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West's 2 major reservoirs imperiled, scientists warn

STAFF AND WIRE REPORTS

Changes in climate and strong demand for Colorado River water could drain lakes Mead and Powell within 15 years, triggering severe shortages across the region, scientists said this week in an unusually bleak water-supply outlook.

The West's two largest storage reservoirs face increasing threats from a combination of factors including human-induced climate change, growing populations and natural forces such as drought and evaporation, scientists working at San Diego's Scripps Institution of Oceanography said.

In response, the operators of the Central Arizona Project issued a news release Wednesday calling the warnings "absurd."

Lake Mead stores Colorado River water for use by the CAP, Tucson and Phoenix and, separately, by California and Nevada. Lake Powell stores water for power production and water use.

Lakes Mead and Powell help manage water resources for more than 25 million people in the seven states, including Arizona, that rely on the Colorado River for water and power.

All these forces have pushed the river system into a long-term pattern of more water leaving the two reservoirs than coming in, said the researchers in a draft copy of their new study. While the dates are subject to some uncertainty, they all point to a major and immediate water-supply problem on the river, the researchers said.

"It is obvious that once long-term outflow exceeds inflow, the system is doomed to run dry," researchers Tim Barnett and David Pierce wrote.

Calling the Colorado "quite literally the life's blood of today's modern Southwest society," they said their findings were startling and alarming. The report has been accepted for publication in the Journal of Water Resources Research.

CAP officials, however, said they couldn't find any scenarios predicting a dry Lake Mead, despite extensive studies conducted when the seven Colorado River basin states, including Arizona, recently reached agreement on how to manage the river in times when it runs short.

The studies covered drought conditions and how shortages could be avoided, project officials said.

"The studies evaluated a broad range of potential hydrologic conditions and several alternative operating criteria," said Larry Dozier, the CAP's deputy general manager. "Lake Mead did not 'go dry' at any time during the various scenarios. Shortages were manageable."

CAP also produced its own drought-impact analysis last year showing that the lake wouldn't go dry even based on the worst-case scenario stemming from University of Arizona tree-ring lab studies, Dozier said. Tree-ring records document droughts in the past.

LOCAL ANGLE

Lake Mead stores Colorado River water sent to Tucson, Phoenix, farms and tribes via Central Arizona Project canal.

If a dried-up Lake Mead cut off all flows to the CAP, that would require Tucson-area water users to pump more groundwater and increase the level of "mining" from the underground aquifer, said a top University of Arizona water researcher. Mining from the aquifer means pumping more than is replenished by rainfall and treated sewage effluent.

That would increase the risk of subsidence, or collapse of the ground surface from overpumping, said Kathy Jacobs, director of the Arizona Water Institute, a three-university research consortium. It would also increase the risk that the water quality would decrease as the aquifer levels drop, she said.

Not having read the new Scripps Institution study, Jacobs declined to comment on its warnings on the odds of lakes Mead and Powell drying up. But "it does seem to most climate scientists that things are likely to get worse over time," Jacobs said.

— Tony Davis

The Scripps researchers and the project officials used starkly different assumptions to reach their conclusions. The CAP researchers didn't look at the possible future effects of global warming. They examined a variety of scenarios based on river runoff during some very dry years from as recently as 2000-'06 and from the distant past as shown by tree-ring records.

"I don't think anybody has any capability to predict reductions in flows from climate change," Dozier said. "I challenge anyone to come up with a reliable model that would predict that."

Pierce, a Scripps programmer analyst, said in reply, "If we don't look at climate change we basically are projecting a different world than we expect it to be. If people see data and ignore it that is one thing. But it doesn't make sense to pretend that the projections don't exist."

A dried-up Lake Mead would be a disaster for Arizona and Nevada.

If water levels dropped below 1,000 feet in elevation, Arizona would lose much of the water that flows through the CAP canal. Nevada would lose access to all its river allocation. Power production also would cease before the lake level reached bottom, researchers said.

There is a 50 percent chance Lake Mead will run dry by 2021 and a 10 percent chance it will run out of usable water by 2014, if the drought deepens and water use climbs, the Scripps researchers said.

"We were stunned at the magnitude of the problem and how fast it was coming at us," said marine physicist Barnett. "Make no mistake, this water problem is not a scientific abstraction but rather one that will impact each and every one of us that live in the Southwest."

CAP official Dozier had not seen the Scripps study but worked closely on other models that have produced different results.

"We did what we called our worst case, and it just didn't happen," he said.

Currently, Lake Mead is half-full, as is Lake Powell.

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• *Arizona Daily Star* reporter Tony Davis contributed to this story, as did Amanda Lee Myers and Ken Ritter of *The Associated Press*.

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