

# West's water worries rise as Lake Mead falls

William M. Welch , USA TODAY 3:55 p.m. EDT July 26, 2014



(Photo: William M. Welch, USA TODAY)

BOULDER CITY, Nev. — Even for a regular like Allen Keeten, who has been visiting here since the late 1970s, the retreating shoreline of Lake Mead behind Hoover Dam is a shock to witness.

"I hate to see it," the 58-year-old truck driver from Kenesaw, Neb., says, peering over the side of the massive concrete dam on the Colorado River. "Nowadays you've got to be careful when you are out on a boat because of all the exposed ground."

Like a giant measuring stick in the desert, the dropping water level of Lake Mead, the nation's largest man-made reservoir, provides a vivid representation of the drought that is gripping the Southwest and much of the West.

Since the dam was built during the Great Depression, water that falls as snow on the Rocky Mountains as far north as Wyoming and collects in the Colorado River has been stored and diverted to quench the thirsts of Southern California, Las Vegas and parts of Arizona.

Only a fraction of the river's flow makes it to Mexico as millions of acre-feet leave the Colorado River system through pipes and aqueducts for use by farms, businesses and homes of the southwestern United States — the water rights apportioned by decades of court cases, contracts and legislation.

Now that measuring stick is drier than ever. Federal water managers say Lake Mead is just 39% full. The water level fell in July to its lowest level since 1937, when water began backing up to form Lake Mead after the dam was completed.

The level of the lake fell this month to just over 1,081 feet above sea level, 139 feet below the nearly 1,220-foot capacity.

As the water recedes, left behind is a broad white stripe of mineral deposits on the lake's shoreline, as visible as a dirty bathtub ring. New islands poke through the lake's lowered surface, and buoys stand amid desert scrub.

Entire coves and miles of lake fingers have dried up, forcing boat landings and marinas to close or relocate. Marina operators who want to stay in business have had to move their floating docks — and the fuel, electricity, water and sewer lines that serve them — in a costly chase to stay on the water.

"It definitely impacts our business. People get scared away," says Bob Gripenot, 61, whose family has owned and operated Lake Mead Marina since the 1950s.

"There's still 500 miles of shoreline, still a lot of water," he says. "But it's harder to get in and out of."

Officials of the U.S. Bureau of Reclamation's offices here, who control the river flow and distribution of water within legal guidelines, expect Lake Mead's level to decline a bit more before recovering some as water held further upstream in Lake Powell is released.

Lake Powell is down, too, though not as badly at 52% of capacity. The entire Colorado River system of four impoundments, ending with Lake Havasu in Arizona, has just over half the water it is capable of holding this summer.

Still, federal water managers are optimistic that they can avoid reducing agreed-upon amounts of water to all who depend on it, at least until next year. Beyond that, much depends on how long drought continues.

"We need to use our water much more wisely than we have," says Terry Fulp, regional director of the Bureau of Reclamation. "As a society we have to recognize the value of water and the scarcity of water."

"We have a long-term issue that we have to grapple with," he says.

The water level this summer could have been worse. Precipitation and water runoff from the Rockies has been strong this year, about 96% of the historical average, according to federal hydrologist Daniel Bunk. In June, the runoff was 114% of normal.

The snowpack in California's Sierra Mountains, on the other hand, has been well below average since 2011, the last good year for water runoff.

Jeffrey Kightlinger, general manager of the Metropolitan Water District of Southern California, the wholesaler that distributes water to scores of local governments from San Diego to Los Angeles, says extreme dry conditions and record heat the past two years in California have put unprecedented pressure on the region's water system.

Water from the Colorado River makes up about a quarter of all water that flows from Southern California taps, and water from the Sierras makes up about 30%, with the remainder coming from local sources, groundwater and reclaimed water.

The Southern California district stockpiled water in previous wet years and has been drawing on those reserves this year to make up for shortages in the flow from Northern California.

Conservation measures have been largely voluntary across much of California, but that is changing. California's State Water Resources Control Board in July approved mandatory if modest conservation steps backed by fines.

Aimed at reducing urban outdoor water use, the regulations require local water agencies to impose fines for hosing down driveways and sidewalks, allowing excessive runoff from landscape irrigation and using drinkable water in ornamental fountains unless it is recirculated.

Shortages from the Sierras make the water flowing through Lake Mead all the more important for tens of millions of people in California.

Bunk, manning the high-tech river flow control room not far from Hoover Dam, says the Bureau of Reclamation estimates that there is about a 23% chance that Lake Mead's water levels could fall below 1,075 feet, the point at which water distributions to some agencies may have to be reduced, next year. By 2017, he says, the risk is 50%.

An especially wet winter would help. A big snowpack in 2011 raised Lake Mead nearly 50 feet in one season.

"We need several above-average years to replenish the storage," Bunk says.

But the trends are worrisome. While California is in the third year of drought, Bunk says Colorado River data suggests this is the 15th year of a broader regional drought, interrupted by an occasional wet year.

Scientists studying tree rings for clues to past water seasons calculate that the period since 2000 is one of the driest in centuries. Bunk says the evidence shows the past 15-year period ranks in the driest 1% of the past 1,200 years.

"It really puts into light how severe this drought is, and yet we have been able to maintain water distribution," he says.

Unseen water levels are falling too. Jay Famiglietti, water scientist with the NASA Jet Propulsion Laboratory in Pasadena, says the drought has led to alarming depletion of groundwater sources. As water from the Sierras has slowed to a trickle, agriculture — by far the biggest user of water in California — has relied on water drawn from wells as a replacement source.

In a paper published Thursday, Famiglietti and five other scientists called the Colorado River basin "the most over-allocated in the world" and said groundwater — difficult to replenish — can't make up the difference indefinitely.

"The dropping level in Lake Mead is a very visual if not frightening reminder of the severity of drought," Famiglietti says. "If the drought continues and water levels continue to dry up, it's going to have huge hydropower and water-availability implications."

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