BAY AREA WATER SUPPLY AND CONSERVATION AGENCY
BOARD OF DIRECTORS MEETING

December 9, 2022

Correspondence and media coverage of interest between November 25, 2022 and December 7, 2022

Correspondence

From: Nicole Sandkulla, BAWSCA CEO/General Manager
To: Dennis Herrera, SFPUC General Manager
Date: November 17, 2022
Subject: Need to Complete Required SFPUC Meter Testing Plan

Press Releases

From: California Department of Water Resources
Date: November 29, 2022
Subject: DWR Awards $86 Million to Build Water Resilience for Millions of Californians

From: City of Hayward
Date: November 17, 2022
Subject: Hayward recognized for third year straight as global leader responding to climate Crisis

Media Coverage

Water Supply Conditions:

Date: December 6, 2022
Source: CBS Sacramento
Article: Weekend storm expected to bring as much as 5 feet of snow to Sierra and 1 inch of rain to Sacramento

Date: December 6, 2022
Source: The Washington Post
Article: California snowpack off to promising start, but drought concern remains

Date: December 5, 2022
Source: KCRA
Article: Rain has returned to NorCal, but don't expect reservoirs to fill up anytime soon

Date: December 5, 2022
Source: CNN
Article: Parts of the West have double the normal snowpack. Experts say it's too early to get excited

Date: November 27, 2022
Source: Maven
Article: Before and after: Satellite imaging shows California's reservoir levels years apart

Drought:

Date: December 7, 2022
Source: The Hill
Article: Senators urge Agriculture secretary to help Western states in '22-year mega-drought'

Drought, cont'd.:

Date: December 6, 2022
Source: Fox Business
Article: California's drought disaster is turning into an economic disaster: "It's unprecedented"

Date: November 25, 2022
Source: LATimes
Article: As California droughts intensify, ecosystems and rural communities will bear the brunt

Water Supply Management:

Date: December 7, 2022
Source: San Francisco Chronicle
Article: Despite rain, Bay Area utilities are cracking down on water waste. One is even shutting off service

Date: December 5, 2022
Source: Courthouse News Service
Article: Extreme drought means meager portions for California water agencies

Date: December 4, 2022
Source: California Water Blog
Article: Managing source water for maximum benefit in a challenging climate

Date: December 2, 202
Source; San Jose Inside
Article: State Announces 5% Boost From State Water Project to Ease Santa Clara County

Date: November 30, 3033
Source: LA Times
Article: Nearly 20% of California water agencies could see shortages if drought persists, state report Shows

Date: November 30, 2022
Source: Nation World
Article: California cities warned to prepare for possible water shutdown ahead of fourth year of drought

Date: November 28, 2022
Source: CNBC
Article: U.S. warns California cities to prepare for possible water cuts and fourth year of drought

Date: November 28, 2022
Source: Department of Water Resources
Article: New Report Shows Continued Water Conservation Is Key to Enabling Suppliers to Meet Demand

Water Infrastructure:

Date: December 5, 202
Source: The Hill
Article: DRIED UP: In California, desalination offers only partial solution to growing drought

Water Quality:

Date: December 5, 2022
Source: Northern California Record
Article: Amid growing PFAS regulation, California files suite against chemical companies

Environment:

Date: November 28, 2022
Source: Modesto Bee
Article: Tuolumne River Trust looks out for spawning salmon amid drought. How many this year?

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Bay Area Water Supply & Conservation Agency

November 17, 2022

Via E-mail Only

Mr. Dennis Herrera
General Manager
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94102

RE: Need to Complete Required SFPUC Meter Testing Plan

Dear Mr. Herrera,

This letter is regarding the SFPUC's obligation to obtain and record continuous and accurate measurements of water deliveries to and from the Regional Water System. In recent years, BAWSCA and the Wholesale Customers have raised concerns associated with meter accuracy and the need for more frequent meter calibration. Meter maintenance and accuracy testing is especially important to the Wholesale Customers for two main reasons:

1. Wholesale Customer meter reads directly inform billing; and therefore, Wholesale Customer meter accuracy has financial consequences for each agency.
2. Wholesale Customer meter reads directly inform the Water Imported input to the Water Audit; and therefore, Wholesale Customer meter accuracy has implications in the reporting of an agency's water loss volumes.

SFPUC Committed to Correct Metering Following Arbitration. Historically, metering inaccuracies have resulted in arbitration between the SFPUC and the Wholesale Customers.[1,2] To settle the 1996 arbitration, the parties agreed that "the present condition of the County-line meters is unacceptable and must be corrected and maintained . . . "[3] The Wholesale Customers were entitled to over $2 Million credited to the balancing account as a result of metering inaccuracies.

Also in 1996, the SFPUC committed "to seeing that organizational systems and procedures are developed and implemented to ensure equipment is maintained, records are kept, and contract provisions are honored in a manner befitting the SFPUC's stature as a regional water utility for one of the world's largest and most economically productive metropolitan areas."[4] BAWSCA is eager to work with the SFPUC to ensure this commitment is met and it believes completion of the Meter Testing Plan is critical.

SFPUC Contractually Required to Complete Meter Testing Plan. The 2018 Amended and Restated Water Supply Agreement between the City and County of San Francisco and its Wholesale Customers (WSA) requires the SFPUC to "prepare a Procedures Manual which will describe in detail the procedures for periodic inspection, testing, servicing and calibration of the

[1] 1995 Partial Settlement Agreement.
[2] 1996 Second Partial Settlement Agreement.
[3] Id. at 3.
[4] 1996.07.09 Otsea letter to Short Re: Second Partial Settlement Agreement at 1.

measuring and recording equipment".[5] The WSA further details the SFPUC's obligations relative to meters and their use in calculating proportional water use among the SFPUC's retail and Wholesale Customers.[6] The SFPUC has not completed the required Meter Testing Plan.

BAWSCA's 2020 Review of SFPUC's Meter Testing Practices. BAWSCA first reminded the SFPUC of the requirement for a Meter Testing Plan in 2019 given the identified concerns regarding SFPUC meter accuracy and the need for more frequent meter calibration. BAWSCA and its consultants conducted a review of current SFPUC meter testing practices and shared the results of that review with the SFPUC in July of 2020 and requested that the SFPUC consider the findings as part of its development of the Meter Testing Plan. BAWSCA has regularly questioned SFPUC staff about the status of completion of the Meter Testing Plan, including at the Annual Wholesale Customer meeting in February 2022, however, little engagement on Plan development has taken place. The SFPUC has not commented on the contents and findings of BAWSCA's review, and no firm date has been provided for when a Meter Testing Plan will be finalized.

DWR is Now Questioning the Status of the Meter Testing Plan. The California Department of Water Resources (DWR) recently questioned SFPUC Wholesale Customer, North Coast County Water District (District), about the SFPUC's calibration of the District's source meters as part of the State's review of the District's State-mandated annual American Water Works Association (AWWA) retail system Water Audit.[7] DWR has now requested the WSA contract language detailing SFPUC's requirement to produce a Meter Testing Plan.

Sufficient Time has been Allowed for the Development of a Meter Testing Plan. Given the concerns raised to date as detailed above, coupled with the recent interest of DWR, it is imperative that a Meter Testing Plan be in place and meter calibration issues addressed.

I appreciate that there is a scheduled meeting with your staff on December 19, 2022 to discuss this matter. In the meantime, BAWSCA requests that the SFPUC share a copy of the draft Meter Testing Plan with BAWSCA immediately for its review and comments such that BAWSCA's input can be reflected in the final Meter Testing Plan and that BAWSCA engagement take place prior to Plan finalization.

Thank you for your attention to this important water supply and financial matter.

Sincerely,

Nicole Sandkulla
CEO/General Manager

[5] WSA § 3.14G.
[6] WSA Attachment J.
[7] Beginning in 2017, SB 555 requires urban retail water suppliers to submit a validated water loss audit report, following AWWA procedures, for the previous calendar or fiscal year to DWR. The State Water Board is analyzing data collected through the annual water loss audit submissions to develop performance standards that agencies will need to achieve to reduce water loss.

tf/ns//le

cc: Ron Flynn, SFPUC, Deputy General Manager
Steven Ritchie, SFPUC, Assistant General Manager of Water Enterprise
Angela Cheung, SFPUC, Water Supply and Treatment Division Manager
Alison Kastama, SFPUC, BAWSCA Liaison
BAWSCA Board of Directors
BAWSCA Water Management Representatives
Allison Schutte, Hanson Bridgett, LLP, Legal Counsel

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CALIFORNIA DEPARTMENT OF
WATER RESOURCES

News Releases
November 29, 2022

Contact:
Allison Armstrong
Information Officer, Public Affairs,Department of Water Resources

916-820-7652 | media@water.ca.gov

DWR Awards $86 Million to Build Water Resilience for Millions of Californians

Water is delivered to fill a 1500 gallon potable water tank at a property in Glenn County, California, where wells have run dry. The water hauling program which includes tank installations and water delivery is led by the North Valley Community Foundation.

SACRAMENTO, Calif. – The Department of Water Resources (DWR) today awarded $86 million in financial assistance to meet the immediate and long-term water needs for millions of Californians in local communities small and large. As California experiences a climate transformation bringing hotter and drier conditions, small communities are extremely vulnerable and long-term solutions are crucial. The State is committed to funding those solutions to ensure water resilience and sustainability for all Californians.

Of the $86 million, $44 million will provide financial assistance to small communities struggling to address drought impacts as part of the Small Community Drought Relief Program. The program was hugely successful in 2021 and this new round of funding from the Budget Act of 2022 will continue to support the state's most vulnerable populations. These communities serve fewer than 3,000 connections and are most vulnerable to water supply issues due to aging infrastructure and dry wells. In coordination with the State Water Resources Control Board, DWR has selected 23 projects located in Fresno, Humboldt, Glenn, Imperial, Madera, Plumas, San Benito, San Joaquin, Santa Clara, Shasta, Solano, Sonoma, Tehama, and Tulare counties to receive funding for projects that will provide new wells, construct pipelines to deliver water, increase water storage and support consolidation efforts to increase water supply reliability.

"Small communities are the most vulnerable to the impacts of our new hotter, drier climate and lack the resources to immediately deal with these challenges," said DWR Director Karla Nemeth. "These continued investments from the State strengthen local partnerships to provide reliable drinking water for all Californians because everyone has the human right to water."

Of the 23 projects, 11 will directly benefit disadvantaged communities. Some of the projects set to receive funding include:

- In Fresno County, existing wells supporting the community of Mira Bella are drying up because of the ongoing drought. As a proposed solution, the district will receive $4.2 million to construct a pipeline from the existing water treatment plant to the community's distribution system to support water supply resiliency. In the interim, hauled water will be provided to the community as the solutions are being implemented.

- In Humboldt County, the Redway Community Services District relies on a single water source located on the banks of the South Fork Eel River. Because of diminishing surface flows, the district has declared a Stage 3 emergency and is rationing water. The district will receive $1.6 million to construct three new wells and replace and rehabilitate existing tank infrastructure to ensure a more resilient water supply.

- In Plumas County, the community of Greenville is losing half of its water supply due to excessive leaks made worse by the drought. The Indian Valley Community Services District will receive $2.4 million to replace approximately 6,500 feet of water distribution system pipelines.

- In San Benito County, the Best Roads Mutual Water Company is relying on bottled water for customers after its two wells serving communities failed due to water quality and water supply issues. The company will receive $2.2 million to construct a new water tank and consolidate the water system with the Sunnyslope Water District.

- In Santa Clara County, four tanks in Chemeketa Park are leaking significant amounts of water. The community will receive $1.8 million to replace the four leaking tanks and expand storage at the treatment plant.

In Tulare County, the unincorporated community of West Goshen is facing a public health emergency due to water quality and water supply issues in the system of private wells serving the community. The community will receive $3.4 million to connect 50 West Goshen households to the nearby public water system, Cal Water Visalia.

To help local agencies build climate resilience in the long term, DWR is also awarding $42 million in state grants through the Integrated Regional Water Management (IRWM) Program in the Central Coast Colorado River, Mountain Counties, North/South Lahontan, San Diego and San Joaquin River funding areas. The state funding supports projects that directly benefit Tribes and disadvantaged communities, and supports water supply strategies such as water desalination, wastewater treatment, water conservation, and groundwater recharge as California plans for a fourth year of drought.

Today’s announcement is the first phase of funding with additional funding to be announced through spring 2023.

Funded projects include:

- In the Eastern San Joaquin region, theSan Joaquin County Flood Control District will receive $2.9 million to modify and update the district’s South distribution system to provide efficient and metered delivery of surface water to farmers to use in-lieu of groundwater, and to provide

the facilities necessary for groundwater recharge with surface water in the non-irrigation season. The project will benefit disadvantaged and small rural communities with hundreds of domestic wells in the area.

- In the Inyo-Mono region, the Eastern California Water Association will receive $120,000 to restore approximately 800 acres of in-stream habitat vegetation in Oak Creek, which was largely devastated by a catastrophic wildfire and subsequent mudslide in 2007-2008. Additional post fire-flood restoration activities include floodplain and wetland restoration, revegetation as well as reforestation, and invasive plant removal. The project will provide increased flood protection and improve creek water quality for the benefit of the residents of downstream Fort Independence Indian Reservation.

- In the Inyo-Mono region, the Eastern California Water Association will receive $229,000 to develop a groundwater model covering the Tri-Valley area to better understand and quantify the amount and the flow of groundwater. The groundwater model will serve as a predictive tool to analyze future groundwater conditions and help inform Groundwater Sustainability Agencies on how, where, and when new wells should be constructed. The project will benefit the Benton Paiute Reservation.

- In the San Diego region, the San Diego County Water Authority will receive $2.4 million to construct a pipeline from the San Vicente Water Reclamation Plant to an existing non-potable pipeline on the Barona Reservation. This project will provide up to 250 acre-feet of water per year of recycled water for non-potable needs to the Barona Tribe. The project will also allow the Barona Tribe to reserve groundwater for its critical drinking water needs, increase groundwater levels and storage, and help to protect groundwater quality from the effects of over pumping.

- In the San Joaquin River region, the Merced Irrigation District will receive $300,293 to build a 30-acre storage reservoir that will store up to 750 acre-feet per year of flood flows diverted from existing diversions on Mariposa and Owens Creeks. The stored water will be used to irrigate 2,100 acres of farmland while also recharging the underlying groundwater aquifer. The project will also permanently fallow 30 acres of farmland, an important step towards achieving a sustainable water balance in the region.

- In the Yosemite-Mariposa region, Mariposa County will receive $427,000 to reconstruct a failing leach field which is the primary wastewater disposal facility for the community of Yosemite West Residential district comprised of 165 customers. The project will allow the disposal of approximately 55 acre-feet of wastewater annually. This leach field will also contribute to groundwater recharge of 55-acre feet annually which eventually benefit the downstream disadvantaged community of El Portal.

Financed by voter-approved Proposition 1, the IRWM Program is designed to incentivize local collaboration to implement innovative, multi-benefit projects that build local climate and water supply resilience, as well as conserve water. In 2020, DWR awarded $211 million to 42 IRWM regions for implementation of over 200 projects including approximately $25 million for projects benefiting disadvantaged communities.

2022 marks the 20th anniversary of the IRWM Program, which was established by AB 1672, the IRWM Planning Act. Over the past 20 years, the IRWM program has been instrumental in strengthening collaboration between regional and state partners to identify local water challenges and projects to provide multi-benefit solutions. The IRWM program has awarded more than $1.5 billion throughout California which has been matched by $5.6 billion in local investments to help implement over 1,300 projects that foster climate resilience by mitigating drought impacts, improving water supply reliability, reducing flood and fire risk, increasing water storage, and improving water quality.

While California continues to make investments in water infrastructure to plan for more frequent, intense droughts, it is also critically important that all Californians do their part to conserve water. Governor Newsom has called for a voluntary 15 percent cut in water usage and urged local water agencies to enact stricter mandatory restrictions where necessary. More information and water-saving tips are available at saveourwater.com.

# # #

For more information about upcoming grant opportunities, visit DWR’s Grants and Loans webpage.

FOR IMMEDIATE RELEASE

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Hayward recognized for third year straight as global leader responding to climate crisis

HAYWARD, Calif., Nov. 17, 2022—Hayward strategic planning prioritizes responding to the climate crisis and the City's work and investments in this area have been recognized for the third consecutive year on a prestigious list of local governments cutting carbon emissions.

Today, CDP, a United Kingdom-based nonprofit through which cities, states, regions, companies and investors voluntarily disclose emission data and climate protection planning, announced that Hayward is one of 122 cities to make its 2022 A-List for climate action among 1,002 participating cities worldwide.

The Cities A-List designation is the third consecutive year running for Hayward and the fourth in five years since Hayward joined the CDP disclosure program in 2015. Other Bay Area cities to make the 2022 A-list are Cupertino, Palo Alto, San Francisco, San Jose and Santa Cruz.

"Congratulations to Hayward for earning a spot on the CDP Cities A List — one of 49 cities and counties in North America to make the list in 2022," said Katie Walsh, Head of Cities, States, Regions and Public Authorities, CDP North America. "From mitigating carbon emissions in line with science, to building resilience against floods, drought and other climate hazards, to centering marginalized and vulnerable communities in their response, A-List local governments are demonstrating best-practice environmental action. Hayward is in the vanguard of cities and counties leading the way toward a climate-safe future."

The 2022 designation recognizes Hayward for municipal investment in on-site renewable energy generation and recycled water infrastructure; for new building standards to phase out reliance on natural gas; and completing a climate risk and vulnerability assessment as part of updating the City's Hazards and Safety Element of the Hayward General Plan.

Also in 2022, Hayward transitioned most electricity service in the City to renewable solar and wind sources of energy through the City's membership in East Bay Community Energy (EBCE). EBCE is a public power agency that joins electricity customers in member cities to procure and support development of environmentally sustainable energy generation, providing greener alternatives for powering homes, businesses and public agencies in Alameda County and beyond.

Formerly the Carbon Disclosure Project, CDP was founded in 2000. It describes itself as a pioneer in using capital markets and corporate procurement to motivate companies to disclose their environmental impacts, and reduce greenhouse gas emissions, safeguard water resources and protect forests. In 2022, nearly 20,000 organizations worldwide disclosed data through CDP, including 18,700 companies worth 50 percent of global market capitalization, and more than 1,100 cities, counties, states and regions. To learn more, visit CDP online at https://www.cdp.net/en.

Weekend storm expected to bring as much as 5 feet of snow to Sierra and 1 inch of rain to Sacramento

CBS Sacramento | December 6, 2022 | Tracy Humphrey

SACRAMENTO - On the heels of two recent, wet storms that left several feet of snow in the Sierra and near-record rain in the valley, we're in for another powerful storm later this week.

The next storm is expected to arrive Thursday evening and will linger through Monday. Based on the preliminary forecast, the storm is expected to bring several feet of snow and multiple inches of rainfall.

Timing

The storm will move into the region around 5 p.m. Thursday. Friday morning will be clear, and then another system will move in Friday night, lingering throughout Saturday and into Sunday. There will then be more opportunities for rain in the valley Monday.

Totals

According to UC Berkeley's Central Sierra Snow Lab at Donner Pass, the 7-day snowfall total is 48.4". By the time the storm moves out Monday, the Sierra could see up to another 60" of snow.

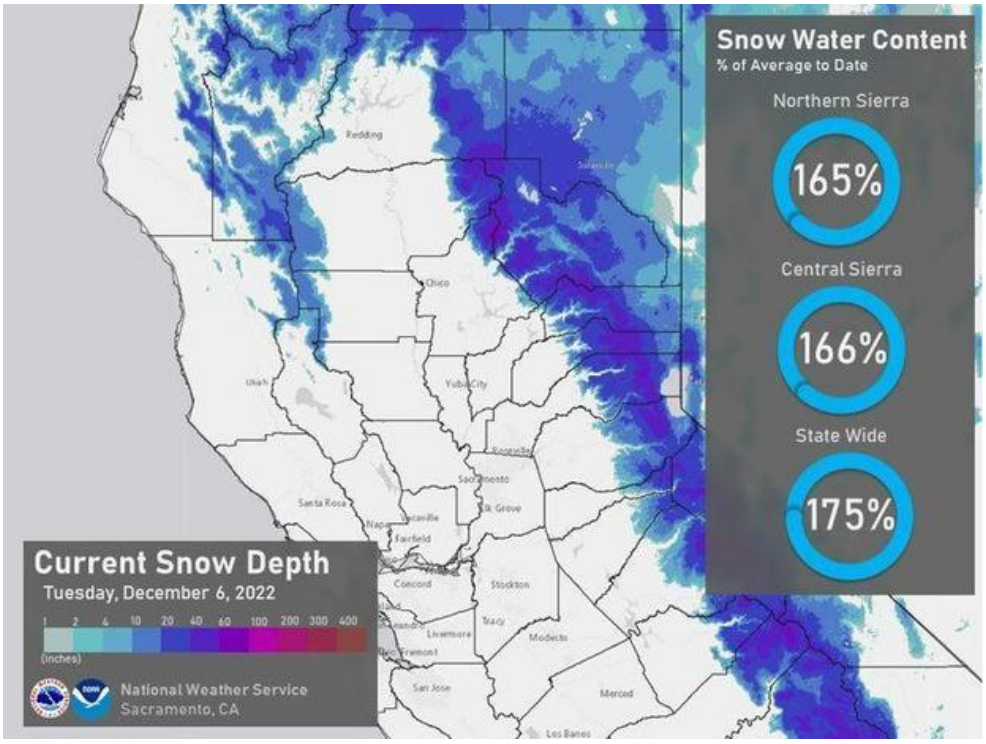
We could also see up to another inch of rainfall in Sacramento. Parts of the foothills could see as much as two inches.

Since October 1, Sacramento has had 3.28" inches (measured at Sacramento Executive Airport) and Stockton has had 2.65".

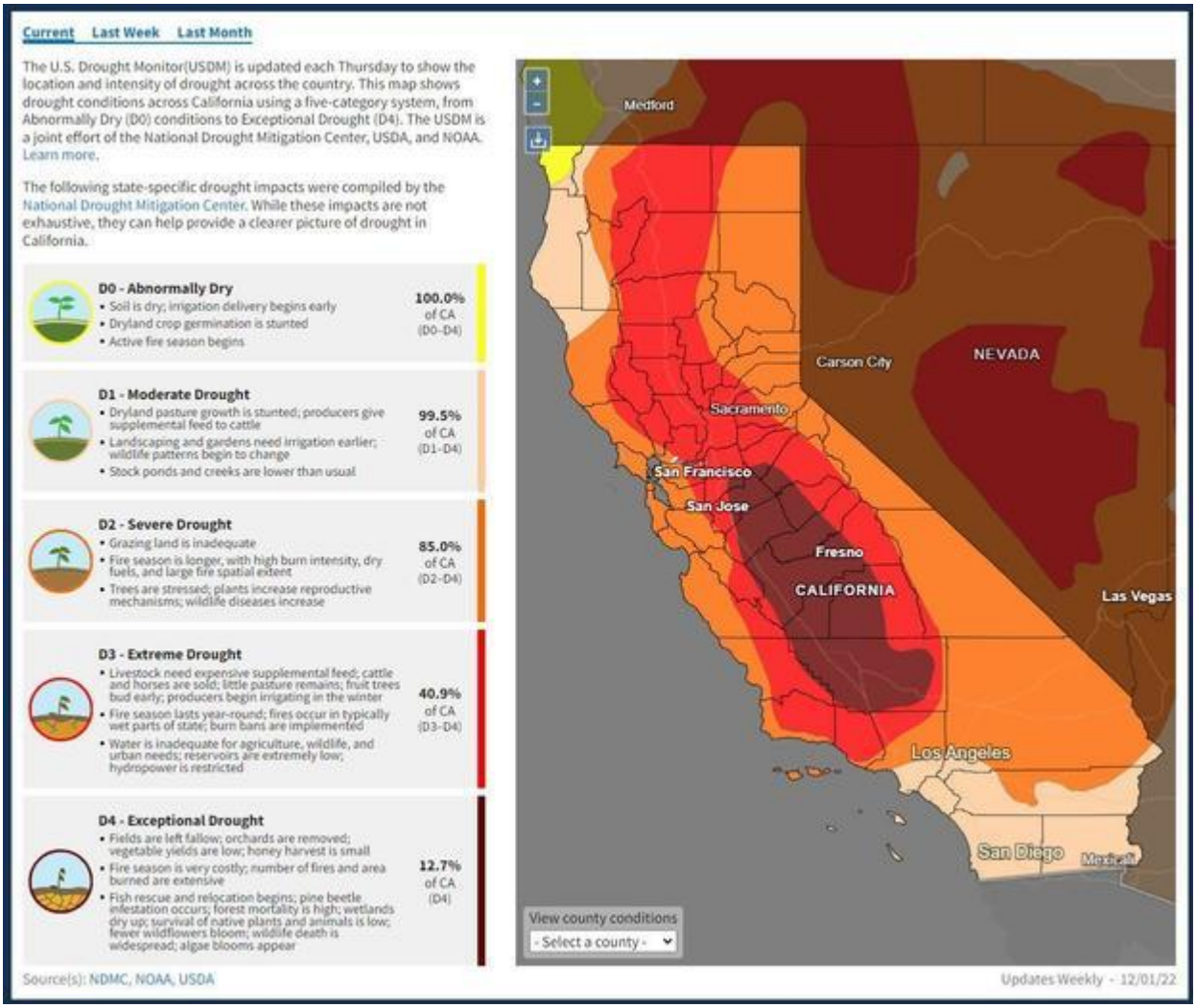
We're off to a great start for the water year, there's a long way to go before the region emerges from its extreme drought.

"Last year we saw a record-breaking October and December which gave way to the driest January through March period on record," according to a Department of Water Resources spokesperson. "Consider this a football game and we're just in the 1st quarter…we've got three more quarters to go."

The Sierra snowpack is looking good. According to the National Weather Service, California is at 175 percent of average to date with 165 percent of average for the northern Sierra. The map below, tweeted Tuesday, shows the current snow depth.



As of December 1, about 41 percent of the state, including the Sacramento region, is under extreme drought, according to the U.S. Drought Monitor.



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California snowpack off to promising start, but drought concern remains
The Washington Post | December 6, 2022 | Diana Leonard

Cars slowly make their way as heavy snow falls on the Mt. Rose Highway near Reno, Nev., on Dec. 1, 2022. (Jason Bean/AP)

Winter is off to a running start in California, after a pair of December storms dropped several feet of mountain snow and soaking low-elevation rains across much of the state. Parts of the Sierra Nevada have recorded more than double the expected snowpack for the time of year, and another significant storm could be on the way this weekend.

However, officials are urging caution and conservation given the depth of the state's water supply challenges. Longer range outlooks still point to a fourth consecutive drought year for the state.

Statewide snow water equivalent — or the amount of water contained in snowpack — is currently 175 percent of normal for the date. The Central Sierra Snow Lab, located at Donner Pass northwest of Lake Tahoe, is now sitting at 253 percent of its average.

Andrew Schwartz, lead research scientist at the lab, said that while these numbers are very good news, averages can be deceptive this early in the season.

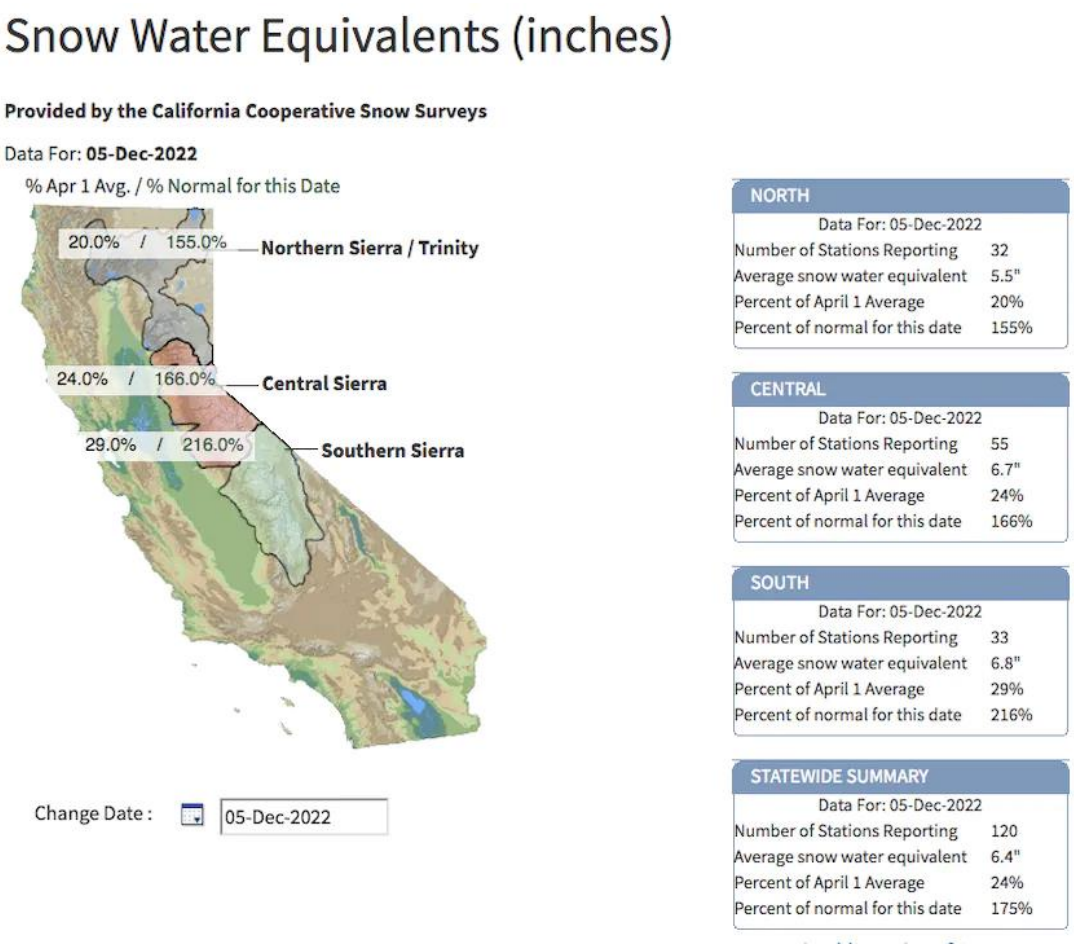
He used a football analogy to put the December snow in context.

“We’ve scored a touchdown in the first quarter of the game, but we still have three quarters to go,” he said. “If we get to March and April and we’re still well above average for the time of year, then it’s time to celebrate.”

Water managers typically measure peak snowpack on April 1 to gauge the amount of water received during the heart of the wet season, after which snow is expected to melt and flow into streams and reservoirs.

As of Dec. 5, statewide snowpack was 24 percent of the April 1 average, meaning that California is about a quarter of the way to an average snow year. But even that solid foundation is not guaranteed to last.

“That’s not a static number; we could still lose that if the storm cycle shuts off and we get into a warmer period,” Schwartz said.



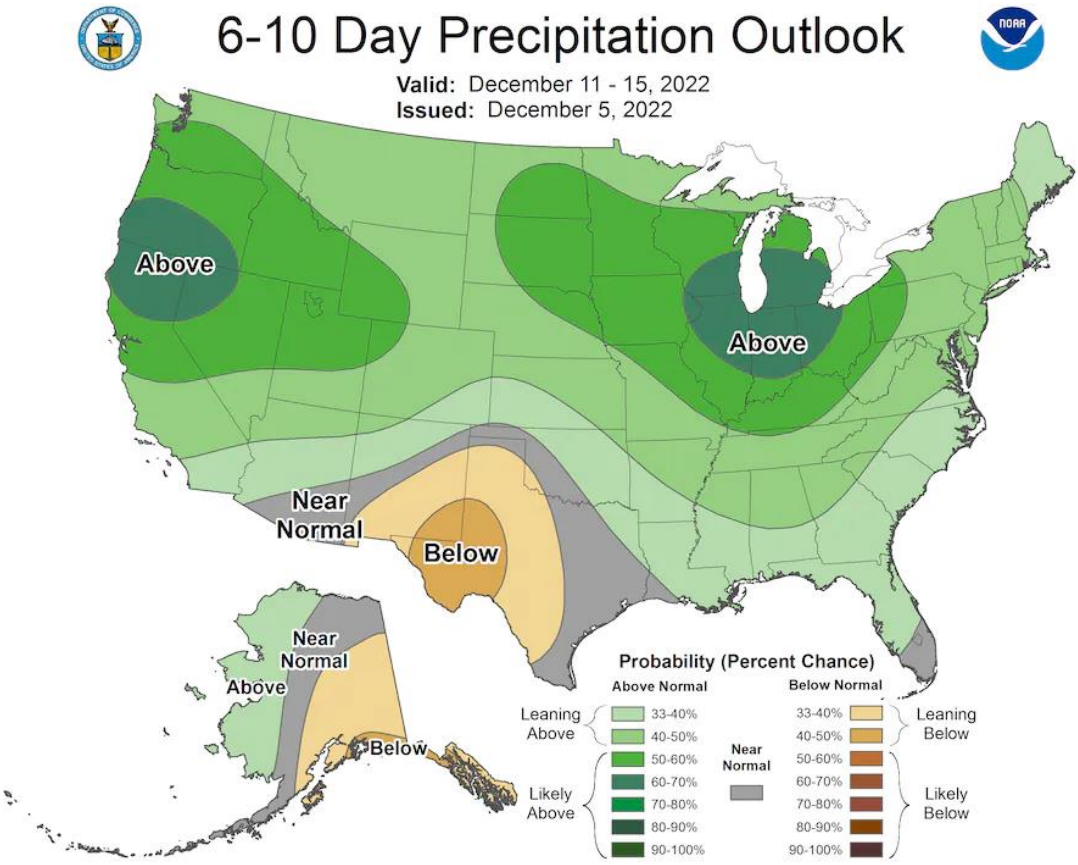
California mountain snowpack as of Monday. Statewide snow water equivalent, or the amount of water available in snow, was 175 percent of average for the date, and 24 percent of the average April 1 peak. (California Department of Water Resources)

Recent winters have featured dramatic twists and turns that ultimately landed on the dry side.

“Parts of California are seeing rain today, but forecasts for the rest of winter are still highly uncertain & highly variable,” the California Department of Water Resources tweeted on Monday. “Last year we saw a record-breaking October and December which gave way to the driest January through March period on record.”

Those wild swings are expected as the atmosphere warms, with stronger storms separated by longer and more severe dry spells — both intensified by climate change.

For now, the storm door is expected to remain open. Multiple atmospheric rivers could make landfall over the West Coast in the next week, according to the Center for Western Weather and Water Extremes, with a substantial storm possible in California this weekend. The National Weather Service Climate Prediction Center is also forecasting a good chance of above normal precipitation through at least mid-month, particularly for Northern California.



Above-normal precipitation is likely over Northern California through at least mid-month. (National Weather Service Climate Prediction Center)

But the state needs a well above average water year, or several wet years in a row, to replenish its reservoirs, which have been depleted by three years of extreme drought — the driest 3-year period on record in California. Schwartz said the Central Sierra Snow Lab would need 60 feet of snow this year to make up for what was lost during that time.

Last week, the California Department of Water Resources announced that the State Water Project, which provides water to 27 million people and 750,000 acres of farmland, will again severely restrict water deliveries to just 5 percent of requested supplies in 2023. That number may increase if this winter turns out to be particularly wet, with a final allocation announced in May or June.

If dry conditions continue, more than 70 urban water agencies face potential shortages in the next 6 months, which officials believe can be remedied with increased conservation and other actions, according to a recent report.

“This early in California’s traditional wet season, water allocations are typically low due to uncertainty in hydrologic forecasting. But the degree to which hotter and drier conditions are reducing runoff into rivers, streams and reservoirs means we have to be prepared for all possible outcomes,” Department of Water Resources Director Karla Nemeth said in a statement last week.

# # #

Rain has returned to NorCal, but don't expect reservoirs to fill up anytime soon

Northern California's reservoirs serve two main functions: storing water for use throughout the summer and fall and preventing flooding in the winter and spring.

KCRA | December 5, 2022 | Heather Waldman

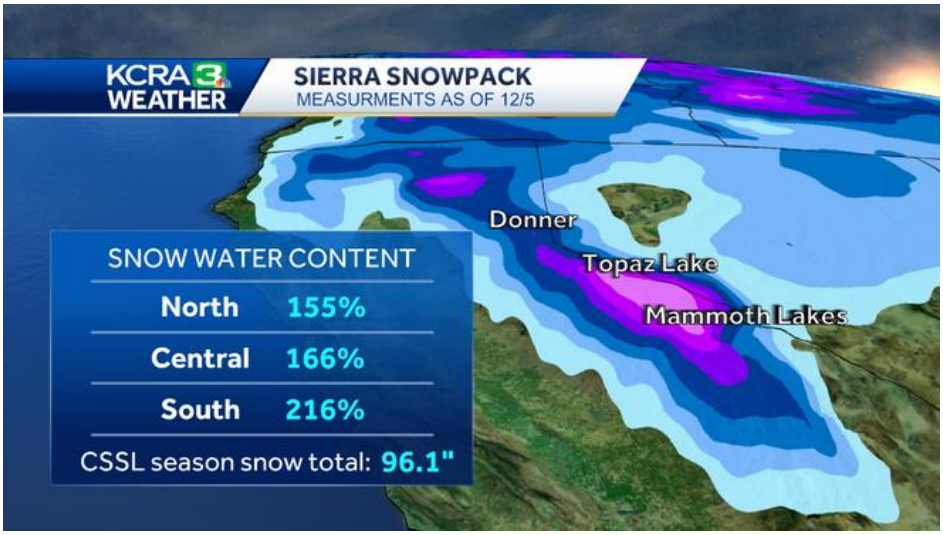
FOLSOM, Calif. — So far, things are going well for Northern California heading into what is, on average, the busiest part of the rain and snow season.

As of Monday morning, many locations around the region are reporting above-average rainfall totals since the water year began on Oct. 1. Downtown Sacramento has had close to 4 inches as of the most recent observation on Sunday.

Many locations around Northern California are reporting higher than average rainfall totals since the water year began on October 1st. These numbers are current as of Sunday, December 4th.

A large portion of that rainfall has come in the last couple of days.

In the Sierra, the average snowpack water content is also above average. The UC Berkeley Central Sierra Snow Lab site in Soda Springs has recorded over 96 inches of snow so far this season. That's more than 250% of the average for the date.



The snowpack water content throughout the Sierra is above average for this date.

That is a promising sign, given that about a third of California's annual water supply comes from runoff from the snowpack. The more water that can be drawn from the snowpack, the less that gets tapped from the reservoir groundwater supply.

It is important to note that a fast start to a water year does not guarantee a good year for the water supply as a whole. Take the 2021-22 season as a perfect example. After a major October storm and a very busy December, rainfall and snowpack measurements were way above average heading into the new year. By early April, the snowpack had almost completely shriveled away, leaving nothing to draw from for much of the spring.

As of Monday afternoon, water levels on Northern California's major reservoirs are between 20-30% of total capacity, running anywhere from 45-65% of the average for the date.

Water managers say that surface reservoirs aren't a great indicator of drought status at the moment because they are designed to be held at low levels in the late fall and early winter.

"We are in flood control mode now," says Jeanine Jones, the interstate resource manager for the Department of Water Resources, "So we aren’t allowed to keep our reservoirs as full this time of year, and so that makes the numbers actually look a little bit better.”

Flood control releases are not currently planned but may be needed if the weather pattern remains active in the coming weeks.

In the meantime, smaller releases are made regularly from Folsom, Oroville and other major reservoirs to meet other year-round requirements. Those requirements include water quality maintenance for the delta region and Bay Area as well as streamflow requirements for wildlife.

Jones says that water levels will be allowed to rise gradually throughout the winter and spring as the risk of a major storm lowers.

"Then, hopefully, there is snowpack up in the mountains and we start storing that snowpack runoff because that is what provides the water supply for cities and farms during the summertime,” Jones said.

While many tend to focus on reservoir levels as a way to gauge drought status, Jones says that groundwater supply is a much better indicator.

“There’s actually a lot more water stored in California’s groundwater basins than there are in California’s reservoirs,” Jones said.

Historically, those groundwater supplies have been severely overdrawn, but water managers are working on improving water use strategies to prevent more of that in the future through projects like the Sacramento Regional Groundwater Bank.

In short, the 2022-2023 wet season is off to a promising start, but real drought relief will take several years of consistently wet and snowy winters.

# # #

Parts of the West have double the normal snowpack. Experts say it's too early to get excited
CNN | December 5, 2022 | Jennifer Gray, CNN Meteorologist

CNN — It's beginning to look a lot like Christmas across the West, and for the parched mega-drought region, the December snow is a welcome gift.

With back-to-back-to-back winter storms across the West, the snowpack is thriving. Parts of the Sierra and the Pacific Northwest are seeing above-average snowpack for this time of year.

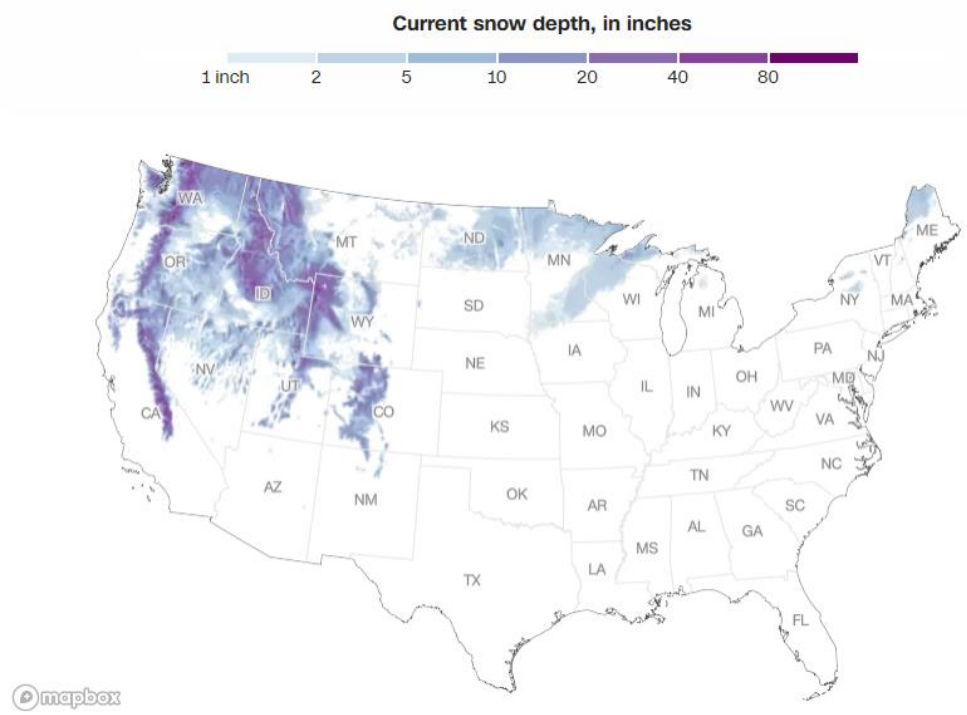
In Central California, the Sierra stands at 200% of normal for snowpack average to date.

The drought monitor released some of the numbers Thursday, which showed some of the driest areas in the West with decent snow. Here is where the West stands as of right now for snowpack:

- Great Basin 157%
- Lower Colorado 152%
- California 135%
- Pacific Northwest 134%
- Upper Colorado 98%

"We're looking fairly good up here at this point," Andre Schwartz, research scientist at the University of California-Berkeley's Central Sierra Snow Laboratory said. "We're definitely above average, as far as how much snow we have on the ground."

Snow on the ground across the US
Here's where the National Weather Service detects at least an inch of snow on the ground in the contiguous United States.



Note: Measurements not availble for islands in the Great Lakes. Data as of Monday, Dec. 5 at 1:00 a.m. ET.

Source: National Weather Service
Graphic: John Keefe, CNN

But Schartz also urged us not to get too excited. If we've learned anything from last year, anything can happen. Take December 2021 as the perfect example.

"We had this record-breaking number of 18 feet of snow or just under that, and then we had a January through March period, that was the driest on record," Schwartz explained.

This year, more frequent, smaller storms – in combination with colder temperatures – have allowed the snow to stick better, as opposed to last year, when the snowpack completely melted between snowstorms, exposing dry ground again.

"The snow lover in me is very excited to see the snow come in, and I'm hopeful it means that we're going to have a good season. The skeptic in me, and the person that worked through last year, is a little bit more hesitant," Schwartz admitted.

Schwartz explained the key to a successful season is to have consistency.

"We don't have to have every storm drop feet of snow. They could still be four to six inches at a time. But we just can't have those super long dry periods where we see midwinter melt that doesn't normally set us up with a whole lot of success," Schwartz pointed out.

The Colorado River Basin is another area gaining a lot of attention for water shortages. They are counting on a good snowpack.

Right now, most of the Colorado River Basin is running low. Parts of Arizona are only at 30% of normal.

Other areas, like Southwestern Colorado, are right where they should be this time of year, but it is still incredibly early in the season.

More snow expected this week

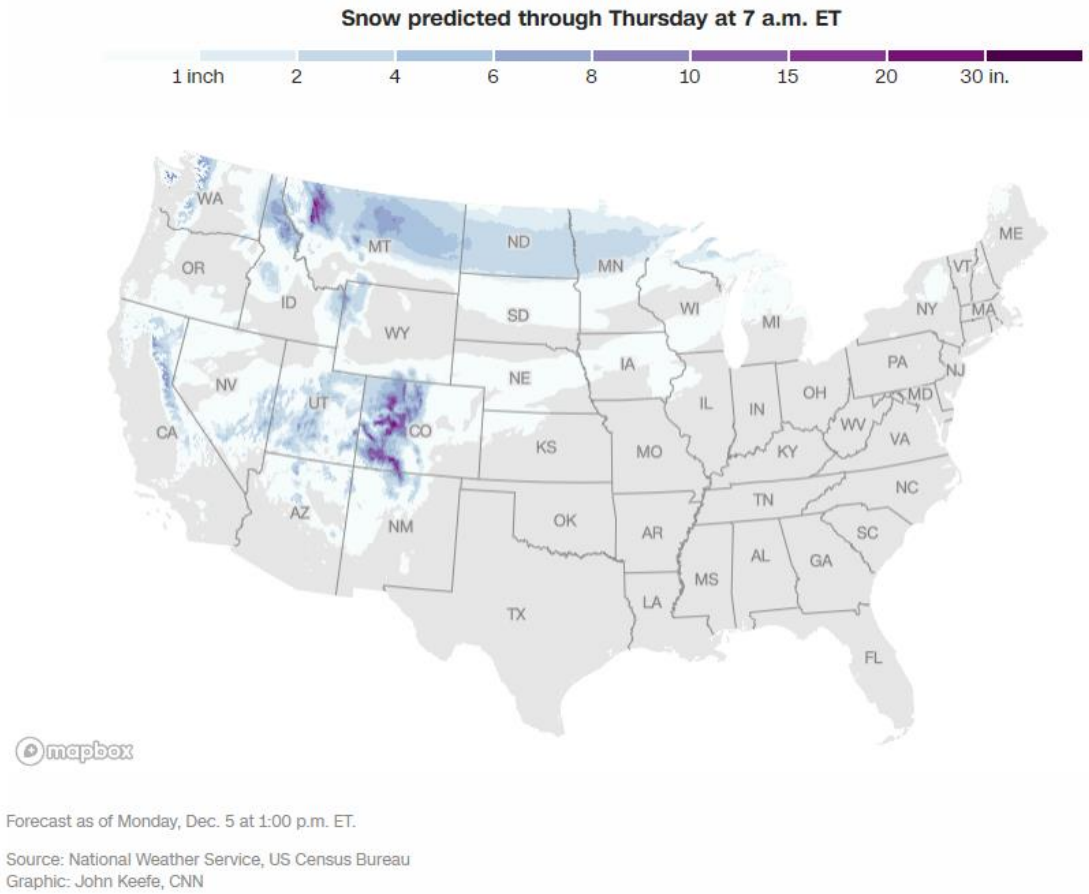
Both the Sierra and the Rockies will get hit with more snow this week as multiple storm systems traverse the West.

Snowfall totals for the highest elevations could end up in the one- to two-foot range this week. More widespread snow totals will be less than a foot.

After a snowy end to last week and a snowy weekend, another round is affecting the Rockies today through Wednesday.

Where to expect snow in the days ahead

Here's the total snowfall the National Weather Service predicts will fall in the contiguous United States.



Forecast as of Monday, Dec. 5 at 1:00 p.m. ET.

Source: National Weather Service, US Census Bureau
Graphic: John Keefe, CNN

"Snow totals from this second system are still favoring widespread 6+ inches of accumulation, with the highest terrain seeing upwards of a foot," the National Weather Service office in Grand Junction said.

The Colorado River Basin and Sierra will need a lot more snow to end with an average season, but the steady stream of snow has been a good sign so far.

"I think there's optimism because we're starting with a really good foundation, but that doesn't necessarily mean that it's going to translate into help with a drought," said Schwartz. "We still have time where it may not snow, and we may still wind up with below average precipitation, but so far, we're looking pretty good."

# # #

CNN Meteorologist Haley Brink contributed to this story.

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Before and after: Satellite imaging shows California's reservoir levels years apart
Maven | November 27, 2022 | Travis Schlepp

A lot has changed for California's reservoirs over the last five years.

In April 2017, then-Governor Jerry Brown issued an executive order that declared California's drought state of emergency over in most counties (Fresno, Kings, Tulare and Tuolumne counties were initially excluded).

The emergency order had been in place since 2014 following several years of historic drought conditions. The drought and the emergency order changed the way California viewed its scarce water resources and led to statewide efforts to revamp and revitalize the way it used the precious commodity.

Counties across the state developed their own plans to reduce water usage and many California residents did their part to make water conservation a part of every day life.

Much of those efforts were successful which led to the order being lifted. For a brief period in time, Californians and local municipalities were free to use and consume water as they saw fit.

But in the years since Brown lifted the order, the state's reservoirs appear to be trending back in the same direction, approaching the same levels that led to the initial drought emergency declaration.

In 2021, Brown's successor, Gov. Gavin Newsom, declared his own drought emergency following the second driest year on record and historically low levels at the state's reservoirs.

Currently, all of California (except for a tiny little corner) is experiencing some sort of drought, with most of the state under moderate to severe conditions.

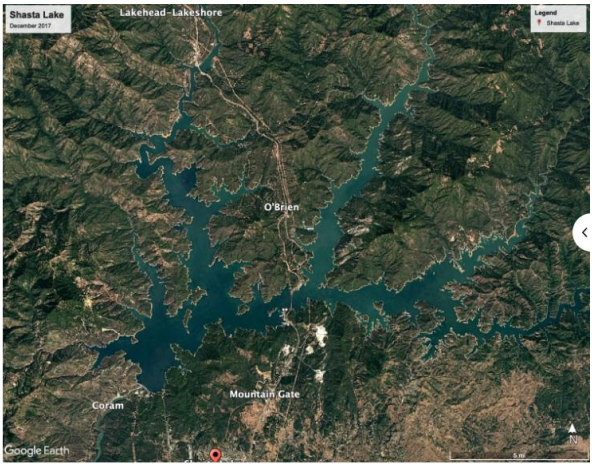
Many of California's reservoirs are significantly below their historic levels for this time of year, some even as low as they were back in 2014 when Brown issued his drought emergency declaration.

Satellite imaging from Google Earth shows the conditions of the state's reservoirs now versus where they were about five years ago.

Shasta Lake

Shasta Lake in Shasta County is the largest of the state's reservoirs.

Images from 2017 and 2022 show a stark difference between shorelines as the lake's water receded, revealing more land that was previously covered by water.



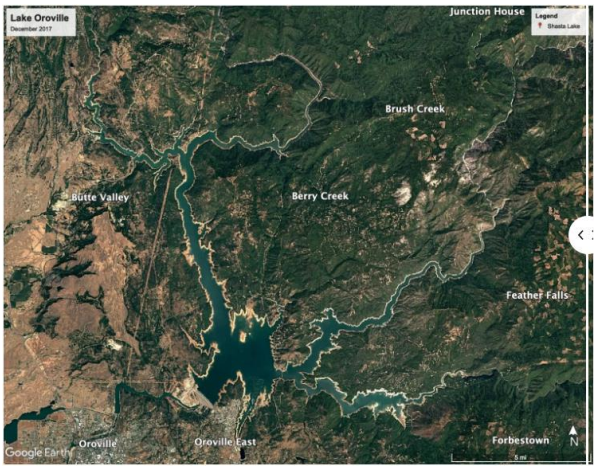
2017

2022

Shasta is currently at 31% capacity, down from its historical capacity of 57% this time of year.

Storage level graphs from the California Department of Water Resources show today's water level hovering above 2014's historically low levels.

Lake Oroville



2017

2022

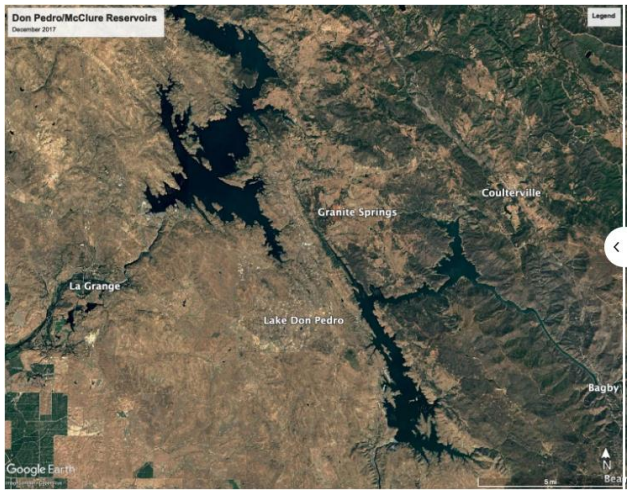
The second-largest reservoir in California is in the midst of a dry spell. As of Nov. 14, Oroville is at 29% capacity, exactly half of the historic average of 58%.

At 1,010,985 acre-feet, Lake Oroville is just a hair higher than it was in 2014 when the declaration order was issued. An acre-foot is approximately 326,000 gallons.

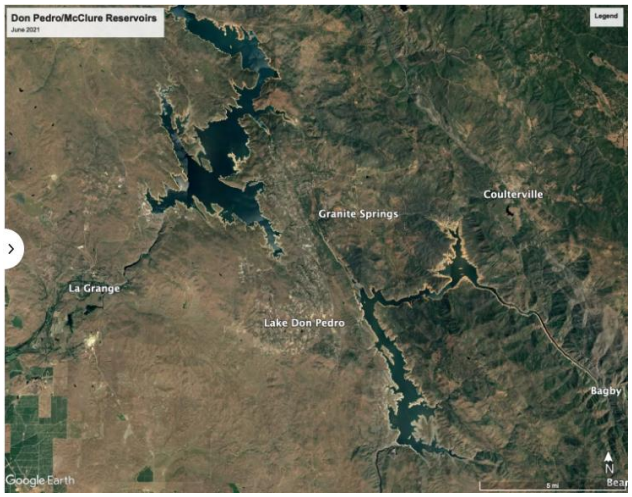
Satellite images from 2017 when the declaration was lifted show significantly smaller shorelines and an island that doesn't exist in 2022.

Both Shasta and Oroville are considered to be at "critically low" levels, according to the U.S. Drought Monitor.

Lake McClure/Don Pedro Reservoir



2017



2022

Don Pedro and McClure reservoirs shown in December 2017 and June 2021.
Lake McClure in Mariposa County is the second-driest reservoir in the state. It's currently at 18% of capacity, which is significantly lower than its historical average for this time of year of 42%.

Even with the low capacity, it's still about twice as high as it was in 2014.

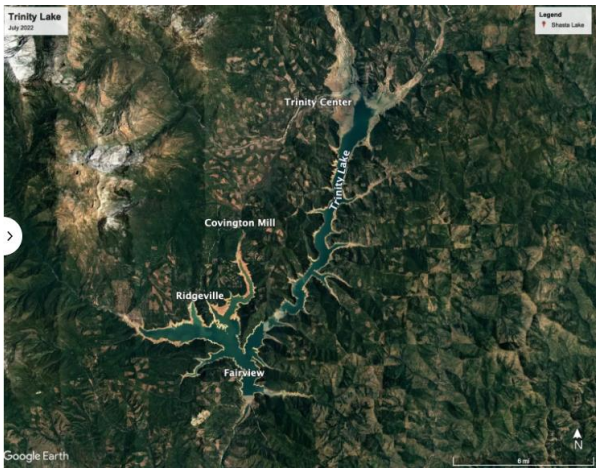
Nearby Don Pedro Reservoir in Tuolumne County is currently at 50% capacity, below its historical average of 75% capacity.

As of November, Don Pedro is currently about 200,000 acre-feet above its capacity in 2014.

Unfortunately, due to limitations with Google Earth, the most recent images available for the two reservoirs is from June 2021, but there is still a noticeable difference from then to 2017 when Brown's emergency declaration was lifted.

Trinity Lake

2017



2022

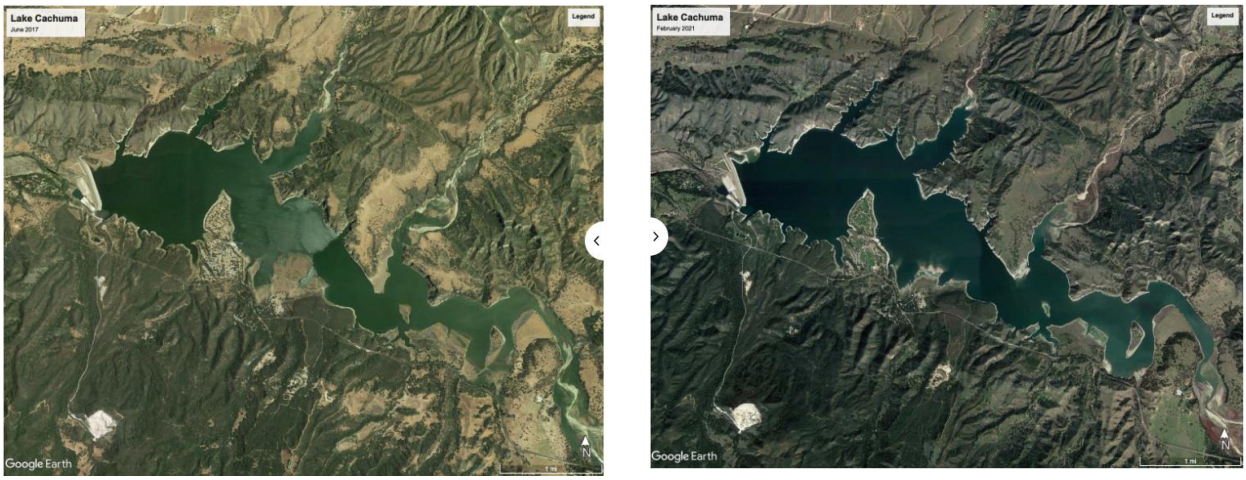
Perhaps no satellite images offer a more dramatic glimpse into the changes at California's reservoirs like Trinity Lake.

Massive swaths of land once covered by water in 2017 are now dry as a bone and some areas even appear to have walkable paths between the two sides.

The reservoir in the northwest portion of California currently sits at 22% capacity, a little more than half of its historical capacity for this time of year (38%).

The reservoir is actually lower today than it was in 2014, according to Water Resources historical graphs.

Lake Cachuma



2017 2022

It's not all bad news for California's reservoirs, however.

Lake Cachuma in Santa Barbara County is currently at 32% capacity, below its historical capacity of 51%.

But at one point, in the months leading up to the 2017 emergency declaration being lifted, the reservoir that serves as the main water source for the city of Santa Barbara was at less than 10% capacity.

Images from Google Earth show the return of an island and the loss of a beach that appeared when the water levels dipped. The latest available images from Google Earth are from 2021 and show a higher level than what is accurate today, but it does put the historical drought conditions from the 2010s into perspective.

Pine Flat Reservoir in Fresno County, which has the lowest capacity of the state's reservoirs at only 16%, is still above the historic lows of 2014-15. Google Earth does not have any satellite images of the entire lake from the previous two years.

# # #

Senators urge Agriculture secretary to help Western states in '22-year mega-drought'
The Hill | December 7, 2022 | Alexander Bolton

President Joe Biden listens as Agriculture Secretary Tom Vilsack speaks during a visit to O'Connor Farms, Wednesday, May 11, 2022, in Kankakee, Ill. Biden visited the farm to discuss food supply and prices as a result of Putin's invasion of Ukraine. (AP Photo/Andrew Harnik)

Sen. Michael Bennet (D-Colo.) is leading a letter signed by 14 other senators urging Agriculture Secretary Tom Vilsack to help Western states survive what they are calling a "22-year mega-drought" that is threatening farms and ranches across the West.

"The American West is in crisis. Across the major basins of the American West … farm and ranch families hang in the balance as they grapple with a 22-year mega-drought," they warned. "The acute shortage of water for Western growers threatens productive farmland across our states, which are both a pillar of our rural economies and drivers of America's food production."

The letter is the latest sign of growing economic pressure posed by the changing climate and the competition for federal money to help communities across the country cope with severe weather.

A study by UCLA published in the journal Nature Climate Change earlier this year reported the American West is suffering its most severe drought in 1,200 years.

Two major reservoirs, Lake Mead and Lake Powell, are at their lowest levels on record.

The senators want the Department of Agriculture to use its authority to help Western farmers and ranchers conserve water, improve their water infrastructure and protect lands plagued by drought.

They say improved water conservation, cover crops that slow erosion and improve soil health, will help farmland store more carbon from the atmosphere, which could help mitigate climate change.

The letter's signatories include Sens. Mitt Romney (R-Utah), Kyrsten Sinema (D-Ariz.), Martin Heinrich (D-N.M.), Mike Lee (R-Utah), John Hickenlooper (D-Colo.), Mark Kelly (D-Ariz.), Ben Ray Luján (D-N.M.), Dianne Feinstein (D-Calif.), Ron Wyden (D-Ore.), Jeff Merkley (D-Ore.), Jacky Rosen (D-Nev.), Catherine Cortez Masto (D-Nev.), Alex Padilla (D-Calif.) and Patty Murray (D-Wash).

The senators argue that many existing Department of Agriculture programs "do not translate well to the needs of Western agriculture" and want the department to promote projects to help basins such as Colorado River Basin, the Rio Grande Basin, the Sacramento-San Joaquin River Basin and the Columbia River Basin.

"As you know, American farmers and ranchers manage over 895 million acres of ground in the United States, giving them a vital role in combating climate change risks while continuing to feed America," the senators wrote.

They said the $20 billion Congress recently provided for agriculture conservation programs should be allocated "equally across the country to reflect the contribution of every region, including the West."

They urged Vilsack to address the understaffing of Agriculture Department field offices and to prioritize hiring more staff with expertise in West agricultural production.

# # #

California's drought disaster is turning into an economic disaster: 'It's unprecedented'
Economists and farmers warn the environmental and economic consequences could be severe as farms become fallowed
FoxBusiness | December 6, 2022 | Jiovanni Lieggi

In the early hours of a cold fall morning, thousands of birds would sit in the puddles of water in the empty rice fields just outside the Sacramento Valley.

At many of those fields this year, there isn't a single bird that can be seen. It's because there's no water. There are no plants. The fields are empty and bone dry. They've become fallowed. The streams of water that once flowed to allow the beavers and deer feed and drink are gone. The ground looks like slabs of cracked concrete.

Economists and farmers warn that there could be severe environmental and economic consequences that stretch beyond these dry fields that farmers are challenged with.

California is now experiencing the driest three-year period since late 1800s. Even with the recent rain and snowfall along the Sierra Nevada Mountains, farmers aren't holding their breath for this winter and rainy season to end the drought.

"I don't know that I've ever seen this, it's unprecedented," rice farmer Sean Doherty said as he looked at his empty rice fields. In a normal year, Doherty would typically farm about 5,000 acres of rice. He was only able to farm about 700 acres this year because he didn't have enough of water.

Doherty is also starting to notice the ecological impacts of the drought. He said he would see the birds, deer, and other animals on his farm every morning. Now, it's rare if he even sees one.

The water supply Sean Doherty would use on his crops has run dry. He was only able to farm about a fifth of the rice that he is usually able to because of the drought. (Jiovani Lieggi/Fox Business / Fox News)

In a new report prepared for the California Department of Food and Agriculture, the state's irrigated farmland shrunk by 752,000 acres of farmland, or by nearly 10%. Doherty is one of the many farmers who was forced to scale back.

"You hope for the best, and plan for the worst," Doherty said.

In the past two years, a combined $3 billion has been lost in revenue because of crop losses. $1.7 billion was lost in 2022 alone, or, about 4.3% of the GDP.

Other sectors in the agriculture industry have had significant losses as well. In 2022, $3.5 billion was lost in gross revenue for processing and purchasing agriculture products.

Sean Doherty, a third-generation rice farmer in California, is standing in what was his water supply before it dried up. (Jiovani Lieggi/Fox Business / Fox News)

"Everything from the milk industry around to almonds has been effected," UC Davis Agricultural Economics Professor Daniel Sumner said. Sumner helped prepare the report for the California Department of Food and Agriculture. He says consumers could soon see the prices rise in stores for certain products, like the rice Doherty grows.

The rice crop in California was only about half of a normal harvest season. Two hundred and seventy thousand acres were harvested compared to the usual 550 thousand.

"That has effects on the rest of the economy as well, it's not just the farmers or the farm workers. It's the grocery stores, all the way to the economy," Sumner said.

For farmers like Doherty who are planning next year's crop, some are wondering if it's even worth growing again because of the drought.

"I don't know what's going to happen, I don't know that anybody does, obviously mother nature does, but she's not talking," he said.

# # #

As California droughts intensify, ecosystems and rural communities will bear the brunt
LA Times | November 25, 2022 | Dorany Pineda

As California droughts get longer and more severe, groundwater over pumping will disproportionately affect ecosystems and rural communities.(Terry Chea / Associated Press)

Drought, human-caused climate change, invasive species and a “legacy” of environmental issues are permanently altering California’s landscape and placing some communities and ecosystems at increasing risk, a panel of experts told water officials recently.

Invasive species and decades of disruptions from massive land and water developments are partly responsible for a continuous decline in native California species, experts told the California Water Commission on Nov. 16. Also, rural communities, many of whom are lower income and rely on privately owned wells, are disproportionately contending with water contamination and scarcity amid recurring cycles of drought, experts said.

Although droughts in California date back to prehistoric times, the state’s modern-day water issues are the repercussions of decades of decisions, said Jay Lund, professor of civil and environmental engineering at UC Davis.

“A lot of our environmental problems today are really legacies,” he said. We are witnessing “the dynamics of past impacts and past changes playing themselves out and our inability — both in terms of regulatory policy and economically, and practically in some cases with some invasive species — to manage that playing out of legacy impacts.”

Groundwater and the Sacramento-San Joaquin River Delta are also among the sectors most vulnerable to dry periods, according to Lund, who emphasized that although cities and agriculture are relatively prepared and well-insulated from drought impacts, irrigated agriculture needs to shrink between half a million and 2 million acres to be sustainable.

About 5.5 million of California’s nearly 40 million residents live in rural counties, which make up more than half the state’s land mass. While urban areas like Los Angeles are under mandatory drought restrictions to reduce strain on state reservoirs, many rural residents reliant on groundwater wells are waterless. Compounding the issue is water affordability and a lack of safe drinking water, particularly in the Central Valley and Central Coast.

“We know that these challenges disproportionately impact low-income and Latino communities,” said Justine Massey, policy manager and attorney for the Community Water Center. “People relying on private wells in particular are significantly impacted because often they don’t know if their water is safe to drink since there’s no other entity doing water testing, and they’re also not aware until they start experiencing issues with pumping that they may be nearing water levels that will render their well not working.”

Although state legislation such as the Sustainable Groundwater Management Act is meant to regulate water availability and will help mitigate water scarcity in an increasingly arid California, thousands of people and delicate ecosystems will fall through the cracks.

A 2020 study commissioned by the Water Foundation found that under SGMA’s minimum water threshold plans, between 4,000 and 12,000 wells will partially or completely dry out by 2040 just in the San Joaquin Valley — affecting roughly 46,000 to 127,000 Californians who may lose access to their current water supply.

“We really urge all decision-makers involved… to look at the worst-case scenarios and really plan for that, because that’s what we’re experiencing so far — worst case after worst case after worst case,” Massey said. “And the folks who are most impacted are the ones who least contributed to the problem.”

Climate change is increasingly being recognized as a “threat multiplier” that will accelerate and aggravate instability and insecurity around the world. In a drought-stricken California, as groundwater levels drop because of less rain and over pumping, concentrations of contaminants in water increase, Massey said.

The current and future health of California’s ecosystems is also on the line.

Mild, short-term impacts of drought can result in reduced plant growth, but when dry periods are longer and harsher and groundwater depletion is more severe, widespread mortality of habitats and species can occur, said Melissa M. Rohde, principal of limited-liability company Rohde Environmental Consulting.

“If groundwater demand is high, groundwater can quickly become out of reach from plant roots and rivers because these ecosystems rely on shallow groundwater,” she said.

Rhode referenced the Nature Conservancy’s Shallow Groundwater Estimation Tool, which found that 44% of ecosystems statewide have been impacted by a significant, long-term decline in groundwater between 1985 and 2019. “We also found that groundwater levels declines have intensified during the most recent two decades,” she said.

Under SGMA, 87% of ecosystems and 40% of wells dependent on groundwater exist outside of the legislation, Rhode said, and “one of the biggest disconcerting aspects of this is that... these ecosystems are often times the last refugia for federal and state threatened and endangered species. They’re very important biological hotspots, and if we’re not doing what we can to protect them under SGMA, we are not safeguarding our most vulnerable species.”

Drought conditions and extreme heat fueled by climate change have also pushed the chinook salmon to the brink of extinction.

The fish — which once swam upstream the Sacramento River to spawn in its chilly waters before the Shasta Dam’s completion in 1945 — has struggled to survive even with government intervention. Last year, the water flowing from Shasta Dam was so warm that most of the eggs and young salmon died.

Wildfires, drought and bark beetle infestations are also destroying the forests of the southern Sierra Nevada, which could have dire consequences for spotted owls, Pacific fishers and other protected species that depend on mature tree canopies for their habitats.

But refusing to accept these changes is pointless, Lund said. “Resistance is futile. We’re going to have a future that’s going to be different,” and learning to reconcile our ecosystems with human activity will be an ongoing challenge. “How do you manage your native species when everything else is changing is going to be a big conundrum for all of our agencies and all the people trying to do this,” he said.

So what can we do about it? For ecosystems, integrating them into water policies, identifying ecological oases and managing groundwater to ensure species have access to it during droughts will be critical, Rhode said.

As for rural communities, Lund suggested we look at how and why urban and agricultural spaces have responded more effectively to drought: Their missions are focused; they have

reliable funding sources; they have organized authority and expertise; and they have accountability via voters, regulators and ratepayers.

“The state has the responsibility to make sure that drinking water needs are protected and not waved away as a cost of business or set aside as something that’s too difficult or inconvenient to address,” Massey said.

“Climate change is testing and surpassing our limits and our normal flexibility,” she added. “The margin of error becomes tighter and tighter. That margin of error is already extremely thin, and what’s on the line is Californians’ access to a life-giving resource.”

# # #

Despite rain, Bay Area utilities are cracking down on water waste. One is even shutting off service

San Francisco Chronicle | December 7, 2022 | Kurtis Alexander

Santa Rosa utility system operator Shiloh Jones writes a notice to a resident who appears to be in violation of the city's water waste policies last year. The city has continued to enforce prohibitions on wasteful watering as another year of drought looms. Brontë Wittpenn, Staff photographer / The Chronicle

Just because the rainy season has arrived doesn't mean California's water cops are off the job.

With a fourth year of drought looming, some of the Bay Area's biggest utilities continue to crack down on excessive outdoor watering. Most are responding to heavy sprinkler use or power-washing with a courtesy note, advising customers to stop what they're doing with the threat of a fine. One city, though, has gone as far as shutting off water service to repeat offenders.

State regulators, meanwhile, are expected this week to enact a second straight year of California-wide prohibitions on outdoor water waste, continuing the ban on such actions as watering lawns to the point of creating runoff, washing a car without a shut-off nozzle on the hose and filling up decorative fountains. Violators could face $500-a-day fines.

The underlying message water officials are trying to send, even with stormy skies in the forecast, is that water supplies remain tight after three dry years and that this wet season probably isn't going to alleviate the shortage.

“We need everyone in California to be more mindful about their water use,” said James Nachbaur, director of research, planning and performance at the State Water Resources Control Board, the agency moving forward with the statewide prohibitions on outdoor water waste. “It looks like the drought will likely continue through this winter. There will be snow, there will be rain, but not as much as usual.”

The State Water Board’s pending regulation comes alongside ordinances passed by many cities and water districts that similarly seek to keep outdoor water use in check. The state rules largely serve as a baseline for what’s not acceptable, which local authorities can build upon.

Among the Bay Area’s seven largest water suppliers, which all provided data to The Chronicle about enforcement of water waste policies this year, the city of Santa Rosa has been perhaps most serious about adopting local rules and enforcing them.

Santa Rosa relies on water from the Russian River watershed, which has been extraordinarily dry. The city’s water waste ordinance, designed to protect the supply, mostly mimics the state regs with a few additions, such as barring sprinkler use and overhead irrigation during the day.

Santa Rosa has responded to 576 incidents of alleged water waste this year either with in-person visits from “water waste patrols” or courtesy notes, records show. For five customers who didn’t heed repeated warnings, the city shut off the water.

“Our focus is to inform, educate and get customers to respond (or) repair their issue as opposed to penalizing customers, and it has been very successful,” Santa Rosa Water Director Jennifer Burke said in an email to The Chronicle. “Most are unaware of their water waste, grateful for the information and fix the issue.”

The Santa Clara Valley Water District, a wholesaler that supplies water to agencies serving nearly 2 million people in the South Bay, has also been strict with its water waste policy. The district’s reservoirs are exceptionally low and the usual deliveries from state and federal water projects have not materialized because of the drought.

Over the past six months, Valley Water officials have sent out more than 1,600 notices to people who have allegedly violated its waste policy, which is similar to the state’s. The most common violation has been watering to the point that runoff spills into the street and sidewalk.

The district has not issued fines, but it reserves the authority to enact penalties of up to $10,000 in extreme cases of water waste.

The San Jose Water Company, which gets its supplies from Valley Water, is leaving outdoor waste enforcement to the wholesaler but the retailer is working to rein in water use by charging customers more when they consume more total water.

The East Bay Municipal Utility District in Alameda and Contra Costa counties is similarly looking at the total water use of households, rather than specific wasteful activities, and levying fines on those who use too much. About 1,000 customers have been fined since the policy took effect in the spring.

In San Francisco, where parcels are generally smaller and yards are less common, water officials are still responding to reports of waste, though not as many as some suppliers. The city has made 238 contacts this year, records show, either in person or in writing, notifying customers of violations of city restrictions, which are similar to the state's rules. No fines have been issued.

"Our conservation field inspectors rigorously observe for any potential water waste in our service area and educate communities on water waste," Joseph Sweiss, spokesman for the San Francisco Public Utilities Commission, told The Chronicle.

The statewide prohibitions on water waste, which expire next month, are scheduled to go before the State Water Board's governing board for renewal on Wednesday. The rules come amid Gov. Gavin Newsom's drought emergency, which directs state regulators to address waste.

Under the policy, the following would be prohibited for another year:

• Irrigating a lawn or other landscape with potable water to the point at which runoff washes onto the street or sidewalk.

• Washing a car without a shut-off nozzle on the hose.

• Hosing down driveways, sidewalks, patios and other hard surfaces with potable water unless health or safety are at risk.

• Filling decorative fountains or ponds with potable water, unless it's recirculated water.

• Watering a lawn or ornamental landscape within 48 hours of measurable rainfall.

• Using potable water for street cleaning or construction.

• Using potable supplies for watering street medians or strips between the sidewalk and street.

# # #

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Twitter: @kurtisalexander

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Extreme drought means meager portions for California water agencies

Five percent allocations sound bad, but it's better than the zero percent initial allocation for 2022.

Courthouse News Service | December 5, 2022 | Hillel Aron

The Delta-Mendota Canal (left) and the California Aqueduct east of Tracy, California.

(CN) — California water officials have announced public water agencies will be receiving 5% of the water they've requested for 2023, thanks to what is expected to be the fourth year of extreme drought. It is only the initial allocation from the State Water Project — more water could be sent to local agencies later in the year if conditions improve.

"This early in California's traditional wet season, water allocations are typically low due to uncertainty in hydrologic forecasting," Karla Nemeth, director of the California Department of Water Resources, said in a statement. "But the degree to which hotter and drier conditions are reducing runoff into rivers, streams and reservoirs means we have to be prepared for all possible outcomes."

Five percent of the water the 29 public water agencies asked for may sound bad — and it is — but it's actually something of an improvement over last year, when the initial allocation was zero percent "with limited water designated only for any unmet human health and safety needs." Eventually, that allocation was raised to 5%.

In 2021, California had its snowiest December in half a century. But the rest of the winter was mostly a dry one, and one wet month wasn't enough to pull the state out of its historic drought — the entire Western United States is currently experiencing the driest 23-year period on record. The State Water Project's largest reservoir, Lake Oroville, is at just over a quarter of its capacity, and a little more than half of its average level for this time of year, although it is up a bit from this same time last year.

California typically receives half its rain and snowfall by the end of January. If the state experiences an adequate amount of rain and snowfall, officials could still release more than the initial allocation of 5% to water agencies. The year's final allocation will be determined in May or June.

“We are in the dawn of a new era of State Water Project management as a changing climate disrupts the timing of California’s hydrology, and hotter and drier conditions absorb more water into the atmosphere and ground," Nemeth said. "We all need to adapt and redouble our efforts to conserve this precious resource."

# # #

Managing source water for maximum benefit in a challenging climate
California Water Blog | December 4, 2022 | Andrew Rypel, Amber Lukk, Ann Willis

Figure 1. A site in the study reach of the Little Shasta River during summer baseflows. (Image credit: Amber Lukk).

In drought-prone northern California, limited water resources, private water rights allocations, and inefficient transport and use of water resources causes tension between freshwater conservation and private landownership (Garibaldi et al. 2020, Vissers 2017). In the face of a changing climate, drought curtailments will likely become more frequent, ratchetting stress on all water users (Vissers 2017). From an engineering perspective, efficiently managing water rights as arid landscapes become drier and less predictable will be essential to preservation of working landscapes and the environment.

Water purchases and leases are a common tool for securing water rights for environmental purposes. California recently considered a budget proposal to allocate $1.5 billion to buy-back private agricultural water rights to mitigate drought and support ecological uses (Bork et al. 2022). However, water right purchases can be incredibly expensive, and understanding which water rights are most likely to achieve maximal environmental benefit is vital for optimized

management. Especially in coldwater habitats, the quality of water sources included in buy-backs will determine success of such efforts.

In our recent study (Lukk et al. In Press), we explore these concepts using a case study of a stream where water rights affect both spring-fed and surface water sources. The study focused on restoration of a portion of the Little Shasta River (Siskiyou County, Northern California) through reconnection of Evans Spring. This natural coldwater spring was historically a tributary to the Little Shasta, but is currently diverted for agricultural use. In the study, we explore effects of increasing stream flow using alternative water sources (e.g., in-stream runoff versus off-channel springs) to enhance coldwater habitat along a working cattle ranch.

Of the simulated scenarios, piping water directly from Evans Spring to the Little Shasta showed the greatest thermal benefits, with a maximum temperature reduction of 2.7°C. This scenario (Piping Scenario B) would provide substantive ecological benefits, especially for salmonids of conservation concern. The addition of surface water runoff, however, did not provide thermal benefits to the Little Shasta River. But while piping spring water provided the largest temperature benefit, this same strategy sacrifices potential benefits of off-channel habitat and restoration of the historical spring-fed channel. The trade-offs associated with piping versus historical channel restoration are important, as one option provides immediate benefit to existing habitat during current conditions when extreme low flows and warmer stream temperatures occur during the summer; the other reflects a more long-term conservation strategy.

Table 1. Results of the water temperature model under various simulated scenarios. Parenthetical values show the temperature change from baseline results.

Scenario	minimum (°C)	average (°C)	maximum (°C)
Baseline	14.6	16.8	19.6
Historical Channel Reconnection	12.8 *(-1.8)*	15.4 *(-1.4)*	19.0 *(-0.6)*
Historical Channel Reconnection + Restoration	12.8 *(-1.8)*	15.2 *(-1.6)*	18.3 *(-1.3)*
Pipe Scenario A: upstream property boundary	13.1 *(-1.6)*	15.2 *(-1.6)*	17.6 *(-2.0)*
Pipe Scenario B: above debris jam	12.6 *(-2.1)*	14.5 *(-2.3)*	16.9 *-2.7)*
Surface runoff instream dedication	14.5 *(-0.1)*	16.5 *(-0.2)*	18.5 *(-1.1)*

No matter which option is pursued, the implications of these findings are that the source of water transfers is vital to success of an environmental water dedication. Water management practices aimed at increasing quantity of water dedications often overlook water quality in favor of an emphasis on quantity alone. When planning water inputs to a coldwater ecosystem, especially for the purposes of conservation, the water quality of the source water should be taken into consideration. Natural coldwater sources have considerable value for California's native ecosystems, whereas their thermal quality is of little value for agricultural uses (Garbach et al. 2014). In contrast, other dedications may increase the amount of water available to streams, but result in little benefit because they have marginal ecological quality.

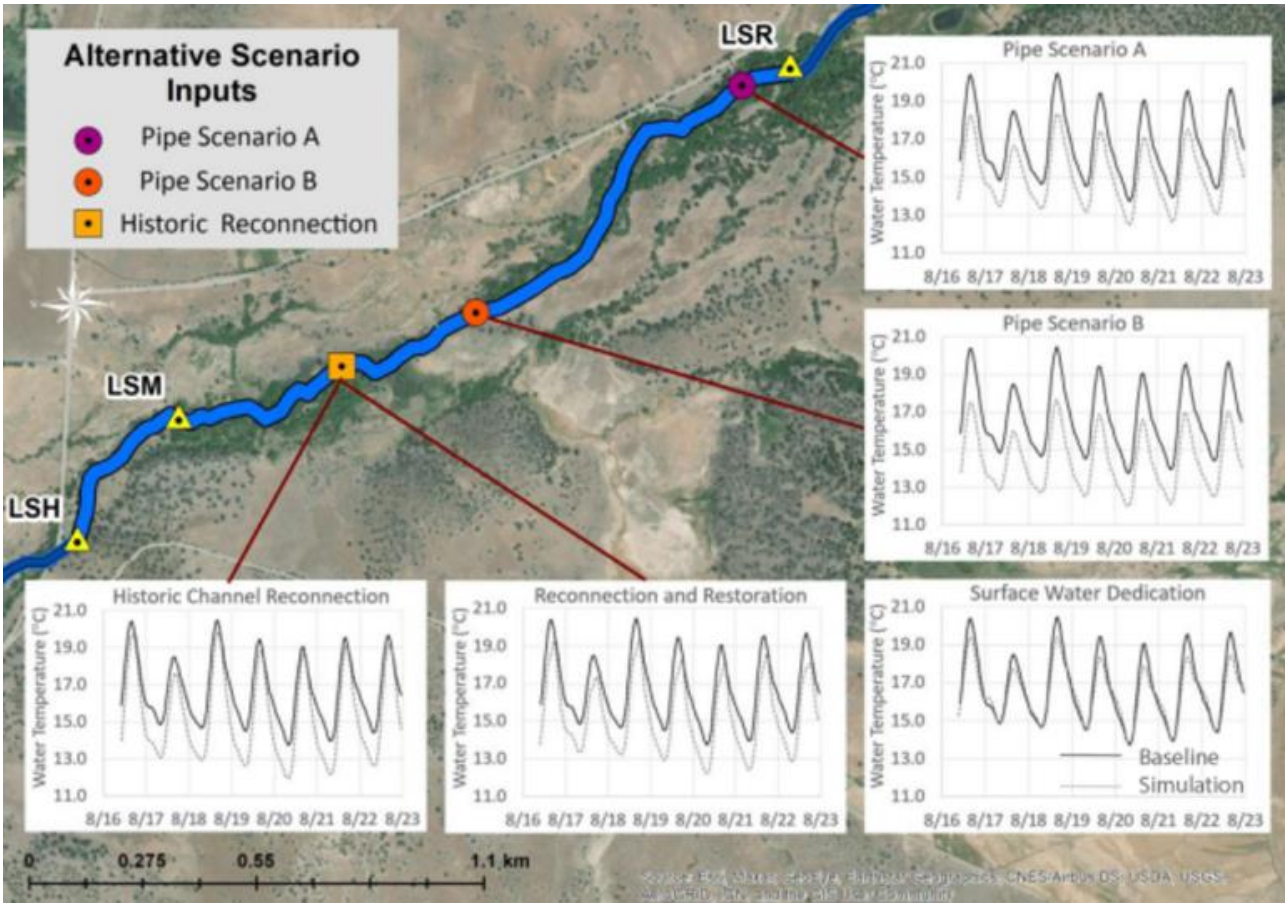

Figure 2. Results from the temperature model showing the differences in water temperature between the baseline measurement and the projected values from each alternative management scenario.

With the challenging unpredictability of freshwater resources, understanding the best possible uses for high-quality coldwater sources may provide the greatest benefits to the environment as well as adjacent working landscapes. For coldwater ecosystems, preservation of natural thermal regimes will be key to conservation efforts in the face of a changing climate (Willis et al. 2021). Prioritizing different water sources and when to use them may provide considerable benefits for the future of water resource and stream management in California.

# # #

Amber Lukk is an Assistant Specialist at the Center for Watershed Sciences.

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About Andrew Rypel
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State Announces 5% Boost From State Water Project to Ease Santa Clara County Drought

San Jose Inside | December 2, 2022

Reservoirs like San Luis Reservoir shown here are drying up as California enters another year of drought. (Photo via Maven's Notebook)

The California Dept. of Water Resources announced today an initial 5% allocation of imported water from the State Water Project for the Santa Clara Valley Water District, as drought conditions continue.

The state also indicated it will work with water agencies to provide water beyond the 5% to help meet minimum human health and safety needs, according to Valley Water.

“This initial allocation serves as a stark reminder that the drought emergency is not over,” Valley Water Chair Pro Tem John L. Varela said. “We’re thankful for the early season rainfall and we hope to see more storms this winter. But we must continue to reduce our water use. We owe it to our kids, family and community not to waste water.”

Despite some early season rain, the U.S. Drought Monitor classifies 99.48% of California in a drought. About 85% of the state, and all of Santa Clara County, are classified as being in a severe, extreme or exceptional drought, according to water officials.

“These dry conditions have a significant impact on the water supply outlook in Santa Clara County,” said Valley Water in a statement today. “Climate change is resulting in hotter and more extreme weather events, with potentially longer and more severe droughts.”

Experts say California needs at least one well-above-average water year, and maybe more, to end the drought and replenish reservoirs.

Currently, Valley Water's reservoirs and the state's reservoirs are well below their historical averages for this time of year, according to the water district.

During the past few years, Valley Water augmented Santa Clara County's water supply and groundwater basins by withdrawing water previously stored in a groundwater "bank" outside the county, purchasing emergency water from willing sellers and aggressively increasing conservation.

"If we endure a fourth year of drought, purchasing these emergency water supplies may be harder to obtain," the water district said in today's statement.

The Valley Water Board of Directors has taken several steps to help Santa Clara County use less water during the drought emergency.

In June 2021, the Valley Water Board of Directors established a 15% water use reduction goal for Santa Clara County compared to 2019. After months of steady progress, Santa Clara County water consumers reached this goal in July and August, saving 16% compared to July 2019.

The Valley Water board also implemented rules aimed at reducing outdoor watering during the drought. Some of the rules include watering ornamental lawns no more than two days a week, and a restriction on outdoor watering during and within 48 hours of rainfall.

# # #

Nearly 20% of California water agencies could see shortages if drought persists, state report shows

LA Times | November 30, 2022 | Hayley Smith

A 2013 aerial view of the Los Angeles Aqueduct as it flows south in its concrete-lined channel alongside Hwy 395 south of the Owens Valley town of Lone Pine.(Brian van der Brug / Los Angeles Times)

Most of California's urban water agencies believe they have enough supplies to last through another seven months of drought, but nearly 20% of them — including many in Southern California — say they could be facing significant shortages, according to a new state report.

The California Department of Water Resource's first annual water supply and demand assessment surveyed the state's urban water agencies to see how they are managing tight supplies through conservation efforts and improved drought planning. The report, which includes yearly data through July 1, focuses on water agencies that serve at least 3,000 connections, representing about 90% of the population.

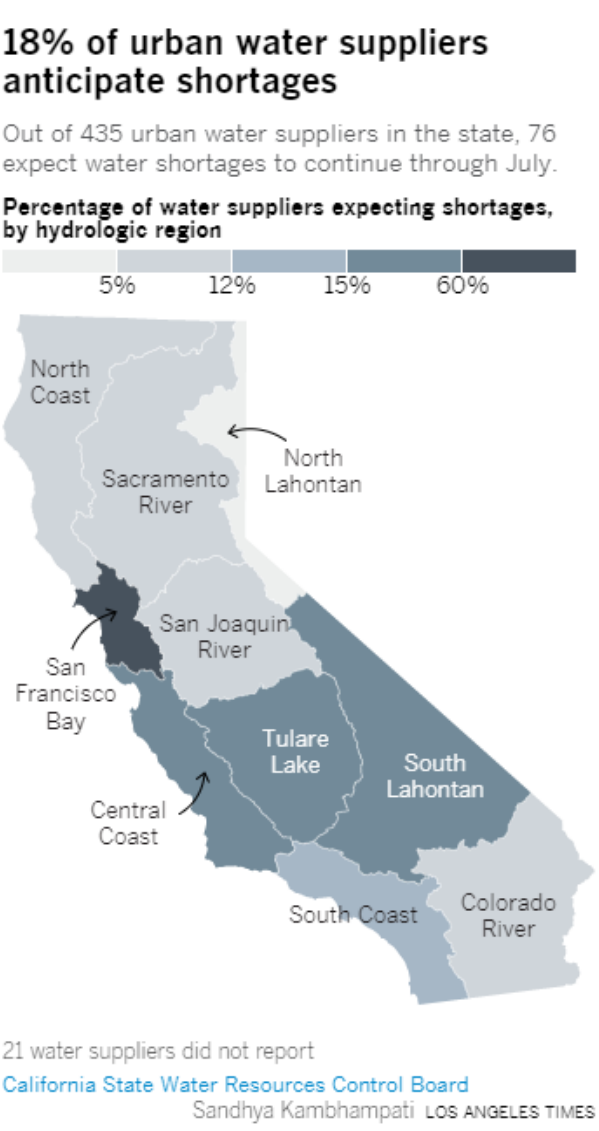
Of 414 reporting agencies, 82% said they do not anticipate any shortages so long as current conservation efforts continue, including voluntary reductions in water use and local Level 2 water shortage measures. Officials said the findings highlight that, in many cases, water saving efforts are making a difference.

“That’s a really important thing to get across — that early drought planning and conservation is working,” DWR assistant deputy communications director Ryan Endean told reporters this week.

But the report also shows that many suppliers may soon face challenges.

Seventy-three agencies, or about 18% of respondents, identified a potential shortage which they said could be addressed through additional conservation measures, including the Los Angeles Department of Water and Power, the Metropolitan Water District of Southern California and the Las Virgenes Municipal Water District.

Three other agencies — the City of Menlo Park, the Ventura County Waterworks Moorpark District and the Ventura County Waterworks Simi Valley District — anticipated shortages that may not be fixable through additional measures alone.



“Look how many agencies are projecting shortfalls — significant shortfalls — next year,” said Dan Drugan, a spokesman for Ventura County’s supplier, the Calleguas Municipal Water District, which reported a potential shortage of about 40%.

Drugan noted that the area receives limited federal supplies from the Colorado River and was heavily affected by slashed allocations from the state this year. He said the agency plans to address potential shortages through aggressive actions among its retailers, including moving to a Level 4 response as soon as December and possibly implementing a full outdoor watering ban next year.

The nearby Las Virgenes Municipal Water District, which serves Calabasas, Hidden Hills and surrounding areas, is projecting a 63% shortage, according to the report. Agency spokesman Mike McNutt said he “wouldn’t be surprised” if that number had worsened in the last several months.

“We have not improved our water situation,” McNutt said. “It’s not for lack of trying, but we haven’t gotten any additional supplies that are

coming in and ... there's not been any precipitation that's been helping us."

Las Virgenes is looking to purchase more supplies from other agencies, he said, and is similarly considering a full outdoor watering ban and Level 4 response.

Other agencies are faring slightly better. In Los Angeles, the DWP reported a potential 30% shortage, but the city's robust response to outdoor watering limits and other drought rules have kept water demands on target, according to water resources policy manager Terrence McCarthy. The agency instituted Level 3 response on June 1 and reported record low usage over the summer, so McCarthy did not anticipate additional conservation restrictions based on current conditions.

"If we continue that way, then we'll be able to meet the demands with the available supplies we have," he said. However, he noted that it's "anybody's guess" what the forecast holds for snow, rain and water supply development through the winter.

"We definitely need to keep our foot on the pedal, not only because we could be facing another dry winter, but also because it's all a matter of making conservation a way of life," McCarthy said.

The DWP, along with Calleguas, Las Virgenes and about two dozen other agencies, purchase water from the region's massive wholesaler, the Metropolitan Water District of Southern California, which itself reported a potential shortage of 43%. MWD officials could not immediately say whether that number had improved in recent months, but noted that its emergency conservation order — which includes outdoor watering restrictions for about 6 million Southern Californians dependent on state supplies — probably won't be lifted until California sees significant precipitation and the state increases allocations.

MWD spokeswoman Rebecca Kimitch added that deteriorating conditions on the Colorado River mean the rest of Southern California could also see calls for increased conservation in the coming months.

"Given the worsening conditions on the river, Metropolitan does not anticipate having a full Colorado River Aqueduct in 2023 or beyond," Kimitch said. "So our entire service area must take measures to protect our limited Colorado River supplies. The initial call for conservation will likely be voluntary, but if the water supply outlook does not improve, Metropolitan may implement a water supply allocation plan for its entire service area, requiring mandatory conservation across the region."

Notably, the majority of the agencies that reported potential shortages are in two of the state's most populous hydrologic regions, the San Francisco Bay Area and the South Coast region, which includes Los Angeles, Orange County and San Diego, the report shows.

However, the focus on water suppliers with at least 3,000 connections means that many small and often rural communities were not included — many of which rely heavily on groundwater and are among those hit hardest by drought. Nearly 1,400 dry wells have been reported in the state this year.

State officials said they are continuing to work with small suppliers through direct assistance grants and technical support programs, including millions of dollars in funding from the DWR's Small Community Drought Relief program. Such funding often goes toward immediate and temporary measures such as hauled water, temporary water tanks, bottled water and emergency inter-ties between communities, according to Steve Doe, the program's manager.

Small water suppliers will have to meet new drought planning requirements under Senate Bill 552, passed in September 2021, which is intended to help such areas better prepare for water shortage conditions, officials said.

Despite such steps in the right direction, the report underscores that nearly a fifth of the state's agencies could face some shortages should drought conditions persist. Forecasts are already predicting another dry winter and a potential fourth year of drought.

Peter Gleick, co-founder and president emeritus of the Pacific Institute, said the report's findings are heavily dependent on whether that prediction manifests.

"They're making some assumptions about how much water supply they'll get in addition to the water that any agency might have in storage, so things could be worse than just 20% saying they need to do more and three of them saying, 'We really are in trouble,'" he said. "But it just depends on how bad the drought is."

And while the report focuses primarily on urban residents, Gleick noted that agricultural water users, which receive allocations separately, are also facing uncertainty when it comes to next year's supply. A recent state report showed that California's irrigated farmland shrank by nearly 10% in 2022.

The latest findings "highlight both that water efficiency and conservation have already played a critical role in helping water agencies deal with the current drought, but also that increased conservation efforts will be required for 20% of urban water agencies if the current drought

continues," Gleick said. He added that the Pacific Institute's research has shown that additional improvements in water-use efficiency are possible for every urban water agency.

The message, he said, is that "conservation really got us through the drought up until today and that it's too soon to stop conserving."

The 2022 report marks the first of what will become an annual assessment each year, state officials said. Urban water agencies are also required to update their water shortage contingency plans every five years.

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California cities warned to prepare for possible water shutdown ahead of fourth year of drought

Nation World | November 30, 2022 | News Desk

Federal water managers warned California cities and industrial users receiving water from the Central Valley project on Monday to prepare for a fourth year of drought and possibly an “extremely limited water supply” through 2023.

The US Bureau of Reclamation, an Interior Department agency that oversees water resources management, said drought conditions in California persist despite storms earlier this month, and warned of imminent water conservation action.

“If drought conditions persist through 2023, reclamation will be difficult, if not impossible, to meet all of the Central Valley Project’s competing needs without implementing additional and more severe water conservation works,” the agency said in a statement. Will get tough fast.” ,

The agency said water storage is near record levels in the reservoirs it oversees in the state, which irrigate more than 3 million acres in central California and supply major urban centers in the Greater Sacramento areas and San Francisco Bay. The project’s water provides supplies to approximately 2.5 million people per year.

Shasta Reservoir, California’s largest reservoir located about 200 miles north of the Bay Area, is currently at 31% capacity, the agency said.

California gets most of its water in the winter months when storms bring snow to the mountain ranges. But record temperatures and low rainfall have forced California and other states to grapple with a future with dwindling water supplies.

The megadrought in the western US has made the two decades the driest in the region in at least 1,200 years, and conditions are likely to persist for years. Researchers have estimated that 42% of drought severity is attributable to human-caused climate change.

Earlier this year, California water officials reduced state water project allocations from 15% to 5% of normal for water agencies serving an estimated 27 million people and 750,000 acres of California’s land.

The Office of Reclamation said it would announce initial water supply allocations for the Central Valley Project in February.

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U.S. warns California cities to prepare for possible water cuts and fourth year of drought
PUBLISHED MON, NOV 28 20223:42 PM EST
CNBC | November 28, 2022 | Emma Newburger

KEY POINTS

- Federal water managers on Monday warned California cities and industrial users receiving water from the Central Valley Project to prepare for a fourth year of drought and possibly "extremely limited water supply" during 2023.
- The U.S. Bureau of Reclamation, an agency of the Interior Department, said drought conditions in California have persisted despite early storms this month and warned of looming water conservation actions.
- The agency said water storage is near historic lows in the reservoirs it oversees in the state, which supply water to the vast agricultural region of the Central Valley and major urban centers in the Greater Sacramento and San Francisco Bay areas.

Houseboats on Lake Oroville during a drought in Oroville, California, U.S., on Monday, Oct. 11, 2021.
David Paul Morris | Bloomberg | Getty Images

Federal water managers on Monday warned California cities and industrial users receiving water from the Central Valley Project to prepare for a fourth year of drought and possibly "extremely limited water supply" during 2023.

The U.S. Bureau of Reclamation, an agency of the Interior Department that oversees water resource management, said drought conditions in California have persisted despite early storms this month, and warned of looming water conservation actions.

"If drought conditions extend into 2023, Reclamation will find it increasingly difficult, if not impossible, to meet all the competing needs of the Central Valley Project without beginning the implementation of additional and more severe water conservation actions," the agency said in a statement.

The agency said water storage is near historic lows in the reservoirs it oversees in the state, which irrigate more than 3 million acres of land in central California and supply major urban centers in the Greater Sacramento and San Francisco Bay areas. The project's water provides supplies for approximately 2.5 million people per year.

Cattle graze amid drought conditions on June 21, 2022 near Ojai, California. According to the U.S. Drought Monitor, most of Ventura County is currently under extreme drought conditions. California is now in a third consecutive year of drought amid a climate-change fueled megadrought in the Southwestern United States. Mario Tama | Getty Images

The Shasta Reservoir, California's largest reservoir located about 200 miles north of the Bay Area, is currently at 31% capacity, the agency said.

California gets most its water during the winter months when storms bring snow to the mountain ranges. But record temperatures and low precipitation have forced California and other states to address a future with dwindling water supplies.

The megadrought in the U.S. West has generated the driest two decades in the region in at least 1,200 years and and conditions are likely to persist for years. Researchers have estimated that 42% of the drought's severity is attributable to human-caused climate change.

Earlier this year, California water officials slashed State Water Project allocations from 15% to 5% of normal for water agencies serving roughly 27 million people and 750,000 acres of farmland.

The Reclamation Bureau said it will announce initial water supply allocations for the Central Valley Project in February.

A sign is posted next to an empty field on May 27, 2021 in Chowchilla, California.
Justin Sullivan | Getty Images

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New Report Shows Continued Water Conservation Is Key to Enabling Suppliers to Meet Demand

Department of Water Resources | November 28, 2022

A drip lawn watering system to make a yard suitable for low water use flora.

SACRAMENTO, Calif. – As directed by 2018 legislation, the Department of Water Resources (DWR) today submitted a first report to the State Water Resources Control Board summarizing how urban water districts assess the adequacy of their supplies over the next seven months. Broadly, the assessments show the importance of conservation by individual Californians to help suppliers meet demands through June 30, 2023.

In this year's assessments, urban water suppliers indicate that they will rely on either continued conservation or more aggressive actions to meet demand through June 30, 2023, if dry conditions persist. They report that they can ensure adequate water supplies through water-saving strategies, such as requiring customers to limit outdoor water and providing leak detection and repair services.

Since 2022 is the first year that urban water suppliers are required to submit an Annual Water Shortage Assessment, this year will serve as a baseline to evaluate if urban water suppliers are accurately assessing their annual water supply and demand. These annual assessments submitted by local agencies are intended to help state and local water suppliers better prepare for current and future droughts.

"One of the lessons learned from the last drought was the importance of early planning and State action to support our water suppliers in preparing for a hotter and drier climate," said DWR Director Karla Nemeth. "Despite ongoing severe drought conditions and a possible fourth dry year ahead, DWR and suppliers are better prepared to continue to supply reliable drinking water to millions of Californians. Actions taken by individual Californians to save water indoors and outdoors make a big collective difference."

With less water available as California shifts to a hotter, drier future, urban water suppliers will be submitting water supply and demand assessments annually as required by the 2018 Making Water Conservation a Way of Life legislation to improve long-term water conservation. The assessments are intended to ensure proper planning at the local level to meet demands and mitigate shortages through water conservation and other actions. The assessments also indicate what level of State assistance may be needed during continued drought.

The DWR report summarizes water supply assessments conducted by 414 of the 435 local urban water suppliers. Twenty-one agencies have not submitted the required assessments.

Those required to submit include water suppliers that serve more than 3,000 connections or that supply more than 3,000 acre-feet of potable water annually for municipal purposes. The summary report does not include small water suppliers, which historically have faced more significant water supply challenges during drought conditions. The State continues to work with small suppliers through direct assistance, grants, and technical support programs.

Of the 414 submitted reports by urban water suppliers:

- 338 urban water suppliers do not expect a shortage during the upcoming year with continued conservation efforts, including a voluntary 15 percent water-use reduction and continued activation of local Level 2 Water Shortage Contingency Plan measures.
- 73 urban water suppliers anticipate they can fully address any shortage through increased conservation actions or increased supplies noted in their water shortage contingency plans, including stronger water-use reduction mandates.
- 3 urban water suppliers noted that they may still experience a shortage after implementing water conservation actions or increased supplies included in their current plans. DWR continues to work with these suppliers to include additional actions to adequately address expected shortages.

To help prepare for drought and water shortage events, urban water suppliers are responsible for developing a water shortage contingency plan. These plans provide a description of the procedures they will employ each year to conduct their annual assessment, including a written decision-making process, as well as the key data inputs and the assessment methodology used to evaluate the near-term water supply reliability. Many suppliers are already implementing Level 2 response actions per Executive Order N-7-22 issued by Governor Newsom earlier this year.

It will be critically important for urban water suppliers to follow their plans and report their water supply situation accurately. This allows state water officials to work with local agencies to find additional supplies and head off potential shortages. The City of Coalinga, for example, submitted a water supply assessment in July that anticipated no water shortages. A few months later, the City announced that it would be out of water by December, largely because it did not implement the actions identified in its Water Shortage Contingency Plan. DWR was able to provide $1.2 million to the City of Coalinga to fund the purchase of supplemental water to maintain a reliable supply through the winter months. The City has been asked to submit a revised water supply assessment.

To help water suppliers plan more effectively, DWR offered technical assistance and provided feedback on their water shortage contingency plans. The feedback included proposing more aggressive response actions appropriate to the projected shortage levels and amending the supplier’s water shortage contingency plan, if deemed necessary. Some of the water suppliers realized more water savings with additional conservation actions and resubmitted the plan with no shortage expected.

DWR is coordinating with the remaining 21 suppliers who have yet to submit their plans and is currently providing additional targeted help and assistance. DWR reminds delinquent suppliers of the importance of proactively assessing supplies and demands in order to be prepared in case of future shortage events. The full list of delinquent suppliers is available here.

“Thank you to all Californians for stepping up conservation efforts to help reduce water use statewide and to urban water suppliers who are serious about planning for their communities,” Nemeth said. “Coming together like this to conserve will make a big impact for our water future.”

Small water suppliers are receiving support from DWR as it implements Senate Bill 552 (SB 552), which imposes new drought planning requirements on small water suppliers with fewer than 3,000 customers. DWR and the State Water Resources Control Board are hosting a series of informational workshops to explain the new requirements and help small water suppliers develop a water shortage contingency plan and solicit feedback for future resources. For more information about SB 552, visit DWR’s SB552 webpage.

This month, DWR will announce funding awards totaling $86 million for emergency and long-term projects through the Small Community Drought Relief program and the Integrated Regional Water Management program. The selected projects will support strategies to improve water quality, increase water supply, and upgrade aging infrastructure.

For larger communities still in need of assistance, DWR is currently accepting applications for the Urban Community Drought Relief program to support projects that build long-term climate resilience and improve water conservation.

State water officials will provide an overview of the summary report to the media and discuss how the state is taking action to help urban and small suppliers prepare for current and future dry conditions. The media briefing will be held via Zoom at 1 p.m. today. Credentialed media can register at https://ca-water-gov.zoom.us/meeting/register/tZ0sd-GurTsjGNRiRVZNwk3vXpxreoF7xcQ3

As California experiences a climate transformation bringing hotter and drier conditions, each individual act of conservation makes a difference. More information and water-saving tips are available at saveourwater.com. For information about other DWR and State of California drought response efforts and funding programs, visit: drought.ca.gov.

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DRIED UP: In California, desalination offers only partial solution to growing drought
The Hill | December 5, 2022 | Sharon Udasin

The American West is experiencing its driest period in human history, a megadrought that threatens health, agriculture and entire ways of life. DRIED UP is examining the dire effects of the drought on the states most affected — as well as the solutions Americans are embracing.

As water in the Western U.S. becomes an increasingly rare commodity, the driest states are grasping at solutions for an even drier future — investing heavily in technologies to maximize the conservation, and creation, of the region's most precious resource.

With more than a thousand miles of Pacific Ocean coastline, California appears to have access to a wellspring that other arid states lack. The technology to transform that unlimited sea supply into potable drinking water has existed for decades, through a process called desalination. Yet while two new desalination plants have received approvals in the past couple months, California's coast isn't exactly teeming with such facilities.

That's because the technology, which is both expensive and energy intensive, can leave behind a mammoth-sized footprint on both surrounding communities and marine life, even as it helps quench the thirst of a parched citizenry.

One of several necessary strategies

With little sign of reprieve for the region's water woes, experts agree that desalination will continue to play a critical, although partial, solution to a crisis that promises to last.

"Our attitude on ocean desal is that it is a tool in the toolbox," Garry Brown, founder and president of Orange County Coastkeeper, told The Hill in a phone interview this summer.

"But it's a tool of last resort — after you have exhausted all your other options," Brown continued. "Ocean desal, as we've learned it here, has the greatest environmental impacts, the greatest energy requirement and is by far the most expensive."

Desalination is the process of removing excess salt from water, usually by means of a technology called reverse osmosis that separates water molecules from either seawater or salty brackish water found inland.

While the process generates potable drinking water, it also produces a high-concentration salt solution called brine that is usually discharged into a receiving body of water.

Arid nations such as Saudi Arabia, Israel and the United Arab Emirates have long relied on seawater desalination to make up considerable shares of their drinking water supplies despite its drawbacks.

“It’s almost romantic to think, ‘Let’s just stick a straw in the ocean and we don’t have to worry about water,’” Brown said. “But it’s far more.”

There are currently 12 desalination facilities in California, according to the State Water Resources Control Board. The biggest to date is the Carlsbad desalination plant, located just north of San Diego.

In mid-November, the California Coastal Commission in an 8-2 vote granted conditional approval for another desalination facility in the Monterey County city of Marina — this one hotly contested, CalMatters reported.

The proposed facility would send supplies to richer enclaves adjacent to Marina, which has sufficient water but is also home to lower-income neighborhoods, according to CalMatters.

This project, which would still need to obtain a litany of permits, would face restrictions that seek to minimize its environmental and community impact, the state news site reported.

‘Much closer to being advisable’

Another facility, called the Doheny Ocean Desalination Project, has received much warmer reception from administrators and environmental activists alike — earning unanimous approval from the Coastal Commission in October.

The project, initiated by the South Coast Water District, will be built within 100 yards of existing regional water transmission lines on property that the district already owns, a statement from the agency said.

This $120 million facility will be situated on Doheny State Beach about 30 miles northwest of Carlsbad. The plant will serve customers from the South Coast Water District and southern Orange County — with a capacity of up to 5 million gallons per day, according to the district.

The Doheny project has faced little opposition due to its relatively small environmental footprint and the unique technology it will employ. The facility will be withdrawing seawater from beneath the ocean floor in a way that optimizes the protection of marine life, according to the district.

The beach’s geography, as well as the lack of other water in that region, also make the spot much better suited for a desalination plant than other areas, according to Gregory Pierce, the co-director of the Water Resources Group at UCLA.

“That one is much closer to being advisable,” he told The Hill over the summer, prior to the plant’s approval.

Pierce was comparing the Doheny project to recently rejected plans for a massive plant in Huntington Beach, about 25 miles northwest of Doheny and just southeast of Los Angeles.

The Coastal Commission rejected the $1.4 billion Huntington Beach proposal this past May after two decades of debate — citing obsolete protocols, inadequate risk mitigation strategies and violations of the California Coastal Act in their decision.

Jack Ainsworth, executive director of the Coastal Commission, stressed in a statement at the time that the agency would “continue to support” desalination facilities “that comply with the law” and that the technology would remain “part of our current and future water portfolio.”

The costs of the project would have been “borne disproportionately by those who are least able to bear it,” Megan Harmon, a coastal commissioner from Santa Barbara, said at the hearing.

Stressing that all desalination projects must be cost-efficient and environmentally sound, Harmon said that the technology “must be and will continue to be a fundamental part of our state’s water portfolio.”

Following the Huntington plant’s rejection, Jessica Jones, director of communications for Poseidon Water, confirmed that Poseidon would not be pursuing anything else at that site. She noted, however, that the company is “in conversations with public partners throughout the state on different water projects.”

Of the three recently debated projects — the rejected Huntington Beach site and the approved Doheny Beach and Monterey facilities — Monterey may be the best indicator of the future of desalination for California, according to Pierce, the UCLA water resources expert.

The Coastal Commission’s decision on Monterey may be “somewhat of a referendum” on how the agency weighs environmental impacts versus near-term costs, Pierce told The Hill in a follow-up email last week.

While all desalination projects have major environmental impacts, Monterey’s design — similar to that of Doheny — seems to fall on the less-damaging end of the spectrum, Pierce explained. At the same time, the cost per gallon of Monterey water is poised to be among the highest proposed thus far, he added.

Desalination might not rank among California’s top two or three solutions to the ongoing water crisis, but it will likely remain within the top five or seven, according to Pierce.

Conservation remains crucial

Preferable to desalination, he said, are tactics such as conservation, wastewater recycling and groundwater replenishment — in which treated wastewater is injected into an underground storage buffer, prior to releasing that water into a municipal system.

This practice, also known as “indirect potable reuse,” already occurs regularly throughout the state. A second process called “direct potable reuse” — discharging purified wastewater directly into water systems without an environmental barrier — is awaiting regulatory approval.

But as far as desalination is concerned, Pierce stressed that its use should be dependent on a given region's water supply options.

While the technology might be suitable in portions of the Central Coast and San Diego, the same cannot be said for Los Angeles or parts of the Bay Area, which have diversified their water portfolios and ramped up recycling efforts, he said.

Similar logic contributed to the rejection of the massive Huntington Beach facility, which would have been located in Central Orange County — an area "blessed with an enormous underground aquifer," according to Brown, from Orange County Coastkeeper.

Because that aquifer is almost two and a half times the size of Lake Mead, the biggest reservoir in the Colorado River basin, Brown said there could not have been "a worse place for a desal plant."

Going forward, Pierce said he is optimistic that "the technology will get better for desalination, just like EVs and solar," referring to electric vehicles and rooftop solar panels. As the technology improves, he explained, the price will become more affordable as a result.

The dismissal of the Huntington Beach project was likewise a testament to a case in which the technology simply wasn't good enough to warrant the investment and potential ecological consequences, experts agreed.

Pierce reiterated his belief that the technology will continue to evolve, while emphasizing that desalination is by no means the sole solution to the Western water crisis.

"It's not the only or best answer — period," he said.

# # #

Amid growing PFAS regulation, California files suit against chemical companies
Northern California Record | December 5, 2022 | Sarah Downey

A new California lawsuit seeks to hold manufacturers liable for damages allegedly caused by per- and polyfluoroalkyl substances – known as PFAS – arguing violation of public nuisance and negligence laws.

California Attorney General Rob Bonta announced the suit on Nov. 10 against 3M, DuPont, Carrier Global, and many other named and unnamed parties. The complaint, filed in Alameda County Superior Court, focuses on Perfluorooctanoic acid, Perfluorooctane sulfonic acid, and five other chemicals determined hazardous by California regulators.

It's among the first statewide suits seeking statewide relief, Albert Lin, professor of law at UC Davis School of Law, told the Northern California Record.

"And it is pretty broad compared to some of the other cases we've been seeing on PFAS where oftentimes it's been against a local water district or municipality," Lin said.

Lin noted an earlier case filed in Minnesota focused on natural resources damages.

"This lawsuit includes natural resource damages but goes beyond that, seeking particularly the clean-up costs," Lin said.

California is not the first state to file such a suit. Wisconsin Attorney General Josh Kaul, who was reelected last month, filed suit there in July.

In August, the EPA issued proposed rulemaking for designating PFAS as hazardous and declined to extend the public comment period beyond Nov. 7. That proposed rulemaking would designate PFOA and PFOS as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as the Superfund law.

The Food and Drug Administration (FDA) states that PFAS are chemicals that have been used since the 1940s in many consumer and industrial products because of their resistance to oil, grease, heat, and water.

A recent PFAS case was dismissed in federal court in New York. Several hundred cases have been combined in Multidistrict Litigation (MDL) in a South Carolina federal court.

The PFAS Action Act was passed by the U.S. House last year. New California PFAS laws will take effect in 2025

The Wisconsin suit looks similar to California's in terms of breadth, Lin said.

It’s not yet known whether or not the California case would go to trial because there aren’t many statewide cases like this that have gotten very far yet, Lin said. Most PFAS cases focus on a particular facility or contamination but there has been growing recognition of PFAS by state and federal regulators.

The California suit, Lin noted, focuses on assessments by the California State Water Resources Control Board and could be a roadmap for similar action in other states.

Gov. Gavin Newsom in September signed the new PFAS legislation that is taking effect in three years.

In terms of whether there’s tort liability based on the general conduct here, it doesn’t rest on whether or not a regulatory agency has acted, Lin said. “As you’re probably aware, EPA hasn’t done a whole lot yet, it’s in the process of identifying safe drinking water standards and has proposals out for identifying PFAS and PFOA as hazardous substances under CERCLA. None of those things are finalized.”

“And this isn't surprising kind of in the big picture sense of what’s the role of tort law where we have a legal system where environmental law is a largely statutory system, where one of the key functions of tort law is to function as a kind of gap filler and that is essentially what we’re seeing here, where numerous tort claims are being filed for these chemicals which up until recently had not seen a whole lot of regulation,” Lin said.

The California complaint focuses on seven PFAS chemicals.

“It seems they’ve focused on those where the state water board has either established or requested limits or restrictions for these particular PFAS chemicals in drinking water, so not so much what EPA has been doing but what the state regulators have been doing,” Lin said.

In a statement emailed to the Record, a 3M spokesperson said, “3M acted responsibly in connection with products containing PFAS and will defend its record of environmental stewardship.”

In a statement emailed to the Record, a DuPont spokesperson said, “In 2019, DuPont de Nemours was established as a new multi-industrial specialty products company. DuPont de Nemours has never manufactured PFOA, PFOS or firefighting foam. While we don’t comment on pending litigation, we believe these complaints are without merit, and the latest example of DuPont de Nemours being improperly named in litigation. We look forward to vigorously defending our record of safety, health and environmental stewardship.”

Updated case status information was not immediately available from the Alameda County Superior Court.

# # #

Tuolumne River Trust looks out for spawning salmon amid drought. How many this year?

Modesto Bee | November 28, 2022 | John Holland

Hear environmental leader on Tuolumne salmon

Seven canoes carried 11 people to see how Tuolumne River salmon are faring after three years of drought.

The Tuolumne River Trust organized the Nov. 12 trip to press its point that too much water goes to farms and cities.

The group paddled the two miles between the La Grange and Basso bridges, near the upstream end of the 25-mile spawning stretch. Chinook salmon come here each autumn after a few years in the Pacific Ocean to reproduce and die, one more turn of an ancient life cycle.

The returning fish contend every fall with the massive pumps that send water far south from the Sacramento-San Joaquin Delta. Dry years like 2022 reduce the volume of the Tuolumne and can raise its temperature. Many of the gravel spawning beds were disrupted long ago by mining and dams.

“Historically, there were well over 100,000 salmon spawning in the Tuolumne,” said Peter Drekmeier, policy director for the Trust, before the canoes set out. “... Last year, there were under 600. It looks like this year will be slightly better.”

The Modesto and Turlock irrigation districts, the main users of the river, defend their handling of the fishery during the drought. They also say it will improve over the long term if the state approves a tentative compromise on how much reservoir water to release into the lower Tuolumne. The deal also would involve San Francisco, which diverts part of the river upstream.

These water suppliers say the agreement would be especially helpful by boosting flows from January to June, when newly hatched salmon head out to sea.

“Site-specific science on the Tuolumne shows that combination of flow and nonflow measures will lead to an improved fishery on the Tuolumne River,” said a Nov. 16 email from Michael Cooke, director of water resource and regulatory affairs at TID.

CHINOOK RANGE TO BERING SEA

The San Joaquin Valley is the southernmost reach of the chinook range, an arc off the coast from California to the Bering Sea. They are commercially fished in areas with adequate numbers to support a season, which is hit-and-miss in this drought-prone state.

Tuolumne salmon surpassed 100,000 in the millennia before dams blocked part of the spawning area and shifted water to human uses. They still can abound at times, such as the 40,322 estimated in 1985 by the California Department of Fish and Wildlife. That resulted mainly from

the very wet 1982 and 1983. Salmon also can benefit from good ocean conditions during the two to five years they are out there.

The Stanislaus River had about 6,000 spawning salmon last year, 10 times the count on the neighboring Tuolumne. That stream has stricter rules for reservoir releases, along with habitat projects by the Oakdale and South San Joaquin irrigation districts and other partners.

The Tuolumne River Trust formed in 1981 to advocate for a waterway that begins amid 13,000-foot glaciers in Yosemite National Park. It also works on watershed health, including wildfire fuel reduction, and educating Stanislaus County residents about the river that runs by them.

MID and TID divert about half of the runoff at Don Pedro Reservoir, just east of the salmon spawning area. San Francisco gets about an eighth. Riverside rights holders take smaller amounts, leaving about 20% of the Tuolumne reaching the delta in an average year.

Peter Drekmeier, center, policy director for the Tuolumne River Trust, speaks to supporters about to observe salmon spawning on Nov. 12, 2022, near La Grange CA. John Holland

DON PEDRO BROUGHT NEW RULES

The salmon rules were set in the federal license that led to the 1971 completion of Don Pedro. It was amended by a 1995 agreement that modestly increased flows.

In 2018, the State Water Resources Control Board approved a plan that would roughly double releases to the lower river. The vote drew applause from environmental and fishing groups, and protests and a lawsuit from the diverters. It has yet to be carried out.

The districts and San Francisco have offered to boost the lower-river volume somewhat while also upgrading fish habitat with nonflow measures. They include restoring gravel in part of the spawning area and creating a new floodplain forest, which offers shelter and food to the young salmon.

Critics question whether these improvements would work under the water releases proposed by the diverters. “That gravel is going to be just gravel unless water flows over it,” local environmental activist Doug Maner said over Zoom at a Nov. 15 update for the MID board.

Cooke, the TID official, addressed this point: “The terms of the voluntary agreement require that the habitat developed by the districts and San Francisco will be inundated with the increased flows ....”

The diverters cite another threat to young salmon: being eaten by bass species introduced to California more than a century ago. They say controlling them is as important as flow increases to the health of the native fish.

The diverters propose a barrier that would allow steelhead trout and salmon to migrate while blocking the larger bass. They also suggest raising catch limits for the invaders and fishing derbies that target them. These ideas have drawn protest from bass fishing guides in the delta, who want to sustain the population even though it is not native.

The Tuolumne River Trust agrees that predation is a problem, but mainly because diversions have left the slower, warmer water favored by bass.

WATER TREATMENT PLANT HAS ROLE

One key improvement for fish will happen next year with the completion of a water treatment plant for Turlock and Ceres residents. The plant will use some of TID’s farm water, but it will be diverted about 25 miles downstream of current canal intake near La Grange. The water will bolster habitat down to about Geer Road, then go through grates in the river bottom to the plant.

TID agreed to supply the project because it will reduce the two cities’ reliance on wells, aiding an aquifer also tapped by farmers. The Modesto area has done the same with a river treatment plant completed by MID in 1994.

The two districts irrigate a total of about 210,000 farmland acres and are key drivers of the food and beverage processing in the region. San Francisco provides varying portions of the water for 20-plus cities in the Bay Area.

The Trust supports the increased flow resulting from the new treatment plant, Drekmeier said at an Oct. 25 meeting of the Stanislaus County Water Advisory Committee. And he cited past efforts at cooperation, notably 1,600 acres of floodplain restoration at Dos Rios Ranch, where the Tuolumne meets the San Joaquin River. The Trust urges the districts and San Francisco to use water more efficiently. The suppliers respond that they try to do so but still need to keep the lower-river releases at a moderate level.

'A SALMON-BASED ECOSYSTEM'

The Tuolumne was running at about 150 cubic feet per second the day of the canoe trip. That's the minimum required during spawning and amounts to 298 acre-feet per day. Cooke said the districts voluntarily added a total of about 12,000 acre-feet between Oct. 17 and 31 to fine-tune the effort.

"These pulses were coordinated with fishery agencies in order to shape the pulses for the greatest environmental benefit," he said.

The districts have to balance the fish with the need to hold water in Don Pedro in case 2023 is a fourth straight dry year. Farmers had no cap in 2020 but were at about 80% of normal last year and 60% this year.

Drekmeier reported back on the trip in a Nov. 21 email. The group saw about 30 salmon, bringing the total to just 440 as of midmonth. The spawning continues through December.

The Trust led four such trips in November, an annual fundraiser called Paddle with the Salmon. Novices got lessons in how to navigate the occasional riffle or eddy and how to spot fish headed upstream to spawn.

They also might see, and smell, those that have died and are decomposing into food for birds, microbes and other scavengers.

"It really is a salmon-based ecosystem," Drekmeier said, "because the salmon bring all these nutrients from the ocean to the upland habitats, and they fuel the food web and help fertilize the soil."

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