National Oceanic and Atmospheric Administration
U.S. Department of Commerce

October 12, 2021

NOAA upgrades climate website amid growing demand for climate information

Focus areas: Climate **Topics:** Social media and Web

A collage of images used on NOAA's Climate.gov website. Climate.gov offers magazine-style articles about climate science and describes how climate conditions are changing with maps, graphics, features, and videos, as well as classroom-ready teaching resources matched to grade levels and science learning standards. (NOAA Climate.gov)

NOAA's Climate Program Office today launched a newly redesigned version of Climate.gov, NOAA's award-winning, flagship website that provides the public with clear, timely, and science-based information about climate. The redesign expands the site's already significant capacity to connect Americans with the resources they need to understand and plan for climate-related risks.

Americans are facing increasingly frequent, severe, and often life-threatening risks from climate change-influenced extreme weather events. Communities, governments, and businesses have begun working to lower greenhouse gas emissions and build resilience. But according to the latest National Climate Assessment, the country will need to significantly scale up these efforts "to avoid substantial damages to the economy, environment, and human health over the coming decades."

Amid these changes, communities and businesses are increasingly requesting NOAA's assistance and expertise in order to understand the enormously complex and destructive impacts of climate change, and the new Climate.gov better meets this growing demand for climate science and information.

"Not only is the climate crisis costing us American lives, with countless families being tragically torn apart by these extreme weather events, but it's also costing us billions of dollars, with a price tag of over $96 billion last year alone. That number will only get bigger, and the climate events will only get deadlier if we do not act," said U.S. Secretary of Commerce Gina M. Raimondo. "The Commerce Department, including NOAA, will use all of the tools at its disposal to address these challenges. Climate.gov is the nation's leading online resource for advancing climate literacy and building resilience to climate impacts. The improved Climate.gov is an asset for families, communities, and businesses. We will continue to work to make NOAA's data as accessible and impactful as possible."

Climate.gov offers magazine-style articles about climate science and describes how climate conditions are changing with maps, graphics, features, and videos, as well as classroom-ready teaching resources matched to grade levels and science learning standards. The site's redesigned Global Climate Dashboard gives a data-driven readout on the state of the climate system with public-friendly explainers and answers to frequently asked questions. The site provides access to commonly requested climate data and tools hosted by NOAA's National Centers for Environmental Information and Regional Climate Centers. Climate.gov's Climate Data Primer provides a guide for users who are new to climate data.

"Climate.gov helps meet the diverse needs of the public, whose health, safety, and economic well-being are directly tied to climate, water, and weather," said Rick Spinrad, Ph.D., NOAA administrator. "The effects of climate change are adversely affecting people's livelihoods and property while putting stress on critical infrastructure, natural resources, and cultural and historic landmarks. The new Climate.gov helps advance one of my main priorities, which is to expand NOAA's role as the authoritative provider of climate products and services, and increase our capacity to help communities better understand, prepare for, and respond to climate risks and impacts."

Originally launched in 2010, the redesigned site addresses the needs and interests of the science-interested public, researchers, educators, and other target audiences based on feedback received during listening sessions.

The redesign uses an artificial intelligence platform to advance Climate.gov's search tool, allowing queries based on location so that users can find city and state-specific maps and data, ensuring climate information is accessible and relevant to all audiences. The new Climate.gov also uses the artificial intelligence platform to better integrate and cross-link content to highlight all available resources sitewide that are relevant to each visitor's unique interests. In addition, users will now find a better mobile experience on tablets and smartphones.

The team has improved user experience and accessibility on the new site by utilizing the federal standards established through 508c and the latest Web Content Accessibility Guidelines (WCAG 2.0). Pages were designed with accessibility in mind and images and videos support improved alternate tags and transcripts. All colors and fonts were selected from the guidelines established by the Government Services Administration's U.S. Web Design System to ensure all content is friendly for vision-impaired users or those with color blindness.

“Climate.gov is America’s public gateway to climate literacy,” said David Herring, chief of the NOAA Climate Program Office’s Communication, Education, and Engagement Division. “This redesign allows the site to continue to provide the highest level of service to its visitors.”

As a primary trusted source of climate information, Climate.gov receives approximately 900,000 visits per month and has more than 400,000 followers across its social media channels. The site’s custom maps and graphics are often shared and re-published worldwide in textbooks, scholarly journal articles, congressional briefing materials, blogs, industry publications, and the media.

Climate.gov is also a valuable source for educators. University professors, for example, assign Climate.gov’s popular blog on the El Niño-Southern Oscillation (ENSO)climate pattern—a collaboration between Climate.gov and experts from NOAA’s Climate Prediction Center—as required reading for their courses on climate variability and seasonal forecasting.

Climate.gov also sponsors and syndicates the award winning Climate Literacy and Energy Awareness Network (CLEAN)teaching guides and collection of climate and energy educational resources—including learning activities, visualizations, videos, as well as short demonstrations and experiments—geared toward educators of students in primary through undergraduate levels.

Media contact

Monica Allen, monica.allen@noaa.gov, (202) 379-6693

Last updated October 12, 2021

NEWS

Lake Tahoe Drops To Natural Rim

Lake Tahoe is at its natural rim and it is expected to drop even more before winter.

Wednesday, October 13th 2021, 4:35 PM PDT
Updated: Wednesday, October 13th 2021, 4:57 PM PDT

By **Paul Nelson**

For the first time since 2016, Lake Tahoe is at its natural rim. The lake dropped approximately 1.5 inches in the last week, even dipping below the rim before rising up overnight.

"The natural lake is basically full and the reservoir is empty," Chad Blanchard, U.S. District Court Water Master said. "It's unfortunate that we're in this position but it's something we've seen before and it's something that with a decent winter, we can get out of in a hurry."

The low water levels are a result of below-average snowpack over the past few years. 63 streams flow into Lake Tahoe and the Truckee River is the only exit. When the lake drops to the natural rim, water stops flowing through the Tahoe City Dam and into the river.

"Basically, Tahoe is at the rim, Boca Floriston rate storage is exhausted so we have no storage to release to meet that target," Blanchard said. "It just means that we're subject to whatever natural flow we get so we have the springs and the additions that we get to the river on the way down from the creeks."

The Truckee Meadows Water Authority says it still has lots of drought storage upstream for every day use.

Blanchard says about 40 inches of water evaporate off Lake Tahoe each year. That is about twice as much as the water that flows into the river. A lot of that evaporation happens in October and November, so the lake will likely drop even more before it rises again.

"When you get these cold events come through and the air temperatures are significantly colder than the water temperature, you get a release of heat energy to the atmosphere and takes water vapor and so you have very large evaporation events," Blanchard said.

The lake has only risen in October seven times in 121 years of records. The lake reached its lowest point during that time in 1992. The water level was 33 inches lower than it is today. Blanchard says the best case scenario for the fall is to get some good rain showers before the snowpack starts building up.

"We really want rain to soak the soil up and then kind of freeze and then get snow on top of it and then you don't lose so much in the spring when you start melting the snow that's there," Blanchard said.

The low lake levels do have an environmental impact on the Truckee River but experts say the lake, itself, will not feel many initial impacts.

"On the south shore of the lake, where the water is very shallow, currently, there's a lot of algae there and that's going to be a lot easier for it to be washed up on shore," Dr. Geoff Schladow, Director of UC Davis Tahoe Environmental Research Center said.

Schladow says there could be even more impacts in the future if the region does not get enough snowpack this winter. He says evaporation could cause the lake to drop even more in the next year, possibly reaching the all-time low without a good snowpack.

"Let's say, hypothetically, this coming winter is a dry winter or even an average winter, the lake level only comes up a couple of feet," Schladow said. "We could very easily be back at that low level this time next year."

That could have environmental consequences for fish habitat in the lake. Kokanee salmon swim up Taylor creak and other streams to spawn each fall. Low lake levels could block them from reaching the creeks.

"They get one chance to reproduce," Schladow said. "If they can't get through the sand bar that's there, I mean, Mother Nature is calling. They're going to start running up on beaches to lay their eggs and spawn but the success rate there isn't as high as in Taylor Creek, itself."

The Tahoe City Dam allows six feet of water storage above the natural rim. How much the lake rises or falls by next summer depends on how much rain and snow fall during the winter.

"There's no reason to panic," Blanchard said. "Obviously, we could get a great year and be right back up. We'll just have to see."

The winter of 2017 brought large amounts of snow. Lake Tahoe started the year below the natural rim but it rose nearly nine feet to fill it to its legal limit.

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THE HILL

Agencies warn of cyber threats water, wastewater systems

BY **MAGGIE MILLER** - 10/14/21 04:43 PM EDT

© Getty Images

A coalition of federal agencies on Thursday warned that hackers are targeting the water and wastewater treatment sectors, strongly recommending that organizations take steps to protect themselves.

In a joint advisory, the FBI, the Cybersecurity and Infrastructure Security Agency (CISA), the Environmental Protection Agency (EPA) and the National Security Agency (NSA) warned of "ongoing malicious cyber activity —by both known and unknown actors—targeting the information technology (IT) and operational technology (OT) networks, systems, and devices of U.S. Water and Wastewater Systems (WWS) Sector facilities."

"This activity — which includes attempts to compromise system integrity via unauthorized access — threatens the ability of WWS facilities to provide clean, potable water to, and effectively manage the wastewater of, their communities," the agencies wrote in the advisory.

The agencies noted that targeting of the water and wastewater sectors had not increased, but that "cyber threats across critical infrastructure sectors are increasing."

The advisory highlighted threats to water and wastewater sectors from phishing emails to personnel containing dangerous attachments or links, and the exploitation by hackers of outdated systems used by many organizations.

The agencies recommended that to protect against ransomware and other attacks, facilities should "use a risk-informed analysis to determine the applicability of a range of technical and non-technical mitigations to prevent, detect, and respond to cyber threats."

The advisory was put out following a difficult year in cybersecurity for critical infrastructure groups, particularly for the water sector.

In February, a hacker breached and unsuccessfully attempted to poison the water supply of the town of Oldsmar, Fla., while, according to the advisory, ransomware attacks throughout this year affected water sector organizations in Maine, Nevada and California.

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Eric Goldstein, the executive assistant director for Cybersecurity at CISA, pointed Thursday to concerns over heightened ransomware attacks against critical organizations in emphasizing the need for owners and operators of water sector groups to protect themselves.

"Recent ransomware incidents and ongoing threats demonstrate why all critical infrastructure owners and operators should make cybersecurity a top priority," Goldstein said in a statement provided to The Hill. "While vulnerabilities within the Water Sector are comparable to vulnerabilities observed across many other sectors, the criticality of water and wastewater infrastructure and recent intrusions impacting the sector reflect the need for continued focus and investment."

"The battle against ransomware doesn't start the day a cyber incident occurs," he added. "It begins long before that with the proactive measures detailed in this joint advisory and at StopRansomware.gov that every owner and operator must take to address security gaps and protect the communities they serve."

TAGS CISA FBI NSA ENVIRONMENTAL PROTECTION AGENCY RANSOMWARE ATTACK WATER SECURITY

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Travel // Tahoe

This is what happens when Lake Tahoe hits a critically low water threshold

Julie Brown, SFGATE

Oct. 15, 2021

A stranded buoy in mud and a marooned boat in shallow water in South Tahoe, amid low water levels at Lake Tahoe.
Julie Brown / SFGATE

The buoys at Regan Beach in South Lake Tahoe are still moored to cement blocks. They still have tags marking their registration. But they are not floating on the surface of the water.

Instead, the white, globe-shaped buoys are sinking into the mud.

Piers stretch above bare ground.

An abandoned motorboat, still attached to its buoy, is marooned in ankle-deep water.

In South Lake Tahoe, where the beaches are shallow, the water has receded so far from the shore that it's as if the tide has gone out, revealing a lake bottom oozing with slimy, green algae.

Trash that had sunk in Tahoe's waters is now exposed to the sunlight: a cigarette lighter, a seat cushion, a champagne bottle. It is a dystopian version of the postcard image of Lake Tahoe.

But the worst part is the smell. The air hangs with the scent of sewage or rotting seaweed. The stink comes from the algae that has been left behind by the retreating waters. It's now rotting on the beach.

This week, Tahoe's water levels got so low they reached a threshold we've been waiting for all summer, with mixed dread and inevitability. In science-speak, the water reached Tahoe's natural rim, at elevation 6,223 feet, on Tuesday morning. Tahoe is considered full at elevation 6,229 feet. So when water levels reach the

natural rim of the lake, that means it has lost 6 feet of water across its surface, which measures at 191 square miles.

The water line shows up on Tahoe's famous East Shore boulders.
Julie Brown / SFGATE

The mountains around Lake Tahoe blessedly saw a couple inches of snow this week. But experts say that even an average winter won't be enough to fill the lake back up. At this point, Tahoe needs a massive, record-breaking, 800-inches-of-snow kind of winter to fill back up.

Until then, there's no telling how low Tahoe could get. If the weather does not deliver significant rain or snow, scientist Geoffrey Schladow, director of the UC Davis Tahoe Environmental Research Center, estimates that evaporation will continue to deplete the lake by a rate of 1.5 inches a week. Over time, that amount adds up.

It's easy to underestimate how much water evaporates off Lake Tahoe. I asked Schladow to do the calculations for me. He came back with a number astonishingly big: Every inch of water that evaporates off of the surface of Lake Tahoe equates to four billion gallons. Schladow broke that figure down more: Every week, enough water is evaporating off of Lake Tahoe to meet the daily needs of 48 million people, he said. That's the average rate of evaporation in Tahoe, per week.

"You go away for a month and suddenly you have 6 inches of water level drop," Schladow said. "And if you go to the South Shore where the shoreline is very flat, it means the actual shoreline may have receded 100 feet. You have these wide, muddy beaches and it doesn't look great."

A pier above a muddy lake bottom, as Lake Tahoe's water levels get lower and lower.
Julie Brown / SFGATE

Evaporation is the biggest outflow of water in Tahoe, Schladow said. That's with or without drought. But in times of water shortage, the impact is all the more visible.

"Let's say we don't get any significant rainfall for another two months, say early December, we're a foot below the rim," he said. "That's a lot of water to make up."

Reaching the rim of Lake Tahoe is not uncommon, and it's not as dire as some would initially think. The lake is still extraordinarily deep — it's deeper than the Empire State Building is tall.

Lake Tahoe tends to lower to its natural rim during drought years, when the snowpack fails to replenish the watershed. The last time Tahoe was hovering at its natural rim was from 2014 to 2017, during a string of dry winters. The apex was in 2016, when the lake dipped almost 2 feet below the rim. Then came the atmospheric rivers of 2018, when Tahoe experienced a record-breaking snowpack, and the lake filled up in one winter, and then some.

A screenshot of water levels in Lake Tahoe from 2011 to 2021.
Screenshot / USGS

Schladow said that Tahoe's lowest lake levels even reflect the Dust Bowl of the 1930s, when drought hung over the nation.

"It occurs every few years," Schladow said. "But it seems to be happening more frequently over time than it was, say, 50 years ago."

There's also historic data of megadroughts much more severe, when trees grew at the bottom of Fallen Leaf Lake.

The longer Tahoe's water levels are low, the more concerning it is. It has a cascade of consequences.

"Hitting the rim is not uncommon," said Jesse Patterson, chief strategy officer for the League to Save Lake Tahoe. "But the longer the lake remains below the rim, the bigger cause for concern."

When Lake Tahoe sinks to the rim, the water no longer reaches its only outlet, the Truckee River. Schladow said that when Tahoe loses its connection to the Truckee River, it becomes a "terminal lake," or a lake that is completely isolated with no natural outlet.

"It's a lake that doesn't have any natural outflows," Schladow said.

The water in lakes that are permanently terminal — like the Great Salt Lake, Mono Lake and, at the other end of the Truckee River, Pyramid Lake — becomes saltier and saltier, Schladow said. That's because, without a natural outlet, the only way

water is removed from the lake is through evaporation, which leaves salts behind. Over a long enough time, salt starts to build up.

But don't worry, Schladow assured me that Tahoe is not in danger of becoming the next Great Salt Lake. "Things don't happen that quickly," he said.

What does happen quickly: The Truckee River watershed loses its largest source of water.

Visitors stroll along the shoreline in South Lake Tahoe in October 2021 amid drought.
Julie Brown / SFGATE

Lake Tahoe is the largest reservoir in the Truckee River watershed, which supplies drinking water to nearly 400,000 people living in the Reno Sparks metropolitan area.

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The Truckee River Operating Agreement defines the Lake Tahoe Reservoir as the top 6 feet of water between elevations 6,229 feet — the mark when the lake is considered full — and 6,223 feet — the low water mark when the lake is at its rim. (Tahoe’s water levels reached 6,223 feet this week.)

So, when Tahoe’s water levels lower to its natural rim, that means there are significant impacts downstream on the Truckee, which has lowered to a near-stagnant trickle in recent weeks. In addition to Lake Tahoe, Reno Sparks also gets drinking water from several other reservoirs, such as Boca, Stampede and Prosser Creek.

There are certain neighborhoods in the Tahoe basin that get their drinking water from the lake. However, most, if not all, of those pipes are seeded very far out into the lake, said Justin Broglio, who is the spokesperson for the North Tahoe Public Utility District (NTPUD), which serves about 4,000 water customers from Dollar Point to Kings Beach.

“We do not currently have, nor do we anticipate in the future, any constraints on any of our water sources for any of our systems,” Broglio said.

The one impact of low water levels on the NTPUD is in the realm of recreation, Broglio said. The district never opened its boat ramp this summer because the water was too low for boats.

Low water levels have revealed rotting algae on a beach in South Lake Tahoe.
Julie Brown / SFGATE

Algae is another issue when the lake is this low.

When the lake recedes, stringy algae gets left on shore, along with decaying plants. “It’s like seaweed on the coast,” Schladow said. “It starts to rot and decompose and smell.”

The combination of warm air and warm water causes algae to grow more. Scientists also suspect that smoke causes increased algal growth. Patterson said the League to Save Lake Tahoe funded a study to look at the impacts of smoke on Lake Tahoe, and initial results will come back this winter. But essentially, scientists suspect that smoke drops more nutrients into the lake that algae feeds on. Smoke also blocks UV light, which tends to kill algae close to the surface of Lake Tahoe. This has implications on lake clarity, and also on the amount of algae revealed by the receding water.

So here we are, several weeks after the Caldor Fire, smelling the stink of rotting algae on South Tahoe’s beaches.

“What a weird summer,” Patterson said. “Like climate change, just punched in the face.”

Algae is ever-present in Lake Tahoe, Patterson said, and lake clarity isn’t dependent on how low the water gets along the shoreline. It’s just that we can see the algae growth in a very obvious way when it’s left behind on Tahoe’s shallowest beaches. And in a warm summer like the one we just had, there’s more of it.

As I walk along the shoreline, the algae feels the most disturbing to me of all the other impacts of the low water levels. I can see invasive clams, which spit out “nutrient bombs,” as Patterson says, that algae feeds on.

Pools of shallow, stagnant water in the mud are tinted red from iron oxidizing bacteria.

If the drought continues, and we don't get a huge winter, Schladow says the lake will be back at its natural rim again next year — probably sooner in the year, and for longer, which translates to more algae, and more time with muddy beaches.

Then, I turn around and see lakefront homes that look especially ostentatious behind piers that point toward the lake but don't reach the water.

These piers were built for a lake that hovers at 6,229 feet, the elevation of the shoreline when the lake is full. Not 6 feet lower.

Written By
Julie Brown

Reach Julie on

Julie Brown is a contributing editor at SFGATE. She covers Lake Tahoe. A former managing editor at Powder Magazine, she writes about people living in mountain communities throughout the West. Brown grew up on Tahoe's West Shore.

Top shopping picks

by Jacob Fischler, Nevada Current

October 16, 2021

NEVADA CURRENT

Climate change intensifying competition for water in the West

by Nevada State News October 17, 2021

A view of Reflection Canyon in Lake Powell, Glen Canyon National Recreation Area, in 2013. (NPS photo)

WASHINGTON–States in the Colorado River means their rights will outstrip the available w congressional panel Friday.

The situation is not expected to get any better vital resource.

Representatives from the seven Western state Utah and Wyoming — that depend on the rive Natural Resources subcommittee hearing that entitlements do not match.

State officials and lawmakers emphasized how during Friday's hearing — the first of two the — beyond general appeals to conservation and

States and tribes in the basin are legally entitl 1.5 million going to Mexico, but only about 12 decades.

The deficit is the result of a years-long drough California Democrat who chairs the House Su said.

"After more than two decades of drought with climate change is fundamentally altering the C amount of water available from this key river.

Ranking Republican Cliff Bentz, of Oregon, sa be the reality elsewhere.

"This situation the Colorado's facing is so refle Bentz said, adding that whatever solution was

Arizona Democrat Raul Grijalva, chairman of comprehensive initiative" to plan for lower water levels.

States preach cooperation

Representatives from the states testified abou preparing for a more dire future, though they

John Entsminger, the general manager of the regional projects like a water recycling partne would be needed to deal with the lower water

“We have a simple but difficult decision to ma last century and fight over water that simply is climate realities of this century?”

“Drought and climate change are presenting c Buschatzke, the director of Arizona’s Departm

Buschatzke said the choice was either to cut e was focused on conservation, he said. Partner would help, he added.

Rebecca Mitchell, director of the Colorado Wa forcing “heart-breaking” decisions for the stat

Some residents had decided to sell multi-gene

“These decisions have significant psychologica communities,” she said.

John D’Antonio, the state engineer for New M Mexican government had worked for nearly a levels drop.

considers that holistic vision.”

Bentz said the ideas of collaboration and cons those ideas could do on their own.

Saying he could pose the same question to any water conservation measures could save in he

Colorado’s water conservation plan could con that included areas outside the Colorado Rive

Tribal rights

Amelia Flores, chairwoman of the Colorado R lacked full rights to its share of the water. Mor lands in Arizona and California.

While the tribes are allowed to divert water fo communities, a right other tribes enjoy, Flore the same right would help their neighbors, sh

“Without the right to lease our water, we can d said. “We are simply requesting the right to de

Nevada Current is part of States Newsroom, coalition of donors as a 501c(3) public charity Contact Editor Hugh Jackson for questions: i on Facebook and Twitter.

“Any future decision-making proce ld c

he said. “I am confident that all seven Basin s

KTNV
LAS VEGAS

By: Jordan Gartner

Posted at 12:51 PM, Oct 18, 2021 and last updated 11:08 PM, Oct 18, 2021

Vice President Kamala Harris tours Lake Mead, discusses climate change with Nevada leaders

'This is about the lake, a region and our nation'

LAS VEGAS (KTNV) — Vice President Kamala Harris arrived in Southern Nevada on Monday afternoon and discussed climate change amid water shortages in the state.

PREVIOUS: Vice President Kamala Harris to visit Lake Mead Monday

Harris arrived in the Las Vegas area around 11:30 a.m. at Nellis Air Force Base and was greeted by Col. Kevin Jamieson of Nellis AFB, Nevada Gov. Steve Sisolak, Rep. Dina Titus, Rep. Susie Lee and Rep. Steven Horsford.

Harris was able to tour Lake Mead at around noon and received a briefing on the current water level at the lake, including the drought situation affecting Nevada and its surrounding states.

"That light rock represents 140 feet roughly that the lake has declined in the last 20 years. If we look more recently, this calendar year, the lake has actually dropped 20 feet just this year," a Lake Mead official told the Vice President.

RELATED: Lake Mead water level expected to continue to drop

The vice president delivered remarks along with other Nevada leaders on the effects of climate change seen in Southern Nevada.

"This climate crisis, fueled by in many, if not most ways, by human behaviors, has resulted in the moment where we're looking at this beautiful American landmark, the product of a lot of thought over generations about how we can supply, in particular the states of Nevada, Arizona, California, and including Mexico, with the water that 25 million people rely on," said Harris.

Harris also made the case for the largest investment in climate resilience in U.S. history through passing the Build Back Better Agenda and the Bipartisan Infrastructure Deal.

"When we look at what's happening here we know this is about this lake but it is about a region and about our nation. The infrastructure deal, combined with the Build Back Better Agenda is about what we need to do to invest in things like water recycling and what we can do in terms of implementation of drought contingency plans. This is about thinking ahead, recognizing where we are and where we're headed if we don't address these issues with a sense of urgency," Harris said.

Daniel McEvoy, a regional climatologist with the Desert Research Institute, was happy to hear our leaders acknowledge the problem and start developing a plan to address it.

"More specifically, the fact that it was talked about that climate change and, specifically, greenhouse gas emissions driving climate change are one of the contributing factors to this drought and part of the reason why Lake Mead is so low and why there was a federal water shortage declared on the Colorado River Basin," said McEvoy.

13 Action News reached out to prominent Nevada Republicans. Knowing they would be opposed to Democratic proposals, we asked them to specifically about their plan to address the water crisis, but that didn't happen.

Adam Laxalt, the former Nevada Attorney General who's running to represent Nevada in the United States Senate, sent a statement that reads, "Kamala Harris and Joe Biden have failed Nevada families. We have the worst unemployment rate in the nation while supply chain issues and inflation have been killing our communities and destroying the Nevada dream. To make matters worse, Harris' management of our border crisis has been nothing short of disastrous as criminal illegal aliens and illicit drugs flow across our border. Harris' visit is a tone-deaf display of this administration's arrogance as they tout policies that have laid waste to our state's economy. While our absentee U.S. Senator Catherine Cortez Masto has stood by Harris and Biden at every turn, I will fight for working families and the Nevada dream as our next Senator. If Kamala Harris is as successful as our climate czar as she’s been as our border czar, we’re all doomed. It's an interesting decision for Catherine Cortez-Masto to align herself with the most incompetent Vice President in American history."

Michael McDonald, the Chairman of the Nevada GOP, also sent a statement. It reads, "The last thing Nevadans want is for this administration to get involved with our water crisis. Whether it’s the border, Afghanistan, or the economy, everything the President and Vice President touch turns to ash. Nevada already has the highest unemployment in the country and families are being hurt by inflation every time they reach for their wallet because of this administration, and the ‘Build Back Broke’ agenda will make these problems even worse.”

reno gazette journal

NEWS

Lake Tahoe's water level is falling amid drought — some projections paint a dire future

One projection, although disputed, shows water levels falling far enough to cut off Emerald Bay from Lake Tahoe if dry conditions continue for another two winters.

Amy Alonzo Reno Gazette Journal

Published 7:00 a.m. PT Oct. 21, 2021

Algae is rotting on Lake Tahoe's south shore beaches. In north Tahoe, docks and piers stretch into the air, never hitting water.

As drought conditions persist in the West, water experts and scientists are wondering just how low Lake Tahoe's water level might drop. The low water levels have even kept kokanee salmon from spawning in areas such as Taylor Creek, which feeds into Lake Tahoe's south shore.

Some scientists and water experts say that if the dry spell continues, the lake could reach record low levels not seen since measurement of the lake started, more than 120 years ago. If that happens, Fannette Island, located in Emerald Bay, could become separate from the main lake.

Others maintain that this year, although dry, is business as usual.

The discrepancies lie between scientific models, weather forecasts and years of observation, coupled with findings from several years ago that the region is historically vulnerable to megadroughts.

From 800 to 1250 A.D., annual precipitation in the region was consistently less than 60 percent of normal, according to University of Nevada, Reno Professor Emeritus John Kleppe.

And prior to that, about 12,000 years ago, the region experienced severe drought at least every 650 to 1,150 years, according to Kleppe, who studied stands of pre-Medieval trees in Fallen Leaf Lake at the southern end of the Tahoe Basin with a team from UNR and the Scripps Institution of Oceanography at San Diego.

During the severe drought periods, lake levels at Fallen Leaf were so low that trees repopulated areas where the water had receded. When the megadrought ended, the lake refilled and submerged the trees.

The team analyzed tree rings and sediment deposits and discovered that trees still standing at the bottom of Fallen Leaf Lake matured when the lake was anywhere from 130 to 200 feet lower than its current depth.

Kleppe said he doesn't believe the region is headed for another megadrought – at least not in the next few years – but that current dry conditions will persist for the next couple of years.

But until the region sees another substantial water year, water levels at Lake Tahoe will remain low.

According to scientists at the U.C. Davis Tahoe Environmental Research Center, Tahoe's water levels are so low that there is no outflow at the Truckee River, the lake's only outlet.

At least temporarily, Tahoe has joined the ranks of other Great Basin water bodies such as Pyramid, Mono and Walker lakes that take in water without releasing it.

The lake's natural water level sits at 6,223 feet. Tahoe Dam on the Truckee River allows the lake to fill higher, up to 6,229.1 feet, providing water for Northern Nevada residents and farmers.

The lake was last full in July of 2019, with its water level generally falling since then. In mid-October, the lake dropped low enough to hit its natural water level.

But it still hasn't hit the lowest recorded level of 6,220.26 feet, reached in 1992.

It is expected that the water level will rise this winter, but if the winter is dry, as predictions are already forecasting, Tahoe will fall below its natural level for even longer in 2022, according to projections from TERC. The center projects that Tahoe's water level could drop another five feet by October of next year.

And as the lake continues to lose water due to evaporation, the shallow aquatic sill that stretches between Emerald Bay and Lake Tahoe could become exposed, cutting Emerald Bay and Fannette Island off from Tahoe.

During full lake conditions, the Emerald Bay sill is only 12 feet deep, according to TERC Director Geoffrey Schladow.

The lake loses about six feet of water per year to evaporation, he said, but regains several of these feet through rain and snowmelt.

"If there's another dry winter, it's a sandbar between the two," Schladow said. "I'm not predicting that's going to happen — I'm predicting that's going to happen if we have two dry winters."

But that's not likely, according to Federal Water Master Chad Blanchard.

In modern times, water levels at the lake have never dropped low enough for Emerald Bay to seal itself off, he said.

The record-setting year of 1992 took the lake just three feet below its natural rim, not enough to seal Emerald Bay off from the rest of the lake.

Blanchard, who has 30 years of working with Tahoe's water under his belt, said it's not uncommon to see the lake drop like this.

"These are normal patterns. Hopefully we'll turn around and we'll get wet again, but there's nothing we can do but wait and deal with what we have."

Amy Alonzo covers the outdoors, recreation and environment for Nevada and Lake Tahoe. Reach her at aalonzo@gannett.com. Here's how you can support ongoing coverage and local journalism.

AMERICAN WATER

NewsRoom

October 21, 2021 | American Water (NYSE: AWK) |

New Research Shows Most Americans are Unaware of Their Daily Water Consumption

MECHANICSBURG, Pa. (Oct. 21, 2021) – According to new research conducted by global research agency Opinium on behalf of American Water, Americans underestimate the amount of water they use daily by 90%. Most believe they use less than 100 gallons of water each day, when the actual number is more than 2,000 gallons on average (according to Water Footprint Network). This figure considers the water consumed by individuals directly (e.g. dishwashing or watering the lawn) and indirectly (e.g. the water required to produce food). With the majority of Americans underestimating their own personal water usage, the study also found a lack of awareness for water consumption in specific areas of their lives as well.

Ahead of the annual observance of the Value of Water's Imagine a Day Without Water on October 21st, the survey asked a nationally representative sample of more than 2,000 Americans to reflect on their daily water consumption and how much water is required to produce many common items we consume daily. The findings revealed that – regardless of gender, homeownership, or age – Americans are largely unaware of just how large their water footprint is and the variety of ways water impacts their everyday lives.

"We all know water is a vital part of our daily lives for drinking and basic hygiene, but we often don't consider the water needed to produce the foods we eat or even the clothes we wear," said Dr. Lauren Weinrich, Principal Scientist, Water Research & Development at American Water. "As part of our commitment to provide clean, safe, reliable drinking water for our customers, it's important to raise public awareness of the true value of water. During this year's Imagine a Day Without Water, we want to help educate our customers on the importance of water, but also ways they can participate in the efforts to support water efficiency and conservation."

The study revealed Americans' various underestimations of water consumption for products they likely use every day:

- Almost 90 million Americans believe it takes no water at all to make a pair of jeans. In reality, a fresh pair of jeans requires around 2,600 gallons to make.
- It takes 713 gallons of water to make a new cotton t-shirt to pair with those jeans. Americans believe it takes just 136.
- Americans believe it takes 158 gallons of water to produce a smartphone, but the actual amount is more than 3,400.

With fall right around the corner, Americans are looking forward to enjoying the season's special events – like gathering around the table for holiday dinners. However, most people aren't aware of just how much water goes into producing these fall-favorites. Americans drastically underestimated the water needed to make:

- One 16-pound holiday turkey takes 4,688 gallons vs. estimated 158 gallons
- A pecan pie takes 1,068 gallons vs. the estimated 135 gallons; and a pumpkin pie takes 458 gallons vs. the estimated 135 gallons
- The traditional green bean casserole – with fried onions on top! – takes 547 gallons of water to hit the holiday dinner table vs. the estimated 116 gallons

The company created an infographic to depict key findings of the study, which you can read more about here. For more information on Pennsylvania American Water and how you can reduce your water footprint, visit https://www.amwater.com/paaw/water-information/wise-water-use.

About Pennsylvania American Water

Pennsylvania American Water, a subsidiary of American Water (NYSE: AWK), is the largest investor-owned water utility in the state, providing high-quality and reliable water and/or wastewater services to approximately 2.4 million people. For more information, visit **www.pennsylvaniaamwater.com** and follow Pennsylvania American Water on **Twitter** and **Facebook**.

About American Water

With a history dating back to 1886, American Water is the largest and most geographically diverse U.S. publicly traded water and wastewater utility company. The company employs more than 7,000 dedicated professionals who provide regulated and market-based drinking water, wastewater and other related services to 15 million people in 46 states. American Water provides safe, clean, affordable, and reliable water services to our customers to help make sure we keep their lives flowing. For more information, visit **amwater.com** and follow American Water on **Twitter**, **Facebook**, and **LinkedIn**.

Media Contacts

Laura Martin

Director of Communications and
External Affairs, Mid-Atlantic Division
304.932.7158
laura.martin@amwater.com

Internet of Water

The Challenge of the Dry Years

Achieving drought resilience depends on better water data and cross-agency coordination

By: Clare Keating, Earth Genome

October 2021

"I have spoken of the rich years when the rainfall was plentiful. But there were dry years too, and they put a terror on the valley. The water came in a thirty-year cycle…. And it never failed that during the dry years the people forgot about the rich years, and during the wet years they lost all memory of the dry years. It was always that way." – John Steinbeck, East of Eden

Nearly 70 years after Steinbeck wrote East of Eden, his words still ring true. With satellite images showing receding reservoirs contoured with pale bathtub rings of dry earth, drab mountain peaks where white snowpack melted away months ago, and so much smoke, the dry years have again put a terror across California. For decades, we've gotten away with business as usual, preparing for the future as though it would always be the way of thirty-year cycles.

Steinbeck's quote is well-worn, from blog posts to Congressional records. Evoking Steinbeck, drought after drought, speaks to our collective inability to act and implement lasting solutions in water-volatile California. Nonetheless, and although we're seemingly at the 11th hour, we face a unique opportunity where, in California, there is both the will and the resources to make meaningful change towards greater drought resilience.

The solution rests on a unified approach to sharing better water data across California.

Water Outcomes: Solving for better water data

Better water data are essential to rapid drought response and resilience. But the tendency to collect too much data, data for data's sake and without a stated use, is a common obstacle. Better data means collecting the right data, defined by strategic water outcomes. From determining desired outcomes, to defining decisions, to specifying tools, a pendulum-like process, akin to Newton's cradle, can be used to improve water data.

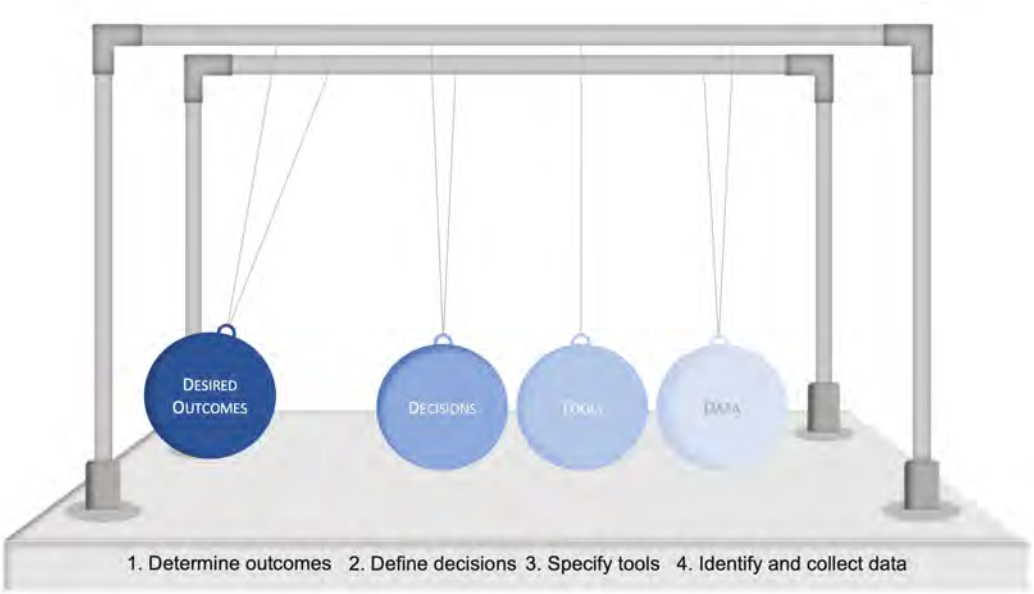


Figure 1 The version of Newton's cradle for California water data seemingly defies physics by losing inertia at pendulum four after better data is identified and collected. © The Earth Genome 2021

Identifying the right data follows a series of pendulums across four steps (Fig. 1). For example, in the case of drought resilience in California, a desired outcome (pendulum 1) is that all Californians have access to safe and affordable water. In many places, this depends on halting the decline of groundwater. Because managed groundwater recharge is a key strategy to reduce groundwater depletion, decisions (p2) center around finding the best recharge sites. With limited water available for recharge, sites that offer multiple benefits are preferred. Groundwater recharge efforts have distinct spatial-temporal aspects which warrant a GIS-based tool (p3) that helps prioritize site selection for individual groundwater sustainability agencies' recharge projects. Tool transparency is needed; trust is a pivotal element to successful drought resilience efforts. Tools not only allow for the effective communication of information internally, to partners, local government, and the public during droughts, but also to transparently balance competing needs and to make drought allocation decisions less contentious and more efficient.
Good drought data and tools are in use today. However, fundamental data for drought resilience, that is, supply and demand of surface and groundwater, is missing. Today, decision-makers lack meaningful historical and current water availability data and analysis while future projections, without climate change and intensity modeling, are rudimentary. Equally, the dearth of use data, ideally in the form of continual, up-to-date surface water diversion and groundwater pumping volumes, exasperates latent distrust over allocation decisions.

In the rich years, when rainfall is plentiful, and even in previous dry years, there wasn't the need to track the fate of every molecule. Estimations and perfunctory data collection were acceptable in Steinbeck's day of thirty-year cycles, just as a simple annual checkup suffices for monitoring a healthy person. But navigating a mega-drought is equivalent to being in intensive care where real-time vitals inform lifesaving decisions. Likewise, in a drought, near real-time data on hydrological vitals is critical. For drought resiliency, the outcomes-based framework points to the need of real-time data on both surface water and groundwater supply and demand in California.

Water Data: Achieving better outcomes

From the starting point of desired outcomes, the path to identifying and collecting the right data for better decisions can be reached. However, in complex systems of water governance, like that of California, better data does not necessarily translate back through the pendulums. The inertia of pursuing desired outcomes is interrupted by the piecemeal nature of water management in California.

In California, the jurisdiction of water depends on the physical location of a water molecule. Jurisdiction over a water molecule is divided across multiple agencies, depending on where it is in the hydrologic cycle and the management situation. This fragmentation creates tension when determining how to mitigate, who should react, and at what level of governance action should occur. These challenges are exacerbated as the answer can change given the duration, severity, or extent of the drought. Fragmentation also creates a system where a decision about one part of a molecule does not consider the other, that is, decisions about surface water are often made without consideration of groundwater, and vice versa.

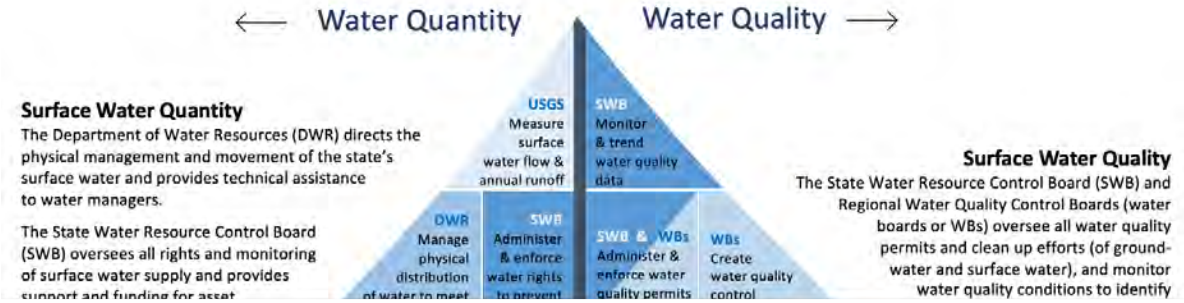


Figure 2 Representation of the shared jurisdiction of a water molecule as it moves through the water cycle from surface to groundwater and managed for quality or quantity. Not all agencies are represented. Shared blocks do not imply shared data or resources. © The Earth Genome 2021

In the case of Newton's cradle for water data, physics itself is interrupted by a lack of coordination. To swing the pendulum of better data back to achieving outcomes requires an integrated and shared data infrastructure that consolidates data and assumptions, and associated tools (Fig. 3). What's needed is action by an outside force that allows decision-makers to see a fuller picture of potential outcomes and shared benefits. To ensure access to safe and affordable water during drought, spatial and temporal data specific to the exact location of at-risk wells, as well as an understanding of the nature of the risk, whether it be quality or quantity, is needed. Indeed, data already exists and innovative, public access tools, such as the Aquifer Risk Map, DWR Drought and Water Shortage Risk Tool, CWC drinking water tool, and SAGBI suitability index, provide needed insights for their relevant use cases. Unifying these resources and efforts would create a system greater than the sum of its parts.

Figure 3 Only with a shared data approach does the Law of Inertia apply to Newton's cradle for California water data, creating an acceleration of drought resilience. © The Earth Genome 2021

The task of drought resiliency in California is enormous; the heavier an object is, the more force it takes to start it moving. But by enacting a collaborative approach to improve drought data, tools, decision-making and resulting outcomes, perhaps Steinbeck's quote will fade into the literary archives. Perhaps this is the turning point where we finally take meaningful action on the great drought challenge. Perhaps we will start seeing quotes that instead speak to our ability to act on, rather than ignore, the escalating crisis of drought.

"I am sure we are up for it: we are Californians and there is one thing that we have shown again and again and that is our love of a good challenge." – Obi Kaufman, The State of Water

Nicholas Institute for Environmental Policy Solutions

Duke University
2117 Campus Drive
P.O. Box 90335, Durham, NC 27708
Tel: 919-668-5412
E-mail: internetofwater@duke.edu

SOUTHWEST STATES FACING TOUGH CHOICES ABOUT WATER AS COLORADO RIVER DIMINISHES

Seven states and 30 Native American tribes lying in the Colorado River Basin prepare to make hard choices as water levels plummet due to a 22-year drought.

2021
OCT 24

CORRESPONDENT
BILL WHITAKER

FACEBOOK TWITTER REDDIT FLIPBOARD

This past week, California declared a statewide drought emergency. It follows the first-ever federal shortage declaration on the Colorado River, triggering cuts to water supplies in the Southwest. The Colorado is the lifeblood of the region. It waters some of the country's fastest-growing cities, nourishes some of our most fertile fields and powers $1.4 trillion in annual economic activity. The river runs more than 1,400 miles, from headwaters in the Rockies to its delta in northern Mexico where it ends in a trickle. Seven states and 30 Native American tribes lie in the Colorado River Basin. Lately, the river has been running dry due to the historically severe drought.

The majestic, meandering Colorado River that cut through these red cliffs, carving the Grand Canyon, is a wonder of nature and human ingenuity. The Glen Canyon Dam created Lake Powell and 300 miles down river Lake Mead sits behind the Hoover Dam. These reservoirs are now being sucked dry by 40 million different straws - that's the number of people in booming western states who depend on the Colorado to quench their thirst, power their homes, water lawns and splash in the sun. Its waters irrigate farms that produce 90% of the country's winter greens. To all these demands add the stress of a 22 year drought - as dry as any period in 1,200 years - and you have a river in crisis.

Lake Powell

Bill Whitaker: These white bathtub rings; is-- is this where the water used to be?
Brad Udall: Absolutely.
Brad Udall, a climate scientist at Colorado State University, went out on Lake Powell with us. Bill Whitaker: So all of this would have been underwater?
Brad Udall: Yeah.
Bill Whitaker: So what does this tell you about what's happening on the Colorado River?

Brad Udall: Well, it's a signal of the long-term problem we've been seeing since the year 2000, which is climate change is reducing the flows of the Colorado significantly.

Brad Udall

Lake Powell and Lake Mead, the two biggest reservoirs in the country, were nearly full in 2000. Today, they are at just about 30% capacity.

Brad Udall: The lake's now 155 feet below full. It's dropped something like 50 feet this year. Bill Whitaker: And it's still dropping?
Brad Udall: Yes. And that's when power generation actually becomes to come into question. Bill Whitaker: So it drops so low that it may not be able to generate--

Brad Udall: It may not be able to generate power--

Bill Whitaker: Hydroelectric power?

Brad Udall: Yeah.

Brad Udall has strong connections to the river. As secretary of the interior, his uncle, Stewart Udall, opened the Glen Canyon Dam. His father, Congressman Mo Udall, fought to channel river water to Arizona. As a young man, Brad was a Colorado River guide. Today he analyzes the impact of climate change on water resources.

Bill Whitaker: Is the west on a collision course with climate change?

Brad Udall: In some ways yes, but we have fully utilized this system. We've over-allocated it, and we now need to think about how to turn some of this back. 'Cause the only lever we control right now in the river is the demand lever. We have no control over the supply. So we have to dial back demand.

Seventy percent of Colorado River water goes to agriculture. When the federal government declared the water shortage, it triggered mandatory cutbacks. Pinal County, Arizona got hit hard.

Waylon Wuertz

Waylon Wuertz: Pinal County alone, we're gonna be losing 300,000 acre feet of surface water. That's water that would be delivered from Lake Powell, Lake Mead. As part of the Colorado River. 300,000 acre feet is 98 billion gallons of water.

Waylon Wuertz farms 500 acres in Pinal County, south of Phoenix. His family has tilled soil here for four generations. It's some of the most productive land in the state. Crops from Pinal County are shipped all over the country. Wuertz grows gourds, cotton and alfalfa —profitable, but thirsty crops and his allotment of Colorado River water is being cut by 70%.

Bill Whitaker: This is Colorado River water?

Waylon Wuertz: Yeah, kinda the-- the lifeline of our-- irrigated ag here.

Bill Whitaker: This comes straight in from Lake Mead?

Waylon Wuertz: Correct. This is-- through hundreds of miles of canal system. It's-- made its way down here to Central Arizona.

Bill Whitaker: And what percentage of your water is supplied by this canal?

Waylon Wuertz: It's been close to 50% of the water that we've used to-- to farm here. And--this next year it's probably gonna drop down to about 20% of the water that we use.

That's 1/7th of what he was getting a decade ago. To use less water and make ends meet, Wuertz sold more than 300 acres to a solar farm. He dipped into retirement funds to repair and restart old wells. He laser leveled his fields to make irrigation more efficient.

Bill Whitaker: But it's just not enough in the middle of this drought.

Waylon Wuertz: No, it's not enough.

So, next year he told us he'll have to leave 150 acres uncultivated.

Waylon Wuertz: What you see green here is eventually gonna die. I hope we'll have enough water to plant it in the future. But more than likely it's gonna stay brown for quite some time.

Amelia Flores

Amelia Flores: All the water users are gonna have to give up something to keep that water in the lake.

Amelia Flores is chairwoman of The Colorado River Indian Tribes, a reservation of four tribes a few hours west of Phoenix, with the oldest and largest water rights in Arizona. After being moved to reservations, Southwest tribes got rights to about a quarter of the river's flow, but government red tape and lack of infrastructure have prevented them from using their full allotment. Flores told us until this drought, tribes were never included in water negotiations.

Bill Whitaker: Why had you not had a seat at the table before this?

Amelia Flores: Because the tribes have always been overlooked in the policymaking and--and in-- in the law of the river. But that day has come to an end.

When western states first divvied up the Colorado River in 1922, and later, when the federal government built the Hoover and Glen Canyon Dams, the future seemed boundless and manageable. Through negotiation and court battles, states worked out agreements — the law of the river — to split the water equally between upper and lower basin states. The lower states use just about all their allotment and it's fed their tremendous growth. The upper states have never used their full share. Now, they are booming and say they need the water they've been promised.

Bill Whitaker: I can see the bathtub rings around here too.

Zach Renstrom: We're trying to keep every drop of water we can into this reservoir for next year's drinking water.

Zach Renstrom manages the water system for Washington County in southwest Utah. St. George, the county seat, is one of the fastest growing metro areas in the U.S. Its population grew 29% this past decade. The state of Utah gets about a quarter of its water from the Colorado, but most of Washington County has only one source, the Virgin River, which fills this reservoir.

Zach Renstrom: So right now we're in the process of implementing really strict conservation measures. And if the cities don't adopt those standards then we'll be out of water very quickly.

Bill Whitaker: What is very quickly?

Zach Renstrom: Within the next five to ten years.

So, in the midst of this drought, Utah is proposing to build a $1-billion to $2-billion pipeline able to bring 27 billion gallons of water a year from dwindling Lake Powell. Utah says it's entitled to the water by law.

Bill Whitaker: You're talking about siphoning off water from a lake that's already at a critically low level to help a city grow in the desert.

Zach Renstrom: Every state on the Colorado River was allotted so much water and a water budget. And so with their water budget the state of Utah has decided that it wants to use a portion of its water here in St. George, Utah.

Bill Whitaker: But it was a budget that was set when water was plentiful. It isn't anymore. What is Utah hoping for?

Zach Renstrom: Utah wants the right to do what every other basin state has done. We want to make sure that we have water for our future, for a hotter dryer scenario that's coming up.

JB Hamby: Building a multibillion dollar pipeline to pump out more water from an already rapidly declining reservoir simply doesn't make sense in the 21st century.

JB Hamby is vice president of the board that runs California's Imperial Irrigation District, one of the richest agricultural regions in the country with the single largest allocation of water on the entire river.

JB Hamby: There's a lot of urban growth and sprawl occurring in other parts of the Colorado River Basin that's really not necessarily sustainable.

Hamby says California's Imperial Valley farms have cut water usage almost 20% since 2003, but points out as the population of St. George, Utah grows, so does its water use.

JB Hamby: We need to think and rethink about how we grow and if we grow and where we grow.

Bill Whitaker: St. George would say that they're not asking for more. They're asking for what they need.

JB Hamby: I think what we all need to have is a reality check, here, and recognize that we live in an era of limits right now and that's not going away anytime soon. In fact, it's only going to get worse.

JB Hamby

A big part of the problem is the law of the river itself, a hodgepodge of rules and regulations pieced together over the course of a century. For example, after all the litigation and negotiations, the law ends up allocating more water than actually flows down the Colorado. And this: in times of shortage, channels that provide more than a third of Arizona's water must run dry before California is required to cut back.

Bill Whitaker: So, so wait a minute, Arizona is being called on to cut its water intake before California has to give up even one drop?

Brad Udall: Pretty amazing. It can't work in today's world. And it's in some ways a little microcosm, right, of this whole law of the river with these systems that have been put in place that just don't work. They can't work. And that's why a rethink's needed.

One example of rethinking: the Colorado River Indian Tribes agreed to leave fields uncultivated, leaving 48 billion gallons — almost three feet of water — in Lake Mead. The state of Arizona agreed to pay them for their losses.

Amelia Flores: My people want to help during this drought. We want to save the river, because for centuries the river has always taken care of us, so now, we have to take care of the river.

Brad Udall: That's what negotiations are all about, right? It may be there are ways to conserve and figure out how to get the same goods and services for less water. Let's let ag grow crops that use less water. Let's figure out how to make cities use water as efficiently as possible. So, I mean, we need some optimism here, right?

Waylon Wuertz: This desert ground...

But as we saw at this meeting of Pinal County farmers, optimism is in short supply.

Waylon Wuertz: The farmer who's prepared the whole life, worked the land, farmed the land is getting the short end of the stick.

Farmers here and across the Southwest feed the country. But it takes more than 2/3rds of the Colorado River to produce the bounty. With lake levels dropping, Arizona farmers like Waylon Wuertz fear their fertile fields could become desert again.

Waylon Wuertz: You're gonna see drastic cuts, a drastic change of what next year has to bring. And for my particular family farm, we're doing all that we can to keep it going. But I have a feeling it's just a matter of time before none of this exists.

Produced by Marc Lieberman. Associate producer, Cassidy McDonald. Broadcast associate, Emilio Almonte. Edited by Sean Kelly.

Washoe County monitoring ponding in Lemmon Valley during heavy rain event

by News 4 & Fox 11 Digital Staff
Sunday, October 24th 2021

Washoe County monitoring ponding in Lemmon Valley during heavy rain event (Washoe County)

RENO, Nev. (KRNV) — Washoe County crews are monitoring ponding in the Lemmon Valley area as heavy rainfall continues to fall.

The county said on social media Sunday night there's a contractor on 24-hour pump watch and utility crews are working to clear specific ponding sites and maintaining access to Lemmon Valley.

Flooding concerns are nothing new for Lemmon Valley residents, many of whom endured flooding when Swan Lake overflowed during the historic 2016-2017 winter. The city of Reno agreed in April to pay $4.5 million to flood victims.

If you live in the area, you are asked to call 775-328-2180 to report any issues.

NEWS

Lake Tahoe, Truckee River See Huge Rise Because of Storm

The weekend storm brought lots of needed water to Lake Tahoe and the Truckee River.

Updated: Monday, October 25th 2021, 9:01 PM PDT

By **Paul Nelson**

The weekend storm dropped three to four inches of rain over 48 hours in Reno-Sparks. Six inches fell in the higher elevations, along with heavy snow.

Last Monday, the Truckee River was just a trickle, flowing at 40 cubic feet per second. It was flowing at more than 5,000 cfs during its peak, Monday morning.

"What a difference a day can make," Chad Blanchard, United States District Court Water Master said. "Yeah, it's incredible how much we have in the river, right now. We would have had a lot more if the snow levels had not dropped earlier than predicted."

Thomas Creek, Steamboat Creek and others are flowing into the river. That brings sediment with it. There is also a lot of debris flowing downstream, like tree limbs. Some of those got caught up on rocks and bridges.

"We haven't had high water for a few years, so the debris kind of piles up and cuts loose when you get high flows," Blanchard said.

The high river flows allowed people to take their kayaks onto the water for the first time in awhile. Others stopped by to see how much the river changed in just a few days.

"It's come to life again," Patty Foncault, Reno resident said. "It's good all the way around. It's muddy like the Mississippi but it's still beautiful."

"It's amazing," Jill Trent, Reno resident said. "I just had to come see it on my lunch break because, I mean, it's just been a trickle for so long and now it's like a real river."

Earlier this month, Lake Tahoe dropped below its natural rim. Thanks to the storm, the lake rose more than six inches in just one day. Now it is about a half-foot above the rim and water is flowing from the lake to the Truckee River again.

"Our first goal is to beat 1977, so we're not the driest year, ever," Blanchard said. "We did that in basically one storm."

The storm dropped enough water in the lake to cover 66,000 acres with one foot of water. That is enough to fill Boca Reservoir 1.5 times. This will only be the eighth October that Lake Tahoe's levels rose since 1910 because there was more inflow than evaporation.

"The inflow to the lake really tapered off since the snow level dropped but there's still quite a bit coming into the lake, so the lake will continue to rise some, and the base flows will be a lot higher now," Blanchard said.

Lake Tahoe did not rise much during the spring because most the dry ground absorbed most of the snow melt.

"We had four times more water stored in Tahoe than we got from the spring runoff," Blanchard said.

This storm soaked up the soil before the snow fell on it. That is expected to make next spring's runoff much more efficient.

"To have as much precipitation, as much rain as we did up high and then to follow it up with a bunch of snow, really wet snow on top of it," Blanchard said. "Now, as it gets cold, it will freeze and lock up. Hopefully, we'll keep piling up the snow."

When storms happen like that, it typically sets up the region for a more efficient runoff in the spring.

NEWS CENTER

Managing Water Resources in a Low-to-No-Snow Future

With mountain snowpacks shrinking in the western U.S., new Berkeley Lab study analyzes when a low-to-no-snow future might arrive and implications for water management

Feature Story Julie Chao (510) 486-6491 • **October 26, 2021**

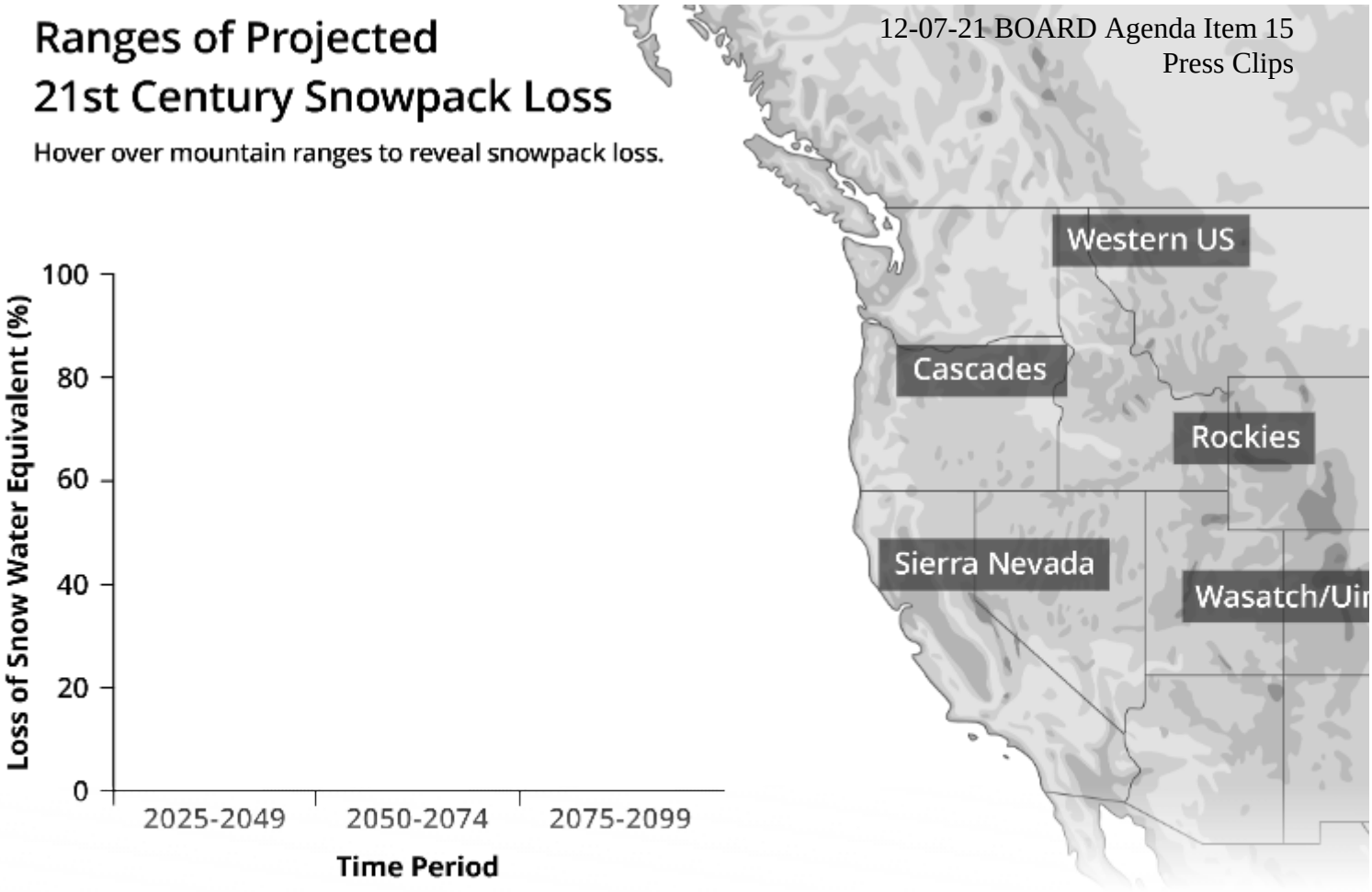
A new Berkeley Lab analysis finds that if greenhouse gas emissions continue along the high-emissions scenario, low-to-no-snow winters will become a regular occurrence in the western U.S. in 35 to 60 years. (Credit: Melissa Kopka/iStock)

MOUNTAIN SNOWPACKS AROUND THE WORLD are on the decline, and if the planet continues to warm, climate models forecast that snowpacks could shrink dramatically and possibly even disappear altogether on certain mountains, including in the western United States, at some point in the next century. A new study led by researchers at Lawrence Berkeley National Laboratory (Berkeley Lab) analyzes the likely timing of a low-to-no-snow future, what it will mean for water management, and opportunities for investments now that could stave off catastrophic consequences.

Their review paper, "A low-to-no-snow future and its impacts on water resources in the western United States," published in the journal Nature Reviews Earth and Environment, analyzes previous climate projections and finds that if greenhouse gas emissions continue along the high-emissions scenario, low-to-no-snow winters will become a regular occurrence in the western U.S. in 35 to 60 years. Further, the study re-evaluates longstanding assumptions in water management in the U.S. and stresses that scientists and water managers need to work together more closely to develop and implement climate adaptation strategies.

The Sierra Nevada, Rockies, Cascades, and other mountain ranges provide a tremendous service by capturing, storing, and releasing water for downstream use. Historically, snowmelt timing provides a critical delay in the delivery of water supply during the spring and into the summer, when precipitation is low and when water demands are at their highest due to agriculture. The factors causing shrinking snowpacks are predominantly tied to temperature increases and shifting precipitation characteristics. Warmer temperatures also imply that storms will produce more rainfall and less snowfall, limiting the amount of seasonal snowpack that can build through the winter.

The research, co-led by authors Erica Siirila-Woodburn and Alan Rhoades of Berkeley Lab's Earth & Environmental Sciences Area, starts with a literature review which distills several hundred scientific studies on snow loss; of those, they identify and analyze 18 studies that had quantitative snowpack projections for the western U.S.



Charts show projected snowpack loss for three time periods: near future, mid-century, and end-century. The projections c
synthesized from 18 published climate studies, which predominantly provide projections from a higher-emissions scenar
The loss of snow water equivalent, or the total water content for a given depth of snowpack, is computed relative to a his
base period chosen by each individual study. Each bar denotes the interquartile range (25th-75th percentiles) of the proj

When will the low-to-no-snow future arrive?

"A recent study highlighted that there has been a 21% decline in the April 1 snowpack water storage in the western U.S. since the 1950s – that's equivalent to Lake Mead's storage capacity. In our review, we found that around mid-century we should expect a comparable decline in snowpack," said Rhoades. "By the end of the century, the decline could reach more than 50%, but with a larger range of uncertainty."

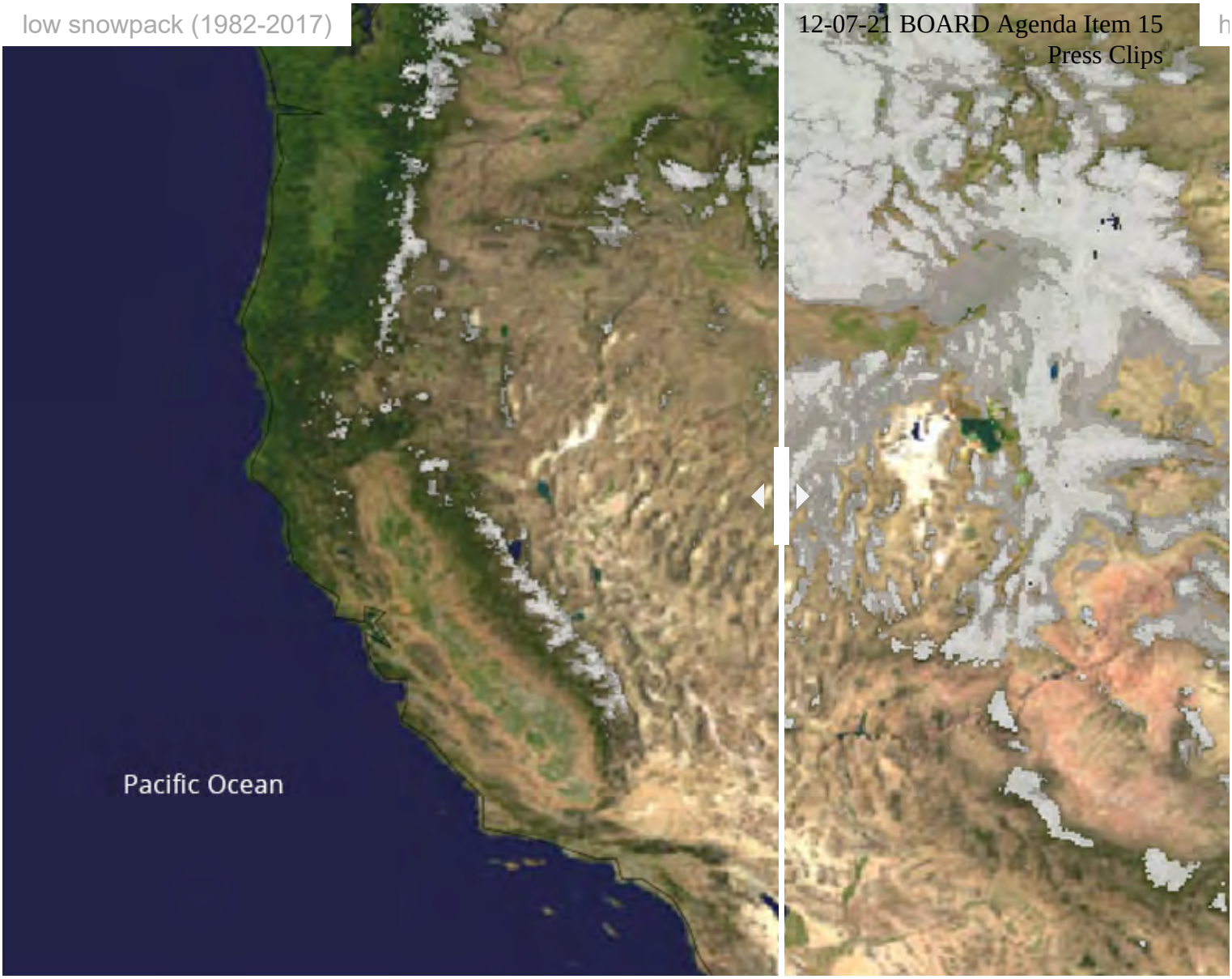
Many water managers use the somewhat arbitrary date of April 1 to make snowpack observations and planning decisions. Over the last several decades, there have been decreases in peak snowpack volume as well as earlier occurrences of the timing of peak snowpack, with the peak occurring approximately 8 days earlier in the year for every 1 degree Celsius (1.8 degrees Fahrenheit) of warming.

Many regions have already experienced winters with very little snow in recent years, such as the Sierras in 2015 when the April 1 snowpack level was 5% of normal, which the authors call an "extreme" event. The paper defines two other types of low-to-no-snow conditions – "episodic low-

to-no snow," or when more than half of a mountain basin experiences low-to-no snow for five consecutive years, and "persistent low-to-no snow," in which this happens for 10 consecutive years. "Low snow" is defined as when the snowpack (or more precisely, the snow water equivalent, a measure of how much water will be released when the snowpack melts) is in the 30th percentile or lower of the historical peak.

Using these definitions, California could experience episodic low-to-no snow as early as the late 2040s and persistent low-to-no snow in the 2060s according to one high-resolution climate projection. For other parts of the western U.S. persistent low-to-no snow emerges in the 2070s. The authors caution the need for more analyses with a broader set of climate projections to enhance confidence in the timeline for emergence of low-to-no-snow conditions.

The authors describe the climate projections in their study, writing: "Through the middle and end of the 21st century, an increasing fraction of the western U.S. is impacted by snow water equivalent deficits relative to the historical period. In particular, only 8 to 14% of years are classified as low-to-no snow over 1950-2000, compared to 78 to 94% over 2050-2099. In all regions, an abrupt transition occurs in the mid-to-late 21st century."



These computer-generated images show data for lowest (left) and highest snowpack conditions over a 36-year period. (Use mouse to move the slider.) An algorithm generated each point on the map, comparing data from 1982 through 2017 and using the lowest or highest values. Because individual years can result in anomalous snowpack in one mountain region and not another, these images convey composites of low and high snow conditions regardless of the year of occurrence. (Credit: Images generated by Ben Hatchett and Alan Rhoades/Berkeley Lab, using data from Zeng, X., P. Broxton, and N. Dawson. 2018. Snowpack Change From 1982 to 2016 Over Conterminous United States, Geophysical Research Letters. 45. 12940-12947)

Impacts on water resources

The impacts of a low-to-no-snow future extend beyond just decreased streamflow, although that is certainly a significant consequence. In the Sierra Nevada, for example, the amount of water in the snowpack on a typical April 1 is nearly double the surface reservoir storage in California.

“A low-to-no-snow future has massive implications for where and when water is stored in the western U.S.,” said Siirila-Woodburn. “In addition to the direct impacts on recreation and the like, there are a lot of secondary effects on natural and managed systems, from a hydrologic perspective. So that’s anything ranging from increased wildfire occurrence to changes in groundwater and surface water patterns and changes in vegetation type and density.”

With less snow and more rain, groundwater levels in mountainous systems may be impacted because snowmelt more effectively infiltrates into the subsurface than rainfall does. Further, less snow at lower elevations will decrease the overall surface area of snowpack stored in the mountains, potentially resulting in less available snowmelt that infiltrates into the ground.

Now for the good news ...

The authors' aim in doing this study was to spur thinking now about adaptation strategies. "We want society to be proactive about these changes in snowpack rather than reactive," said Rhoades. "Our hope in presenting the literature synthesis of low-to-no snow is so that we can understand the problem in a 'one-stop shop' way. Additionally, we highlighted some novel climate adaptation strategies that are coming about through nontraditional academic and water agency partnerships, which will be key parts of a portfolio of adaptation approaches needed to overcome snow loss in a warmer world."

One such partnership is a Department of Energy-supported project called HyperFACETS, which involves 11 research institutions, including Berkeley Lab, working with water utility managers in California, Colorado, Florida, and Pennsylvania.

The paper also discusses potential adaptation strategies, such as a technique known as managed aquifer recharge, in which excess surface water is stored underground as groundwater for later use. Another relatively new technique, forecast-informed reservoir operations, in which weather and hydrological forecasts are used to inform decisions about retaining or releasing water from reservoirs, was recently shown to increase water storage at Lake Mendocino in California by 33%.

These and other techniques show promise for increasing water supply, but the authors also recommend more cross-collaboration, both among scientists and within society as a whole, to expand the portfolio of climate adaptation strategies.

"We are advocating for the idea of engagement with best scientific practices and more collaboration or partnership between researchers and stakeholders. For example, city managers are concerned with flood control; farmers are concerned with water storage; everyone has their own objectives. Even within science, the disciplines are typically siloed," said Siirila-Woodburn. "If everyone were working together to manage water rather than working independently for their own purpose, there would be more water to go around."

# # #

Founded in 1931 on the belief that the biggest scientific challenges are best addressed by teams, Lawrence Berkeley National Laboratory and its scientists have been recognized with 14 Nobel Prizes. Today, Berkeley Lab researchers develop sustainable energy and environmental solutions, create useful new materials, advance the frontiers of computing, and probe the mysteries of life,

matter, and the universe. Scientists from around the world rely on the Lab's facilities for their own discovery science. Berkeley Lab is a multiprogram national laboratory, managed by the University of California for the U.S. Department of Energy's Office of Science.

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TAGS: climate, Earth sciences, water, watersheds

Regional Water Improvement Pipeline Project Commences Bringing Jobs, Economic Growth and Environmental Sustainability

Pipeline to reduce nitrates in Truckee River, protect endangered aquatic life in Pyramid Lake and convert effluent water industrial use in Tahoe Reno Industrial Center

NEWS PROVIDED BY
Switch →
Oct 26, 2021, 11:00 ET

STOREY COUNTY, Nev., Oct. 26, 2021 /PRNewswire/ -- Governor Steve Sisolak joined leaders from every local government in the Truckee River region to celebrate commencement of construction of the Regional Water Improvement Pipeline Project. The sixteen-mile pipeline will deliver 4,000 acre-feet of treated effluent water from Truckee Meadows Water Reclamation Facility (TMWRF) in Sparks to the Tahoe Reno Industrial Center (TRI Center). The project led by TRI Center and Switch (NYSE:SWCH) is the first regional public-private partnership in Nevada history to engage the support of each municipality and agency in Northern Nevada. Partners include, the State of Nevada, City of Reno, City of Sparks, Washoe County, Storey County and Truckee Meadows Water Authority along with several major private sector partners such as the Master Developer of TRI Center, Switch and other leading technology companies. Farr West Engineering is the construction manager for the project.

"This is a true win-win project that will create hundreds of good jobs in the community, while at the same time providing important environmental sustainability outcomes that benefit the residents and businesses along the Truckee River system," said Governor Sisolak. "I commend each of the government entities that have made this model of regional coordination and cooperation a reality."

Far-reaching benefits of the pipeline include:

- Eliminating the infusion of nitrate-rich effluent water into the Truckee River by utilizing it for mechanical use at TRI Center
- Protects rate payers and allows for growth by deferring a $25 million expansion of the TMWRF waste water treatment facility
- Allows TRI Center and State of Nevada to provide clean instream flow water, maintaining the flow of the Truckee River
- Improves the overall water quality to Pyramid Lake by reducing the nitrates into Truckee River and protects the endangered Cui-ui fish
- Creates hundreds of good paying jobs in the local community

"This important project checks the box on several of our major environmental objectives," said TMWA Director John Enloe. "This has proven a very innovative solution to an otherwise complex set of needs in the region. We couldn't be more pleased to see this project get underway."

"Switch is proud to have been part of this critical infrastructure project from inception through fruition," said Switch President Thomas Morton. "This innovative solution helps not only Switch, but our 1,300 plus global customers, operate mission-critical technology infrastructure in the most sustainable way using 100% recycled water to protect the area's precious natural resources."

Leaders from each of the participating municipalities and agencies also weighed in with their support, including:

Hillary Schieve, Mayor of Reno, Nevada

> "Innovation and collaboration have led to the Regional Water Improvement Project. In my time as Mayor, I can't think of another project that has led to virtually every major stakeholder in the Truckee River region coming together with a single purpose. Reno has played an important role alongside our colleagues and we are very excited to see so many benefits coming to life."

Ed Lawson, Mayor of Sparks, Nevada

> "With water becoming an ever-more precious resource, we have been very mindful to protect the residents of Sparks and all of the neighboring communities throughout the Truckee River region from increased costs. This project masterfully uses new technologies in repurposing waste water and in so doing, off-sets $25 million in rate payer investments in otherwise needed improvements. We are proud to have played a role in bringing this project to life."

Jay Carmona, Chair of the Nevada Storey County Commission

> "Few projects deliver such widespread benefits as does the Regional Water Improvement Project. From protecting the quality of the Truckee to protecting the endangered Cui-ui fish and ensuring that future generations can enjoy Pyramid Lake, this project provides benefits across Storey County and beyond."

Roger *Norman, Master Developer, Tahoe-Reno Industrial Center*

> "In every project with which I've been associated, we start with community benefits at the core. This one is especially meaningful in a time of such environmental importance. We will do good for people, water and endangered species and, at the same time, address a critical environmental need of providing useful water for business without adding burden to public uses."

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Stanford Experts Offer Reasons for Hope Amid California's Drought

October 27, 2021
By
Barton "Buzz" Thompson
Q&A with Robert Jordan

This Q&A was first published by Stanford Woods Institute for the Environment. (https://woods.stanford.edu/)

Despite the rain that drenched central and northern California recently, drought still casts a long shadow over the state. The consequences of a multi-year water shortage are dire: reservoirs that serve millions of people and massive swaths of farmland are disappearing, hydroelectric dams are in danger of losing power and wild salmon are facing mass die outs. Last week, Gov. Gavin Newsom expanded a drought-related state of emergency.

Below, Stanford water experts Newsha Ajami

(https://news-media.stanford.edu/wp-content/uploads/2021/10/25112904/Drought-QA2.jpg)
A drone view of Lake Oroville under the Enterprise Bridge on July 26, 2021. (Image credit: Kelly M. Grow/California Department of Water Resources)

(https://waterinthewest.stanford.edu/about/people/newsha-ajami), Rosemary Knight (https://profiles.stanford.edu/rosemary-knight), Felicia Marcus (https://waterinthewest.stanford.edu/about/people/felicia-marcus) and Barton "Buzz" Thompson (https://law.stanford.edu/directory/barton-thompson/) discuss lessons learned from previous droughts, imperatives for infrastructure investment and reasons for hope in this arid era.

Ajami, director of urban water policy at Stanford's Water in the West (https://waterinthewest.stanford.edu/) program, has pioneered novel ways to integrate data science, engineering and policy into water management solutions. Knight is a professor of geophysics in the Stanford School of Earth, Energy & Environmental Sciences (Stanford Earth (https://earth.stanford.edu/)) who has pioneered the use of geophysical and remote sensing technology to analyze groundwater. Marcus, the William C. Landreth Visiting Fellow at Water in the West, is an attorney and water policy expert who has worked on water-related management and policy issues at the federal, state and local level. Thompson, the

Robert E. Paradise Professor in Natural Resources Law, chairs a collaborative effort (https://www.mwdoc.com/wp-content/uploads/2021/09/San-Joaquin-Valley-Water-Collaborative-Action-Program-Prospectus.pdf), to help diverse interests in the San Joaquin Valley jointly address drought and long-term water challenges.

What lessons learned from the 2012-16 drought can help us be more resilient?

Knight: The 2012-16 drought made us realize how important it is to monitor changes in our groundwater systems on a timescale that allows for adaptive, as close as we can get to real-time, management. An explosion in the availability of satellite data introduces the potential to develop new ways to do this. Our recent study (https://www.sciencedirect.com/science/article/pii/S0048969721057132?via%3Dihub) shows the approach's potential to provide regional water managers with reliable estimates of changing groundwater levels during droughts.

Thompson: We learned the importance of water markets in reducing the cost of droughts. In the last drought, farmer-to-farmer water trades enabled the most productive farmland to get the water needed to produce crops and keep farmhands working.

Is California better prepared for drought than in previous years? If so, how?

Ajami: Knowing how much water is used by various customers is a first step toward improved conservation and efficiency. Fortunately, more homes are metered now, and new multifamily residential buildings are required to have submeters for every unit and all residences are required to have a water meter by 2025. All major water utilities are now required to report their monthly water use and water leakage. This provides a broader understanding of water use and loss across the state and helps achieve better system-level efficiency.

Knight: We now have in place the Sustainable Groundwater Management Act, which requires local water agencies to gather the data needed to better understand the state of groundwater resources in their area and the negative consequences of excessive pumping.

Thompson: We still have a long way to go. Large cities are in generally good shape because they have diversified their water supplies and reduced demand. But many disadvantaged, rural communities are still dependent on shallow wells that can go dry in droughts. Farmers are confronting dramatically reduced surface supplies at the same time the state is telling them to reduce groundwater use. And we still fail to take timely and adequate steps to protect the environment from droughts.

California might start mandatory water restrictions. How successful has that been in the past? How can policymakers improve the likelihood of compliance?

Ajami: Our research (https://waterinthewest.stanford.edu/news-events/news-insights/driving-water-conservation) shows that during the state's most recent severe drought, which ended in 2016, many Californians complied with both voluntary and mandatory water restrictions. We saw up to 20% water use reduction during the voluntary phase and another 20-30% during the mandatory restrictions. We have also found (https://iopscience.iop.org/article/10.1088/1748-9326/abbfc2/meta) that in a majority of cases, water use was permanently reduced, possibly due to structural changes, such as replacing fixtures, appliances or landscaping.

Marcus: Messaging is key. Once you learn how much water is wasted on keeping a lawn an artificial shade of green in the dead of summer, especially in a drought, most of us remember. Additionally, water agencies, particularly in Southern California, put out over half a billion dollars in rebates to change out lawns to drought-tolerant landscaping, to which the public responded extremely well.

What investments will enable the state to tackle drought and create more sustainable water supplies?

Knight: We need to get more water from the surface down to replenish groundwater systems. To do this, we need to invest in research to assess potential locations. One example of this is a Stanford-led project (https://woods.stanford.edu/research/funding-opportunities/realizing-environmental-innovation-program/recharging-groundwater) to integrate geophysical imaging of the subsurface, which allows us to map out the "fast paths" of sand and gravel that can move the water from the ground surface, with geochemical modeling to predict water quality. Recently signed Senate Bill 170 allocates $60 million for floodplain restoration projects, including a portion to support this type of geophysical imaging.

(https://news-media.stanford.edu/wp-content/uploads/2021/10/25112851/Drought-QA1.jpg)
Low water levels at the south ramp of Lake Mendocino, a large reservoir in Mendocino County, California, on Oct. 13, 2021. (Image credit: Florence Low/California Department of Water Resources)

Thompson: If I had to choose three areas for investment, they would be groundwater storage projects, wastewater recycling and stormwater capture. Together, these would allow us to stretch, diversify and expand our water supply.

What role can nature-based solutions play in supporting water resilience?

Marcus: The beauty of nature-based solutions is that they are more resilient in the face of climate change than gray infrastructure in many cases. So, for example, rather than building floodwalls and levees that can cause destruction and mayhem when breached, we can let the water dissipate and spread out into flood plains, recharging groundwater while providing ecological benefits and green space. Another example is restoring mountain meadows to retain more water and slowly release it over time to make up for the loss of snowpack we will experience with temperature rise. In urban California, projects like the LA County Clean, Safe Water Program will yield $300 million a year in multi-benefit greening projects to capture stormwater for recharge, water quality treatment and much-needed urban greening.

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Water sprays an irrigated field in Northern Nevada on May 18, 2021. (David Calvert/The Nevada Independent)

Indy Environment: Nevada researchers, NASA launch online data platform to help Western water users manage limited supplies

Good morning, and welcome back to the Indy Environment newsletter.

It's good to be writing after several weeks off, and there is no dearth of news. Over the next few weeks, I'm planning to write about the impacts of drought, the Colorado River,

the race for a lithium supply chain, and what the devastating fires this summer left behind.

As always, we want to hear from readers. Let us know what you're seeing on the ground and how policies are affecting you. Email me with any tips at daniel@thenvindy.com

If you received this email from a friend or colleague, subscribe here to get it in your inbox.

We talk a lot about precipitation, and for good reason. In many places across the West, our water supplies depend on runoff from snowpack. But what we don't talk about as often is the movement of water in the other direction — how water cycles from land to the atmosphere.

Yet understanding that movement is critical to managing water supplies and understanding how much water we are consuming. Scientists refer to the movement as evapotranspiration, or ET. It describes how much water evaporates from the earth's surface and transpires from plants. That might sound very technical and dry, but evapotranspiration is a crucial part of the water cycle.

Analyzing evapotranspiration data helps to approximate the amount of water that is consumed by an irrigated landscape — say a field or even your front lawn. For growers, understanding evapotranspiration can help them better schedule irrigation and implement conservation measures. For water managers, it can help them develop accurate water budgets — to better understand how water is being used. For state regulators, evapotranspiration data can be used to justify regulatory decisions or to set up programs that incentivize more efficient practices.

The problem: There is a big gap in this data.

Evaluating evapotranspiration on the ground is costly and the data is not always accessible for many water users. That can leave water users and managers at a loss. Simply put, "you can't manage what you don't measure." The saying, in this case, is apt, said Justin Huntington, a research professor of hydrology at the Desert Research Institute.

For years, Huntington and a team of researchers have worked to fill that gap, turning to satellite data, models and weather variables to show evaporation data at a granular level — to about a quarter-acre. And last Thursday, they launched the data on an online platform, OpenET.

That's a big deal, Huntington said in an interview, because it opens up evapotranspiration data to all users, making it readily accessible and affordable. It also marks a regional effort to better manage water resources amid an ongoing drought and a changing climate.

OpenET, which is built on Google Earth Engine, provides near real-time evapotranspiration data in 17 Western states.

Forrest Melton, a program scientist for the NASA Western Water Applications Office, said in a press release that it closes "one of the biggest data gaps" in how Western water is managed.

"This easy-to-use online platform provides scientifically robust data that are invaluable for water management at all scales, from an individual agricultural field to an entire river basin," he said.

The project, led by DRI, the Environmental Defense Fund, NASA and HabitatSeven (a firm that builds data-driven web applications focused on the environment), has already gained traction among water managers, and regulators in the West, including in Nevada and the Colorado River Basin. The OpenET website lists a number of case studies across the West, ranging from the Sacramento-San Joaquin Delta to the Navajo Nation and the Salt River Project in Arizona.

The Southern Nevada Water Authority has used OpenET to understand irrigation practices along the Muddy River, which is a tributary to the Colorado River. And Adam Sullivan, Nevada's top water regulator, said earlier this year that his agency "strongly supports" the initiative.

Over the summer, Sen. Catherine Cortez Masto, Rep. Susie Lee, Rep. Chris Stewart (R-Utah) and Rep. Jared Huffman (D-California), introduced legislation directing the U.S. Department of Interior to establish a federal program for satellite-based evapotranspiration data. The bill draft also includes a $14 million appropriation to fund the program for fiscal years 2022 through 2026.

"Public access to these data will be increasingly vital to support water users and responsible water management needs into the future," Sullivan said when the legislation was introduced.

Hoover Dam on Thursday, July 15, 2021. The dam holds back Lake Mead. (Jeff Scheid/The Nevada Independent)

When it rains, it pours: On Sunday and Monday, the Reno-Tahoe Airport recorded 2.92 inches of rainfall, the highest ever for October. To put that in perspective, that's nearly as much water as the Reno airport recorded during the last year, according to the National Weather Service. That staggering statistic illuminates the intensity of the recent "bomb cyclone" that hit eastern California and Western Nevada over the weekend. Dan McEvoy, a climatologist at the Western Regional Climate Center, said the precipitation "couldn't have come at a better time." The big early storm helped improve soil moisture. That's important because when soils are too dry, they can make runoff from snowmelt inefficient. And runoff forms the basis for much of our water supply. But this one storm alone did not end the drought. Although the storm provided short-term relief, McEvoy said more precipitation this winter will be needed to pull the region from drought.

- Something to watch: the connection between the water cycle and fire. Areas in and around Nevada were hit hard by wildfires this summer. Some of those fires burned in areas that are part of the Carson River and Truckee River watersheds. Forest health, wildfire and the water cycle are all connected. And burn scars on the landscape can have lasting impacts, creating physical hazards and affecting water

quality. The *Los Angeles Times*' Rosanna Xia wrote about debris flows caused by the recent storm.

- What the Southwest is looking at this year: KUNC's Alex Hager reports on the high amount of precipitation that is needed to pull the Southwest out of drought conditions.

Do we need a bigger "parachute" on the Colorado River? Earlier this week, climate scientist Brad Udall tweeted a thread of data showing combined storage at Lake Mead and Lake Powell, the two largest reservoirs in the Colorado River Basin, a watershed that is relied upon by about 40 million people in the Southwest, including Las Vegas. The result was alarming, though not entirely surprising to those who have been following the situation. It shows the precipitous drop in water storage across the system over the last two decades. Yes, there are plans in place to reduce demands if Lake Mead drops even lower. But Udall, at the end of his thread, raises an important point about their adequacy: "If these demand reductions plans are the equivalent of a parachute, there are legitimate questions about (a) the size of the parachute and (b) why are we deploying it so close to the ground given all that has transpired over the last 22 years."

- It raises the question: What does a worst-case scenario look like? John Fleck, who researches and writes about the Colorado River at the University of New Mexico, did an excellent blog post on this very question. And it includes a quote from John Entsminger, the general manager of the Southern Nevada Water Authority, testifying in Congress on Oct. 15. In written testimony, Entsminger told the panel of lawmakers that "despite the fervent warnings from internationally renowned scientists like Jonathan Overpeck and Brad Udall that urge us to plan for a future with even less than 12.3 million acre-feet, the river community is far from consensus about how dry of a future to plan for."

- How water should be used and divided remains a point of contention. That boiled over this week with the development of the Lake Powell Pipeline and St. George. Water planners and politicians in Utah have long pushed a new diversion from Lake Powell that would support growth in the Southern part of the state (St. George). Over the weekend, *60 Minutes* aired a piece on the Colorado River with a quote from an Imperial Irrigation District board member saying that the proposal "simply doesn't make sense in the 21st century." Criticism of the proposed project, in turn, prompted a response from Utah Sen. Mitt Romney, as the *Salt Lake Tribune*'s Alastair Lee Bitsóí and Brian Maffly reported. In the past, officials in Nevada and other states have raised concerns about the project.

Breaking ground on a pipeline in Northern Nevada: The Tahoe Reno Industrial Center and data center company Switch broke ground on a pipeline that Gov. Steve Sisolak described as a “win-win” in a statement on Tuesday. The pipeline, approved by local governments in the Reno area, will bring treated municipal wastewater to the nearby industrial park. The project has long been in the works but hit several roadblocks along the way, including criticism about the state contributing water rights to the project and a lawsuit with a property owner after a water board for the industrial park tried to exercise eminent domain. But local water managers have cast the project as a common-sense way to reuse limited water supplies. By sending treated wastewater to the industrial park, businesses can reduce their demand for additional water supplies. At the same time, cities can reduce their short-term expenses of treating wastewater. "This important project checks the box on several of our major environmental objectives," John Enloe, a water resources manager with the Truckee Meadows Water Authority, said in a statement on Tuesday. "This has proven a very innovative solution to an otherwise complex set of needs in the region.”

A Southwest Gas technician makes a service call in Las Vegas on April 16, 2021. (Jeff Scheid/The Nevada Independent)

Southwest Gas, Wall Street and Carson City: As of Wednesday morning, investor Carl Icahn had made an unsolicited bid to purchase outstanding shares of Southwest Gas, which is based in Las Vegas and serves customers throughout the state. *Bloomberg News*' Josh Saul has the story. At the center of Icahn's dispute with the natural gas utility is its plans to purchase a gas pipeline company for about $2 billion from Virginia-based Dominion Energy, which has been shedding fossil fuel assets. There is a lot to write about the purchase and Icahn's criticisms of the company. In an open letter on Oct. 5, Icahn criticized Southwest Gas' leadership for errors and what he describes as a frayed relationship with state regulators. Southwest Gas issued a statement in response and Icahn issued a rebuttal. At the same time, Southwest Gas continues to face pressure in Nevada to plan for a transition away from natural gas. On Friday, several groups, including Southwest Gas, filed comments with Nevada utility regulators as part of an investigation into the future of natural gas. I'll be writing more about all of this soon.

Nevada became the 16th state to adopt vehicle standards to reduce emissions in the transportation sector. *The Las Vegas Sun*'s Jessica Hill has more on the story.

"The Bureau of Land Management is evaluating three large-scale solar projects that could turn the southern Nevada desert into a major green energy hub," *E&E News*' Scott

Streater writes. The projects would straddle the border between Nye County and Clark County. Kevin Emmerich, co-founder of Basin and Range Watch, told *E&E News* that he is concerned about the wildlife impacts of additional renewable development in the sensitive desert ecosystem.

OCTOBER 29, 2021

Advanced water treatment techniques will help ensure sustainability of global water supplies

by University of Sheffield

Credit: Pixabay/CC0 Public Domain

Advanced water cleaning techniques are needed to meet United Nations' Sustainable Development Goals (UN SDG) and ensure our water supplies remain sustainable, say University of Sheffield researchers.

With demand for clean water rapidly increasing worldwide, the UN's SDG is to ensure availability and sustainable management of water and sanitation for all by 2030, but 2.2 billion people still have no access to safe drinking water, and a further 844 million people lack even a basic water service.

Adding to this, pressures from the demand for fresh water means we rapidly need to find more effective ways to reuse the water we have.

A new review investigated the benefits of advanced water treatment techniques and highlighted in particular how one of these techniques—photocatalytic water treatment—could help more effectively eliminate micropollutants from our water resources.

Industry, agriculture and domestic wastewater all contribute to water pollution. The micropollutants from these are found in surface, ground and drinking water, and can cause long-term, severe effects on the environment and human health.

Micropollutants are synthetic or man-made in nature and include chemicals from things like prescription medications such as antibiotics, painkillers and hormones, personal care products and toiletries, industrial chemicals, pesticides and herbicides used in farming and many more.

Manasi R. Mulay, co-author of the review from the University of Sheffield's Grantham Centre for Sustainable Futures and one of our Ph.D. students attending this years UN Climate Change Conference (COP26) in Glasgow, said that "not being able to remove some of the persistent organic pollutants in wastewater remains a barrier to ensuring clean and safe water for everyone."

"Wastewater is treated by conventional wastewater treatment plants (WWTPs) before being put back into water bodies, but this existing technology cannot completely remove micropollutants, which have even been found supplies from water supplied by drinking water treatment plants, which can also be fed by WWTPs."

"Over time these micropollutants, due to their resistance to degradation processes, can accumulate in water and have potential consequences such as acute and chronic toxicity and hormonal disruptions for marine life, the environment and humans."

Micropollutants accumulating in water resources can harm aquatic ecosystems, but also have equally worrying impacts on human health, and are believed to be contributing to the rise in antimicrobial resistance (resistance to antibiotic medications) which is becoming an increasingly worrying problem globally.

Conventional water treatment technologies, such as filtration, sedimentation, and coagulation/precipitation and biological treatment techniques do not achieve complete degradation of all harmful pollutants, and often have to be used in combination to achieve a high standard of water quality. They also usually come with issues such as how to dispose of toxic byproducts of the cleaning process.

Researchers from the University of Sheffield are investigating photocatalytic water treatments, a type of advanced oxidation processes (AOP) triggered by a light source, which can attack and break down nonbiodegradable and chemical micropollutants into less complex and less toxic or nontoxic compounds. This process could be highly efficient and can work on multiple micropollutants at the same time.

Manasi Mulay, said that "using AOPs micro-pollutants can be broken down into simple compounds such as water and carbon dioxide, with the use of photocatalysts. TiO2 (titanium dioxide) based photocatalysis is one of the most promising AOPs being developed, as it offers high efficiency and chemical stability over re-uses in destroying persistent pollutants in water."

"Interesting fact is—though titanium dioxide based photocatalysis has been known since 1972 as the 'Honda-Fujishima effect', its development needs to be revisited from an efficient water treatment perspective, with customized treatment for pollutants that exhibit high resistance to degradation."

"Although it is challenging to address multiple issues such as complete elimination of pollutants, costs, and a low environmental impact with a single technology, using hybrid technologies, or combinations of several advanced oxidation processes are a promising way to more effectively manage our water resources."

Dr. Natalia Martsinovich from the Department of Chemistry, who co-authored the review, said that "combining benefits of different advanced water treatment techniques could be promising to help achieve the UN's goal of clean and sustainable water for all by 2030, however at the moment many AOPs are still labor intensive and cost-prohibitive.

"The challenges associated with the advanced oxidation processes include the secondary pollution caused by the intermediates which is of concern".

"We urgently need more resources invested in the research, development, and implementation of advanced wastewater treatment technologies. Along with clear policies that monitor the release of pollutants to the environment, regulate the purification treatment of wastewater and encourage reuse of clean wastewater."

"Only with the support of nations around the world with willingness to protect the natural water resources and provide clean water access to all, can we reap the benefits of advanced water treatment technologies to work towards the Sustainable Development Goal set by the UN and this should be a priority for all attending COP26 next week."

More information: Manasi R. Mulay et al, TiO_2 Photocatalysts for Degradation of Micropollutants in Water, *Clean Water and Sanitation* (2021). DOI: 10.1007/978-3-319-70061-8_194-1

Provided by University of Sheffield

LOCAL NEWS

11:10 AM, Nov 01, 2021 and last updated 4:20 PM, Nov 01, 2021

By: KTNV Staff

Southern Nevadans allowed to water once per week under winter watering schedule

Waste-water fees start as high as $80

Photo by: Ken Ritter/AP

FILE - In this April 9, 2021, file photo, sprinklers water grass near a street corner in the Summerlin neighborhood of northwest Las Vegas. Nevada Gov. Steve Sisolak signed legislation on Friday, June 4 to make the state the first in the nation to ban certain kinds of grass. The measure will ban water users in southern Nevada from planting decorative grass in an effort to conserve water. (AP Photo/Ken Ritter, File)

LAS VEGAS (KTNV) — A new mandatory winter watering schedule is in effect for Southern Nevadan starting Monday.

The winter schedule goes through Feb. 28, 2022, as residents and businesses are asked to water one day per week based on the property's address, according to a Southern Nevada Water Authority press release.

Anyone unsure which day they're allowed to water can check here, officials advised.

Southern Nevadans are reminded that watering according to the mandated schedule is required by law and those who don't comply may be subject to waste-water fees starting as high as $80. Those fees double with each violation, officials noted.

WATER FINES: How to conserve water and avoid paying

The winter restrictions limit both turf and drip irrigation. The water authority offered the following advice to avoid wasting water through runoff while helping the soil absorb more moisture:

- Irrigate grass for no more than 12 minutes per watering day using three watering cycles of four minutes each. Each four-minute cycle should be spaced one hour apart.
- Water during the mid-morning hours to avoid freezing and prevent ice from forming on lawns and sidewalks.
- Drip irrigation should be run every seven to 14 days since trees and plants need less water than grass.

The water authority also advised residents to change the time on their irrigation clocks after daylight saving time begins on Nov. 7.

Winter watering restrictions carry an added importance this year in light of federal restrictions limiting the amount of water Southern Nevada can draw from Lake Mead amid historic drought conditions in the American southwest, according to water officials.

Beginning Jan. 1, Nevada's water allowance from Lake Mead will decrease by 7 billion gallons.

> *Baby, it's (getting) cold outside and cooler temperatures mean less water for your landscape. Water 1 day a week on your assigned watering day Nov. 1-Feb. 28 and NEVER on Sunday.*
>
> *Visit https://t.co/rZXSEA2AsN to find your mandatory watering schedule. pic.twitter.com/9yvpcwWmrF*
>
> *— Southern Nevada Water Authority (@SNWA_H2O) November 1, 2021*

"If every property owner in Southern Nevada changes their watering clock each season, the community could save more water than is being cut under shortage conditions," officials stated.

DRAINING LAS VEGAS: Here is who's using the most water in valley

Community members were advised to visit here for more information about seasonal water restrictions, water conservation, and preventing and reporting water waste.

LAS VEGAS SUN

Las Vegas Sun

MENU | November 2, 2021

EDITORIAL:

Lake Tahoe's grim outlook is all the more reason to fight climate change

Scott Sonner / AP

A woman walks with her dog on the dry lake bed that extends 200 yards from Lake Tahoe's normal shoreline Wednesday, Oct. 20, 2021 at Tahoe City, Calif. Drought fueled by climate change has dropped Lake Tahoe below its natural rim and halted flows into the Truckee River, an historically cyclical event that's occurring sooner and more often than it used to _ raising fears about what might be in store for the famed alpine lake.

Monday, Nov. 1, 2021 | 2 a.m.

While Las Vegas residents watch nervously as the water level falls at Lake Mead, our fellow Nevadans are also seeing the alarming effects of climate change on Lake Tahoe.

In both cases, it's a call for action on reducing global warming.

Southern Nevadans are well aware of the situation at Lake Mead, which has reached historically low levels, but they may not be as familiar with the problems at Lake Tahoe. In a nutshell, climate change has disrupted weather patterns there to the point of causing the lake to drop below its natural rim on a disturbingly regular basis and in turn reduce the flow of water into the Truckee River to a trickle. If that.

Although the recent storm that moved through Northern California and Northern Nevada provided a break from the drought and will help Tahoe, don't bet on the relief being anything but temporary. Forecasters are calling for an abnormally dry winter.

For Lake Tahoe, that outlook would translate to less snowfall in the surrounding mountains, and less snowmelt next spring. This pattern results in the lake falling below its natural rim sooner than it used to, and reducing its feed into the Truckee.

Meanwhile, because of warming temperatures, when Tahoe does get precipitation in the winter, an increasingly higher percentage of it falls as rain rather than snow. That's also reduced the normal spring recharge of the lake from snowmelt in recent years.

Northern Nevada's environment and economy face consequences from these changes. Low water levels in streams around the lake badly disrupted the spawn of kokanee salmon this year, for instance, and receding water levels can lead to toxic algae blooms. Less water in the Truckee River and streams puts stress on wildlife throughout the region.

Boat ramps already closed this summer at Lake Tahoe as the water receded away from docks. River rafting operators on the Truckee shut down operations early, and boat and kayaking rentals were down.

"Our season was short, and we fear there may not be one next summer," Toni Rudnick of the Truckee River Raft Company told the Associated Press recently. "It all depends on the snowpack. In 2015, we didn't open at all when the Truckee River was a series of puddles. ... In 2016, we had a 15-day season."

The dwindling snowfall and heavier rainfall also shorten the seasons of the area's ski resorts — a problem that's only expected to worsen. The amount of precipitation falling as snow was over 50% in the 1900s, but today it's 33% and is on a trajectory to drop to less than 20% by the end of the century minus urgent action to reduce the greenhouse gas emissions that are fueling climate change.

Then, of course, there's the effect of dry weather in creating wildfires. South Lake Tahoe experienced that danger from an uncomfortably close distance this summer when the community was evacuated during the Caldor Fire. The community was spared, but just barely.

The inescapable reality of climate change is that it's playing out in real-time, right before our eyes. In Nevada, we witness it in receding shorelines in our lakes, in clouds of smoke in our skies, and in the triple-digit ranges of our thermometers for days on end. And the intensity of the damage is snowballing.

And that's just one state.

With global leaders meeting in Scotland this week for climate talks, Nevada offers a microcosm of the real-time effects of climate change and a look at how much more damage is in store unless aggressive and immediate protections are adopted.

The situation here also points out the critical need for Congress to support the climate initiatives in the Biden administration's Build Back Better plan — a $550 billion package that includes tax credits for companies and consumers aimed at boosting sales of electric vehicles and solar energy systems, retrofitting buildings and spurring production of clean-energy equipment such as wind turbines.

In Nevada, we must continue to build on our state's recent progress on climate change goals and legislative measures. A recent example came Oct. 22 when the Nevada Legislative Commission gave final approval to a set of new vehicle regulations known as the Clean Cars Nevada program.

Scheduled to go into effect in 2025, the new standards emulate those of California, Washington, Oregon and 12 other states that have set stricter emissions standards than those required by the federal government. The law also mandates the auto industry to offer more electric cars on the market.

Steps like these are crucial to protecting our world and our state. Whether we live north or south, we don't have to look far to see the need.

Switch and Tahoe Reno Industrial Center to build water pipeline for recycled water

New pipe delivers water to industrial park housing Google, Tesla, and Switch

November 02, 2021 By: **Peter Judge** Comment

US data center provider Switch and the Tahoe Reno Industrial Center are building a 16-mile pipeline that will deliver recycled water to the TRI Center industrial park, helping preserve an endangered fish.

The Regional Water Improvement Pipeline Project will deliver some five billion liters of recycled water from the Truckee Meadows Water Reclamation Facility (TMWRF) in Sparks City to the TRI Center. The Center is the world's largest industrial park, and home to Switch, Google, and the Tesla Gigafactory.

– Public domain / Wikipedia

Public private partnership

The pipeline is paid for by a public-private partnership, involving every municipality and agency in Northern Nevada, including the State of Nevada, City of Reno, City of Sparks, Washoe County, Storey County, and Truckee Meadows Water Authority. It is also supported by private sector partners including the Master Developer of TRI Center, Switch, and other leading technology companies, who weren't named in the announcement. Farr West Engineering is the construction manager for the project.

"This is a true win-win project that will create hundreds of good jobs in the community, while at the same time providing important environmental sustainability outcomes that benefit the residents and businesses along the Truckee River system," said Governor of Nevada Steve Sisolak. "I commend each of the government entities that have made this model of regional coordination and cooperation a reality."

The project will take nitrate-rich treated e uent water for mechanical use at TRI Center, instead of releasing it into the Truckee River. This will improve water quality at Pyramid Lake and protect the Cui-ui, an endangered sucker sh that lives there. Clean water will be provided to maintain the ow of the Truckee River.

The project also enables the state to defer a $25 million expansion of the TMWRF wastewater treatment facility and create "hundreds of good-paying jobs in the local community", according to the announcement.

Switch President Thomas Morton said: "This innovative solution helps not only Switch, but our 1,300 plus global customers operate mission-critical technology infrastructure in the most sustainable way using 100 percent recycled water to protect the area's precious natural resources."

Ed Lawson, Mayor of Sparks, Nevada, added: "With water becoming an ever-more precious resource, we have been very mindful to protect the residents of Sparks and all of the neighboring communities throughout the Truckee River region from increased costs. This project masterfully uses new technologies in repurposing wastewater and in so doing, o -sets $25 million in ratepayer investments in otherwise needed improvements. We are proud to have played a role in bringing this project to life."

Jay Carmona, Chair of the Nevada Storey County Commission, said: "Few projects deliver such widespread bene ts as does the Regional Water Improvement Project. From protecting the quality of the Truckee to protecting the endangered Cui-ui sh and ensuring that future generations can enjoy Pyramid Lake, this project provides bene ts across Storey County and beyond."

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How is every drop of the Truckee River managed? Some say the share may not be fair

by Kim Burrows, KRNV

Monday, November 1st 2021

*Lake Tahoe at Tahoe City October, 2021(KRNV)<p>{/p}<p>
{/p}*

RENO, Nev. (KRNV) — The big storm that dumped rain and snow on northern Nevada did not relieve us from our severe drought. All that rain in Reno and Sparks quickly filled the Truckee River but most of it is just surface runoff. Every drop of that water in the Truckee is already spoken for, no matter how high or low the water levels.

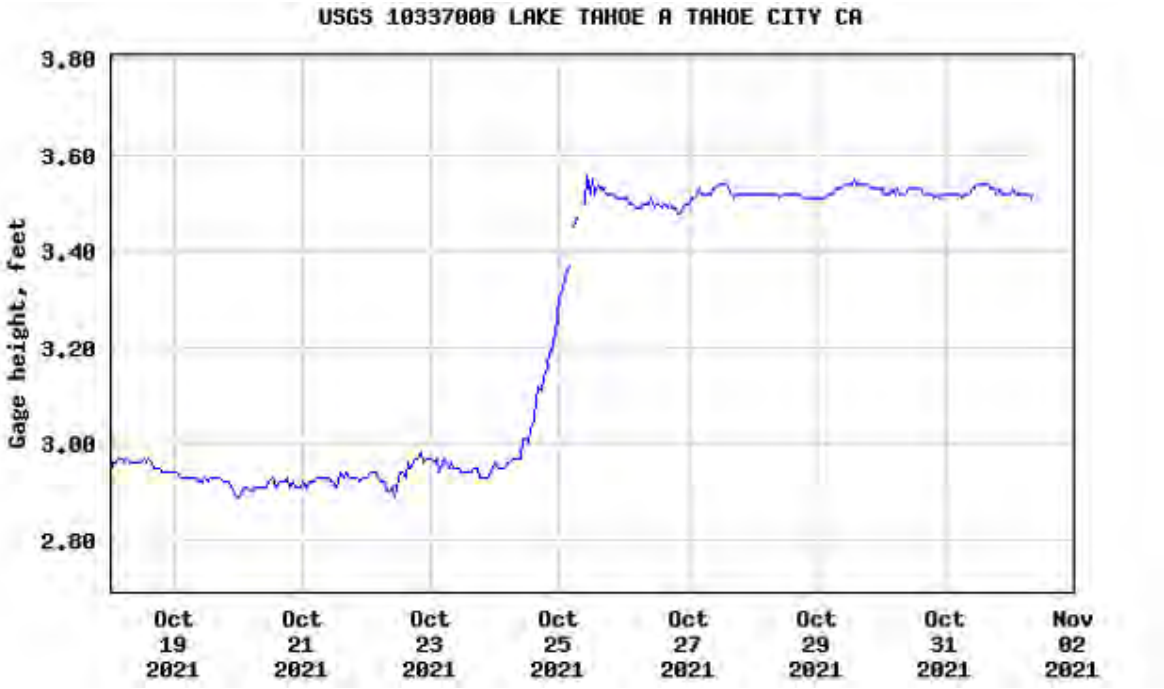
It all starts upstream at Lake Tahoe. The water level has been hovering at or below the natural rim for weeks. The recent storm increased the level by about a half foot and over the rim. Without more rain or snow, the levels will drop again. That means water will not be able to spill over the rim and into the Truckee River. That was the case just a couple of weeks ago.

The dry riverbeds and exposed ground stunned tourists and residents at Fanny Bridge in Tahoe City.

“It’s pretty astonishing,” said Keith Thomas, also known as Mr. Truckee. “It reminds me of about six years ago when it wasn’t flowing at all.”

When the water runs over Tahoe’s rim, it runs down the Truckee and can be stored in many of our reservoirs like Boca, Stampede or Prosser.

Lake Tahoe at Tahoe City October, 2021 (KRNV)



Tahoe water levels.PNG

The Truckee River Operating Agreement or TROA dictates where the water is used.

“That’s where the major parties state of Nevada, state of California, federal government, the Pyramid Lake Paiute Tribe, Truckee Meadows water Authority, all got together and negotiated over 30 years to change some of the operating rules and the ability to basically credit store water and be able to have some drought reserve,” said Chad Blanchard, the Federal Water Master.

The agreement was implemented in December 2015 and oversees the nearly 120 miles of the Truckee River that runs from Lake Tahoe to Pyramid Lake.

About 80-85% of the Truckee Meadows’ drinking water comes from the Truckee River. TROA updates the decades-old decrees and now caters to our more urban landscape.

Jim Litchfield who is a former surface water hydrologist says not everyone getting a fair cut of the water.

“The recreational community, the biological enhancement or biological protection community has not always been a significant player at the table for water management that’s largely because of their financial input,” he said.

Litchfield owns the Reno Fly Shop one block from the Truckee River. He’d like to see recreation and fishing continue even in low runoff years. That comes down to how the Truckee is managed.

“There is some water that could remain in the Truckee River for biological enhancement and the protection of the biological resources that right now hasn’t been or isn’t being largely because of historical practices,” he said.

Travis Hawks the Nevada Department of Wildlife’s Regional Fisheries Biologist said fish have died off due to the very low water levels just before last week’s storm. He too wants to make sure there’s enough water to keep the river flowing for the state’s ecology.

Truckee River in Reno October, 2021 (KRNV)

“I do think that big picture stuff needs to be kind of looked at and assessed in the future. If there (are) things we can do to benefit certain stretches of the river, they really need to be looked into and investigated because the river is a resource for the whole community.”

The Truckee Meadows Water Authority’s Bill Hauck said TROA improves and updates water use for today’s needs.

“Of the other benefits of TROA which went into effect December 2015 was enhanced recreational uses, Improved river flows, improved flows for fisheries in the lower river,” Hauck said.

Hauck said the river is managed “as well as it could be.”

The Truckee Meadows' needs have changed. We have less agricultural needs. Those fields have been swallowed up by houses and development. But Hauck says even though the type of water use has changed, the amount used has not. He said we're just swapping one use for another.

Northern Nevada has had two very dry years. A third one would be a record.

The Water Master said he’s not overly worried about the low river and lake levels.

“Not yet. No, again, it’s not good but it’s something we’ve seen and we will see again," Blanchard said.

County reports 875% increase in homelessness since 2017

By Bob Conrad | **Published:** November 3, 2021 | **Last Updated on** N

People experiencing homelessness were forced to move from an encampment near the Wells Avenue overpass on May 20, 2021 in Reno, Nev. Image: Ty O'Neil / This Is Reno

Washoe County officials this week confirmed that the Reno area has seen an 875% increase in homelessness since 2017. That figure is based on self-reported point-in-time (PIT) statistic collected each year.

The increase was reported Monday by a consultant hired by Washoe County to review the Nevada Cares Campus operations.

“This population is more visible, more vulnerable and less able to access effective services than any other population,” said consultant Jon DeCarmine. “According to the Northern Nevada Continuum Care, unsheltered homelessness has increased by more than 800% since 2017, despite relative stability in the total number of people experiencing homelessness…”

These figures, however, are based on snapshots of self-reported information. Washoe County has on recently started collecting and reporting more accurate data about those experiencing homelessness.

The PIT count, for example, is a glimpse in time, not an overall trend. There were 80 people reported during the PIT count in 2017. That number is up to 780.

“The PIT is conducted annually and is a once-a-year snapshot.

It includes both data from Homeless Management Information System (HMIS)] and a visual count of people living unsheltered,” said county spokesperson Bethany Drysdale.

The HMIS data show considerably more people experiencing homelessness from the PIT counts, but those data presented by the county only go back a year.

The county’s new website that reports data on homelessness “utilizes a slightly different methodology than the PIT,” Drysdale explained. “They are similar, but are not apples to apples comparisons.”

In December of last year, there were between 1,600 people — including families, youth, adults and veterans — listed as homeless. That number increased to almost 2,000 in July and is now down to a 1,700 people.

Those figures fluctuate daily, monthly and annually as people move in and out of homelessness.

Agencies also report varying numbers

Local service organizations that serve people who are unsheltered also show conflicting data based largely on reports by their clientele. Other factors include changing where service is provided, self-reporting by clients and in the case of the Community Health Alliance, changes to data collection practices.

“It’s important to keep in mind that Community Health Alliance is capturing self-reported informat from its patients,” CHA spokesperson Megan Duggan said. “There are patients who may consider themselves ‘homeless’ because they lost their home and are staying with family or friends.”

CHA reported seeing 881 people experiencing homelessness in 2020, 2,257 in 2019 and 2,250 in 20

A former CHA employee, James Fleming, said CHA’s changes to its patient questionnaire contribut the reduced numbers in 2020. He called the CHA figures above, “utter fiction,” claiming the CHA

changed its patient registration form in 2020, on his recommendation, to collect more accurate data.

He said the prior registration form artificially inflated actual homeless counts.

“People were confused and accidentally self-reported as homeless on our registration paperwork,” Fleming said.

An older registration form provided to This Is Reno shows less specific options related to housing situations, which Fleming said encouraged more people to select being homeless on the CHA form.

“After some research I traced our faulty homeless data to mistakes and confusion related to our intake/ registration paperwork. The Spanish language version is even more confusing than the Engl version, and half our population speaks Spanish,” he said. “I assumed that when I saw the new registration form being printed, that at least we could start inputting correct data from Spring 2020 onward.”

CHA’s 2021 patient registration form has more specific options to select related to living situations. registration form shows people can check if they are homeless or not and, if so, their living situation Options include living on the street, doubling up, living at the shelter and an “other” category.

Duggan denied CHA was padding its numbers.

“Community Health Alliance reports the data it has captured. Is it possible that some Community Health Alliance patients have a broader definition of the term ‘homeless’ than what is used by those participate in the PIT? Yes,” she added. “Is it also possible that the PIT may underestimate the num of homeless individuals living in a community? Yes.”

Duggan also said the disparity of reported numbers was because less people were using CHA services.

This was for two reasons, she said: “Community He Alliance provided medical and dental services on-site at the homeless shelter on Record Street. Our Record Street site essentially closed down in March 2020 due to COVID-19, and the City/County decided to move th homeless shelter to the new Nevada Cares Campus.

CHA’s varying counts of those experiencing homelessness are similar to Northern Nevada HOPE which also bases its figures on information reported clients.

According to HOPES’ Mary Ingvoldstad, “In 2020, of our patient population reported that they were experiencing homelessness. This is a self-reported response that is collected at every medical visit after patient has been asked about their housing status.”

Reno's former homeless shelter, the Community Assistance Center, on Record Street and the adjacent Reno Sparks Gospel Mission. Image: OurTownReno.com

HOPES' 17% in 2020 was 1,874 people who reported experiencing homelessness.

Ingvoldstad also said information is collected "in accordance with the Health Resources and Service Administration definition. Since this is a self-reported response there is no validation associated wi responses until the patient is ready to receive housing assistance."

Data collection methods will continue to vary

The county continues to use the PIT count and the HMIS data.

"HMIS does not include those who are not taking advantage of services," Drysdale said. "So while th PIT is only once a year and is therefore outdated, it is a more inclusive number at least for that poin time."

It's also a different number than the HMIS data by about half, and the Nevada Cares Campus, with capacity of about 600 beds, has been close to full since opening.

Homeless advocates speaking during public comment yesterday called Community Homeless Advisory Board (CHAB) members, who are local elected officials from Washoe County, Sparks and Reno, ton deaf and out of touch.

"You are using our tax dollars to pay to keep these people in traumatic situations, and we need to do better," Meagan O'Farrell said.

"Our community has torn down hundreds of affordable housing units in the last five years — hundreds— and our homeless population tripled if not more," said Katie Colling.

Some spoke in favor of reopening the prior Record Street shelter as winter approaches. Increasing t capacity for women and children experiencing homelessness was also stressed.

County officials recommended against reopening Record Street. Doing so would spread out services available to those seeking assistance, the county's Dana Searcy said.

Bob Conrad Publisher & Editor

Bob Conrad is publisher, editor, and co-founder of This Is Reno. He has served in communication positions for various state agencies and earned a doctorate from the University of Nevada, Reno in 2011, where he completed a dissertation on social media, journalism and crisis communications. I addition to managing This Is Reno, he holds a part-time appointment for the Mineral County University of Nevada Extension office.

THE HILL

Millions consuming 'invisible toxic cocktail' of cancer-linked chem study

BY **SHARON UDASIN** - 11/03/21 12:40 PM EDT

Millions of Americans are unknowingly ingesting water that includes "an invisible toxic cocktail" of cancer-linked chemicals, a new survey of the nation's tap water has found.

The Environmental Working Group's (EWG) 2021 Tap Water Database, available to the public as of Wednesday, revealed contamination from toxins like arsenic, lead and "forever chemicals" — perfluoroalkyl and polyfluoroalkyl substances (PFAS) — in the drinking water of tens of millions of households across all 50 states, as well as Washington, D.C.

"The Environmental Protection Agency's Office of Groundwater and Drinking Water has demonstrated for decades that it is utterly incapable of standing up to pressure from water utilities and polluters to protect human health from the dozens of toxic contaminants in America's drinking water," EWG President Ken Cook said in a press statement.

To compile the database, EWG researchers and scientists spent two years collecting and analyzing U.S. water contaminants from almost 50,000 water systems, a news release from the group said. The researchers attributed their findings to "antiquated infrastructure and rampant pollution of source water," as well as obsolete regulations from the Environmental Protection Agency (EPA) that rely "on archaic science" and "allow unsafe levels of toxic chemicals in drinking water."

While compiling the database, the researchers also identified 56 new contaminants in American drinking water, which generally fell into two categories, according to an EWG spokesman. The two groups mostly include new PFAS compounds and chemicals found through the EPA's fourth Unregulated Contaminant Monitoring analysis, which amassed data on suspected drinking water contaminants that do not yet have health-based standards.

To view information on contaminants in a specific region, users can log into the database and enter their ZIP codes, and then scroll down to select the utility that serves their community. The database then shows the "contaminants detected," stressing that "legal does not necessarily equal safe."

"Getting a passing grade from the federal government does not mean the water meets the latest health guidelines," the database cautions.

Washington, D.C., for example, has 13 contaminants that exceed EWG's health guidelines, although the district does comply with legally mandated federal standards.

The D.C. Water and Sewer Authority's drinking water has 58 times the amount of arsenic that the EWG deems safe, 1,200 times the amount of bromochloroacetic acid, 328 times the amount of bromodichloromethane, 116 times the amount of chloroform and 4.3 times the amount of hexavalent chromium, according to the database. All of these contaminants have been shown to increase cancer risk.

New York City has 10 contaminants that exceed EWG's health guidelines, while also complying with legally mandated federal standards. The city's tap water has 73 times the amount of bromodichloromethane that EWG deems safe, 80 times the amount of chloroform and 2.1 times the amount of hexavalent chromium, according to the database.

The EWG called for substantial federal investments to help solve U.S. tap water problems, such as removing toxic lead service lines and cleaning up PFAS contamination — both of which are included in Congress's infrastructure spending bills that are still under debate.

"With more funding, stronger federal safety standards and a greater focus on helping historically disadvantaged areas, safe water could

part of our work to help consumers and communities learn about the true scope of the problem, empower themselves and advocate for better water quality."

Although the 1974 Safe Drinking Water Act gave the EPA the authority to oversee U.S. tap water quality, and the agency has set maximum contaminant levels for more than 90 contaminants, the water provided by most water systems is not actually safe, according to the EWG.

The EPA's Office of Groundwater and Drinking Water has added no new contaminants to its regulated list since 2000, the EWG statement said. Meanwhile, many of the maximum contaminant levels do not reflect current science; standards for nitrates, for example, are based on a U.S. Public Health Service recommendation from 1962, the EWG found.

Because contaminants like PFAS and hexavalent chromium — made famous by activist Erin Brockovich's fight in Hinkley, Calif. — still have no legal limits, water utilities still have no incentive to tackle the pollution that plagues local communities, according to the EWG.

"Our government needs to wake up to the fact that clean water is a human right, regardless of race, income or politics," Brockovich said in a statement. "Achieving true water equity means getting everyone — every single person — in this country access to affordable, safe tap water they can trust will not poison them and their loved ones."

The EPA did not immediately respond to The Hill's request for comment.

TAGS **FOREVER CHEMICALS**

NEWS

Winter Outlook for Northern Nevada

The Winter Outlook has been released, bringing some parts of country lots of cold and snowy weather, and dry weather for others.

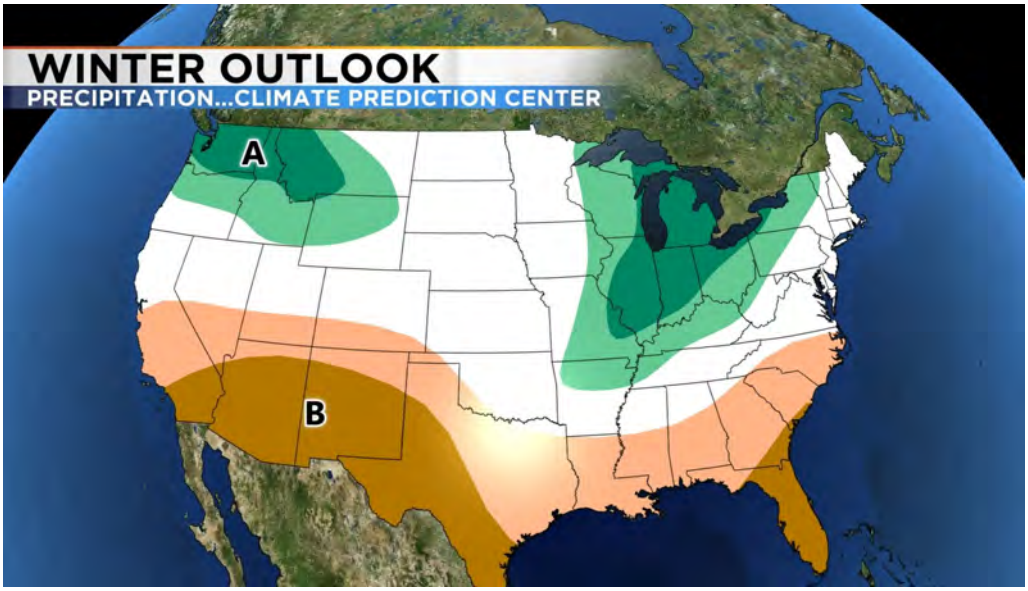
Wednesday, November 3rd 2021, 3:47 PM PDT
Updated: Wednesday, November 3rd 2021, 5:03 PM PDT

By **Angela Schilling**

This October was the wettest on record at the Reno-Tahoe International Airport. We saw just over three inches of precipitation. This is nearly half of the precipitation we typically receive each year and nearly the same amount we got during our latest water year. The recent rain helped our drought situation but this coming winter season is more important. Our water supply is heavily tied to our snowpack. Not only do we want a lot of snow, but we also want it to last through early spring.

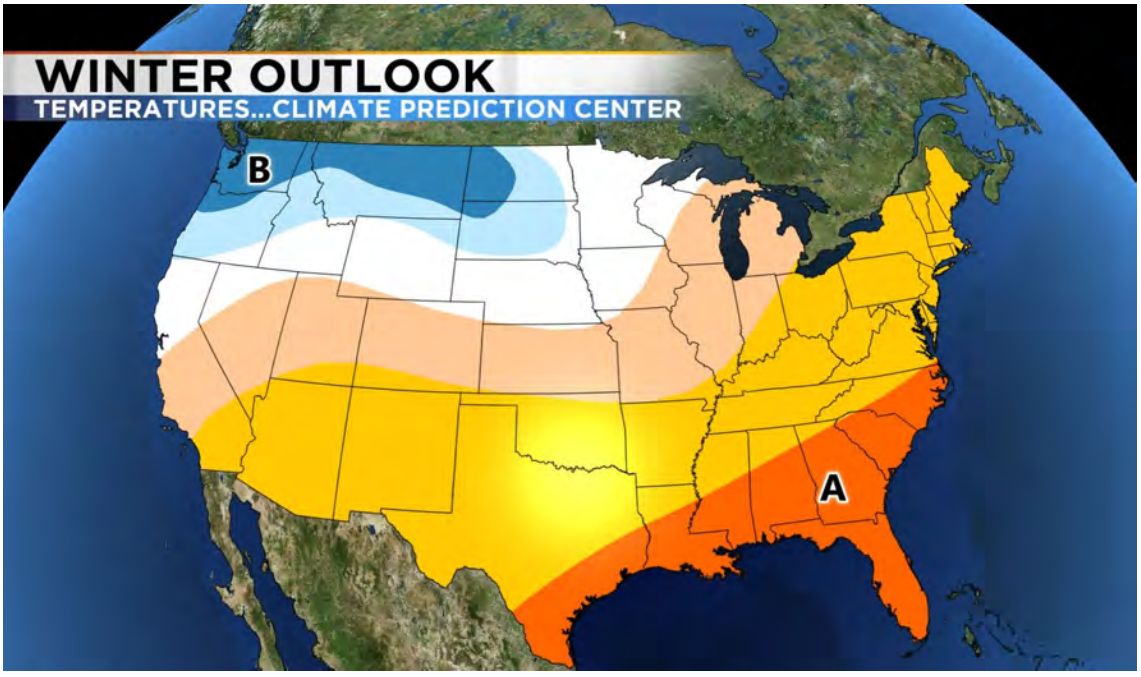
"I am surely hoping for snow this winter, lots of snow. We could really use it," says Reno resident Marybeth Oppenheimer.

The latest forecast calls for a wetter than normal winter in the Pacific Northwest and drier than normal winter to the south. Reno is left somewhere in between with both extremes possible. This means northern California has a better chance of making a dent in our drought situation than areas south of I80. Reno usually sees about 21 inches of snow each year, and Tahoe City usually sees about 15 feet.



"Even though we had a big storm, it wasn't enough. We need more rain," says northern California resident Debbie Munoz.

The temperature forecast is similar. The Pacific Northwest has a good chance of seeing a colder than normal winter, while northern Nevada will likely be warmer. La Nina will be in place for the second winter in a row. A La Nina winter is associated with colder water temperatures, pumping up the jet stream to our north. This gives the Pacific Northwest a better chance for stormy weather, but the slightest wiggle of the jet to the south could give us a more active pattern.



La Nina is expected to weaken with time, which means by late winter early spring, the door could be open for more storms to develop farther south. Since La Nina is forecasted to be moderate, and not strong, the Pacific Northwest won't have as stormy of a winter as it could be. The weather pattern can change season to season, which means a wet October does not always mean there will be a wet winter. Keep in mind the long term forecast is for the season as a whole, so there could be isolated events that don't fit the mold. While the weather pattern looks warmer than normal on average, we could still have a couple cold spells and big storms. Remember last winter? The winter was dry for the most part, but then a huge storm moved through giving the valley over a foot of snow. Let's hope we can have a more active snow season this year.

New River Forecast Model Integrates Artificial Intelligence for Better Water Management in the West

By Dr. Sean W. Fleming, National Water and Climate Center, NRCS · Nov 04, 2021

Water supply forecasts are important for any crop year. But for farmers, ranchers, foresters, and water managers in the West facing extreme and debilitating drought conditions, those forecasts have never been more critical to their operations and livelihoods.

Since the Dust Bowl of the 1930s, NRCS has helped America's producers plan for their operations through the Snow Survey and Water Supply Forecast program. The program runs a massive network of mountain climate and snow monitoring sites across the western U.S. called SNOTEL. This is coupled with other data and computer models to predict the amount of river runoff in the upcoming spring and summer. These water supply forecasts are used by America's producers to plan their operations for the year, by helping guide choices like crop selection, water rights rentals, and whether to leave land fallow.

Over the decades, that information has grown to be used by many other groups for many purposes – from optimizing hydroelectric power generation, to assessing seasonal flood risk, to complying with legal decisions around endangered species and international treaties governing transboundary rivers. The value of water managed using these forecasts is easily in the billions of dollars, and even modest increases in accuracy can create over $100 million a year in public benefit for just one river basin.

However, major forecasting improvements are needed because of narrowing margins between water supply and water demand in the ever-more-thirsty American West. Those tighter margins reflect a combination of climate change and population growth, and they mean there's less room for error than ever before in water management, requiring improved efficiency and accuracy in everything we do.

Today, NRCS has unveiled a new computer application to address this pressing need: the multi-model machine learning metasystem, or M⁴. This first-of-its-kind model will be the largest migration of artificial intelligence, also known as AI, into real-world river prediction programs.

Researchers first experimented with machine learning, a branch of AI, for hydrologic forecasting a quarter-century ago. But they couldn't jump the research-to-applications gap – the needed step of getting from what works in the lab to what works in the field. Ironically, scientists and engineers working outside the tech sector have often been the last to adopt AI into their everyday practices. Unlike some other areas, STEM fields have long used sophisticated math and computer models. AI had to successfully compete with those existing methods to gain widespread acceptance, which in many fields, including earth and environmental science, is only starting to happen now. The average hydrologist is still more likely to use AI – in a smartphone app, for example – to find the quickest route to the office in the morning, than to apply it in their work when they get there!

We aimed to change that. Applied scientists at NRCS took a pragmatic approach: they looked in detail at what they needed in the next generation of their operational river forecast system, and then created a new tailor-made solution from existing building blocks. That included adopting automated machine learning, which makes it easier and faster to use, and radically improving the explainability of the results, putting to bed a long-standing worry about so-called 'black box' AI technologies. Testing proves the system is more accurate, robust, and simple-to-use than ever before, while keeping features that worked in the older models.

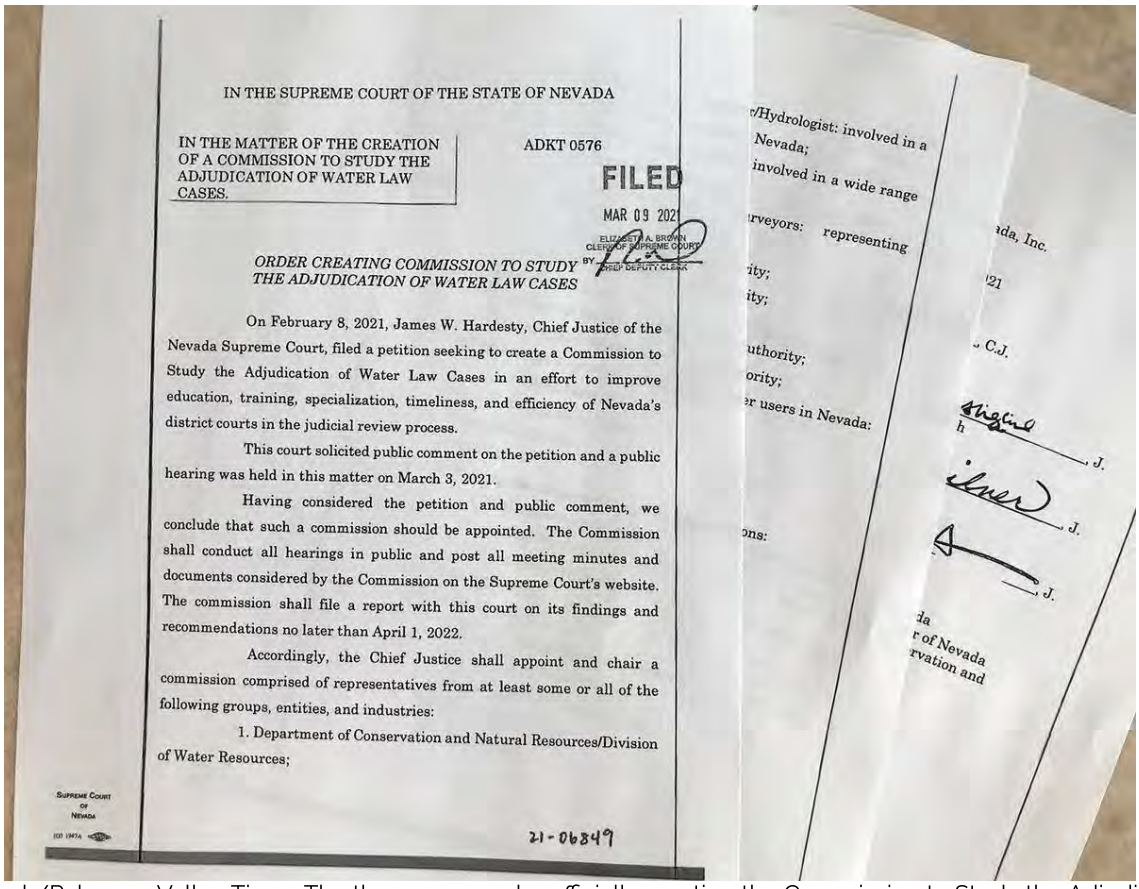
Our hope is that M will help farmers, ranchers, and foresters – our customers – better plan for their operations and continue to have the means to provide for people in the U.S. and around the world who depend on American agriculture. And given how many other water users and government agencies also rely on NRCS forecasts, we're also looking forward to seeing how the migration of AI into real-world, high-stakes environmental information systems like M will help everyone in the American West use increasingly pressured water resources more effectively while protecting our shared natural environment.

To read more about this new system, see the recent paper published in the Journal of Hydrology (https://www.sciencedirect.com/science/article/pii/s0022169421008325?via%3dihub) , the top-ranked, peer-reviewed scientific journal in water resources.

For more information about our Snow Survey and Water Supply program, visit our website (https://www.nrcs.usda.gov/wps/portal/wcc/home/) .

Dr. Sean W. Fleming (mailto:sean.fleming@usda.gov) *is the Applied R&D Technical Lead, Water and Climate Services Team at the NRCS National Water and Climate Center in Portland, Oregon.*

Nevada 'water court' concept under consideration



IN THE SUPREME COURT OF THE STATE OF NEVADA

IN THE MATTER OF THE CREATION OF A COMMISSION TO STUDY THE ADJUDICATION OF WATER LAW CASES.

ADKT 0576

FILED
MAR 09 2021
ELIZABETH A. BROWN
CLERK OF SUPREME COURT
BY
CHIEF DEPUTY CLERK

ORDER CREATING COMMISSION TO STUDY THE ADJUDICATION OF WATER LAW CASES

On February 8, 2021, James W. Hardesty, Chief Justice of the Nevada Supreme Court, filed a petition seeking to create a Commission to Study the Adjudication of Water Law Cases in an effort to improve education, training, specialization, timeliness, and efficiency of Nevada's district courts in the judicial review process.

This court solicited public comment on the petition and a public hearing was held in this matter on March 3, 2021.

Having considered the petition and public comment, we conclude that such a commission should be appointed. The Commission shall conduct all hearings in public and post all meeting minutes and documents considered by the Commission on the Supreme Court's website. The commission shall file a report with this court on its findings and recommendations no later than April 1, 2022.

Accordingly, the Chief Justice shall appoint and chair a commission comprised of representatives from at least some or all of the following groups, entities, and industries:

1. Department of Conservation and Natural Resources/Division of Water Resources;

SUPREME COURT OF NEVADA

21-06849

Robin Hebrock/Pahrump Valley Times The three-page order officially creating the Commission to Study the Adjudication of Water Law Cases is pictured here. The commission came as a result of a petition put forward by Nevada Supreme Court Justice James Hardesty.

By Robin Hebrock Pahrump Valley Times

November 5, 2021 - 7:01 am

In the driest state in the nation, "Whiskey is for drinking, water is for fighting," isn't just a catchy saying, it's reality.

All throughout the state of Nevada, water resources are a topic of unrelenting contention and the tug of war between domestic users and commercial operations, both of which cannot survive and thrive without water, is ongoing. Throw in environmental advocates and the situations becomes even more tempestuous. Lawsuits are common but water law is extraordinarily complex, leading to a variety of challenges for the state's district courts, where those lawsuits originate. On top of this, the decisions of the lower courts are sometimes conflicting and final rulings on appeals from the Nevada Supreme Court often take years to come to fruition, as was the case with the lawsuit surrounding Nevada State Engineer Order #1293A.

It is the very specialized nature of water law cases and their lengthy, complicated legal battles that prompted the Nevada Supreme Court to establish a Commission to Study the Adjudication of Water Law Cases earlier this year and one of the proposals coming out of that commission, that of a "water court", is already capturing the attention of many throughout the state.

"The Nevada Supreme Court convened the Commission to Study the Adjudication of Water Law Cases on March 9, 2021," information about that body explains. "Under the chairmanship of (Nevada Supreme Court) Chief Justice James Hardesty, the commission will work to improve education, training, specialization, timeliness and efficiency of Nevada's district courts in water law cases. Commission membership is comprised of experienced professionals, key stakeholders and members of the Nevada judiciary."

The commission to study water adjudication met for the first time on April 16 of this year and during that meeting one of the agenda items was to introduce the concept of a new water court. If created, this body would be tasked with overseeing all water law cases in the state.

As is to be expected, this concept is yet another wedge between the opposing sides of the water issue, with some in favor of and others against the idea. There are those who feel a water court presents a viable solution that would streamline the adjudication process and ensure equitable application of the law, but others are expressing their concerns about the potential makeup of that court and skepticism as to whether it would be a truly independent body free from external influences.

When the concept of a water court was broached at the commission to study water adjudication's first meeting, then Nye County Water District Manager Oz Wichman, who is one of 26 people appointed to the commission, put forward a few suggestions on the parameters of the water court. He was then asked to delineate his comments in a memorandum, which gives an overview of what he felt such a court should look like, were it to in fact be established.

Under Wichman's recommendations, the water court would be comprised of a total of five members who would be appointed to lifetime terms, rather than elected by the voters of the Silver State, and this lack of voters' say in selecting the judges is one of the major sticking points for those who oppose the move.

For his part, Wichman has some straightforward reasoning behind his suggestions, which are encapsulated in the memorandum and accessible to the public through the Nevada judiciary's website. Entitled "Water Court and Water Districts Proposal," the document outlines Wichman's thought process in terms of the formation of a water court.

"The court should consist of five judges assigned to five distinct districts. The judges are to reside (live in) their assigned districts. Hearings
(litigation) are to be conducted within the district boundary," the document reads in regard to the proposed number of judges and creation of water court districts. "There is a common thread of concern that should a water court be created and (for example) all judges reside and hear cases in a centralized location, rural Nevada will have no representation... This provides for equitable representation for both metropolitan and rural areas."

As to why he recommends that these judges be appointed for life by the Nevada Supreme Court, Wichman explains, "The goal is to provide judges with extensive knowledge of water law that will remain in office for extended periods (decades)," while also noting that the water court would have the power to petition the Nevada Supreme Court for removal of one of its judges in the event that the body feels that person is not performing their duties correctly.

Another point made by Wichman is that the water court's decisions should not be the end-all, with any rulings from that body subject to appeal to the Nevada Supreme Court. He also recommends that decisions of the water court be made as a whole, noting, "The judge assigned to the district will provide the burden of research and preside over the proceedings. However, all decisions will be considered, and voted on, by the full body and as such will require at least three judges to be in agreement with any given decision coming out of the court."

Whether a water court will be established and if so, precisely how that body will be structured, is still up in the air however, with the Commission to Study the Adjudication of Water Law Cases set to continue meeting until spring of next year. The commission is expected to present its findings and recommendations to the Nevada Supreme Court no later than April 1, 2022.

This body's meetings are available for telephonic or online participation, as well as live-streaming, on the platform Lifesize. Details on joining the meetings can be found with each agenda, which will be posted online at least three days prior to the meeting. The Pahrump Valley Times reached out to the commission to learn when its next meeting would be held but no date for that meeting has been set yet. Once it is, the notice of the meeting will be posted online on the Nevada Supreme Court's calendar.

Meeting documents and recordings, a full list of the 26 members and other information regarding the Commission to Study the Adjudication of Water Law Cases can be found online at www.nv.courts.gov by clicking on the
"Nevada Appellate Courts" link at the top of the page, followed by
"Programs and Services".

For more information contact Micheline Fairbank at mfairbank@water.nv.gov or Jamie Gradick at jgradick@nvcourt.nv.gov

Contact reporter Robin Hebrock at rhebrock@pvtimes.com

David Simeral displays a drought monitor map on his computer screen at the Desert Research Institute in Reno, Nev. on Tuesday, Nov. 9, 2021. (David Calvert/The Nevada Independent)

Indy Environment: Meet the Nevada climatologist who helps write the U.S. Drought Monitor

Good morning, and welcome to the Indy Environment newsletter.

As always, we want to hear from readers. Let us know what you're seeing on the ground and how policies are affecting you. Email me with any tips at daniel@thenvindy.com.

If you received this from a friend, sign-up here to receive it in your inbox.

Many of us are familiar with the U.S. Drought Monitor. It is frequently cited in news articles and reports. Government officials use it to make decisions about policies, and lawmakers point to it for a rough estimate of how severe drought conditions are. It has real-world consequences too, relied upon to determine where disaster relief ought to go and to support crop insurance claims.

It's no surprise that it's shared so widely. Many parts of the West are preparing for an evenmore arid future, the consequences of which are coming into greater focus as greater attention is paid to changes in precipitation and temperature. The drought monitor is also visual and clear. In this way, it is an immensely shareable piece of science communication, perfect for our online world.

Over the past few years, I have looked at the U.S. Drought Monitor more frequently, including historical drought data. And it prompted me to ask: What is this map telling me?What conclusions should I take away from it? The answers to those questions turned out to be closer to home than I expected, about an 11-minute drive from my house to the Desert Research Institute.

Since 2012, David Simeral, an associate research scientist at the institute, has played a role in helping draw the drought map each week. Simeral is one of nine national U.S. Drought Monitor authors, and he is the only one based in the West, where arid conditions are a defining feature throughout much of the region.

Earlier this week, I met with Simeral in his office at the Desert Research Institute's Reno campus to talk about how he creates the map and what data is used for it. Simeral is part of the Western Regional Climate Center, which is housed at the institute.

When I got to the office, Simeral opened a Drought Monitor map from September, the last time he was the lead author. That was the first thing I learned: There's one lead author for each map, and the nine authors rotate to serve as the lead author for the entire U.S. map, which is updated once a week and released on Thursday (check out the latest version here).

The second thing that Simeral emphasized was that **each drought map pulls from a lot of different data and sources.** The map is hardly automated. On Simeral's computer, he has a list of mapped data that he can toggle through: precipitation, soil moisture, streamflow measurements (to name only a few). Using this data, and comparing it to conditions plotted the week before — or several weeks and months before — Simeral is able to start to get a sense of how drought is developing in a particular area. There are dozens of indicators to go through, and many of them get hyperlocal, down to the level of a particular stretch of stream.

The finished map defines on-the-ground conditions using five main categories, ranging from D0 (abnormally dry) to D4 (exceptional drought). There is not a quantitative formula for determining these categories. Instead, authors including Simeral look at the indicators and data to determine each week how drought is progressing. For instance, if data point to improvements in an area that is experiencing exceptional drought, Simeral might downgrade the area to D3 (extreme drought).

Simeral calls this a "convergence of evidence approach."

Why is the ~~map~~ created this way? Why not simply rely on precipitation? **Drought, despite the word's everyday use, is actually not easy to define.** According to the National Integrated Drought Information System, "drought is generally defined as 'a deficiency of precipitation over an extended period of time (usually a season or more), resulting in a water shortage.'"

There are, however, different types of drought, and they are not necessarily exclusive. These include meteorological drought, hydrological drought, agricultural drought and ecological drought. They are cumulative too, requiring a look at not only the most recent rainfall, but a variety of factors.

When Simeral writes the drought map and is listed as the lead author, he is hardly going about the challenging task alone. In fact, he describes **the creation of the weekly drought map as an iterative process, where there are drafts, robust discussions and feedback from those on the ground.** When Simeral is charged with writing the map, he says he is often the first one in the office and the last to leave. There are long days filled with phone calls, email replies and meetings.

As of October 2020, about 451 people — weather forecasters, state agency officials and academics — belonged to a listserv for creating the drought monitor. On any given week, aportion of them help participate in the map's creation. Participants on the state and regional level offer local expert input, recommending certain regions that should have their drought status upgraded or downgraded. It's the drought author's job to then weigh those recommendations by looking at the data.

Simeral and other authors hear anecdotes directly from farmers and ranchers, as well. In some cases, a staffer from a congressional office might call. Sometimes there are insights about what they are seeing on-the-ground or from constituents. Other times, there are criticisms of a map that policymakers have since tied to important decisions, including disaster funding.

Simeral acknowledged that there can be differences of opinions, even within the group working on putting the map together. He said he takes the concerns seriously, and has gained a lot of insight from talking through the map with agricultural producers. But impacts that might look drought-related can be tied to other factors, including how land and water are managed.

"I take [them] seriously, but there is a level of verification that has to occur," Simeral said.

After all, the map is not only a map. Each week, the map comes with a narrative. That's often missing when the map is shared online or in articles. But Simeral said it's a critical part of the end product, and the narrative goes into more detail about what is happening in each region of the U.S. It talks about policies, agency decisions and other factors that can influence drought impacts. The narrative is important, too, because the character of drought can be different in different places.

"Drought comes in different forms," Simeral said. "It manifests itself differently in every location."

He pointed to the Southeast, which sees "flash droughts." If no rain comes, even for just a few weeks, sandy soils in the region can dry out rapidly and bring immediate impacts, Simeral said. In the Southwest, where the climate already trends arid, Simeral might look at other indicators, watching how conditions unfold over a longer period of time. **This is not always an easy task, especially in a state like Nevada**, where hydrological and ecological impacts occur in remote areas that are not always well documented. Certain parts of the state also lack strong data.

Then there is the question of how to view the map in a world where "normal" is not what it used to be. The climate is changing, and parts of the West are at the frontlines. The term "megadrought" is often tossed around these days. And respected scientists in the Colorado River Basin have even suggested using the term "aridification" as the term "drought" connotes a temporary condition.

The drought map is a tool, and it is a reflection of what's going on week-by-week. But it is also useful in seeing how things have changed over time. Its inputs are climate data, and the U.S. Drought Monitor website offers a historical time series showing how droughts have developed.

Looking at the data each week has given Simeral a firsthand look at how things are changing in the West, where drought is becoming more frequent and severe. The last two years, he said, have been notable because of the way extreme heat has affected other systems, including the accumulation of snowpack, a critical water source.

During the interview, Simeral opened up the historical time series on the computer. What he said he has found "alarming" is how quickly this current drought ramped up in its intensity.

"The water implications are huge," he said. "And water is everything in the West."

David Simeral at the Desert Research Institute in Reno, Nev. on Nov. 9, 2021. (David Calvert/The Nevada Independent)

Nevadans encouraged to help shape state's water management through survey

News FOLLOW NEWS | November 9, 2021

Staff Report

INCLINE VILLAGE, Nev. – State residents can weigh in and help guide development of an updated water plan through a survey released Monday by the Nevada Division of Water Resources.

The survey is available online at https://tinyurl.com/298wbedz now through Dec. 15, 2021.

The new State Water Plan will serve as a high-level policy and planning guide focused on addressing Nevada's many complex water challenges, including the increasing demand for limited water resources, floods, prolonged drought, dam safety, and sustainment of our wetlands and freshwater ecosystems – all within the overarching context of Nevada's rapidly growing population and the accelerating impacts of climate change occurring in all corners of the state.

"Nevada is in a critical time of water management," said Adam Sullivan, state engineer/administrator for NDWR. "As the driest and one of the fastest-growing states in the nation, the demands on our limited water resources make thoughtful and strategic water management in Nevada more important than ever. We look forward to engaging with Nevada's communities and gaining key insights through the State Water Plan public survey to support a sustainable, vibrant water future in the years ahead."

NEWS

Partnership Restores Water Flows To Little Washoe Lake

Little Washoe Lake and portions of the Scripps WMA dried up during the summer of 2021 due to the lack of precipitation and associated stream flows caused by consecutive drought years.

Tuesday, November 9th 2021, 3:26 PM PST

Little Washoe Lake water levels are now recovering after the Nevada Department of Wildlife (NDOW) worked with partners to repair a water diversion ditch that feeds the Washoe Lakes system, which includes Big and Little Washoe Lakes, as well as the Scripps Wildlife Management Area (WMA) that lies between.

Little Washoe and portions of the Scripps WMA dried up during the summer of 2021 due to the lack of precipitation and associated stream flows caused by consecutive drought years.

“This is the first time many locals could ever recall Little Washoe Lake levels dropping to this extreme,” said NDOW Habitat Division Administrator Alan Jenne. “We quickly realized a need to investigate to find the root of the issue, possible solutions and evaluate options to make the system more resilient”.

NDOW visited the lake with the Nevada Division of Water Resources, the Nevada Division of State Parks, and the U.S. Federal Water Master in July to evaluate the situation.

Despite finding no anomalies or immediate solutions for summer stream flows, the visit and discussions did reveal an irrigation diversion ditch that washed out during the 2017 floods that could provide some long-term relief for the Washoe lake system if repaired.

NDOW began coordinating with the Washoe Lake Reservoir and Galena Creek Ditch Company, and Nevada Conservation Districts Program to discuss options to repair the ditch.

It was found that while the value and use of the water rights that flow through the diversion ditch were still there, the funds necessary for a repair were not.

NDOW quickly volunteered to fund the repair if the ditch company would oversee the project and coordinate with private landowners and the States Conservation District Program to hire someone to make the repairs. Quilici Construction Company, given their extensive experience with these scenarios, was soon hired and the repairs were finalized on Friday, November 5.

POPULAR STORIES

As Cities Grow, Wastewater Recycling Gets Another Look

More places around the U.S. are eyeing the practice of recycling wastewater for reuse in homes and businesses as tap water.

By Associated Press
Nov. 10, 2021

Connor Sonnenberg, foreground left, and Billy Kinn, foreground right, drink wastewater that was sterilized at the PureWater Colorado Mobile Demonstration using a method that involves carbon-based purification, Thursday, Oct.

14, 2021, in Colorado Springs, Colo. Across the U.S., cities are increasingly embracing the idea of sterilizing wastewater from toilets, sinks and factories, and piping it back into homes and businesses for drinking. (AP Photo/Brittany Peterson) THE ASSOCIATED PRESS

By BRITTANY PETERSON and SAM METZ, Associated Press

DENVER (AP) — Around the U.S., cities are increasingly warming to an idea that once induced gags: Sterilize wastewater from toilets, sinks and factories, and eventually pipe it back into homes and businesses as tap water.

In the Los Angeles area, plans to recycle wastewater for drinking are moving along with little fanfare just two decades after similar efforts in the city sparked such a backlash they had to be abandoned. The practice, which must meet federal drinking water standards, has been adopted in several places around the country, including nearby Orange County.

“We've had a sea change in terms of public attitudes toward wastewater recycling," said David Nahai, the former general manager of the Los Angeles Department of Water and Power.

The shifting attitudes around a concept once dismissively dubbed “toilet to tap" come as dry regions scramble for ways to increase water supplies as their populations boom and climate change intensifies droughts. Other strategies gaining traction include collecting runoff from streams and roads after storms, and stripping seawater of salt and other minerals, a process that's still relatively rare and expensive.

Though there are still only about two dozen communities in the U.S. using some form of recycled water for drinking, that number is projected to more than double in the next 15 years, according to WateReuse, a group that helps cities adopt such conservation practices.

In most places that do it, the sterilized water is usually mixed back into a lake, river or other natural source before being reused — a step that helps make the idea of drinking treated sewage go down easier for some.

Funding for more wastewater recycling projects is on the way. The bipartisan infrastructure bill passed by Congress has $1 billion for water reuse projects in the West, including the $3.4 billion project in Southern California.

And tucked into the federal budget reconciliation package being debated is $125 million in grants for alternative water sources nationwide that could include reuse technologies.

The Southern California project would be the nation's largest wastewater recycling program, producing enough water to supply 500,000 homes, according to the Metropolitan Water District, which serves 19 million people in Los Angeles and surrounding counties.

In Colorado, over two dozen facilities already recycle water for non-drinking purposes, which is more affordable than cleaning it for drinking. But growing populations mean cities could need to pull additional supply from the Colorado River, which is already strained from overuse.

At that point, it might make sense to start recycling for drinking purposes as well, said Greg Fisher, head of demand planning for Denver Water.

To warm residents to the idea, Colorado Springs Utilities is hosting a mobile exhibit that shows how wastewater recycling works. On a cold, rainy afternoon, dozens of visitors showed up to learn about the carbon-based purification process and sample the results, which several noted tasted no different than their usual supply.

The recycling process typically entails disinfecting wastewater with ozone gas or ultraviolet light to remove viruses and bacteria, then filtering it through membranes with microscopic pores to remove solids and trace contaminants.

Not all water can be recycled locally. Often, Western communities are required to send treated wastewater back to its source, so that it can eventually be used by other places that depend on that same body of water.

“You have to put the water back into the river because it’s not yours,” said Patricia Sinicropi, executive director of WateReuse.

As a result, much of the country already consumes water that's been recycled to some degree, simply by living downstream from others. It's why drinking water undergoes stringent sterilization even when it's pulled from a river or lake that looks clean.

Encouraged by efforts in other cities, even places with stable water supplies are considering recycling their own wastewater. After a poll showed broad support for the idea in Boise, Idaho, city officials began studying plans to recharge local groundwater with treated wastewater.

“We need to be managing for the potential impacts of climate change," said Haley Falconer, a senior manager in the city’s environmental division.

The Southern California project, which still needs to undergo environmental review and finalize its funding plan, would also lessen the region's need to pipe in water from afar. In exchange for financing from water agencies in Nevada and Arizona, the area is ceding some of its share of the Colorado River.

“We’re taking advantage of a water supply that’s right here in our backyard,” said Deven Upadhyay, chief operating officer for the Metropolitan Water District.

Officials emphasize the project uses technology that’s been used safely elsewhere, including in Israel and Singapore. The reassurances have become critical after a separate Los Angeles wastewater treatment plant, which uses a different process to purify water for irrigation and industrial purposes, flooded and spilled sewage into the ocean in July.

“The last thing that any of us want is one of these projects that have a water quality hiccup that sets back public perception,” Upadhyay said.

—

Metz, who reported from Carson City, Nevada, is a corps member for the Associated Press/Report for America Statehouse News Initiative. Report for America is a nonprofit national service program that places journalists in local newsrooms to report on undercovered issues.

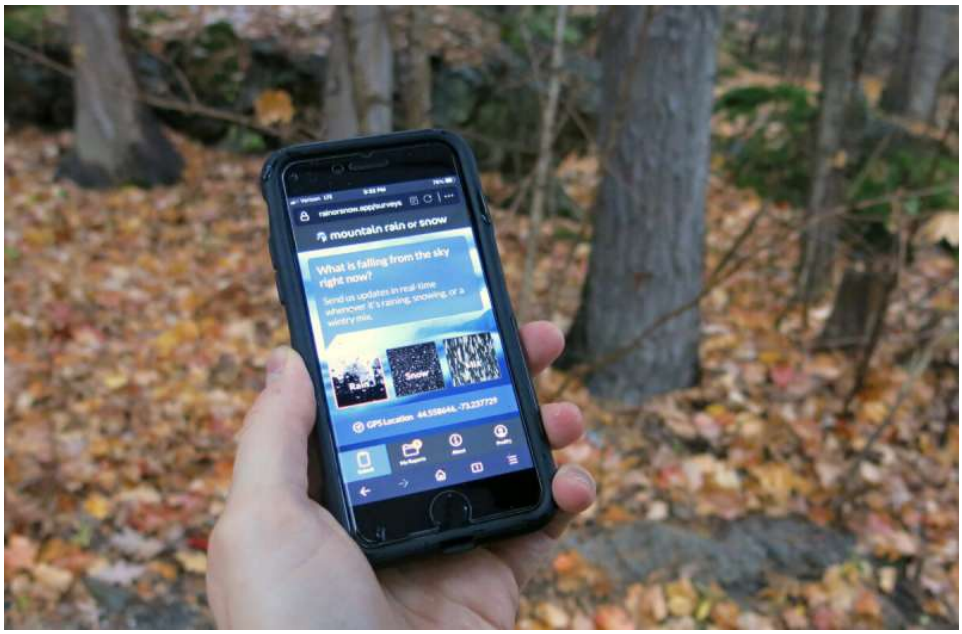
The Associated Press receives support from the Walton Family Foundation for coverage of water and environmental policy. The AP is solely responsible for all content. For all of AP’s environmental coverage, visit https://apnews.com/hub/environment.

Tags: Associated Press, recycling, Colorado, Nevada, California, business, environment, Arizona, Waste Management, demographics, Idaho

NOVEMBER 15, 2021

'Mountain Rain or Snow' project seeks citizen scientists and winter storm reports

by Desert Research Institute



Mountain Rain or Snow engages citizen scientist volunteers to submit observations of rain, snow, or mixed precipitation via smartphones and other devices. Credit: Lynker

During the winter, a few degrees can make all the difference between digging your car out of a snowbank and rushing rivers overtopping their banks. Why? Winter storms at near-freezing temperatures have notoriously fickle precipitation, with mixes of rain and snow. While the air temperature difference between the two may be slight, the real-world consequences can be huge.

What's more, the computer models we use to predict weather and streamflow often struggle to predict whether rain or snow will fall when temperatures are right around 32°F. Satellites don't do much better. What this means is that scientists need your help.

With NASA funding, a team from Lynker, the Desert Research Institute, and the University of Nevada, Reno is launching a citizen science project where volunteers like you can submit observations of rain, snow, and mixed precipitation via your smartphone, laptop, desktop, tablet, or any other device with a browser. It's called Mountain Rain or Snow, and you can report from your backcountry adventures, winter drives (as long as you're the passenger), and even the comfort of your own home. Every observation is valuable.

As we grow the community of Mountain Rain or Snow volunteers, we will be better able to analyze patterns of rain and snow to improve satellite monitoring and model predictions. This info can then bring about better weather forecasts, more detailed knowledge of skiing conditions, improved avalanche risk assessments, and more robust understanding of the water stored in mountain snowpacks.

This winter we're focusing our efforts on the following mountain regions. If you're in one of these areas, text the region-specific keyword to the number provided.

Two citizen scientists collect data for the Mountain Rain or Snow project. Credit: Lynker

You'll then get a link to the Mountain Rain or Snow web app and you'll receive notifications of incoming winter storms in your area. You can opt out at any time.

- The Appalachians and Adirondacks of New England and New York: Text NorEaster to 855-909-0798
- The Cascades, Coast Range, and Klamath Mountains of Oregon: Text OregonRainOrSnow to 855-909-0798
- The Sierra Nevada of California and Nevada: Text WINTER to 855-909-0798
- The Rocky Mountains of Colorado: Text CORainSnow to 855-909-0798

If you don't happen to find yourself in one of the above areas, we welcome observations from wherever you are. Anyone can submit an observation at any time via rainorsnow.app/.

More information: Learn more about NASA's Citizen Science Program: science.nasa.gov/citizenscience

Provided by Desert Research Institute

Citation: 'Mountain Rain or Snow' project seeks citizen scientists and winter storm reports (2021, November 15) retrieved 30 November 2021 from https://phys.org/news/2021-11-mountain-citizen-scientists-winter-storm.html

EPA Advances Science to Protect the Public from PFOA and PFOS in Drinking Water

November 16, 2021

Contact Information
EPA Press Office (press@epa.gov)

WASHINGTON (Nov. 16, 2021) – Today, the U.S. Environmental Protection Agency (EPA) is asking the agency's Science Advisory Board to review draft scientific documents regarding the health effects of certain Per- and Polyfluoroalkyl Substances (PFAS). EPA is committed to science-based approaches to protect public health from exposure to Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonic acid (PFOS), including by quickly updating drinking water health advisories with new peer-reviewed approaches and expeditiously developing National Primary Drinking Water Regulations for these contaminants.

"Under our new PFAS Strategic Roadmap, EPA is moving aggressively on clear, robust, and science-based actions to protect communities suffering from legacy PFOA and PFOS contamination," **said EPA Administrator Michael S. Regan**. "This action will ensure a rigorous review from experienced scientists to strengthen our understanding of this preliminary information as the agency works toward developing revised health advisories for PFOA and PFOS, and soon establishing regulations that protect communities from these contaminants."

EPA has transmitted to the Science Advisory Board four dra documents with recent scientific data and new analyses that indicate that negative health eects may occur at much lower levels of exposure to PFOA and PFOS than previously understood and that PFOA is a likely carcinogen. The dra documents present EPA's initial analysis and findings with respect to this new information.

Following peer review, this information will be used to inform health advisories and the development of Maximum Contaminant Level Goals and a National Primary Drinking Water Regulation for PFOA and PFOS. EPA is now seeking independent scientific review of these documents. EPA is making these draft documents available to the public to ensure a transparent and robust evaluation of the available information.

EPA will not wait to take action to protect the public from PFAS exposure. The agency will be actively engaging with its partners regarding PFOA and PFOS in drinking water, including supporting their monitoring and remediation efforts. Importantly, the Bipartisan Infrastructure Law, signed by President Biden on November 15, 2021, invests$10 billion to help communities test for and clean up PFAS and other emerging contaminants in drinking water and wastewater, and can be used to support projects in disadvantaged communities.

EPA will move as quickly as possible to issue updated health advisories for PFOA and PFOS that reflect this new science and input from the SAB. Concurrently, EPA will continue to develop a proposed PFAS National Primary Drinking Water Regulation for publication in Fall 2022.

For more information, visit www.epa.gov/pfas <https://epa.gov/pfas>.

Contact Us <https://epa.gov/newsreleases/forms/contact-us> to ask a question, provide feedback, or report a problem.

Hoover Dam from the Mike O'Callaghan-Pat Tillman Memorial Bridge in 2018. (Jeff Scheid/The Nevada Independent)

Indy Environment: What the infrastructure bill means for water in Nevada and the West

Good morning, and welcome to the Indy Environment newsletter.

I'll be off next week for the holiday. Hope everyone gets some rest, and see you in December.

As always, we want to hear from readers. Let us know what you're seeing on the ground and how policies are affecting you. Email me with any tips at daniel@thenvindy.com

If you received this from a friend, sign-up here to receive it in your inbox.

On Monday, President Joe Biden signed the $1.2 trillion bipartisan infrastructure bill, legislation that is expected to send more than $4 billion to Nevada. The funds are earmarked to address a variety of different infrastructure needs, including roads, public transportation and cybersecurity.

forward:

Under the bill, over the next five years, **Nevada could receive about $405 million to fund water projects** that focus on everything from fixing aging infrastructure to ensuring access to clean drinking water. That number is based on current estimates from allocation formulas that distribute federal dollars, part of a program known as the State Revolving Fund, or the SRF.

Those dollars will flow into two buckets. About $60 million is expected to go toward the Clean Water State Revolving Fund and about $345 million could go toward the Drinking Water State Revolving Fund, according to Samantha Thompson, a spokesperson for the Nevada Division of Environmental Protection, the state agency responsible for administering the programs.

For both programs, there is a backlog of projects vying to get off the ground (the state publishes priority lists for both programs). According to Thompson, there is more than $550 million in funding needs for drinking water projects and more than $407 million in needs for clean water projects. As of July, a wide range of applicants, from small to large water users across the state, have applied for funding.

The new funds, Thompson wrote in an email, “will aid substantially in reducing this unmet need.”

Drinking water funds, she wrote, could be used to address compliance issues, sustainability, climate change, contaminants or replacing lead pipes. Funds under the clean water program could go to similar activities, stormwater management, wastewater treatment and conservation.

The agency, she said, is working with the EPA to fully evaluate the legislation and will conduct outreach, starting next month, to determine additional projects that might be eligible for funds.

Apart from funds directed to the state, **other water provisions in the legislation could have consequences across the state and region.** The infrastructure bill opens up more than $11 billion in funding to Indigenous communities, with a portion of that funding focused on water.

The infrastructure bill allocates about $3.5 billion over five years for the Indian Health Service Sanitation Facilities Construction Program. The legislation includes $2.5 billion for water rights settlements and increases EPA clean drinking water funding by as much as $858 million.

Tribes in Nevada administer a total of 17 sewer systems and 23 water systems, according to a new report from the Water & Tribes Initiative, a group focused on access to clean drinking water in states that make up the Colorado River watershed. **The report highlights an important fact: The allocations are an important step, but how the agencies disburse the funding is also important to watch.** The Water & Tribes Initiative report aims to provide a roadmap for agencies, encouraging a coordinated "whole of government" approach. It also calls on agencies to re-evaluate barriers that have blocked funding allocations in the past.

In 2019, a report from DigDeep and the U.S. Water Alliance found that two million Americans lack access to running water or indoor plumbing. Native American communities, the report found, are more likely than other groups to lack these services. Some gaps, experts have said, are due to a lack of infrastructure investment, with federal spending lower than it used to be.

the EPA to compile a report on water affordability and debt. Thompson, with the state's natural resources agency, noted that the legislation includes requirements, associated with the new funding, "for ensuring projects address water projects for underserved or disadvantaged communities."

The bill also includes provisions aimed at a particular Nevada water issue: the Colorado River and the drought facing the West. The legislation allocates about $8.3 billion to address Western water issues over the next five years. Of that, about $300 million was allocated to help implement a drought contingency plan, agreed to in 2019, to cut back on Colorado River water.

The legislation also includes $1 billion for water reuse, roughly half of which ($450 million) will go to a competitive grant program for large-scale recycling projects. Earlier this year, Rep. Susie Lee (D-Las Vegas) and Democratic Sen. Catherine Cortez Masto had introduced legislation to shore up that funding. The grant program could help bolster a Southern California project that the Southern Nevada Water Authority has invested in. The project, if successful, could free up water on the Colorado River.

Here's what else I'm watching this week:

A Southwest Gas technician makes a service call in Las Vegas on April 16, 2021. (Jeff Scheid/The Nevada Independent)

What's going on with Southwest Gas: On Tuesday, I wrote about the pressure Southwest Gas is under as it makes investment decisions about the future of the company. For weeks, activist investor Carl Icahn has been placing pressure on the company and criticizing the utility's management after it announced a nearly $2 billion deal for a pipeline distribution company. At home in Nevada, utility regulators are looking at long-term planning for natural gas. The utility wants to expand its system, even as the state's climate plan calls for a transition away from the fossil fuel. There's also a Supreme Court lawsuit going on — and more. Here's my article.

California are negotiating a deal that could cost about $100 million to stave off further drops in the reservoir.

Bureau of Land Management appoints a new deputy state director: Justin Abernathy will serve as the deputy state director for energy and minerals at the agency, which manages about 65 percent of the state's land. More on the appointment in a press release from the agency.

"White gold" at the Salton Sea: *The Los Angeles Times*' Sammy Roth writes about a firm that began drilling to tap into lithium and geothermal at the Salton Sea in Southern California.

Hycroft mine lays off workers: Adella Harding, with the *Elko Daily Free Press*, reports on the Hycroft Mining Holding Corp.'s decision to lay off workers at its mine west of Winnemucca.

A new battery plant: "A graphene and battery manufacturer is conducting a major expansion into Northern Nevada, which is being described as the most significant economic development win for the region since Tesla's Gigafactory," the *Reno Gazette Journal*'s Jason Hidalgo reports.

How one California city cut its water use in half, via KQED's Ezra David Romero

Rare Sierra Nevada foxes survive Dixie Fire, the *Los Angeles Times* Lila Seidman reports.

The Desert Research Institute is calling citizen scientists for precipitation observations.

Do you appreciate the work that goes into this newsletter?
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Reno park rangers could soon monitor Truckee River, homeless advocates concerned

by Ben Margiott
Wednesday, November 17th 2021

RENO, Nev. (News 4 & Fox 11) — The City of Reno is planning to restart its park ranger program, under which rangers would have authority to monitor and respond to calls at city parks, recreation facilities, trails and any public property near the Truckee River.

The ordinance, introduced and discussed at the Reno city council meeting Wednesday, would allow park rangers to monitor areas within 350 feet of the river shores, which homeless advocates fear could lead to homeless people being targeted.

City officials said the proposal comes as the parks department seeks to restart the parks ranger program, which launched in 1995 but was shuttered due to budget cuts during the Great Recession.

Under their proposal, the city could hire two full-time park rangers, whose job would be to monitor the city's parks, public bathrooms, picnic shelters, play structures and nature study areas.

Reno park ranger duties (Courtesy: City of Reno presentation)

The unarmed rangers could also respond to calls and write tickets for vandalism, off-leash dogs, disorderly conduct and other minor code violations.

Wednesday morning, city council members voted unanimously to move forward with the ordinance over the concerns raised by homeless advocates. It will need to pass once more before becoming law.

"They have nowhere to go and so we shouldn't be criminalizing people who are just existing," said advocate Natalie Handler.

46° 59° 62°

It's a step in the wrong direction. It does nothing to help this pulation d does e ything to compound their suffering and their hurt.

Handler worried that homeless people who camp near the riverbanks will be disproportionately ticketed and wind up in the criminal justice system.

Mayor Hillary Schieve supported the plan, arguing that conditions at the river are 'out of control.'

"It needs to be a river that everyone can enjoy. All of us. Because honestly, when people are down there and trying to recreate and then they come across trash or needles or things that can be hazardous - it's problematic," Schieve said.

Councilman Devon Reese said he 'struggled' with the proposed ordinance, expressing skepticism that it was the best approach.

"I fundamentally do not believe that we can criminalize our way out of homelessness," he said. "I want for us to have vibrant and safe parks and open spaces for everyone to enjoy. I believe we all do. What I do not want to do is be seen as targeting a particular people group."

A city spokeswoman confirmed the ordinance is scheduled for nal vot uring th ec. 1 council meeting, which begins at 10 a.m. at Reno city hall.

WATCH the city council meeting here:

Email reporter Ben Margiott at bjmargiott@sbgtv.com. Follow @BenMargiott on Twitter and Ben Margiott KRNV on Facebook.

GOVERNMENT

Two new unarmed park rangers to start patrolling

By Bob Conrad | November 17, 2021

Parks and open spaces, to include the Truckee River, will soon have new patrols. The Reno City Council today unanimously approved hiring two new park ranger positions. The vote was the approval and a second reading and adoption will occur at a future council meeting.

The rangers will be non commissioned rangers, meaning they are not law enforcement and will not carrying guns. Rangers will patrol park and recreation areas to enforce rules and regulations.

Mayor Hillary Schieve said “it’s gotten out of control down at the river… and we have to address it. A of our residents cannot use it for recreation. If we let people stay there, it’s only going to be more dangerous for them and for others, and that’s not right.”

Lily Baran with the ACLU of Nevada said she would like to see the city commit to keeping the range unarmed.

“That is a trend that has happened with other cities,” she said. Some spoke against the measures, sa it would lead city officials to criminalize those experiencing homelessness.

Baran also requested more trash cans and resources for those unable to stay at the Cares Campus.

“I agree with you, so thank you,” Schieve said in response to Baran.

The city had two unarmed rangers starting in 1995 but the positions were eliminated as part of bud cuts during the Great Recession.

“Revitalizing this program will entail much of what was originally implemented in the late 1990s,” c staff said.

More city council actions

Provided by the City of Reno

Fire station alerting system

Council approved a contract purchase with PURVIS Fire Station Alerting System for software and services related to Public Safety Dispatch and Reno Fire Department in an amount not to exceed $1,240,000. The purchase will be reimbursed by 911 surcharge funds. The Public Safety Dispatch an Fire Department require a new fire station alerting system to replace the legacy system to ensure th is a reliable enhanced communication system between dispatch and the fire stations during fire emergency calls.

Donation to Reno Fire Department's paramedic scholarship program

Council accepted a cash donation in the amount of $1,000 from the Paralyzed Veterans of America the Reno Fire Department for its paramedic scholarship program. Staff will use this donation as par the City's paramedic scholarship program supporting our firefighters.

Offenses against property ordinance introduction

Council approved an ordinance introduction to be heard for a second reading and adoption, amend Title 8, Chapter 8.10, of the Reno MunicipalCode entitled "Offenses Against Property," creating new Ordinance RMC8.10.110 prohibiting possession of a catalytic converter unless otherwise permitted.

Following a presentation, Council approved an ordinance introduction to be heard for a second read and adoption selecting Map Option D, revising the City's official map and ward boundaries. Background: Population data from the 2020 Census indicates the populations of the City's five ward need to be rebalanced to conform with the Reno City Charter.

UPDATE: This story was updated to include other city council decisions provided by city staff.

Bob Conrad Publisher & Editor

Bob Conrad is publisher, editor, and co-founder of This Is Reno. He has served in communication positions for various state agencies and earned a doctorate from the University of Nevada, Reno in 2011, where he completed a dissertation on social media, journalism and crisis communications. I addition to managing This Is Reno, he holds a part-time appointment for the Mineral County University of Nevada Extension office.

www.thisisreno.com

Ward boundaries and official city map ordinance introduction

NOVEMBER 18, 2021

One year from launch: US-European satellite to track world's water

by Jet Propulsion Laboratory

Engineers integrate separate parts of the SWOT satellite into one in a clean room facility in Cannes, France. Credit: Thales Alenia Space

An international team of engineers and technicians has finished assembling a next-generation satellite that will make the first global survey of Earth's surface water and study fine-scale ocean currents. The Surface Water and Ocean Topography (SWOT) mission is just a year out from launch, and the final set of tests on the spacecraft have started.

SWOT is a collaboration between NASA and the French space agency Centre National d'Etudes Spatiales (CNES), with contributions from the Canadian Space Agency (CSA) and the United Kingdom Space Agency (UK Space Agency). The SUV-size satellite will collect data on the height of Earth's salt- and fresh water—including oceans, lakes, and rivers—enabling researchers to track the volume and location of water around the world.

SWOT will help to measure the effects of climate change on the planet's water, such as the processes by which small, swirling ocean currents absorb excess heat, moisture, and greenhouse gases like carbon dioxide from the atmosphere. The mission's measurements will also aid in following how much water flows into and out of the planet's lakes, rivers, and reservoirs, as well as regional shifts in sea level.

"SWOT will be our first global snapshot of all surface water that we have now, how the water moves around the planet, and what happens to it in a new climate," said Nadya Vinogradova Shiffer, SWOT program scientist at NASA Headquarters in Washington.

A team at the agency's Jet Propulsion Laboratory in Southern California shipped the scientific heart of the satellite to Cannes, France, in June. Ever since, they've been working with colleagues from CNES and the French space agency's contractor, Thales Alenia Space, to connect the part of the spacecraft holding the science instruments to the rest of the satellite and ensure that the electrical connections function properly.

"The best part has been seeing two complex systems that were built across the world from each other by different teams come together and work," said JPL's Said Kaki, the deputy project manager for SWOT. Kaki, along with an initial team of about 25 people from JPL, followed the mission's science instruments to France in June. There are certain tests and procedures that the team needs to conduct in person, so they are living and working thousands of miles from home until the SWOT satellite is shipped to its launch site at Vandenberg Space Force Base in Central California in September 2022.

"Being far away from home for so long is not always easy, but luckily, I'm surrounded by amazing coworkers," Nacer Chahat, the JPL payload system engineer for the mission, said from Cannes. He has been onsite overseeing the spacecraft testing and helping to troubleshoot any challenges that arise.

Testing phase

The next six months or so will involve three phases of testing to make sure the satellite will be able to survive the rigors of launch and the harsh environment of space. Engineers and technicians will attach the satellite to a device called a shake table, which simulates the intense vibrations and rattling of launch. Then the spacecraft will move into an acoustic chamber to bombard it with high-decibel sounds similar to those of blastoff. Next, they'll move SWOT into a chamber that mimics the temperature swings and vacuum of space. Last but not least, engineers will put the satellite through additional tests to make sure its systems can withstand any electromagnetic interference, including signals from various parts of the spacecraft and from other satellites.

"After that, we button up the spacecraft and ship it to the launch site," said Kaki. At Vandenberg, the team will put the finishing touches on the satellite to ready it for launch, which is scheduled for

no earlier than November 2022.

The mission's science team is also in full swing, preparing for when the spacecraft is in orbit. Researchers are using simulated data to put their analytic tools through their paces, as well as prepping for the period right after launch called "calibration and validation." This is when researchers compare data from the satellite with measurements taken on the ground in order to ensure the science instruments are collecting data properly and measuring what they're supposed to be measuring.

The international nature of the mission means that like the engineering team, the science team spans continents. "The best part of my job as the mission's project scientist is being able to work with a large international research team with diverse interests and backgrounds in oceanography and hydrology," said Lee-Lueng Fu, the JPL project scientist for SWOT. "This experience has broadened the horizon of my scientific career even after 40 years of devotion to Earth research."

More about the mission

SWOT is being jointly developed by NASA and CNES, with contributions from the CSA and the UK Space Agency. JPL, which is managed for NASA by Caltech in Pasadena, California, leads the U.S. component of the project. For the flight system payload, NASA is providing the Ka-band Radar Interferometer (KaRIn) instrument, a GPS science receiver, a laser retroreflector, and a two-beam microwave radiometer. CNES is providing the Doppler Orbitography and Radioposition Integrated by Satellite (DORIS) system, nadir altimeter, the KaRIn RF subsystem (with support from the UK Space Agency), the platform, and ground control segment. CSA is providing the KaRIn high-power transmitter assembly. NASA is providing associated launch services.

More information: To learn more about the mission, visit: swot.jpl.nasa.gov/

Provided by Jet Propulsion Laboratory

Citation: One year from launch: US-European satellite to track world's water (2021, November 18) retrieved 30 November 2021 from https://phys.org/news/2021-11-year-us-european-satellite-track-world.html

KNOW YOUR ENVIRONMENT. PROTECT YOUR HEALTH.

ewg

House passes Build Back Better bill to make historic climate-focused conservation investments

PRESS CONTACT
Sarah Graddy (/news-insights/our-experts/sarah-graddy)
sarah@ewg.org
(202) 939-9141

NOVEMBER 19, 2021

WASHINGTON – The Environmental Working Group today applauds the U.S. House of Representatives for including $28 billion in the Build Back Better bill to tackle a growing backlog of requests from farmers seeking U.S. Department of Agriculture Conservation Assistance for efforts to address the climate emergency.

“This is the biggest investment in agricultural conservation programs since the Dust Bowl,” said Scott Faber (https://www.ewg.org/news-insights/our-experts/scott-faber), EWG’s senior vice president for government affairs. “EWG applauds Chairwoman Debbie Stabenow and Chairman David Scott for proposing these historic investments in the budget reconciliation bill.”

Stabenow (D-Mich.) chairs the Senate agriculture committee and Scott (D-Ga.) leads the House agriculture panel.

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The new spending would help farmers reduce greenhouse gas emissions, based in large part on proposals included in the Climate Stewardship Act introduced earlier this year by Sen. Cory Booker (D-N.J.) and Rep. Abigail Spanberger (D-Va.) to expand the USDA's conservation programs.

The Build Back Better legislation is a $1.75 trillion social spending measure known as a budget reconciliation bill, which the Senate will now consider.

"The budget reconciliation bill provides a once-in-a-generation chance to make better farmland stewardship, not unlimited subsidies, our top priority," Faber said. "Farmland conservation practices that reduce greenhouse gas emissions also have the added benefit of reducing the amount of farm pollution that is fouling our drinking water."

By every measure, the problems posed by farm pollution – like toxic algae blooms, high nitrate levels in drinking water and low-oxygen dead zones – are getting worse, as the nutrients and chemicals applied to farmland continued to wash into the nation's rivers, lakes and bays.

Although Congress made important reforms (https://www.ewg.org/news-insights/news/ewg-applauds-farm-bill-drinking-water-reforms) in the 2018 Farm Bill, spending on USDA conservation programs did not increase enough to meet farmer demand. Farmers and ranchers offering to share the cost of conservation practices (https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/technical/cp/ncps/?cid=nrcs143_026849) like buffer strips and cover crops continue to be turned away from the federal funding they need.

According to its own recent data, the USDA:

- This year turned away 87,163 farmers with valid applications for conservation funding through the Environmental Quality Incentives Program (https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/).
- This year turned away 20,641 farmers with valid applications for conservation funding through the Conservation Stewardship Program (https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/).
- In the past two years turned away more than 100 proposals offered through the Regional Conservation Partnership Program (https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/rcpp/).

"The unfunded annual backlog for EQIP, CSP and RCPP is more than $2 billion," Faber said. "It could cost an additional $2 billion to enroll the acres offered into CRP. Thousands of other farmers have simply stopped seeking funds after being turned away by the USDA again and again."

After rising steadily in the past, farm conservation spending has **leveled off** (https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=99510) in recent years.

"Increasing conservation spending will reduce the backlog of farmers waiting for conservation assistance," Faber said. "And it will help protect our drinking water supplies, provide more habitat for wildlife, reduce greenhouse gas emissions, lead to more carbon being stored in the ground and help our farms prepare to better withstand the effects of extreme weather caused by the climate crisis."

He said, "Spending more is just one part of the solution. We must also spend smarter."

EWG's **extensive analysis**(https://conservation.ewg.org/what-do-conservation-data-tell-us.php) of conservation spending shows the government isn't doing enough to ensure that participating farmers adopt "the right practices in the right places." Conservation funds are frequently used for on-farm infrastructure improvement projects and **practices** (https://conservation.ewg.org/egip.php?fips=00000&regionname=theUnitedStates) that mostly benefit farmers, not the American taxpayer or the environment.

"The fact that this proposal will exclusively fund practices that reduce emissions is as historic as the scale of the investment that is being made," Faber said.

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The Environmental Working Group is a nonprofit, non-partisan organization that empowers people to live healthier lives in a healthier environment. Through research, advocacy and unique education tools, EWG drives consumer choice and civic action.

Nation & World
The Seattle Times

Cloud seeding gains steam as West faces worsening droughts

Nov. 22, 2021 at 5:01 am | *Updated Nov. 24, 2021 at 11:27 pm*

A kayaker fishes in Lake Oroville as water levels remain low due to drought conditions in California in August 2021. (Ethan Swope / The Associated Press)

By Maddie Stone

The Washington Post

As the first winter storms rolled through this month, a King Air C90 turboprop aircraft contracted by the hydropower company Idaho Power took to the skies over southern Idaho to make it snow.

Flying across the cloud tops, the aircraft dropped flares that burned as they descended, releasing plumes of silver iodide that caused ice crystals to form and snow to fall over the mountains. In the spring, that snow will melt and run downstream, replenishing reservoirs, irrigating fields and potentially generating hundreds of thousands of additional megawatt hours of carbon-free hydropower for the state.

Idaho Power, a private utility serving more than half a million customers in southern Idaho and eastern Oregon, has used cloud seeding to pad its hydroelectric power production for nearly two decades. But over the past few years, the utility has ramped up its snow-making efforts at the behest of state officials concerned about dwindling water supplies.

This year, the western United States is in the midst of one of its worst droughts in recent memory. As of Tuesday, about one-third of the country – mainly west of the Rocky Mountains – is experiencing severe to exceptional drought. Nearly all of Idaho is under at least a severe drought.

Today, Idaho cost-shares the cloud seeding program, estimated to produce 1 million acre-feet of additional water annually, to the tune of about $2 million a year. In April, the state passed a bill to expand its cloud seeding efforts.

Residents of the Gem State aren't the only ones embracing cloud seeding, a 75-year-old technology that many scientists still view with skepticism. With a recent experiment providing the first unambiguous evidence that cloud seeding can increase snowpack levels, research into artificial rainmaking is undergoing a small renaissance.

As the West experiences a historic drought and climate models point to more dry spells in the future, states are doubling down on their cloud seeding programs.

"I definitely think it's one of those things that we can't ignore, as far as drought mitigation," said Julie Gondzar, the cloud seeding program manager for Wyoming. While cloud seeding won't end a drought, Gondzar says, it can "slowly, incrementally" increase snowpack over time. Right now, every little bit helps.

The premise of cloud seeding is simple. Certain clouds contain large amounts of "supercooled liquid" water, or water that exists in a liquid state below the freezing point. At temperatures below about minus-5 degrees Celsius (23 Fahrenheit), adding particles of silver iodide to that water can promote ice crystal formation, resulting in additional snowfall.

But while the basic principles of cloud seeding were worked out in the 1940s and more than 50 countries were running cloud seeding programs as of 2017, scientists have long struggled to quantify how effective cloud seeding is – if it even works at all.

A six-year study that Wyoming conducted from 2008 to 2013 – among the most ambitious done thus far – estimated that cloud seeding can boost precipitation within seedable clouds by about 3.3 percent over the winter season. But those findings did not meet key thresholds for statistical significance, meaning scientists were unable to say for sure that the extra snowfall produced by seeded clouds wasn't the result of chance.

Other studies have measured gains of up to 10 percent but have been similarly unable to prove that the benefits were actually due to seeding, according to Sarah Tessendorf, a scientist at the National Center for Atmospheric Research (NCAR) who studies cloud seeding.

"Most statistical programs," studies that compare the amount of precipitation from randomly seeded clouds and unseeded ones, "have failed to meet statistical significance," Tessendorf said. "And that's been really hard to overcome. The signal from cloud seeding is often very small and within the range of natural variability."

In 2017, NCAR teamed up with a consortium of universities and Idaho Power to launch a first-of-its-kind experiment called SNOWIE (Seeded and Natural Orographic Wintertime Clouds: The Idaho Experiment). From January to March, the researchers used specialized aircraft to inject silver iodide into clouds over the Payette Basin north of Boise and measured the impact on snow using a suite of aerial and ground-based radar, snow gauges and models.

The results, published last year in the Proceedings of the National Academies of Sciences, were unambiguous: Cloud seeding works. On three occasions, the researchers saw ice crystals form inside seeded clouds in the exact zigzag pattern the aircraft had flown.

"We were able to show the ice and snow forming in the clouds, and track it to the ground to quantify how much additional snow fell in those clouds," said Tessendorf, a co-principal investigator for SNOWIE. "That was big – that really put cloud seeding back on the map."

There are lots of research questions left to answer. Eighteen additional cloud seeding attempts by the SNOWIE team didn't have a clear effect on snowfall. The program, which is funded to run for two to three more years, is now focused on teasing out any subtle effects of seeding that might have occurred during those attempts and using high-resolution computer models to better quantify cloud seeding under a range of conditions. The temperature of the clouds, the amount of supercooled liquid water

inside them, and conditions like wind direction all play a role in cloud seeding's effectiveness.

“We need to dive a little more into how much water we can really generate, when does it work and when doesn’t it work,” said Katja Friedrich, a scientist at the University of Colorado Boulder and co-principal investigator for SNOWIE.

As the science of cloud seeding continues to advance, a number of states out west – some of which have done operational cloud seeding for decades – are expanding their programs in the face of persistent water shortages.

The Idaho Water Resource Board, which helps fund Idaho Power’s cloud seeding program in the Boise, Wood and Upper Snake River basins, is conducting a statewide climatology assessment to identify other basins that might benefit from cloud seeding.

In September, the board authorized funds for a pilot cloud seeding project in the Bear River Basin in southeastern Idaho this winter. Idaho Water Resource Board executive officer Brian Patton explained that seeded basins have seen “a fairly impressive increase in water supplies” – up to 15 percent in some years. “The folks over in the Bear River are looking at that and saying ‘We want in on that, too.'”

This month, Colorado, which has conducted cloud seeding operations since the 1950s, is hoping to install ground-based silver iodide generators in the North Platte River Basin bordering Wyoming. For two winters, both states have been seeding their respective sides of the basin using aircraft.

“We’re excited to see the effectiveness of both programs in one basin,” said Andrew Rickert, the cloud seeding program manager at the Colorado Water Conservation Board.

Part of the reason that states out west are embracing cloud seeding, despite lingering uncertainties about the benefits, is that it’s cheap. Utah, which estimates that its statewide network of 165 silver iodide generators boosts snowpack by 5 to 15 percent, says the program cost works out to just $2.18 per acre-foot of water produced.

“It’s basically free,” said state cloud seeding coordinator Jake Serago, noting that in urban areas out west, water can cost hundreds of dollars per acre-foot.

But there is an even more fundamental reason that cloud seeding is gaining popularity. “The only way to add water to the system is through cloud seeding,” Rickert said. “I do think it’s gaining support because of the dire straits we’re in with regards to drought.”

This story was originally published at washingtonpost.com. Read it here.

Toxic cables to be pulled from Tahoe under settlement

() Emerald Bay's mouth to Lake Tahoe shown Oct. 20, 2021. (AP Photo/Scott Sonner)

By Scott Sonner Associated Press

Saturday, November 27, 2021 (/news/2021/nov/27/toxic-cables-be-pulled-tahoe-under-settlement/)

RENO — AT&T's Pac Bell subsidiary has settled a lawsuit conservationists filed under a U.S. law more typically cited in Superfund cases, agreeing to spend up to $1.5 million to remove 8 miles of toxic telephone cables that were abandoned on the bottom of Lake Tahoe decades ago.

A U.S. judge in Sacramento recently signed the consent decree in the suit the California Sportfishing Protection Alliance filed in January.

The abandoned cables — replaced with fiber optic ones in the 1980s — contain more than 65 tons of toxic lead that is polluting the lake, the lawsuit said.

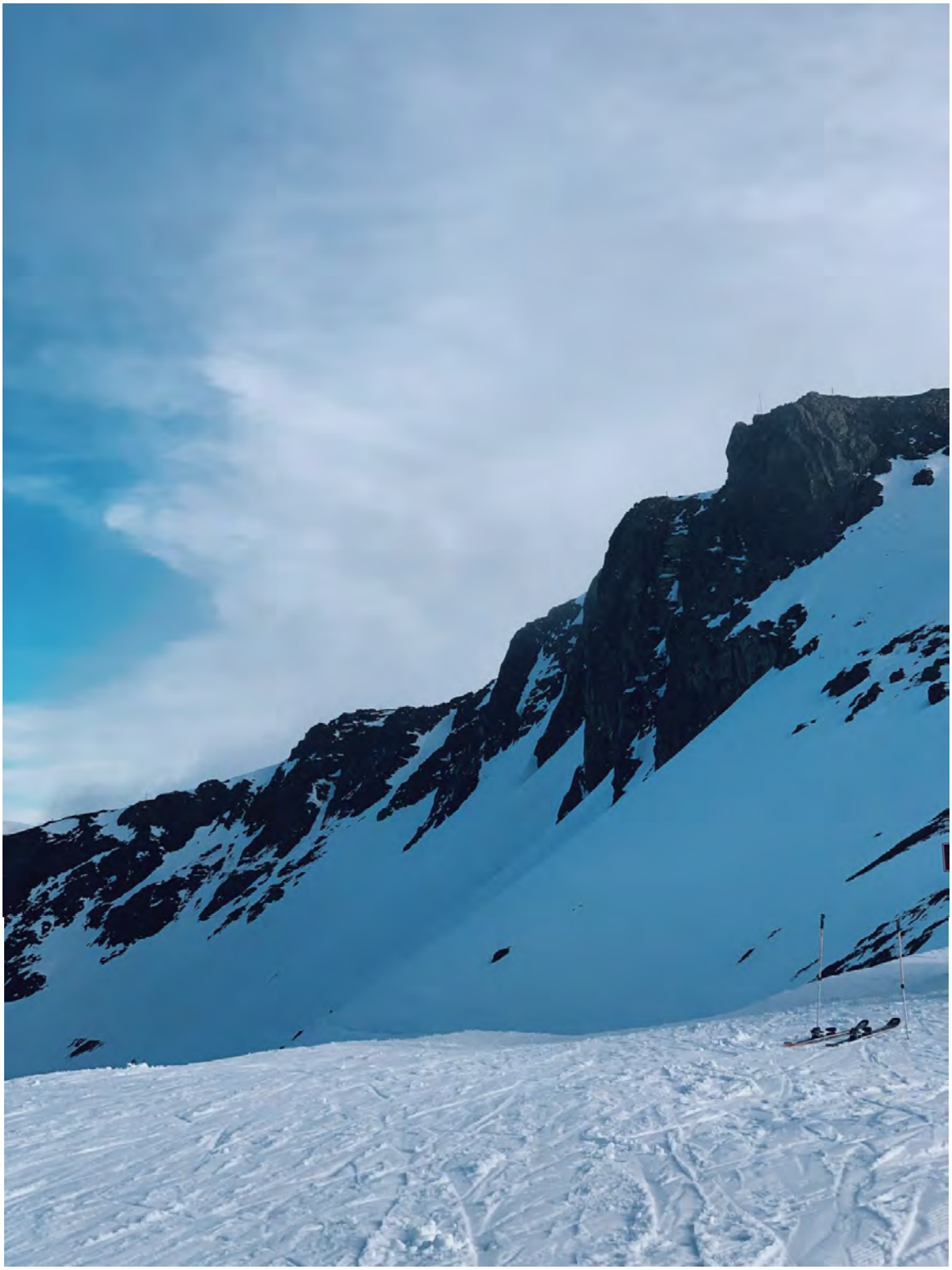
In addition to violating state water quality protections, the suit said the more than 3 pounds of lead

Tuesday, November 30, 2021 COURTHOUSE NEWS SERVICE

A future of little to no snow in the western mountains will stress water supply, scientists say

The American West will need to reevaluate its approach to a water management system that once relied on consistent snowfall.

CARSON MCCULLOUGH / November 29, 2021



The snowy terrain of Olympic Valley, California. (Patrick Bald/Unsplash)

(CN) — The U.S. will need to make some serious changes to its water supply strategies as Earth's climate continues to warm and snowpack in the country's western mountains becomes much harder to come by in the coming decades, according to a new study.

In America's long and often strained history of managing its water infrastructure massive amounts of water from mountain snowpack has long been viewed as a comforting constant. Frigid temperatures and frequent snowfalls allow nearly 162 million acre-feet worth of snow to accumulate in the western mountains each year, only to melt during the spring and summer seasons when it becomes a key component of America's water supply.

But, as with countless other things, climate change is about dramatically change that.

In a study published in the science journal Nature, experts warn that human-driven climate change is currently on track to send the country's supply of snow plummeting. Scientific circles largely agree that if current trends keep up, roughly a quarter of the snowpack in the western mountains will be gone by 2050.

Data models suggest there is even a future where snowpack could disappear entirely in these areas on a persistent basis — and it may happen much sooner than we think.

"There is less consensus on the time horizon of snow disappearance, but model projections combined with a new low-to-no snow definition suggest ~35–60 years before low-to-no snow becomes persistent if greenhouse gas emissions continue unabated," the study states.

Scientists stress that these changes could prove catastrophic for communities that rely on the water from snowpack. According to the study, assuming that the western mountains of the U.S. lost around 54 million acre-feet of snow storage that was valued at around $200 per acre-foot with little-to-no snow conditions cropping up within the next century, economic costs reach up to $850 billion dollars — more money than the U.S. is shells out annually on defense spending.

"Moreover, the disappearance of snow in the [western United States] has important hydrologic ramifications on both natural and managed systems," according to the study. "Changes in the seasonal snow cycle influences the timing and magnitude of groundwater recharge, vegetation dynamics and stream discharge, which then directly impacts water availability."

Experts say the western U.S. will likely need to make some serious changes to its water infrastructure. Future water management strategies could include entirely new surface storage capacity projects, not unlike the proposed Sites Reservoir project in California, and while they can prove costly and take time to develop, other strategic dams and canals might be called for.

Current infrastructure can also be retrofitted with modern innovations to be more effective. One option would be to use forecast-informed reservoir operation that allows reservoirs to retain or release water more strategically based on advanced weather and hydrologic forecasts. A recent case modeling study on Lake Mendocino showed that an approach such as this could increase water storage by 33%.

"A path forward can be made by including Earth scientists, infrastructure experts, decision scientists, water management practitioners and community stakeholders, in a collaborative, iterative process of scientific knowledge creation through a co-production framework," the study states.

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