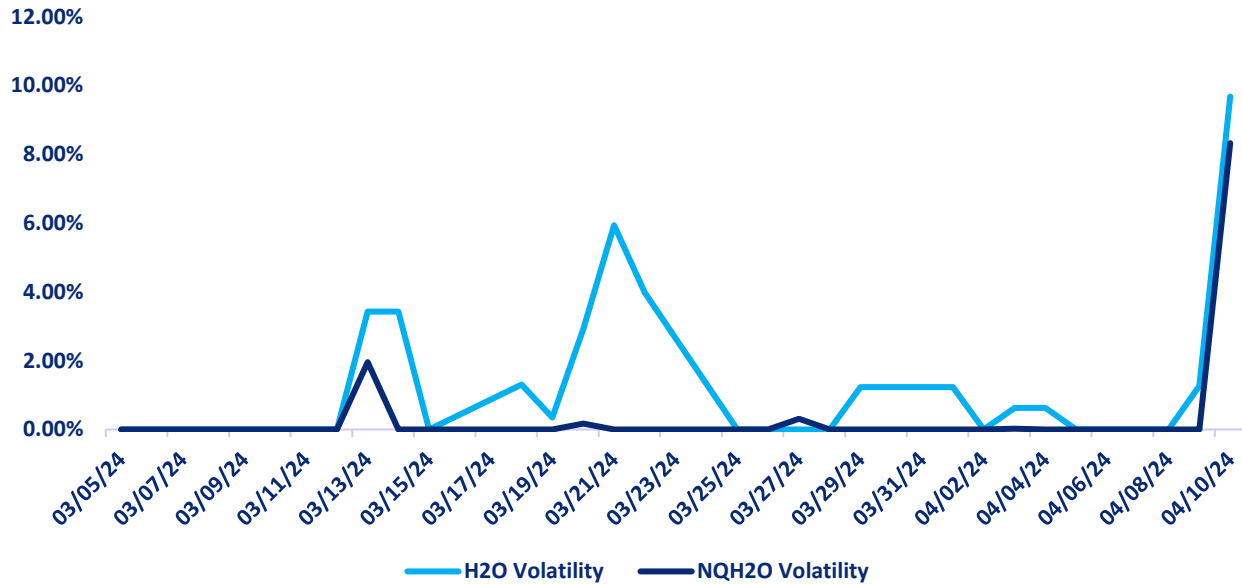
Below are the bid offer prices on different expiries being quoted in the market.

Apr 24	197@205
May 24	202@225
Jun 24	230@265
Jun 25	314@385



H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



DAILY VOLATILITY

Over the last week the April contract daily future volatility high has been 9.68%.

ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	54.45%	11.23%	13.37%	11.81%
H2O FUTURES	N/A	15.96%	14.18%	12.46%

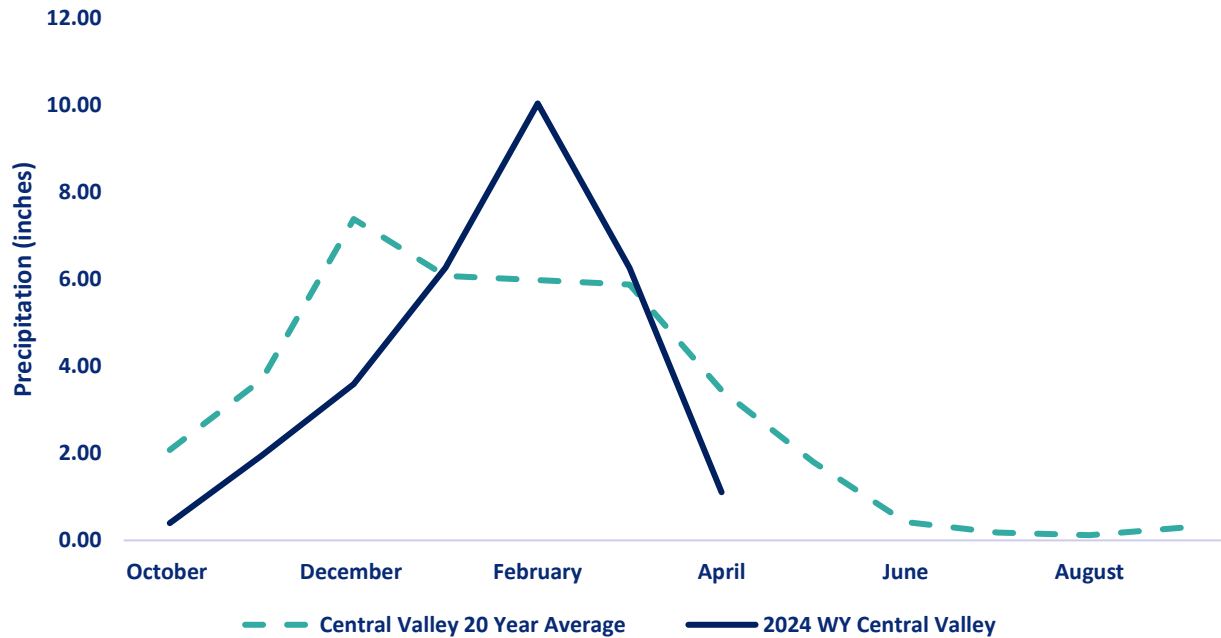
For the week ending on April 10th, the two-month futures volatility is at a premium of 4.73% to the index, down 2.78% from the previous week. The one-month futures volatility is at a premium of 0.81% to the index, down 6.99% The one-week futures volatility is at a premium 0.65% to the index, down 0.62 from the previous week.

*Above prices are all **HISTORIC VOLATILITIES**. 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 10/04/2024

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2024 WYTD VS 2023 WYTD %	2024 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	2.05	1.98	57.53%	180	89
TULARE 6 STATION (6SI)	0.83	0.75	32.30%	209	85
NORTHERN SIERRA 8 STATION (8SI)	0.45	0.41	10.68%	133	96
CENTRAL VALLEY AVERAGE	1.11	1.05	32.19%	174	90

RESERVOIR STORAGE

RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	*% HISTORICAL AVERAGE
TRINITY LAKE	2,007,715	82	37	110
SHASTA LAKE	4,311,418	95	87	118
LAKE OROVILLE	3,145,065	89	84	123
SAN LUIS RES	1,508,369	74	99	86

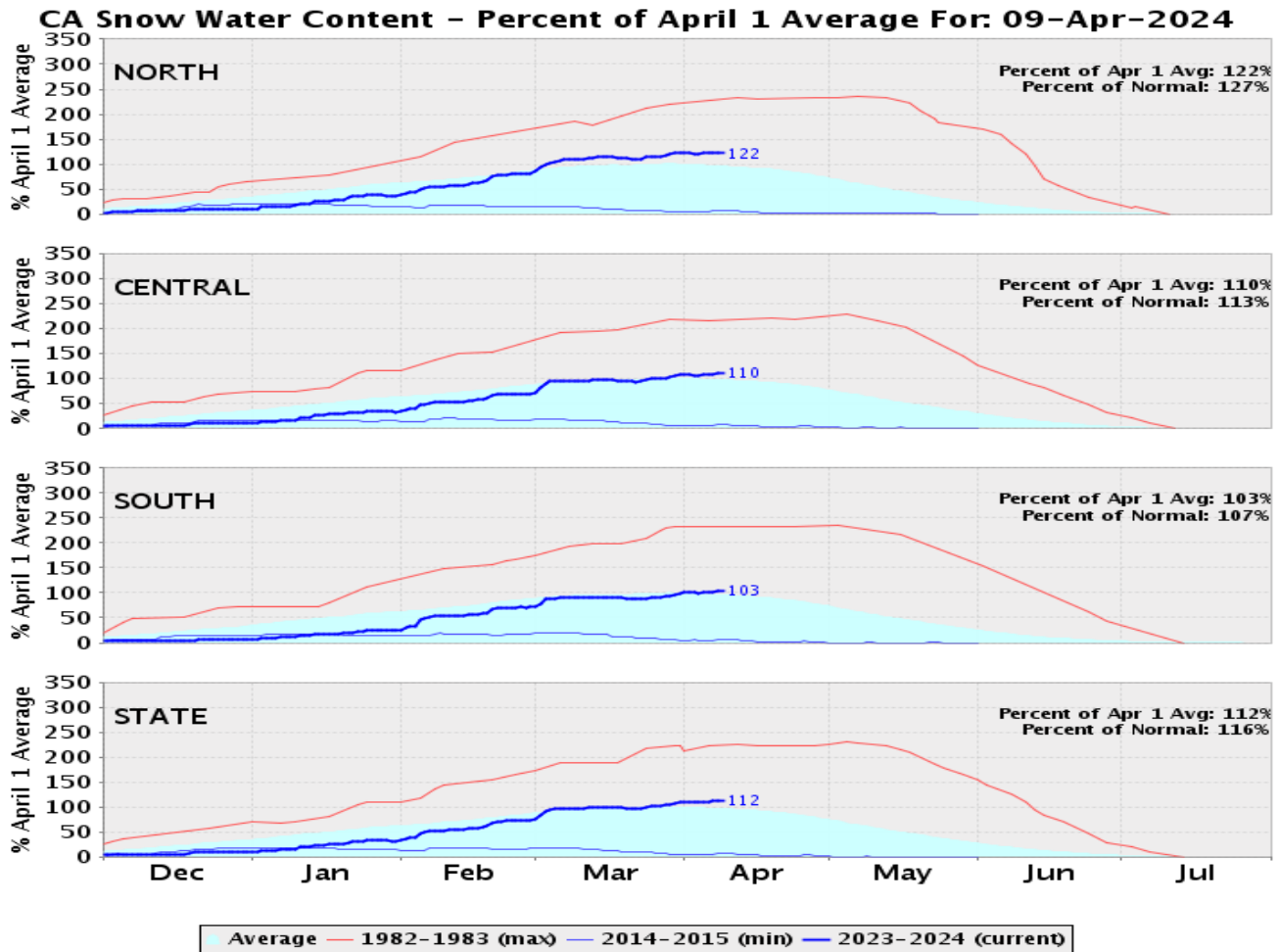
*% Historical Average is based on a daily average that is interpolated from historical monthly averages. The monthly averages are computed using monthly data from water year 1991 to 2020. The monthly averages are updated every 5 years using a sliding 30 year period.

[Reference: California Water Data Exchange](#)



VELES WATER WEEKLY REPORT

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	34.8	-0.3	207	127	122
CENTRAL SIERRA	29.4	0.6	244	113	110
SOUTHERN SIERRA	23.4	1.5	280	107	103
STATEWIDE	29.4	0.8	261	116	112

*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. April 4, 2024

Data valid: April 2, 2024 at 8 a.m. EDT

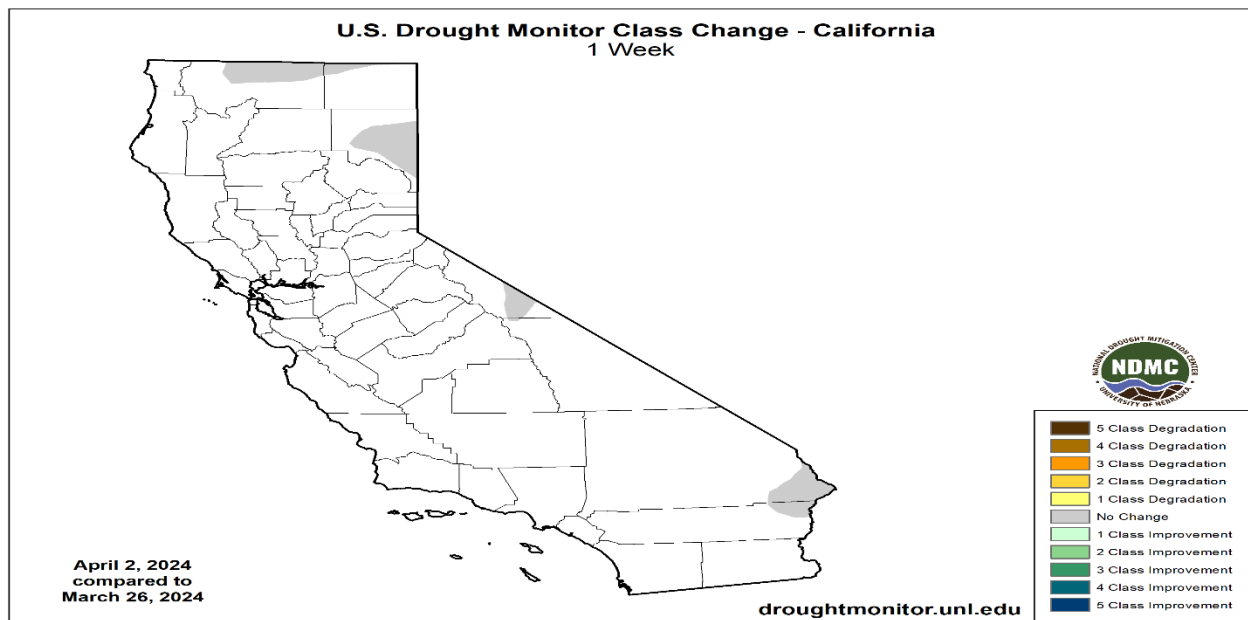
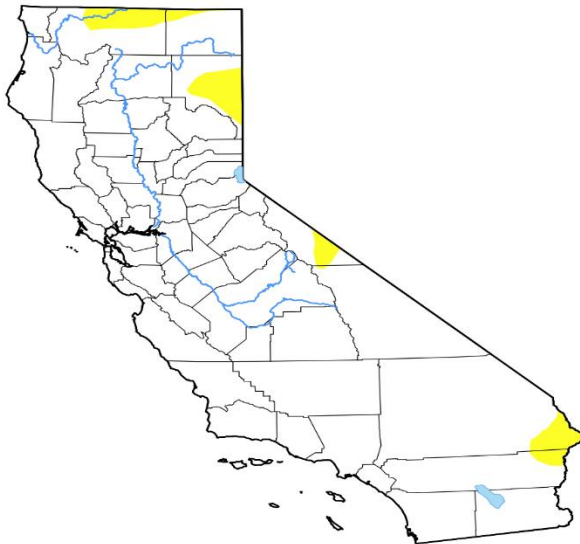
Intensity

- 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 Pugh](#), NOAA/CPC

Pacific Islands and Virgin Islands Author(s):
[Anthony Artusa](#), NOAA/NWS/NCEP/CPC



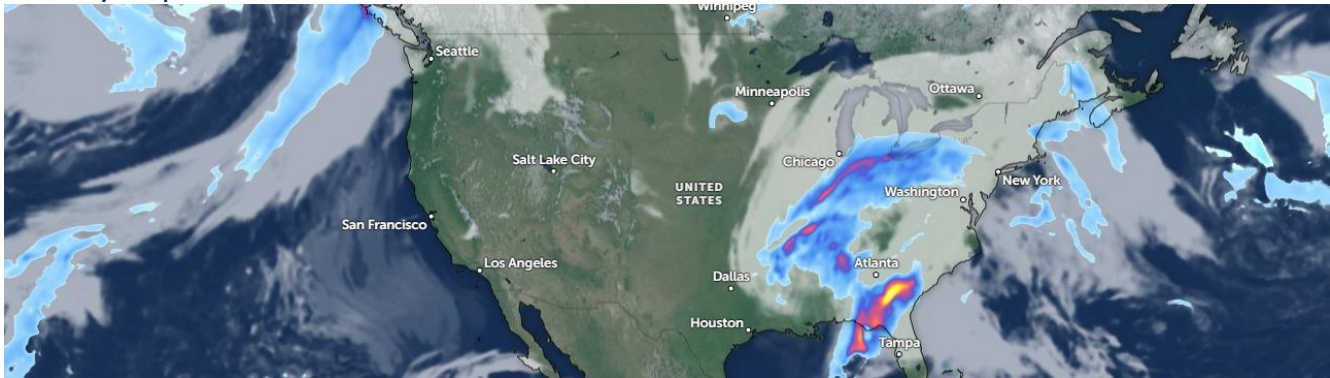
Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2024-04-02	95.46	4.54	0.00	0.00	0.00	0.00	5
Last Week to Current	2024-03-26	95.46	4.54	0.00	0.00	0.00	0.00	5
3 Months Ago to Current	2024-01-02	96.65	3.35	0.00	0.00	0.00	0.00	3
Start of Calendar Year to Current	2023-12-26	96.65	3.35	0.00	0.00	0.00	0.00	3
Start of Water Year to Current	2023-09-26	94.01	5.99	0.07	0.00	0.00	0.00	6
One Year Ago to Current	2023-04-04	56.17	43.83	24.86	0.82	0.00	0.00	70

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 a Pacific frontal system moving onto Western Canadian and will eventually affect the Northwest US coastline. While there is some cloud cover over the Northern Rockies, most of the Western and Midwest is clear. There is a large storm stretching from Dallas to Minneapolis and covering most of the Eastern US, with some significant activity over Northern Florida and Georgia. There is no monsoon activity at present.

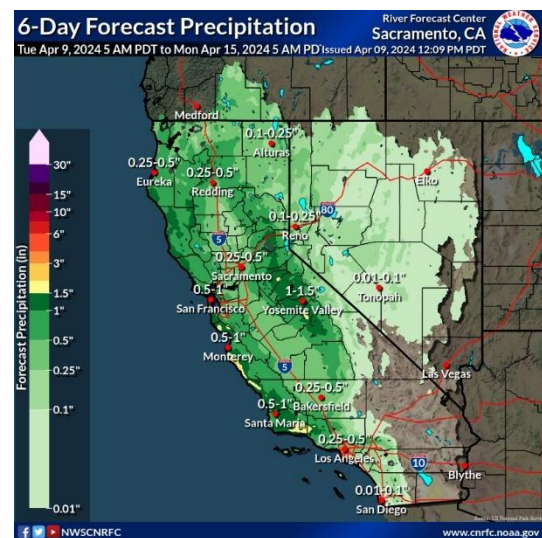


10 Day Outlook

Models continue to struggle with the timing and track of an upper low expected to bring precipitation to CA Friday and into the weekend. The 12z GFS has not changed too much since the 06z run still further offshore than the ECMWF as it approaches before traveling south into the weekend and passing Point Conception just off the coast into Sunday evening. The 12z ECMWF has changed quite a bit, picking up the speed of the low and carrying it inland around Monterey County late Saturday into Sunday and already moving into NV Sunday morning. Now, at 00z Monday the 12z GFS has the core of the low just nw of Point Conception while the ECMWF has the low over NV and beginning to move into UT. For what it's worth, the 12z CMC is closer to the ECMWF solution. This is leading to some very different QPF out of the two models. For the 24 hrs ending 00z Monday, the GFS has 1-

1.50+'' over Santa Barbara/Ventura counties while the ECMWF has 0.10-0.25''. The faster timing of the ECMWF is also leading to big differences early on. The 24 hr QPF ending 00z Sunday has a few hundredths to 0.30'' across the Sierra in the GFS solution vs 1-2'' in the ECMWF. The ensembles have not come any closer together either with spreads in initial precipitation arrival still between Friday morning and Saturday

Map Ref: Zoom Earth





VELES WATER WEEKLY REPORT

afternoon in both the GFS and ECMWF members. The ensembles vary in the track of the low as well. All this to say, there is still a great deal of uncertainty in the QPF for the extended.

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

WESTERN WEATHER DISCUSSION

Multiple low pressure systems and enhanced onshore flow resulted in above-average precipitation for much of Arizona, Utah, Nevada, and California from March 26 to April 1. According to the California Department of Water Resources on April 2, snow water equivalent (SWE) averaged at or slightly above normal for the Sierra Nevada Mountains. A relatively wet March and widespread precipitation amounts of 0.5 to 1 inch, liquid equivalent, this past week supported improvements for Arizona. Given the recent precipitation, the drought impact was modified to reflect only long-term drought for most of Arizona. This region will be reevaluated next week and additional revisions may be warranted. Eastern and southern New Mexico have remained mostly dry during the past 30 days. According to USDA's National Agricultural Statistics Service, 81 percent of New Mexico topsoil moisture is rated as short to very short. Washington, northern Idaho, and western Montana have below-normal SWE heading into early April. Abnormal dryness (D0) and moderate drought (D1) was expanded across the northern Cascade Mountains of Washington due to this low snowpack.

Reference:

Rocky Bilotta, NOAA/NCEI

Ahira Sanchez-Lugo, NOAA/NCEI



WATER NEWS

CALIFORNIA WATER NEWS

Clean air, water, environment amendment passes first hurdle in California Assembly

California lawmakers want to establish the state's position on environmental health, taking a first step Monday in their proactive approach to ensure processes for the state's environmental management remains secure, regardless of any federal changes.

“In California, we’re a national leader on addressing climate change and injustice,” Assemblymember Isaac Bryan said Monday when addressing the Assembly Natural Resources Committee. “We’re a global leader in addressing climate change and injustice.”

The Los Angeles Democrat is propositioning a constitutional amendment that would enshrine into law the Californian's right to clean air, water and the environment.

Assembly Constitutional Amendment 16, authored by Bryan, passed Monday out of the Assembly Natural Resources Committee and into his chamber’s Appropriations Committee. It must pass both houses by at least two-thirds and then secure a majority vote at the polls.

Bryan, also the committee's chair, noted California has implemented an air resource board and air quality management districts. It also has safe and affordable drinking water — privileges he said are at risk of federal interference.

“We have not codified these protections in our state constitution, which makes them vulnerable,” Bryan said.

According to Bryan, California lags behind states like Montana and New York in including clean environmental rights in its constitution. Without those listed rights, the state remains unprotected from changes in federal administrations.

“If our state is to continue making equitable environmental progress, it is imperative that we join the growing list of states who have moved to enshrine environmental rights in their constitutions,” Bryan said in a bill analysis.

Reverend Louis Chase, with Holman United Methodist Church in Los Angeles, advocated for the amendment. He said his church is on the frontline of racial justice work. His community and others sit in the middle of four freeways, and are subjected to the problems they bring.

Solange Gould, with Human Impact Partners, also supported the legislation and said it would provide a legal framework that’s needed.

The amendment was opposed by the California Chamber of Commerce.

Brady Van Engelen, with the state chamber, said the intention of the amendment was laudable. However, it could potentially be a job killer.



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Van Engelen also pointed out that California already is a leader in climate and water quality issues. He questioned what additional protections would add that the state already doesn't have.

It also would lay a foundation for possible legal challenges, he said. Van Engelen said the people who would benefit the most are white NIMBYs — meaning “Not In My Back Yard” — who would manipulate the law to their own ends.

Bryan said he found that idea offensive, as Black and brown communities have been living in subpar environmental conditions for decades.

“We know what it means to not push forward,” Bryan said. “That’s not what folks sent us here to do.”

Assemblymember Joe Patterson, a Rocklin Republican, elicited laughter when he said that he figured his legislation would pass given that Bryan is the committee chair.

Saying he liked the big ideas Bryan presented, Patterson added that he worried that without the Legislature stating its intent, a judge could stymie the amendment.

Patterson suggested that Bryan narrow the amendment’s focus.

Bryan argued that, even if the amendment is snared in litigation, it highlights the accountability that people should have over their government — that they have the right to clean air, water and environment. Additionally, he argued, it serves as a reminder to lawmakers that people should have those rights.

Original Article: [Courthouse News Service by Alan Riquelmy](#)

California's Lake Shasta Set to Fill Completely

Lake Shasta could reach its full capacity this spring, following a high amount of rainfall in California.

The largest reservoir in California has been steadily rising since the beginning of March. It has gone up sharply since the start of the year, which saw its levels at 1,012 feet, compared to its current level on April 5 of 1,058 feet. The lake has risen by about 19 feet since the beginning of March alone.

"Shasta Reservoir is currently 121 percent of the 15-year average and 93 percent full as of April 4. Unlike other Central Valley Project reservoirs, Shasta is predominantly filled by rainfall rather than snowpack runoff," a Bureau of Reclamation spokesperson told Newsweek.

An area manager for the U.S. Bureau of Reclamation told local newspaper Redding Record Searchlight that they are expecting Lake Shasta to "creep right up to the top." The reservoir, located in Shasta County, California, was in a dire situation due to drought in 2022.

The lake replenished to high levels last year due to a record amount of rainfall. And now, following another wet year for the state, its levels are once again looking healthy.



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Before 2023, California had been plagued by drought. Intense rain and snow storms last year brought so much water supply that the drought status was completely lifted, and the state now looks safe for another year.

Other reservoirs in the state are fed through snowmelt, which comes trickling down from the Sierra Nevada in the spring.

The California Department of Water Resources (DWR) has recently conducted its April snow survey, which is the most important of the year as it determines how much water supply the state could see when the snow starts melting.

The survey recorded 64 inches of snow and 27.5 percent of snow water equivalent. This put the snowpack at 113 percent of average.

California's reservoirs already "remain in good shape," the department said in a statement, "thanks to state efforts to capture and store as much water as possible from record storms in 2023 and again this season."

"It's great news that the snowpack was able to catch up in March from a dry start this year. This water year shows once again how our climate is shifting, and how we can swing from dry to wet conditions within a season," the department director Karla Nemeth said in a statement.

"These swings make it crucial to maintain conservation while managing the runoff. Variable climate conditions could result in less water runoff into our reservoirs. A hundred percent snowpack does not mean 100 percent runoff. Capturing and storing what we can in wetter years for drier times remains a key priority," Nemeth added.

Original Article: [News Week by Robyn White](#)

Newsom's Delta pitch: It's for the climate

Gov. Gavin Newsom has a new sales pitch for a tunnel to move more water south from the Sacramento-San Joaquin River Delta that past governors have tried and failed to build for five decades.

"The Delta conveyance is an adaptation project," he said last week in a snowy field in the Sierra Nevada, where a winter that started out dry eventually delivered a just-above-average snowpack that will soon melt into the Sacramento River and its tributaries.

It was a pretty good backdrop for his pitch: that not only will climate change make precipitation "flashier," with bigger storms and floods, but it'll make it scarcer overall — reducing the state's water supply by up to 10 percent by 2040.

Building a new tunnel to reroute water deliveries through the state's main water hub will help maximize scant supplies, Newsom argued, while running it only during wet weather will minimize harm to local communities and endangered fish like the Delta smelt and salmon.

"It's critical if we're going to address the issue of climate change," he said. "It is one of the most important projects this state can advance."



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Governors have used various arguments to advance the tunnel, which has been around in one form or another since former Gov. Jerry Brown backed a “peripheral canal” in the 1970s. Brown argued the project would protect the region’s labyrinth of levees from earthquakes.

Long-skeptical Delta lawmakers aren’t convinced by the latest rationale.

“He’s searching for a reason,” said Representative John Garamendi, a Democrat from the western part of the Delta. “The only way it could relate to climate change is sea-level rise, and that is a legitimate concern. But the tunnel would not solve the problem.”

He said rebuilding levees to protect Delta communities from flooding would be more of a climate adaptation project than pumping more water out.

Environmentalists also dismiss the climate argument.

“It’s really cynical to portray this as an adaptation,” said San Francisco Baykeeper science director Jon Rosenfield, who argues the tunnel would further harm fish and who with other green groups asked state and federal officials in a letter on Tuesday to reduce Delta pumping to save them. “It’s doubling down on the status quo that’s gotten us to a very critical point.”

So whom is Newsom talking to when he says the Delta tunnel is a climate adaptation project?

“Water agencies,” said Jerry Meral, a former top Brown water aide who now directs the California Water Program at the National Heritage Institute.

The water agencies who would use the water from the tunnel are the ones who are going to pay for it, eventually, but most haven’t yet decided to commit. The administration estimates the construction price tag at \$16 billion.

“We have a number of other historic arguments that you can make about why you should build the tunnels, and the climate argument is much stronger, because it’s undeniable from a water supply point of view,” Meral said.

Eighteen water agencies have already chipped in for the design and environmental review of the project (construction itself is estimated to cost \$16 billion). But only two small ones in the arid Inland Empire, the San Geronio Pass Water Agency and San Bernardino Valley Municipal Water District, have agreed to help finance the next step, pitching in \$8.2 million and \$11.2 million each.

The biggest fish is the Metropolitan Water District of Southern California, which delivers water to 19 million people in Los Angeles, San Diego and the surrounding areas. General Manager Adel Hagekhalil said he’s receptive to the climate argument — but he’s still circumspect on the broader question of whether to back the tunnel.

“The board of Metropolitan is very supportive to the concept of being able to provide resiliency in the middle of this climate change, and I think the governor is saying that,” he said in an interview last week. “The question is, what are the tools to get that done and how we get it done and how much we pay for it and who pays for it.”



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Met will decide whether to pay more for the tunnel as part of its broader climate planning this year or next. It's currently dealing with a budget hole because conservation has driven down sales beyond what it expected. At a February meeting, one board member questioned why the agency would fund new infrastructure if people aren't using as much water. A vote on rate hikes to make up for reduced sales is set for tomorrow.

Original Article: [Politico by Camille Von Kaenel](#)

California Farm Bureau Reports Despite Wet Year, Fish Protections Limit Allocations

State and federal water providers have increased promised allocations after accounting for recent storms that improved snowpack and reservoir levels.

The California Department of Water Resources doubled the amount of water it expects to deliver this year to most contractors that rely on the State Water Project, increasing the allocation for water users south of the Sacramento-San Joaquin River Delta from 15% to 30% of requested supplies. Those north of the delta are expected to receive 50% of their allotment, while Feather River Settlement Contractors will get their full allocation.

The U.S. Bureau of Reclamation, which manages the Central Valley Project, increased allocations for south-of-delta agricultural water users from 15% to 35% of their contracted allotment and from 75% to 100% for those north of the delta. The revised allocations followed a new snow survey measurement released March 1 and a spring runoff forecast released March 8. As of April 1, statewide snowpack was 104% of average for that date. A final water allocation for the year, accounting for springtime precipitation, is expected in May or June.

In their initial allocations, water agencies are "cautious about not overcommitting water supplies that may not materialize," said Chris Scheuring, senior counsel for the California Farm Bureau, adding that water allocations may still increase.

"We're optimistic," he said. "Hopefully, the season finishes out with another blast or two of rain, and we hope everybody is able to get full deliveries in a decent year like this one."

Agricultural water users in the San Joaquin Valley voiced frustration at receiving roughly a third of their contracted allotment during a year with above-average precipitation, following historic rain and snow events last year that replenished California's reservoirs.

"This is very disappointing and not because our expectations are unrealistic," said Allison Febbo, general manager for Westlands Water District, a major water provider that supplies farms in Fresno and Kings counties. "The broad public discussions surrounding water management in California have led us to believe that higher levels of delivery would be possible in better hydrologic years, such as this one."



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Allocations for farmers and other contractors south of the delta were limited by the presence of protected fish species near pumping facilities, which resulted in reduced pumping from the delta into the San Luis Reservoir. The reservoir serves state and federal water systems.

“While the series of storms in Northern California improved the water supply outlook, a number of factors, particularly anticipated regulatory constraints throughout the spring, continue to limit the water supply allocation for south-of-delta agriculture,” said Karl Stock, regional director for the Bureau of Reclamation.

DWR director Karla Nemeth said the state agency was doing its best “to balance water supply needs while protecting native fish species.”

The threatened and endangered fish species found near pumping facilities include delta smelt, winter-run chinook salmon and steelhead trout. Regulations designed to protect those species have made it hard for San Joaquin Valley farmers to anticipate water supplies from year to year, Scheuring said.

“Oftentimes, we find that species-related restrictions hamper the flow of water from north to south,” he said. “It is not so much a supply problem as a regulatory problem and, some would say, an infrastructure problem.”

DWR emphasized the need for the Delta Conveyance Project, which would move water south from the delta through a 45-mile tunnel. The \$16 billion project would “make it possible to move more water during high flow events while helping fish species like steelhead trout avoid threats posed by current pumping infrastructure,” the department said.

In December, the water agency released a final environmental impact report, approving the project. The tunnel still needs buy-in from water users that would fund the project, and it faces challenges from opponents trying to block it in court.

Febbo said the inability to move water south through the current system has consequences for crop production and the people who make their living from agriculture.

“Inadequate and unpredictable water supplies have a direct impact on the communities and farms in the San Joaquin Valley and their ability to feed the nation and the world,” she said. Febbo called the most recent allocation “a missed opportunity to celebrate what appears to be good outcomes for fisheries and to also provide water supplies that are essential for the San Joaquin Valley, an area already struggling with economic challenges and rising unemployment.”

Nicole Nicks, general manager at Westside Transplant in Merced County, which supplies tomato transplants to farmers across the state, said last month that growers in the Westlands Water District were hesitating to plant processing tomatoes because of uncertainty around water supplies.

While tomato acreage is largely dictated by the supply needs of canneries, which are contracting less tonnage this year, Nicks said water supplies also play a role.



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“It was kind of shocking,” she said last week, that the allocation for farmers south of the delta was not increased more. A larger revision, in line with the state’s water supplies, might have prompted some growers to order more tomato transplants, she said.

“Depending on how things go,” Nicks said, “they could still change the allocation. But by that time, it’s kind of too late.”

Westlands Water District said it conducted an analysis that found steelhead trout and winter-run chinook salmon “are expected to trigger further restrictions on delta pumping into June,” which is after farmers of many crops will have made their cropping decisions for the year.

“The hydrology this year is good,” Scheuring said. “If we have folks that are getting shorted, that’s a problem.”

Original Article: [Sierra Sun Times by Caleb Hampton](#)

Farm Bureau ‘encouraged’ by water plan

The president of the California Farm Bureau says she’s “encouraged” by some details in Gov. Gavin Newsom’s updated water plan, which the state Department of Water Resources unveiled last week.

Among the seven points in the update finalized April 2 is to improve the “backbone” of state, federal and regional water infrastructure as well as natural infrastructure such as lakes, rivers and groundwater basins.

The plan also calls for increasing flexibility of regulatory systems to meet the challenges of changing hydrology.

“We’re encouraged that the plan highlights infrastructure projects to capture, store and convey water supplies,” CFB President Shannon Douglass said. “We’re also pleased that it seeks to reduce permitting burdens for projects that support water resilience, including through groundwater recharge and habitat restoration.”

California updates its water plan every five years. The DWR is hosting a webinar at 10 a.m. April 29 to highlight projects and funding outlined in the updated plan.

Original Article: [Farm Progress](#)

California Snowpack is Above Average for the Second Straight Year

The California Department of Water Resources (DWR) conducted its April survey last week, and reports show that the snowpack is at above-average levels for the second straight year.

The DWR conducts four snowpack surveys per winter doing manual surveys as well as electronic readings from 130 stations around the state.

Skip Ad



VELES WATER WEEKLY REPORT

The April survey is one of the most important because it shows the peak snowpack of the state which is crucial information for water masters, reservoirs, and businesses as we transition into spring and summer.

The key figure to take away from the April survey is the water content of the snowpack. The manual survey was conducted at Phillips Station off Highway 50, just south of Lake Tahoe near Sierra at Tahoe.

The reports show a snowpack of 64 inches and a snow water equivalent of 27.5 inches. These figures represent 113% of the average for this area.

The other electronic readings show the snowpack across the state is at 110% of snow water equivalent for April averages. This is up from just 28% from the January readings. The mountains across the state benefited greatly from the heavy dumps we've seen in February and March. The challenge now is effectively capturing the runoff during the spring.

"Variable climate conditions could result in less water runoff into our reservoirs. 100 percent snowpack does not mean 100 percent runoff. Capturing and storing what we can in wetter years for drier times remains a key priority," said DWR Director Karla Nemeth.

While it's encouraging to see the snowpack levels go above average, California is still in the midst of an almost two decade long drought. There have been three record-setting multi-year droughts in the last 15 years according to Dr. Michael Anderson, state climatologist for DWR.

The DWR provides water to 27 million Californians, and the Sierra Nevada snowpack supplies about 30% of California's water, according to the DWR.

"California has had two years of relatively positive water conditions, but that is no reason to let our guard down now," says Dr. Anderson, The wild swings from dry to wet that make up today's water years make it important to maintain conservation while managing the runoff we do receive. Our water years moving forward will see more extreme dry times interrupted by very wet periods like we saw this winter."

Original Article: [Powder by Quintin Mills](#)

California unveils research into 'floating solar' project over major canal

Canals in California may soon feature a new look — solar panel canopies, designed to stop evaporation and soak up the sun's rays, created under a new project funded with help from the federal government to boost green energy infrastructure.

Governor Gavin Newsom joined staff from the U.S. Bureau of Reclamation on Thursday to highlight a new "solar-over-canal" project along one of the state's primary aqueducts. The pilot project proposes placing a solar canopy to "float" over a major waterway as a source of renewable energy that can also prevent loss of precious water through evaporation.



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Adam Nickels, Deputy Regional Director at the Bureau of Reclamation, said that the Biden Inflation Reduction Act helped make it possible to pick a portion of the Delta-Mendota Canal for placement of a solar panel in Merced County.

About \$19 million from Biden's fund is designed to help fund solar projects, with \$15 million going toward making "floating solar" research happen.

Commissioner Camille Calimlim Touton of the Bureau of Reclamation said that researchers hope to identify the best design for floating solar projects and what will work to pair with existing waterways.

Representative Jim Costa, a Democrat from Fresno, praised Biden for investing in infrastructure while criticizing the former Trump administration for making promises to do so "that never happened."

"These pilot projects will go a long way in other efforts to ensure that California's water needs are met well into the 21st century," Costa said. "This is about the environment, this is about our urban water needs and this is about agriculture."

Representative Jared Huffman, a Democrat from San Rafael, said that canals present an opportunity to turn waterways into clean energy capture sites. He pointed out the importance of the canal and forebay in the San Joaquin valley, and to the process of moving water throughout California.

The bureau's regional director Karl Stock said that he thinks solar canopies over water canals will become a crucial part of the state's water management system to reduce evaporation.

"The way we were talking about desalination and water treatment 23 years ago is very much the same as how we're talking about solar over waterways today," Stock said.

Karla Nemeth, director of California's Department of Water Resources, said that the department is also investing \$20 million in two canal sites near Turlock to study how fixed solar canopies over canal structures could also work.

Newsom said Thursday that work on the Merced County pilot began in February 2022, and was a "stubborn process" because not everyone in the region supported the idea of "solar-over-canal." But such projects can generate 3% higher efficiency energy using moving water, while reducing evaporation and creating land-based solar in areas which do not compete with agricultural land, he said.

The work also fits into the state's newly updated five-year water plan, and the push to decarbonize its energy grid, the governor said.

"It's a no-brainer, it just makes sense to do something that has so many co-benefits," Newsom said. "We are doing unprecedented work to modernize our water infrastructure."

Standing near the aqueduct surrounded by Central Valley farmland, Newsom took a jab at some Republican counties' disdain for him, noting the large signs and billboards calling to recall him which still stand along Interstate 5.



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“I drive through this state, and a few years back I thought, wow I’m getting real popular — my name is appearing everywhere up and down Highway 5,” he said.

“I realized quickly it was for different reasons. It’s always good to be back here in the valley.”

The state this week released an updated California Water Plan, including a Water Resilience Portfolio. It includes 142 actions for building new infrastructure to store and move water, such as “solar-over-canal,” as part of California’s Water Supply Strategy.

Original Article: [Courthouse News Service by Natalie Hanson](#)

New Kern County groundwater bank gets underway with another shot of public funding

The \$171 million Kern Fan Groundwater Storage project – with a unique “eco-twist” – received another chunk of public funding just as the first section of the 1,300-acre project had a formal christening on Wednesday.

Officials with Rosedale-Rio Bravo Water Storage District, Irvine Ranch Water District and the Bureau of Reclamation gathered at the project site near Enos Lane west of Bakersfield to look over construction of the first part of Phase 1, which began in February.

The Bureau announced earlier in the week that it had approved a \$3.9 million grant for the project, which is in addition to \$4.7 million awarded by the Bureau in 2023. That funding requires a 75% match from Rosedale-Rio Bravo and Irvine Ranch.

“We are extremely excited to get another large influx of infrastructure funding from the Department of Interior,” Rosedale-Rio Bravo General Manager Dan Bartel wrote in an email. “The team did a fantastic job of preparing extensive feasibility and environmental impact studies and of course the grant application package which makes this all possible.”

The federal funding is on top of \$89 million of Proposition 1 water storage bond money that the California Water Commission approved for the Kern Fan Project back in 2018. Kern Fan was the only San Joaquin Valley project to win approval of Prop. 1 funding, which does not require a match.

Bartel said the project still has a number of permitting hurdles to cross before the state releases the Prop. 1 money.

The basic concept of the Kern Fan project is standard groundwater banking: Put excess water underground in wet years and retrieve it in dry years, with some left behind to sustain the aquifer.

Kern Fan, however, also promises to hold 25% of the banked water in an “ecosystem account” to be called on by the Department of Water Resources when needed for environmental reasons in the Sacramento-San Joaquin Delta.

The ecosystem account is one of the main reasons Kern Fan won Prop. 1 funding.



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There are several wrinkles to iron out before the project reaches its full recharge capacity of 100,000 acre feet, however.

Including the specter of 1,2,3-Trichloropropane (TCP), a contaminant left over from a nematode fumigant applied throughout the San Joaquin Valley from the 1950s through the 1980s.

TCP is considered highly carcinogenic and restricted to five parts per trillion (about five grains of sand in an Olympic pool). It has been found in groundwater generally in the Kern Fan area, Bartel acknowledged.

“We have not drilled new wells yet on Phase 1, so that is still an unknown,” he wrote in an email.

TCP contamination has already caused problems for ag/municipal banking operations in Kern County, including with Metropolitan Water District of Southern California, which has several long standing banking partnerships in the region.

Bartel was confident the Kern Fan water could be “blended down” to reduce TCP to levels allowable in the California Aqueduct, which the project will eventually connect to directly through a new 10-mile canal.

The placement of that canal is still under consideration and was the subject of one of two lawsuits over the project.





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The Kern County Water Agency and City of Bakersfield both sued Kern Fan for different reasons. Bakersfield was concerned Rosedale-Rio Bravo and Irvine Ranch would use the project to move Kern River water out of the county. The agency was concerned that the project's connection into the Aqueduct would cut into other water district's ability to move water into and out of the Aqueduct.

Both actions were settled after the Kern Fan officials agreed no Kern River water would leave the county and that they would do a full environmental study before deciding where to connect to the Aqueduct, Bartel said.

For now, Kern Fan is starting on 300 acres along the west side of Enos Land just south of Rosedale Highway. Those ponds will take water, when available, from connections to the river, the Friant-Kern Canal and Cross Valley Canal. Construction on Phase 1 is expected to be finished by the end of 2026 and cost \$39 million.

Even without a drop, though, Bartel noted that the project is already saving water.

The land where the recharge ponds are being constructed had been farmed for years in "intensive irrigated agriculture" that required 1,000 acre feet per year.

Original Article: [SJV Water by Lois Henry](#)



US WATER NEWS

Reclamation slows flows through Glen Canyon Dam to address damage

The Bureau of Reclamation announced Monday that recently uncovered damage to the Glen Canyon Dam will require it to reduce flows through portions of the structure as it looks to repair the site and prevent future problems at one of the nation's major reservoirs.

Wayne Pullan, the Bureau of Reclamation's Upper Colorado Basin regional director, said that the agency — which is responsible for delivering water to Arizona, California and Nevada — is investigating damage to the lowest level of pipes at the dam, four structures known as the "River Outlet Works."

"In nearly 60 years of operation in Glen Canyon Dam, we didn't need to address the issues that we're facing now," Pullan said in a news conference. "We didn't need to consider the possible sustained operation of the River Outlet Works at low elevations. Water flows through several exit points on the Glen Canyon Dam, which holds back the Lake Powell reservoir, including a hydropower facility and the River Outlet Works.

Original Article: [E&E News by Jennifer Yachnin](#)

Lithium Companies Fight Over Water in the Arid Great Basin

Over the past few decades, the United States has imported most of its lithium from Chile and Argentina, but there's one major domestic source of the mineral—Nevada. Clayton Valley, a remote basin in the nation's driest state, is home to the Silver Peak mine, where lithium is extracted in gridded ponds that turn neon blue as they recover one of Earth's lightest elements through solar evaporation.

Albemarle, a North Carolina-based company, runs Silver Peak as the only active lithium mine in the U.S. But over the past decade, amid a growing demand for electric vehicles and batteries to store electricity from intermittent renewable sources, dozens of mining companies have rushed to the area, vying for the element critical to the energy transition and the water that's key to extracting it from the Earth.

Mining operators across the West have faced major barriers in the global race for lithium. Mines come with large footprints that can disrupt wildlife habitat, harm cultural sites and put pressures on communities. On top of all that is another major challenge posing a barrier for lithium projects in the western U.S. and Clayton Valley: Competition for limited water supplies.

"All these companies can sue each other all they want to," said De Winsor, a commissioner for Esmeralda County, Nevada, who has been closely monitoring the water situation playing out within its borders. "All we want to do as a county is protect the citizens of the county."



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Albemarle claims it holds the rights to nearly all the groundwater in Clayton Valley, leaving little room for more companies to develop scores of additional mining claims. Water is so scarce here that two companies looking to mine in Clayton Valley recently filed requests with state regulators asking for permission to import groundwater from nearby valleys.

Exactly how much water is sustainable to use in this area is an open question. Many estimates looking at the volume of water stored in Nevada's aquifers are based on science dating back to the 1960s. Even in cases where groundwater use remains below the sustainable yield, pumping can affect nearby areas or dry up springs, conflicting with other water rights.

In proceedings to settle water disputes, as with an ongoing hearing on Clayton Valley, different parties often present different ideas and modeling of groundwater to show how the aquifer might respond to more use.

"There are models and then there are models," said Jeff Fontaine, executive director of the Central Nevada Regional Water Authority. "I think a lot of this comes down to that very issue."

What happens with water here matters because Clayton Valley and the surrounding valleys have been at the epicenter of Nevada's lithium boom. Companies ranging from speculators to well-funded ventures have proposed more than a dozen projects to get lithium from brine or clay in Clayton Valley and the nearby valleys that pockmark the Great Basin.

And in the months to come, how water is allocated in Nevada's lithium valley could change—if a venture backed by oil services giant SLB, formerly known as Schlumberger, has its way.

For several years, SLB's subsidiary, NeoLith Energy, has been working to get a pilot plant permitted near the Silver Peak mine and prove-up a new technology known as direct lithium extraction, or DLE. The technology promises to consume less water, take less time and disturb less land.

Like other proposed mining projects in Clayton Valley, SLB is targeting lithium dissolved in salty groundwater, so it needs a portion of the water rights Albemarle claims to pump that brine to the surface.

In 2021, SLB's partner filed for water rights, a filing that has led to a tense dispute between two lithium mining projects with major backers. They have fought over this water in court and in a state regulatory hearing that began in January and could decide who controls water in Nevada's lithium valley.

Albemarle is not ceding any of its water without a fight, arguing that the DLE operation could damage the aquifer and conflict with its operations. But the company sits on more water rights than it has historically needed for its operation.



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To a competitor like SLB, Albemarle's holding onto this water violates the "use it or lose it" rule of Western water law, the idea that individuals and businesses cannot retain water rights indefinitely. The rule aims to prevent speculation by entities that might hold onto an unused water right in hopes that its value will increase, but state regulators have the discretion to grant exemptions.

They have granted Silver Peak more than 20 "extensions of time" since the 1980s, though the state recently renewed a small temporary water permit for SLB's pilot plant, recognizing that the Silver Peak mine has not used more than 70 percent of its water rights since 2022.

It's that continued lack of use that has frustrated operators in the area. In 2022, an executive told The Nevada Independent that Albemarle was working to maintain a "monopoly through holding water hostage" and that other businesses have faced similar issues with the company.

With the state hearing pending, neither SLB nor Albemarle would comment on the water rights. Albemarle has stated, in the past, that it plans to expand its mine and increase its water use.

Nevada is not the only place in the Great Basin where there is tension and competition among different operators competing for land and scarce water supplies. Earlier this month, Utah passed legislation to start looking at a regulatory framework for brine extraction.

"It seemed really important to have some good policy around how we manage" lithium brine, said Bridger Bolinder, a Republican member of the Utah House of Representatives.

The legislation also tasked the state with studying potential regulations for brine operations. In Nevada, the Center for Biological Diversity has pushed lawmakers to fund a study that looks at where lithium can be extracted without substantial harm to communities or the environment.

Patrick Donnelly, the Great Basin director for the group, has been tracking more than 83 lithium projects in Nevada, with nearly half in Esmeralda County and bordering Nye County. In many valleys, the claims for projects are concentrated in specific hotspots believed to hold brine. DLE projects present a particular challenge, he said, because regulators must consider pumping up the brine and reinjecting the water underground after the lithium has been removed. Without planning and action from the Legislature, he said, "it's going to be chaos."

"We need a plan and this effort is meant to be in collaboration with the mining industry, not in opposition to the mining industry," Donnelly added.

In 2017, the Nevada Legislature resolved one issue facing lithium companies in Clayton Valley, where Albemarle held nearly all the water rights but others had valid mining claims and wanted to research the brine. In such cases, the state now grants a small amount of water for exploration.



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But even companies that have started exploring cannot mine without water rights.

“Having the mining claims does not allow them to continue to mine if there are no water rights available,” said Rob Ghiglieri, who leads the Nevada Division of Minerals.

Original Article: [Inside Climate News by Daniel Rothberg](#)

Water & power collide in proposed \$100 million Colorado River deal

Colorado’s Glenwood Canyon is as busy as it is majestic. At the base of its snowy, near-vertical walls, the narrow chasm hums with life. On one side, the Colorado River tumbles through whitewater rapids. On the other, cars and trucks whoosh by on a busy interstate.

Pinched in the middle of it all is the Shoshone Generating Station.

“It is a nondescript brown building off of I-70 that most people don’t notice when they’re driving,” said Amy Moyer, director of strategic partnerships at the Colorado River District. “But if you are in the water world, it holds the key for one of the most interesting and important water rights on the Colorado River.”

Beneath a noisy highway overpass, Moyer looked at the hydropower plant through a chain-link fence. Her group, a taxpayer-funded agency founded to keep water flowing to the cities and farms of western Colorado, has agreed to pay \$98.5 million on rights to the water that flows through the Shoshone facility.

The purchase represents the culmination of a decades-long effort to keep Shoshone’s water on the west side of Colorado’s mountains, settling the region’s long-held anxieties over competition with the water needs of the Front Range and the fast-growing cities and suburbs around Denver.

Even though the Shoshone water rights carry an eight-figure price tag, the new owners will leave the river virtually unchanged. The river district will buy access to Shoshone’s water from the plant operator, Xcel Energy, and lease it back as long as Xcel wants to keep producing hydropower.

The water right is considered “non-consumptive,” meaning every drop that enters the power plant is returned to the river. The river district wants to keep it that way as long as it can and ensure the water that flows into the hydroelectric plant also flows downstream to farmers, fish and homes.

The river district is pulling the \$98.5 million sum from local, state and federal agencies. It has secured \$44 million already, and got a boost this week with a \$1 million pledge from the city of Grand Junction, with deals in the works for the remainder.

It’s rare for a big-money water deal to find this kind of broad approval from a diverse group of water users. But the acquisition is seen as pivotal for a wide swath of Colorado, and has been co-signed by farmers, environmental groups and local governments.

“It’s so much more than, ‘We’re going to spend \$100 million to do nothing,’” Moyer said. “We’re keeping native flows in the river for so many benefits on the West Slope.”



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Why Shoshone?

To understand why this unassuming power plant wields so much clout, take a look at its history.

About 40 million people across seven Western states rely on the Colorado River. It supplies big cities like Los Angeles, Las Vegas, Phoenix and Denver as well as a multibillion-dollar agriculture industry. But it's governed by a century-old legal document and a management system that has proven frustratingly difficult to adapt for today's policymakers.

Key to that system is the concept of "prior appropriation," which means that those who were first to use water will be the last to have their water curtailed in times of shortage. It often ignores Indigenous people who were using the river before white settlers ever arrived. But under the rules those settlers drew up and modern governments still use, it means older water rights are more powerful.

Shoshone's water right is one of the oldest and biggest in the state, giving it preemptive power over many other rights in Colorado.

Even in dry times, when cities and farms in the rest of the state feel the sting of water shortages, the Shoshone Hydroelectric Plant can send water through its turbines. And when that water exits the turbines and re-enters the Colorado River, it keeps flowing for users downstream.

The hydro plant itself produces relatively little energy. Its 15-megawatt capacity is only a small fraction of Xcel Energy's total Colorado output of 13,100 megawatts. Shoshone's capacity is enough to serve about 15,000 customers, less than a quarter of the population of Garfield County where the plant sits.

But the power plant has held legal access to Colorado River water since 1902, and can claim seniority over the vast majority of other water owners in the state. That kind of seniority means power and certainty for whoever owns it. And that has raised the hackles of western Colorado water users, who worry that users in other parts of the state might be interested in buying Shoshone's water right.

Colorado's Front Range – functionally the metro area from Fort Collins to Pueblo – is fed by a complex network of canals, pipes and tunnels cut through the mountains, carrying water against gravity to the places where it's needed. About 80% of the state's water falls on the west side of the mountains, but 80% of its people live on the east side.

Cities on the Front Range have been able to grow significantly over the past century, despite often having access to a finite supply of water. Western Colorado residents worry that future growth could lead those cities to spend big on more water from the West Slope, and say securing Shoshone's water blocks eastern Colorado users from snatching that water up for themselves.

Fish and farms

The Colorado River District's plans to buy Shoshone's water have drawn widespread support, largely because of the transfer's widespread benefits.



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Perhaps no constituency will benefit from the move as much as the one that lives in the river itself.

“Anything that results in more water in the river is good for fish,” said Dale Ryden, a biologist with the U.S. Fish and Wildlife Service.

Standing on the banks of the Colorado River in Grand Junction, Ryden looked out over a murky, meandering stretch of water, part of the “15 mile reach,” a critical section of the river about 80 miles west of the Shoshone plant. The reach is filled partly by water exiting Shoshone’s turbines.

Ryden explained that this section of river is home to a variety of species, some of which are endangered, and some which are found nowhere else on Earth than the upper portions of the Colorado River. Those species – with names like flannelmouth sucker and humpback chub – rely on this stretch of river for virtually every aspect of life.

“Back in the day, before there were people here and there was a lot of water and snowpack, the ‘15 mile reach’ was kind of the place to be if you were an endangered Colorado pikeminnow or a razorback sucker,” Ryden said. “The adults live here, they spawn here, they feed here. It’s just a really highly used and good section of river for the adult endangered fish.”

Because the fish are protected by the Endangered Species Act, people who use water from this section of the Colorado are required to leave enough behind for fish. That means dry conditions and water shortages would force farmers and ranchers in the nearby Grand Valley to try to balance their own water needs and the legal protections afforded to endangered fish.

“We can’t have farming without taking care of those fish,” said Tina Bergonzini, manager of the Grand Valley Water Users Association, one of a handful of agricultural irrigation districts near Grand Junction. “They go hand in hand.”

Mesa County, which contains the Grand Valley, has an annual agricultural output of about \$94 million. It’s the state’s top producer of fruits and berries, including regionally famous peaches from Palisade. Bergonzini says the farmers and ranchers who contribute to that total will be able to depend on a steady water supply year after year once Shoshone’s water is guaranteed to keep flowing their way.

“I think peace of mind is the number one most important thing that it’s going to be able to bring to the Grand Valley,” she said.

The Grand Valley Water Users Association was among 21 groups that co-signed the river district’s plan to buy the Shoshone water right.

Other potential suitors

The river district says the deal protects the Shoshone water right, but hasn’t detailed who exactly they’re protecting it from. History provides more than a few examples of Front Range cities and agriculture looking West for new water supplies, but it’s unclear which of them would have wanted to buy Shoshone.



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Denver Water, the state's largest water utility, forfeited the chance to buy access to Shoshone's water in 2013 when it inked the Colorado River Cooperative Agreement, along with the Colorado River District. In fact, Denver Water agreed to support the acquisition of the Shoshone water right by a West Slope entity.

Representatives from Denver Water, Aurora Water and Northern Water – which serves eight counties north and east of Denver – declined to comment on the Shoshone's water rights transfer. A spokesperson for Colorado Springs Utilities said the agency was “aware of the Colorado River District's efforts to acquire the Shoshone water rights and would not oppose the transfer of those rights.”

Mark Hermundstad, a retired water lawyer who helped craft the Colorado River Cooperative Agreement, said he was not aware of any particular water agency that was poised to buy the Shoshone right but that threats may have still existed. He even floated the idea that an East Coast hedge fund could theoretically attempt to buy Shoshone's water.

“There's always been a possibility that someone with a lot of money could come in and buy it and try to do something with it,” he said.

Original Article: [Tucson Sentinel by Alex Hager](#)

DENR set to cancel 3,000 water rights

THE Department of Environment and Natural Resources (DENR) said it expects to cancel 3,000 grants of water rights due to non-use, and redistribute them to new grantees.

“There are many water rights grantees that do not use the water that was granted to them,” Environment Undersecretary Carlos Primo C. David told reporters on the sidelines of Israel-Philippines Water technology innovations forum last week.

Water rights are granted by the government to private and government entities.

The DENR did not discuss the combined water volume these rights cancellations would free up. It did say that the cancellations will take place within the year.

“Once we cancel them, we are opening up the use of that water (to others). Because you cannot apply for a right when someone has it,” Mr. David said.

Meanwhile, Mr. David said the DENR is set to meet with the water regulator to discuss the water allocation for Metro Manila from the National Water Resources Board.

“For Metro Manila, I am in charge of allocating water for the different users of Angat, and the users there are MWSS for Metro Manila, and Bulacan (province) and both have increased their demand,” Mr. David said.

For April and May, irrigation water will be fully allocated, but the water allocation for Metro Manila remains under study.

Metro Manila's demand has increased by 0.5 cubic meters per second, Mr. David said.

On Monday, the water level in Angat Dam declined to 196.50 meters from 196.82 meters on Sunday, according to the government weather service, known as PAGASA.



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The dam has a minimum operating level of 180 meters and a normal high-water level of 212 meters. The latter is considered the ideal level with adequate safety margins during the dry months

Angat Dam is the main source of water for Metro Manila, accounting for about 90% of the capital's potable water.

Original Article: [Business World Online by Ashley Erika O. Jose](#)

Turning oil industry waste into water wealth in the desert

Freshwater resources in West Texas are dwindling at the same time the oil country is struggling to dispose of dirty, unwanted oil field wastewater that is spewing [from leaky wells](#) and [triggering earthquakes](#). It's a dual challenge that an emerging industry is working to solve.

New pilot projects in the Permian Basin of West Texas and southeastern New Mexico are testing technologies that they hope can cost-effectively purify the chemical-laden brine that flows up alongside oil during the production process so it can be reused. Regulators and oil companies are [heavily involved](#) as they aim to usher in a new era of oil field wastewater recycling.

The premise is nothing new — some of this wastewater is already recycled for reuse in fracking. But efforts to recycle billions of barrels of water are gaining new momentum as the Texas Railroad Commission [cracks down](#) on underground wastewater disposal in areas of intensifying earthquakes, leaving oil companies with fewer places to put it.

Meanwhile, arid West Texas and New Mexico are [looking to bolster](#) freshwater supplies and increasingly see opportunity in treating the oil industry's wastewater, also known as produced water, for reuse in irrigation, for the production of new fuels such as hydrogen and to recharge drying bodies of water such as the Pecos River.

The practice of recycling this water is gaining traction out of necessity, said Mike Hightower, program director of the New Mexico Produced Water Consortium.

"I think within three years we're going to see (recycling efforts) start exploding," he said, noting that Texas alone needs to come up with 7 billion gallons of new water a day by 2050 to address a growing gap between freshwater supply and demand. And because regulators and hydrogeologists believe that wastewater underground is correlated with a rash of earthquakes shaking the oil country as well as a worrying trend of water returning to the surface through old wells, "we can't continue to inject like we do."

"Why am I bullish? I need to be."

Wastewater handling is an essential part of the oil production process, especially in the Permian, where five to nine barrels of super-salty water laced with chemicals can come up with a single barrel of oil. This flowback is a mix of the water used to frack the well and water trapped with oil in rock released by the production process.

Without places to put the water or recycling facilities capable of treating it, oil companies could be forced to stop extracting oil in some areas of the oil-rich basin. It's



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a growing threat, given that earthquakes in the area are still trending “alarmingly high,” said Ryan Hassler, vice president of oil field service research at Rystad.

“What’s at stake at the worst end of this is having to shut in drilling and completions activity,” Hassler said.

The trick is getting regulators to set new standards for treating the oil field wastewater and bringing the cost of recycling technology down to a point where it’s competitive with disposal, researchers said. To that end, there are eight active pilot projects feeding fresh data to regulators and industry consortiums.

Until there are clear regulatory guidelines on how to process the water, oil companies remain reluctant to invest in recycling facilities, Hassler said. The recycling units could cost as much as \$30 million a piece, according to Joe de Almeida, Occidental Petroleum’s director of water strategy and technology, who spoke during a recent conference in Houston hosted by the Produced Water Society. To make the investments, Oxy would want to know more about regulators’ expectations.

In response to industry hesitance, the Railroad Commission’s chief engineer, Ted Wooten, assured the conference’s audience that it would be up to the industry to do the research needed for standard-setting.

Original Article: [Houston Chronicle by Amanda Drane](#)

Colorado River states get a wet winter, but Lake Powell will get below-average runoff, forecast says

Spring storms brought more snow to mountains across the Western U.S., bringing water for struggling Lake Powell with them.

The National Weather Service Colorado Basin River Forecast Center on Friday estimated that Lake Powell will receive 5.7 million acre-feet of water between April and July as snow melts off the mountains. An acre-foot is roughly enough water to sustain two houses for a year.

That volume is 89% of the normal runoff for that time period recorded between 1991 and 2020.

5

Facing extreme drought and climate change since the turn of the century, Lake Powell dropped to a historic low of 22% full in Feb. 2023. The reservoir currently stands at about 32% full.

Three factors determine how much water ends up in Lake Powell: the amount of snowpack on Western mountains, spring temperatures (warmer weather can cause snow to melt faster) and soil moisture (dry soil absorbs melting snow, leaving less water for reservoirs).

Snowpack jumped in March throughout the Upper Colorado River Basin, the portion of the river basin that lies above Lake Powell and includes Colorado, New Mexico, Utah and Wyoming.

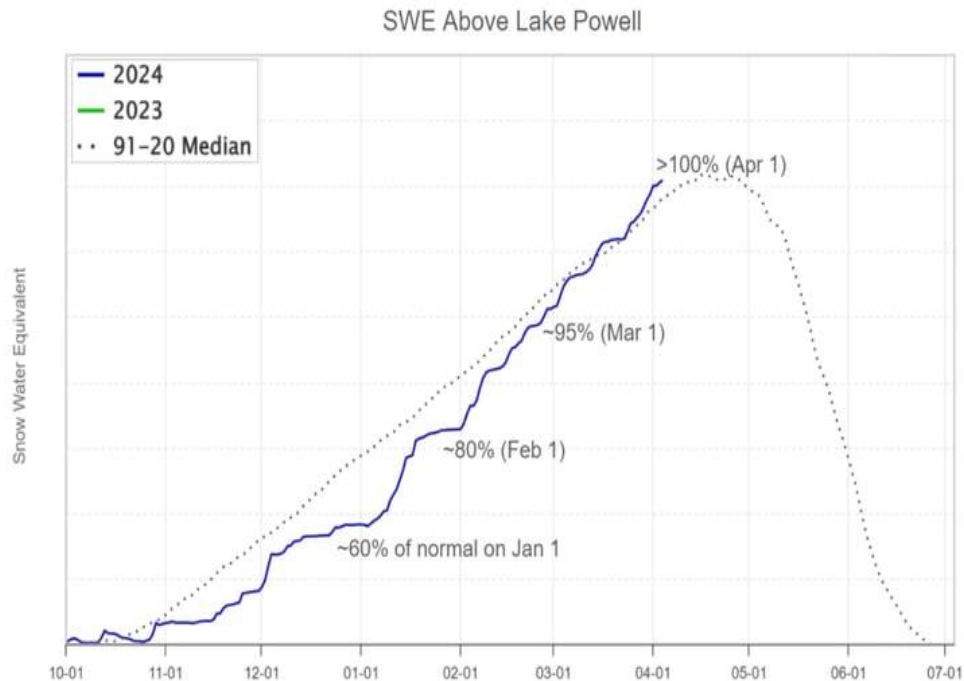


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On March 1, snow water equivalent — the amount of water contained in snow — above Lake Powell stood at 97% of the median snow water equivalent between 1991 and 2020.

A month later, on April 1, forecasters recorded Upper Basin snowpack at 113% of the median.

UCRB Snowpack Evolution



(Colorado Basin River Forecast Center) This graph depicts snowpack in the Upper Colorado River Basin, which includes Colorado, Utah, New Mexico and Wyoming. SWE stands for snow water equivalent, which is the measure of how much water is in snow. As of April 1, snow water equivalent in the Upper Basin is 113% of the median snow water equivalent recorded between 1991 and 2020.

Snowpack conditions above Lake Powell improved because of active weather in March, forecasters said, which was the third month in a row with near to above-normal precipitation throughout the Colorado River Basin.

Last month, the Upper Basin saw 130% of average precipitation, bringing precipitation above Lake Powell to 102% of average for October 2023 through March 2024.

But an above-average year for snow doesn't guarantee an above-average runoff, given the forecast of warm spring temperatures and dry soil conditions.

Right now, forecasters say, soil moisture across the entire Colorado River Basin — which includes Arizona, California and Nevada as the Lower Basin — is close to below normal. Soil moisture is better in the Upper Basin than in the Lower Basin.

When forecasting how much water Lake Powell will get, hydrologists release three possible scenarios. On Friday, forecasters reported that there is a 10% chance that the reservoir could receive as much as 8.3 million acre-feet of water or more from April



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through July. In a drier scenario, there is a 10% chance that runoff could drop to 4.4 million acre-feet of water or below. The most likely case is that Lake Powell sees about 5.7 million acre-feet of water.

Forecasters in late March predicted that Lake Powell would receive 5.4 million acre-feet of water between April and July.

These estimates guide the management of the Colorado River, which serves 40 million Americans, 30 Native American tribes and sustains various ecosystems and habitats.

Original Article: [The Salt Lake Tribune by Anastasia Huffman](#)

SD agency grants over \$172 million for water projects throughout state

The South Dakota Department of Agriculture and Natural Resources has issued loans and grants totaling over \$172 million for environmental water projects throughout the state. The grant money is awarded for drinking water, wastewater, storm water, and solid waste projects.

The money is divided into \$20 million dollars in grants and over \$152 million dollars in low-interest loans.

Thirty-six projects have already been approved for funding. They range from Aberdeen constructing a new water tower to Worthing rehabilitating its existing lagoon.

Projects are funded by the U.S. Environmental Protection Agency, federal appropriations, loan repayments, and bonds.

Original Article: [SDPB by Even Walton](#)

Water allotment drops to 63% for Yakima Valley junior water rights holders

People who hold junior water rights, or rely on irrigation companies with junior rights, will be getting less water than anticipated this year in the Yakima Valley.

Officials with the U.S. Bureau of Reclamation, citing below-average precipitation in the Yakima River Basin, announced Wednesday that junior water rights holders will receive 63% of their water allotment this year.

March's forecast anticipated a 72% allotment.

Senior water rights holders — those who acquired rights to water prior to 1905 — will receive their full allotment. Junior rights allotments can be reduced — or even cut off — during droughts to ensure that senior water rights holders get their full share of water.

Overall, the five reservoirs in the Yakima River Basin — Keechelus, Kachess, Cle Elum, Bumping and Rimrock lakes — are at 47% of total capacity. Individually, Bumping Lake is at 82% capacity, followed by Rimrock Lake at 67% capacity.

Between October and March, precipitation was 82.4% of average, while snow water content levels were 78% of average as of April 1.



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Seasonal weather forecasts call for above normal temperatures and below normal precipitation during the spring and summer, based on March forecasts, according to the Bureau of Reclamation, assuming things remain as predicted.

“A lot can happen between now and May 1,” said Mikolaj Lewicki, a BOR hydrologist. The next forecast will be in May, with allotment numbers adjusted accordingly.

Original Article: [Yakia Herald Republic by Donald W. Meyers](#)

GLOBAL WATER NEWS

European climate risks have reached critical levels, says EEA

A damning report from the European Environment Agency (EEA) warns that various climate risks across Europe have reached critical levels.

Europe stands as the fastest-warming continent globally, facing imminent climate risks that threaten multiple sectors, including energy, food security, ecosystems, infrastructure, and public health.

The EEA’s report ‘European Climate Risk Assessment (EUCRA)’ has issued a dire evaluation, underscoring the critical levels of many risks and the potential for catastrophic outcomes without immediate action.



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Escalating climate risks

Extreme heatwaves, droughts, wildfires, and flooding, witnessed in recent years, are projected to intensify across Europe, even under optimistic global warming scenarios.

These phenomena are not only set to exacerbate living conditions but also pose significant threats to various facets of European life.

The EEA's report highlights the urgency of identifying policy priorities for climate change adaptation and resilience building in vulnerable sectors.

The assessment reveals that Europe's policies and adaptation efforts are failing to match the rapid escalation of climate risks.

Incremental adaptations may prove insufficient, necessitating urgent actions, even for risks not yet deemed critical. Certain regions within Europe emerge as hotspots for multiple risks.

Southern Europe faces heightened vulnerability to wildfires, heatwaves, and water scarcity, impacting agriculture, outdoor labour, and public health.

Coastal regions, including densely populated urban areas, confront threats of flooding, erosion, and saltwater intrusion.

Insights from the risk assessment

Identifying 36 major climate risks across five clusters—ecosystems, food, health, infrastructure, and economy and finance—the assessment emphasises the pressing need for immediate action.

More than half of these risks demand urgent attention, with eight deemed particularly critical.

These include conserving ecosystems, protecting against heat-related health issues, fortifying infrastructure against floods and wildfires, and ensuring the stability of European mechanisms like the EU Solidarity Fund.

Ecosystems face urgent risks, especially in marine and coastal areas, with potential cascading effects on food, health, infrastructure, and the economy.

In terms of food, heat and drought pose critical risks to crop production, particularly in southern and central Europe. Shifting towards plant-based proteins could mitigate water consumption and reliance on imported feed.

Heat is the most pressing climate risk for human health, impacting vulnerable groups such as outdoor workers, the elderly, and those in poorly built infrastructure. Addressing health risks requires actions beyond traditional health policies, including urban planning and labour laws.

Infrastructure, including energy, water, and transport systems, is increasingly vulnerable to more frequent and extreme weather events. Coastal flood risks are relatively managed, but rising sea levels and changing storm patterns pose significant threats, especially in southern Europe.



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Europe's economy and financial system are exposed to various climate risks, including increased insurance premiums, asset threats, and government expenditures.

The EU Solidarity Fund's viability is already under strain due to costly floods and wildfires. Worsening climate impacts may exacerbate private insurance gaps and vulnerability among low-income households.

Collaborative approach needed

While acknowledging progress in understanding and preparing for climate risks, the EEA report underscores inadequate societal preparedness due to lagging policy implementation.

It calls for closer cooperation between the EU, its Member States, and regional and local levels to address urgent risks collectively.

Moreover, bridging knowledge gaps through an improved understanding of climate risks and effective governance structures is deemed crucial.

Europe's battle against climate risks is at a critical juncture, demanding immediate and coordinated action across sectors and governance levels.

The EEA's assessment serves as a call for policymakers to prioritise climate adaptation and resilience-building measures to safeguard the continent's future.

As Europe grapples with escalating risks, concerted efforts towards mitigation and adaptation are imperative to secure a sustainable and resilient future for generations to come.

Original Article: [Innovation News Weekly](#)

Australia's Macquarie among lenders to Thames Water's parent company

The Australian investment bank Macquarie, which has been criticised for its role in the privatisation of England's water industry, is understood to be among lenders to Thames Water's troubled parent company.

The former Thames Water shareholder could, along with other lenders, play an important role in determining the fate of Britain's biggest water company, after its parent company Kemble Water Finance defaulted on its debt.

Kemble said on Friday it had requested that its lenders and bondholders take no creditor action, but the development raised the prospect that the utility could face a significant restructure or even ultimately collapse.

Macquarie's fresh involvement, first reported by the Times, is likely to spark further controversy, after the Australian group came under fire for loading Thames Water with debt and inadequate investment while receiving big dividends during its part-ownership between 2006 and 2017.

Macquarie has defended its stewardship of the utility, arguing that it invested more than £11bn in Thames Water's network during the period, the highest per customer level of all water companies in England and Wales.



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It emerged last week that the group of lenders to Kemble also include the Dutch bank ING, Allied Irish Banks (AIB) and the Chinese state-owned Bank of China and Industrial and Commercial Bank of China (ICBC).

Kemble has a £190m loan that is due to be repaid at the end of this month, but the banks are expected to agree an extension. Late last month Thames Water's shareholders refused to stump up £500m needed by the end of March, some of which was earmarked to pay the Kemble loan.

Macquarie is thought to have invested £130m in Kemble's debt in 2018 and 2020, equivalent to about 9% of the company's debt instruments. This is not part of the £190m due later this month.

A spokesperson for Macquarie said: "We manage debt investments on behalf of long-term institutional investors in a range of infrastructure companies, providing long-term financing for essential infrastructure. Macquarie has not had any control or influence over Thames Water's operating company since 2017."

Macquarie sold its remaining stake in Thames Water seven years ago. The utility's debt jumped from £3.4bn to £10.8bn during the Macquarie consortium-led ownership.

The Australian group is known for buying public infrastructure. It can then charge fees, and receive dividends for its part-ownership, as well as enjoy any increase in the asset price. Estimates have put dividends paid for Thames Water during the Australian bank's 11-year stewardship at £2.7bn.

Days after Macquarie's sale of its stake was announced in March 2017, Thames Water was hit with a then record fine of £20.3m linked to huge leaks of untreated sewage for offences in 2013 and 2014.

Original Article: [The Guardian by Julia Kollewe](#)

Sierra Leone: African Development Bank Executive Directors visit key water project

A delegation of seven executive directors from the African Development Bank Group has visited a key water revamping project in Sierra Leone designed to transform water management and sanitation in the capital and beyond.

The directors, on a five-day consultation mission to strengthen the Bank's partnership, visited project sites of the Freetown WASH and Aquatic Environment Revamping Project, which seeks to boost access to safe water supply by fifteen percent through climate-resilient and sustainable water supply systems, and to ensure a seven percent increase in access to improved sanitation using improved solid and liquid waste collection, treatment and disposal services.

They visited project sites for the rehabilitation and construction of new water treatment plant and water storage reservoir for the Angola Water Supply system located in New Jersey in the Angola locality, in the Western Area of Greater Freetown.



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African Development Bank Executive Director for Sierra Leone, Rufus N. Darkortey, noted, “Improving water supply and sanitation is critical for socio-economic development and the Freetown WASH and Aquatic Environment Revamping project will contribute greatly to poverty eradication in Sierra Leone.”

The Planning, Research and Development Manager at Guma Valley Water Corporation, Ing. Ishmail Bundu highlighted the benefits from the newly rehabilitated and expanded raw water reservoir under the project, the Babadorie Reservoir, located in Regent Town, Western Area Rural of Greater Freetown. He stated, “The total capacity of raw water storage in the reservoir rehabilitated and expanded with financing from the African Development Bank was increased from 60,000 cubic meters to 72,000 cubic meters. With co-financing from the Kuwait Fund, another reservoir to store additional 60,000 cubic meters is being constructed in the same location. The overall storage of 130,000 cubic meters will serve the entire area during the driest period of the year.”

The project has already started to produce results. To date it has helped form 60 micro and small enterprise groups for water meter installation and trained 469 young people in plumbing and business management. It is expected to provide access to safe water for an estimated 1.4 million people (51% women), including new access for 1 million people and restore a regular daily water service for 400,000 people residing within Western Area Urban and Western Area Rural of Greater Freetown Area. It is also expected to improve environmental sanitation conditions, hygiene and sanitation habits of at least 200,000 people in vulnerable communities in Freetown and create over 2,700 jobs.

Halima Hashi, the Bank’s Country Manager for Sierra Leone, said that the Bank is committed to supporting Sierra Leone and other African member countries to achieve their goals. “The African Development Bank will continue to mobilise financial resources for programs, supporting the achievement of the water and sanitation goals set by the Government of Sierra Leone,” she said.

Across the country, the Bank is implementing projects focused on improving quality of life in line with its High Five priorities. Currently, it supports 10 projects covering Water and Sanitation, Energy, Transport, Agriculture, Multi-Sector projects with a total investment of \$USD 156.37 million.

Over the course of the mission, the Executive Directors held bilateral with several ministries such as the ministries of Works & Public Assets, Finance, Planning & Economic Development, Agriculture & Food Security, Energy, Water Resources and Sanitation, Trade and Investment. They also met with development partners in Sierra Leone, as well as the National Investment Board, Chamber of Commerce, Sierra Leone Investment and Export Promotion Agency, the private sector, civil society organizations, National Farmers’ Association, Youth groups and vulnerable groups.

Original Article: [African Development Bank](#)



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Up to £11m in water company fines will be reinvested to improve waterways, government says

Up to £11 million from water company fines will be reinvested in schemes to improve waterways and wetlands, the government has said.

The Water Restoration Fund - which has now opened for applications - will offer grants to local groups, charities, farmers and landowners to help them improve rivers, lakes, streams and wetlands where illegal pollution has occurred.

Initiatives that could be given money might include schemes to create wetlands, boost wildlife and river habitats, and improve public access to green spaces.

The cash will come from fines and penalties issued to water companies for environmental breaches such as dumping sewage.

The £11m will be allocated to schemes in the areas where the water companies accrued the fines and penalties, the Environment Department (Defra) said.

These are: Anglian Water, £3,085,000; South West Water, £2,150,000; Thames Water, £3,334,000; United Utilities, £800,000; and Yorkshire Water, £1,600,750.

The fund is the government's latest attempt to crack down on pollution caused by water companies and comes in the face of growing public anger over the state of England's rivers and coastal waters.

Original Article: [Sky News](#)

Thames Water debacle holds a harsh lesson about asset pricing models

It is rare these days to come across a climate change denier in the world of institutional investors — especially those who choose to invest in infrastructure, an essential lever of the energy transition and decarbonisation of the economy. Investors tend to believe the latest science on climate change. But, when it comes to asset pricing, strangely enough they often do not. At the end of 2022, a group of large pension plans, including funds from Canada, Japan and the UK, discovered that they had lost a large part of the £5bn investment in Thames Water that they had recorded on their books. This Easter, they learnt that they had probably lost all of it. There is only one way for a water utility serving the capital of a G7 country to lose so much value so fast: it was never worth £5bn to begin with. Yet its owners denied this reality for years. The signs that Thames Water and its parent Kemble Water Finance constituted a high-risk, low-profit business were there all along. The cost of capital in this investment should have been considered quite high (and increasing over the years) and its value much lower. A key reason why the risks of investing in Thames Water were ignored is the continued use of invalid asset pricing approaches for reporting its “fair value”. For instance, many investors in private assets — and in this case the water sector regulator, Ofwat, too — rely on the “capital asset pricing model” (CAPM) to estimate a cost of capital and the value of the business (and for Ofwat the allowed level of water tariffs). This model states that the cost of equity of a company is a function of the expected return of “the market” and how much



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this company correlates with it or its “market beta”. Today, CAPM remains the most commonly used framework for estimating the value of private investments like infrastructure companies. Yet the scientific community has known for more than 30 years that CAPM, while one of the foundations of the field of academic finance, is wrong. That’s right: the model used by most large valuation firms, many private asset managers and the regulators of UK network utilities has been proven not to work. CAPM relies on a very abstract notion of “market portfolio” and does not fit the market data. It has been shown time and again that better models can be used to explain asset prices, and that these approaches have led to the creation of entire new industries from hedge funds to factor investing. What is more, the way CAPM is used to value private assets often makes a mockery of the original model by relying on inputs that seldom have any relationship with the actual investment. The inevitable conclusion from all this is that the reported values of private investments held by institutional investors and their managers today are very likely to diverge significantly from their true market value, and do not represent the level of risk taken or the liquidation value of these assets. This is how investors in Thames Water saw their investment go from £5bn to zero in a few months — they were blindsided by bad models and bad data. In other words, they ignored the science. Some will point out that these values are audited. This is correct but also irrelevant. Auditors validate a process, not the content of the valuation exercise. Did you use a well-known asset pricing model? Tick. Did you adjust for the asset illiquidity? Tick. It is not for the auditors to say which asset pricing model is the correct one, what the “illiquidity premium” is or if the level of interest rates used corresponds to current market levels. Sticking to these practices amounts to denying the science and the importance of risk when it comes to the market value of private assets. As with climate change, the costs of this denial are increasingly becoming larger, as private assets represent a greater share of the portfolio of investors. There is a better way. Applied financial research and data availability about private investments have made significant progress since CAPM was developed in the 1960s. It is time for investors in private companies like Thames Water to take a more scientific view of asset pricing. They need proper measures of risk for the private asset classes to which they now allocate large amounts, and of the value of the assets they hold. After all, these underpin the value of everything from defined benefit pension rights to defined contribution lump sums, life insurance policies, wealth management and many other products. And for all of these there is, ultimately, a fiduciary responsibility to report the true market value of what’s sitting in your clients’ portfolios.

Original Article: [The Financial Times by Frédéric Blanc-Brude](#)

Global source water exceeds safe drinking limits of PFAS

Research from the University of New South Wales (UNSW) in Australia, in collaboration with international partners, has brought to light the concerning levels of per- and poly-



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fluoroalkyl substances (PFAS) contamination. The results of the study reveal that we have underestimated the amount of PFAS in source waters across the globe.

These chemicals, numbering over 14,000, have been valued since the 1950s for their remarkable properties, including resistance to heat, water, grease, and stains, leading to their prevalence in a vast array of consumer and industrial products.

Forever chemicals

From non-stick pans and waterproof apparel to cosmetics, insecticides, food packaging, and even firefighting foams, PFAS compounds have been integrated into daily life, despite their environmental and health risks.

Labeled as “forever chemicals” due to their persistent nature, PFAS compounds hardly degrade in the environment or the human body, posing long-term ecological and health risks.

PFAS contamination in water sources

Now, the UNSW experts have provided a pioneering global assessment of PFAS contamination in surface and groundwater sources, revealing widespread exceedances of established safe drinking water thresholds for these chemicals.

“Many of our source waters are above PFAS regulatory limits,” said senior author Denis O’Carroll, a professor of engineering at UNSW. “We already knew that PFAS is pervasive in the environment, but I was surprised to find out the large fraction of source waters that are above drinking water advisory recommendations. We’re talking above five percent, and it goes over 50 percent in some cases.”

Focus of the study

This comprehensive study, aggregating over 45,000 data points from government reports, databases, and peer-reviewed literature collected over roughly two decades, is the first to quantify the environmental load of PFAS on such a scale.

The researchers found high levels of PFAS in various regions, including Australia, particularly in areas historically exposed to firefighting foams, such as military and fire training facilities.

“Drinking water is largely safe, and I don’t hesitate drinking it,” O’Carroll said. “I also don’t suggest that bottled water is better, because it doesn’t mean that they’ve done anything differently than what comes out of the tap. But I certainly think that monitoring PFAS levels and making the data easily available is worthwhile.”

Health implications of PFAS

In Australia, as well as in numerous other regions globally, it’s common for individuals to have trace amounts of PFAS in their system. However, the health implications of these chemicals remain a topic of debate, with a lack of universal consensus on the extent of their risk.

For instance, an expert health panel in Australia has indicated that the evidence linking PFAS exposure to significant health impacts is minimal to non-existent. However,



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international health organizations in the US and Europe associate PFAS exposure with a range of negative health effects, including decreased birth weights, elevated cholesterol levels, diminished kidney functionality, thyroid disorders, changes in sex hormone levels, weaker vaccine efficacy, and an increased risk of liver, kidney, and testicular cancers. Moreover, the World Health Organisation (WHO) classified PFOA, a variant of PFAS, as a category one human carcinogen in 2023.

While associations between PFAS and various health conditions have been identified, causation has not been definitively established. Nevertheless, due to the enduring presence of these substances and their associated health risks, regulatory agencies worldwide have implemented stricter controls on PFAS usage and established safety limits for drinking water as a precautionary measure.

“Two forms of PFAS initially raised concerns about 20 years ago: PFOS and PFOA,” said O’Carroll. “These chemicals are regulated to different extents around the world. In the US, the proposed drinking water limits for PFOS and PFOA are four nanograms per liter.” In Australia, another PFAS compound, PFHxS, is subject to regulation, with a combined limit for PFOS and PFHxS set at 70 nanograms per liter, significantly exceeding the US’s threshold for PFOS and PFOA.

“PFOA, on the other hand, is regulated in Australia at 560 nanograms per liter, which is two orders of magnitude higher than in the US,” O’Carroll added.

What level of PFAS is safe?

Compared to the regulations in the US, Australia’s standards appear more lenient. Yet, when compared with Canada’s approach, which aggregates the total of all 14,000 PFAS compounds and caps them at 30 nanograms per liter, both the Australian and US guidelines seem less stringent.

The research revealed that 69 percent of worldwide groundwater samples, lacking known sources of contamination, surpassed Health Canada’s safety benchmarks for drinking water, while 32 percent exceeded the US’s hazard index for drinking water.

“There’s debate about what level PFAS should be regulated to,” O’Carroll added. “Australia has much higher limits than the US, but the question is why. Both health bodies would have different reasoning for that, and there’s not a really strong consensus here.”

Ongoing research

In light of the findings, the researchers aim to deepen the understanding of PFAS pollution by investigating the environmental impact of PFAS compounds in consumer products and developing new technologies to mitigate PFAS in drinking water systems. Furthermore, predictive models are in development to forecast the distribution of PFAS in the environment and their interaction with biological systems.



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As this significant research unfolds, Professor O'Carroll urges manufacturers and consumers to exercise caution and responsibility in the use of PFAS-containing products.

“We manufacture and distribute a lot of chemicals without having a full assessment on their potential health impacts. We should have judicious use of some of these chemicals. Just because they're available, doesn't mean that we should use them,” he concluded.

Original Article: [Earth.com by Andrei Ionescu](#)

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