



- Aspen Times file photo/Mark Fox

## New storage eyed as Colorado confronts more people & less water

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SPECIAL TO THE DAILY,

With demographers forecasting 35 percent more people in Colorado by 2035 and climate scientists predicting 15 percent less water available in the Colorado River Basin by mid-century, something has to give.

More and more, public officials, business groups and environmental organization have been talking about additional dams and reservoirs to augment those built in the mid-20th century.

"The water inheritance is running out," said Josh Penry, the minority leader in the Colorado Senate, in a speech at the summer meeting of the Colorado Water Congress, a consortium of water providers. "Colorado needs to embark on a new round" of storage construction.

"We study too much. We analyze too much," added Penry, who is from Grand Junction and a Republican candidate for governor.

Representatives of environmental groups concede the need for additional storage but also call for restraint.

"There are projects that have significant adverse environmental impact that we could not support," said Melinda Kassen, managing director of the Western Water Project for Trout Unlimited. "And there are projects that have substantially fewer environmental impacts that we can support," she said, if mitigation measures are included.

Hovering over these conversations is the ghost of Wayne Aspinall. A one-time schoolteacher and lawyer from the fruit orchards of Palisade, Aspinall possessed neither good looks nor a good speaking voice. He did have a solid command of legislative techniques and an ardent belief in the need to harness and regulate the rivers of the Rockies.

Serving in the U.S. House of Representatives from 1949 to 1973, Aspinall helped obtain authorization and federal funding for a series of major dams in the upper Colorado River Basin. Utah's Lake Powell was the most massive, but a trio of reservoirs on the Gunnison River also resulted from his legislative perseverance. Today, they are collectively designated as the Aspinall Unit.

### Growing populations, pending crisis

But if Westerners saw the yoking of rivers into submission as the major task of the mid-20th century, today a more nuanced challenge exists. The limits of abundance have become more apparent.

Most, if not all, of the best dam sites have been taken. Little of the reliable water supplies remains unspoken for, and in those few unclaimed instances — such as on the Yampa River of northwestern Colorado — the water is far from population centers.

Coloradans in the future, as is already the case, can be expected to congregate along the urbanized Front Range corridor. More than three-quarters of the state's residents currently live in a narrow swath less than 200 miles long.

The State Demographer's Office projects that the population, now at 5 million, by 2035 will nudge 7.8 million — an increase roughly the existing size of metropolitan Denver-Boulder.

Even more staggering population growth has been projected by 2035 for what is called the Colorado River system, an area that includes Denver, Salt Lake City and Los Angeles. The existing population of 24 to 30 million people will grow another 12 to 15 million people. Imagine Las Vegas 11 times over.

In contrast to this uphill climb of population, climate scientists see a downward slope for water. Temperature is the major driver.

Computerized simulations differ substantially whether precipitation will increase or decrease. Further, existing precipitation patterns could be altered as increased planetary heat alters flow of the jet stream. In other words, changes in Vail and Telluride might not be uniform.

There's more certainty about increased heat. Rising temperatures will produce shorter winters, more evaporation and transpiration, and a substantial reduction of total flows in the Colorado River. Scientists in the last two years have settled on a 15 percent reduction as a central figure.

"We are expecting a 39 percent increase in population and, if you want an average, a 15 percent reduction in supplies," said Taylor Hawes, of The Nature Conservancy, describing the seven-state Colorado River Basin.

"By most standards, that's a crisis."

### Managing uncertainty

Planning is the prospect of drought. Colorado had several significant droughts in the 20th century, but all are overshadowed the mega-droughts of the distant past. Studies

of tree rings across the Southwest conducted by Connie Woodhouse of Arizona State University and other dendrochronologists show clear evidence of droughts roughly 1,000 years ago that lasted up to three decades.

The parched summer of 2002, a time of roaring wildfires near Denver, Durango, and Glenwood Springs, caught water managers by surprise. Levels in Lake Powell dropped precipitously in 2003, and by late 2004 had left bathtub rings two-thirds below the high-water mark. Many wondered if the reservoir might actually drop to a dead pool, unable to generate any electricity.

Along Colorado's Front Range, the situation looked equally bleak. Had it not been for a miraculously wet and heavy snowstorm in March 2003, cities and farmers might have faced another withering summer, hot and dry.

Water managers broadly embrace the theory of human-caused global warming. Their meetings for the last several years have focused on the sharp warnings coming from climate scientists.

"The science is all basically pointing in the same direction," says Eric Kuhn, general manager of the Colorado River Water Conservation District.

But if all signs point toward hotter and drier, great uncertainty remains. Faced with that uncertain hydrological future, Marc Waage, manager of water resources planning for Denver Water, says he has been "scratching my head for the last two years" about how to create a long-range water plan.

Before, water planning was a lot easier. There was always population growth, of course, but planners assumed a worse-case scenario that resembled a previous drought. Colorado's documented worst drought came in the mid-1950s — about the time Wayne Aspinall was proposing to dam the Gunnison, San Juan, and Green rivers.

Now, water planners realize much more serious droughts are possible and that even the average amounts of water will be less. Runoff will occur weeks and perhaps months earlier, leaving to much longer, hotter and drier summers. Combined with population growth, all this suggest that the existing water infrastructure may be inadequate.

## The elephant of Colorado

Colorado's big question mark remains the urban Front Range corridor, especially Denver's southern suburbs that overwhelmingly rely upon underground water that has become steadily more difficult to extract.

Prairie Waters Project, a major new diversion project to be completed in 2011, will draw water from the South Platte near Brighton several dozen miles south for use in Aurora, located on the eastern flanks of Denver. Short as this pipeline is, this project is expected to cost nearly \$700 million.

Far more ambitious projects have been conceived. The most spectacular, proposed by former Montrose farmer Aaron Million, would draw water from the Green River near Rock Springs, Wyo., and pipe it along Interstate 80 and then down to the Front Range.

More recently, a rival plan employing the same idea has begun to emerge from a consortium of water providers in Denver's southern suburbs.

Another so-called "big straw" would draw water from the Yampa River west of Craig. That idea comes from the Northern Colorado Water Conservancy District, the agency responsible for the Colorado Big Thompson project. The project, which takes water Grand Lake to Estes Park, was described by Telluride native and historian David Lavender as a "massive violation of geography."

These big straws have mostly been painted as saviors of agriculture. The thinking is that without further Western Slope diversions, the cities will end up buying farms for water.

But does the water exist?

Whether Colorado actually has sufficient water under the treaty apportioning the Colorado River Compact is open for debate. Kuhn, for example, has long suggested that Colorado has no more than a few hundred-thousand acre-feet of unallocated water. A study to be completed later this year by the Colorado River Water Board hopes to answer with greater certainty just how close Colorado is to the last drop.

Another set of studies will attempt to push the science of climate change even more rigorously. Tapping the expertise of scientists assembled in the federal laboratories at Boulder, the studies hope to provide a better idea of how much water may exist in a hotter and drier future.

The focus naturally is on the Western Slope, where three-quarters of Colorado's water originates, mostly in the form of snow. The studies will also attempt to predict how much precipitation regimes will change between basins — the San Juan, for example, as distinct from the Eagle.

While this gets sorted out, a set of parallel discussions has been occurring among the state's major river basins. The intent of these roundtables is to reach some larger consensus about water allocations, perhaps similar to the compacts that govern the Colorado River.

## Friction

If the roundtables have improved dialogue, friction has occasionally flared. Disagreement was evident in one exchange at last month's meeting of the Colorado Water Congress. Pitkin County Commissioner Rachael Richards complained that Western Slope water had not been given its due in generating revenue in Colorado's second largest economic, tourism and recreation.

She got pushback from Rodney Kuharich, director of the South Metro Water Supply Authority. Aspen, he observed, seem to have done quite well despite the diversion of waters from the Roaring Fork River and its tributaries that began decades ago. Resorts on the Western Slope, he said, have benefited handsomely from customers drawn from along the Front Range.

As for additional storage, future reservoirs will likely be smaller but perhaps at higher-elevation locations, to

minimize evaporation. But whereas the reservoirs of Aspinall's day were all about commerce, today they will be judged against a greater matrix of considerations.

Hawes, of the Nature Conservancy, said her group believes that decisions about storage should be guided by multiple uses, "so that the environmental is part of the planning and not an afterthought."

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