MOAB SUN NEWS

WATER

The Colorado River, past and future

How will states manage a drier future?

By RACHEL FIXSEN Moab Sun News

The waters of Lake Powell stretch across the border between Utah and Arizona, backed up by the Glen Canyon Dam. The reservoir is part of a vast and complex infrastructure used to manage the distribution of water from the Colorado River.

On Feb. 20, the University of Utah Center for Colorado River Studies hosted a presentation and panel discussion in Moab on research being conducted on and policies being considered for Lake Powell. Scientists, activists, authors, and historians shared their perspectives on various aspects of the river, the dam, and the reservoir to a full house at Star Hall. The complicated history of river engineering and water allocation sets the stage for an uncertain future of the management of the West's precious resource.

"We can't talk about the future of this reservoir and how its managed unless we digest some basic facts," said Dr. Jack Schmidt, professor of watershed sciences at Utah State University, at the presentation, before he and others gave an overview of the reservoir's history and parameters.

The presentation was part of an effort by the Center for Colorado River Studies to help the public understand the complexity of the natural systems and political agreements surrounding the Colorado River.

In 1922, seven U.S. states supplied by the river made an agreement known as the Colo-See River, Page 11

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rado River Compact. The agreement divided the states into the "upper basin" states of Utah, Colorado, Wyoming, New Mexico and "lower basin" states of Arizona, California, Nevada.

The Upper Basin promised not to deplete the flow of the Colorado below 7,500,000 acre-feet during any 10-year period; based on data available at the time, this was considered a roughly even split of the available water between the two regions. States in each basin were left to determine allocation agreements between themselves. Over time, state and federal agencies have created various agreements to continue refining the division of water rights. Lake Mead, created by the Hoover Dam in 1936, and Lake Powell, created by the Glen Canyon Dam in 1963, allow states to store water from the Colorado River and manipulate its distribution.

Climate data from subsequent years suggests that the river flows assumed by the designers of the Colorado River Compact reflected a period of unusual moisture in the region. Average precipitation over a longer timeline appears to be significantly less than the leaders of 1922 supposed; furthermore, as the planet's climate shifts to a hotter, drier state, it looks unlikely that the river will ever have the amount of water it was thought to have at the time of the compact.

Powell and those "Lake Colorado River Storage Project reservoirs were designed for a drought that was about half as long as the dry period we're in, and climate change is going to continue to impact that," said Eric Kuhn, author of "Science be Dammed," an analysis of the science and management decisions behind water projects on the Colorado River, at the Star Hall presentation.

Water levels in Lake Powell and Lake Mead have reflected this decreased flow. In 2005, Lake Powell dropped to its lowest level since it first filled up in 1963, sinking to 3,555 feet above sea level, just barely high enough to keep from exposing the intakes for the hydroelectric generator at the dam and causing damage to the facility.

"Here's an important number," Schmidt told the audience at Star Hall. "If the reservoir elevation gets lower than 3,490. feet above sea level, then water cannot be taken into those penstocks, because then air is entrained, and if air is entrained, you get the phenomenon of cavitation in the turbines, which will destroy the turbines."

He went on to explain that water managers don't want to get too close to that absolute limit, and they set a bottom threshold of 3,525 feet above sea level for Lake Powell.

Policymakers must constantly, consider how supply and demand are affected by climate and natural systems, new infrastructure and aging infrastructure, population growth and changes in land use, and scientists' and researchers' evolving understanding and modeling of how these factors will play out in the future.

In 2007, the seven states, signed a set of "Interim Guidelines" for how to allocate the river during "shortage" periods, or periods during which water levels in the Colorado River basin are below the amounts assumed in the compact. The guidelines are set to expire in 2026; before that time, they need to be reexamined and renegotiated. The document mandates that renegotiation discussion begins this year. The Center for Colorado River Studies wanted to ensure that the public has access to the

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knowledge necessary to form educated opinions on water policy.

To prepare for a renegotiation of interstate agreements, scientists and researchers have been studying the Colorado River basin and all the systems that

comprise it. The presentation at Star Hall illustrated just how complex the issue is. Glen Canyon Dam itself has been controversial nation-wide since its inception. Environmentalists, river runners, and archaeologists to this day lament the loss of the natural canyon flooded by the dam, which was filled with Native American artifacts and wild riparian ecosystems. That dam and other infrastructure have changed many properties of the river, from flow rate, to temperature, to fish populations, to evaporation patterns, to the shape of the riverbed. As scientists study the new patterns of the river, they try to create models that can accurately predict future behaviors and conditions of the river. For example, by studying how the river moves and

deposits sediment, scientists have variously predicted an operable life span for Lake Powell of 100 to 150 years. These models and data sets can help steer management agreements.

"The current interim guidelines aren't going to

work forever," said Erich Balken, executive director of the Glen Canyon Institute, a Salt Lake City-based nonprofit devoted to the restoration of Glen Canyon and the Colorado River.

The organization is advocating for a policy they call "Fill Mead First," which Balken briefly discussed at the Star Hall event. The policy would allow the downstream Lake Mead to be filled to capacity before starting to store water in Lake Powell. The group recommends not decommissioning Glen Canyon Dam, a step that has been taken at other dam sites around the country, but drilling diversion tunnels around it to allow the river to return to its natural flow.

The hydroelectric power plant driven by Lake Powell would be temporarily shut down, and intakes to power the facility would be installed in the diversion tunnels. Glen Canyon would be returned to its natural state until the necessity arose to store more water than Lake Mead could hold.

The idea is politically difficult because Lake Powell serves as a kind of "bank account" of water that helps upper basin states ensure that they meet their water obligations to the lower basin states. Beyond Lake Powell, the water essentially belongs to the lower basin. The dividing line maintains a tension between the regions.

"It's only a symbolic line, but it's a very powerful one," said Balken.

However, he believes that the Fill Mead First proposal could save water and be implemented in a way that serves both the upper and lower basin states.

At the same time that Colorado River users are beginning the renegotiation process, the state of Utah continues to pursue water projects that affect the Colorado River and Lake Powell. Local leaders in Washington County are exploring a "Lake Powell Pipeline," a 140mile pipe that would pump water from Lake Powell to the St. George area.

Lawmakers in Salt Lake City are considering the possibility of diverting water from the Green River and the Bear River, the former of which is a tributary to the Colorado and eventually feeds Lake Powell, to water users on the Wasatch Front. More water rights have been allocated from the Colorado River than there is actual water to distribute, and historically, the first users of the existing water, and the owners of water infrastructure, retain the rights to continue using the water.

More information may be found on the University of Utah Center for Colorado River Studies website, https://qcnr.usu. edu/coloradoriver/