9.28.25

DENVER BASIN AQUIFER

Why declining aquifers in Colorado matter a great deal

HOA-HRMD

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GUEST COMMENTARY

Woes of the Colorado River have justifiably commanded broad attention. The slipping water levels in Lake Powell and other reservoirs provide a compelling argument for changes. How close to the cliff's edge are we? Very close, says a new report by the Center for Colorado River Studies.

But another cogent — and somewhat related — story lies underfoot in northeastern Colorado. That's the story of groundwater depletion. There, groundwater in the Republican River Basin has been mined at a furious pace for the last 50 to 60 years.

Much of this water in the Ogallala aquifer that was deposited during several million years will be gone within several generations. In some places it already is. Farmers once supplied by water from underground must now rely upon what falls from the sky.

In the San Luis Valley, unlike the Republican River Basin, aquifers can be replenished somewhat by water that originates from mountain snow via canals from the Rio Grande. The river has been delivering less water, though. It has problems paralleling those of the Colorado River. Changes in the valley's farming practices have been made, but more will be needed.

In a story commissioned by Headwaters magazine (and republished in serial form at BigPivots.com), I also probed mining of Denver Basin aquifers by Highlands Ranch, Parker, Castle Rock and other south-suburban communities.

Note

Those Denver Basin aquifers, like the Ogallala, get little replenishment from mountain snows. Instead of growing corn or potatoes, the water goes to urban needs in one of America's wealthier areas.

Parker and Castle Rock believe they can tap groundwater far into the future, but to diversify their sources, they have joined hands with farmers in the Sterling area with plans to pump water from the South Platte River before it flows into Nebraska. This pumping will require 2,000 feet of vertical lift across 125 miles, an extraordinary statement of need in its own way.

Like greenhouse gases accumulating in the atmosphere, these underground depletions occur out of sight. Gauges at wellheads tell the local stories, just like the carbon dioxide detector atop Hawaii's Mauna Loa has told the global story since 1958.

Colorado's declining groundwater can be seen within a global context. Researchers from institutions in Arizona, California, and elsewhere recently used data from satellites collected during the last two decades. The satellites track water held in glaciers, lakes, and aquifers across the globe. In their study published recently in Science Advances, they report that water originating from groundwater mining now causes more sea level rise than the melting of ice.

"In many places where groundwater is being depleted, it will not be replenished on human timescales," they wrote. "It is an intergenerational resource that is being poorly managed, if managed at all, by recent generations, at tremendous and exceptionally undervalued cost to future generations. Protecting the world's groundwater supply is paramount in a warming world and on continents that we now know are drying."

This global perspective cited several areas of the United States, most prominently California's Central Valley but also the Ogallala of the Great Plains.

In Colorado, the Ogallala underlies the state's southeastern corner, but the main component lies in the Republican River Basin. The river was named by French fur trappers in the 1700s, long before the Republican Party was organized. The area within Colorado, if unknown to most of Colorado's mountain-gawking residents, is only slightly smaller than New Jersey.

A 1943 compact with Nebraska and Kansas has driven Colorado's recent efforts to slow groundwater mining. The aquifer feeds the Republican River and its tributaries. As such, the depletions reduce flows into down-river states.

Farmers are being paid to remove land from irrigation with a goal of 25,000 acres by 2030 to keep Colorado in compliance. So far, it's all carrots, no sticks. Colorado is also deliberately mining water north of Wray to send to Nebraska during winter months. This helps keep Colorado in compact compliance. So far, these efforts have cost more than $100 million, some of the money coming from self-assessments and others from state and federal grants and programs.

In some recent years, more than 700,000 acre-feet of water have been drafted from the Ogallala in the Republican River Basin. To put that into perspective, Denver Water distributes an average annual 232,000 acre-feet to a population of 1.5 million.

Hard conversations are underway in the Republican River Basin and in the San Luis Valley, too. They will get harder yet. Sixteen percent of all of Colorado's water comes from underground.

The Colorado River has big troubles. It's not alone.

Allen Best chronicles water and energy changes in Colorado at BigPivots.com.