High and Dry in the West:

The Failure to Integrate Management of Ground- and Surface-Water Resources

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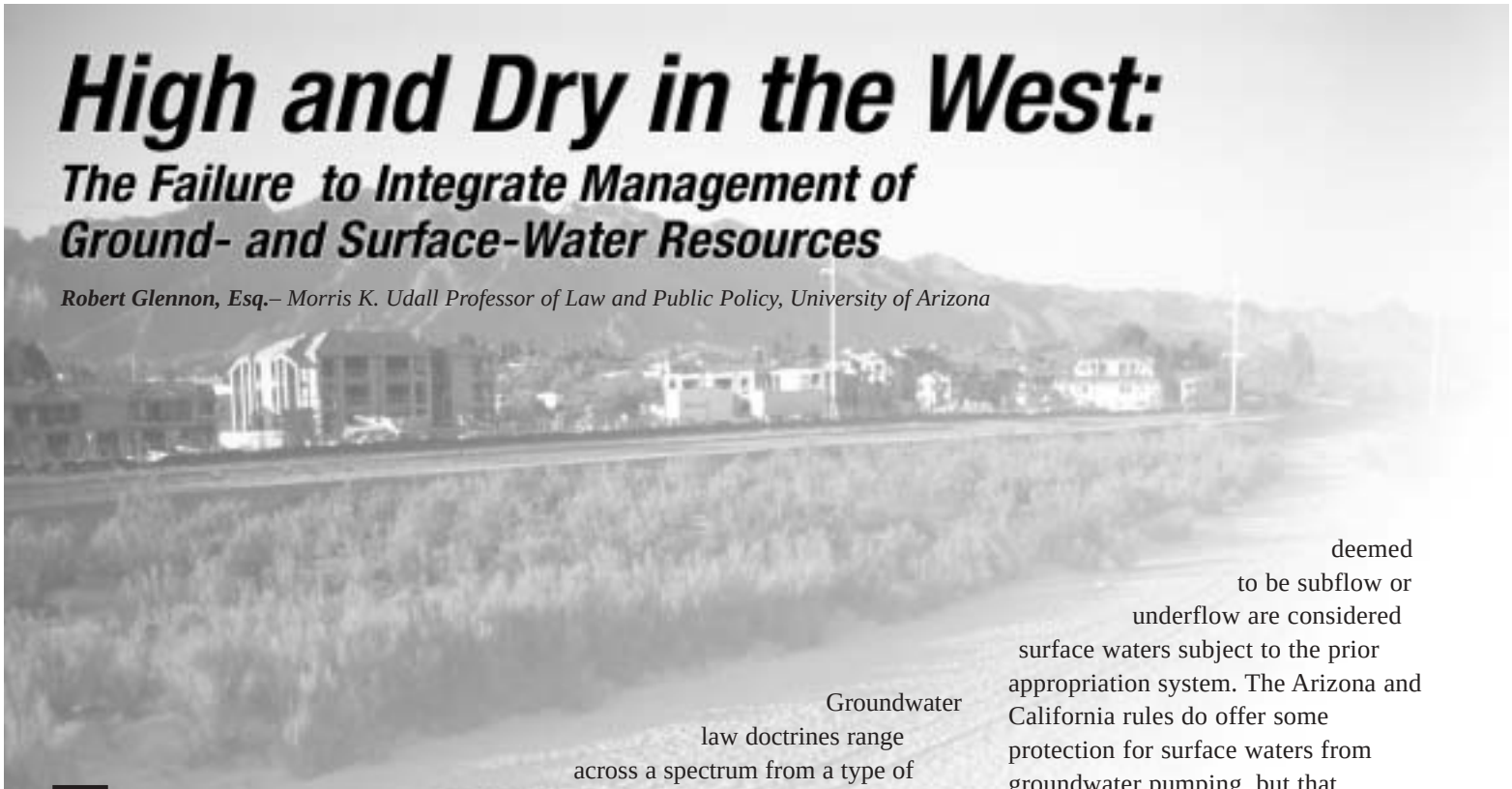

The failure of western states to conform the legal rules for regulating groundwater use with the scientific principles of hydrology has caused an environmental catastrophe. As our groundwater pumping has increased in recent decades, it has caused rivers, springs, lakes, and wetlands to dry up, the ground beneath us to collapse, and fish, birds, wildlife, trees, and shrubs to die. This article will offer an overview and a commentary on the various approaches that western states have used.

The chasm between law and science is a product of history. In the 20th century, when American courts developed rules regulating groundwater use, the science of hydrology was in its infancy. Because no one understood how water beneath the ground moved, state courts essentially threw up their hands and held that anyone who succeeded in getting water from the ground had a right to it. Since then, the science of hydrology has matured, but the legal rules have not kept pace. Instead, all states in the West use the prior-appropriation doctrine to allocate rights to surface water from streams and rivers, but for groundwater, many states have developed different doctrines.

Groundwater law doctrines range across a spectrum from a type of prior-appropriation system, to the reasonable-use doctrine, to the right of capture. At one end, with essentially no protection for either the environment or surface-water prior appropriators, are the states of Oklahoma, Texas, and Nebraska. Oklahoma's law is so permissive that pumping from any place but in the actual bed of a stream is allowed. Texas's right of capture has been dubbed "the rule of the biggest pump." What is not funny is that thousands of springs in Texas have dried up. As for Nebraska, its law has allowed the city of Grand Island to drill wells on an island in the middle of the Platte River and pump water that Nebraska law deems "groundwater" rather than surface water. This is one reason why an environmental organization, American Rivers, placed the Platte River on its 2003 list of the 10 most endangered rivers in the United States.

The states of Arizona and California continue to adhere to doctrines developed in an early-20th century water-law treatise – now discredited – that divided underground water into dependent and independent waters. The former were described as either "subflow" or "underflow." Waters deemed to be subflow or underflow are considered surface waters subject to the prior appropriation system. The Arizona and California rules do offer some protection for surface waters from groundwater pumping, but that protection is rather limited. Pumping outside the "subflow" or "underflow" region that intercepts water that is moving toward rivers or streams, but has not yet reached the rivers or streams, is exempt from regulation. The lesson for groundwater pumpers is simply to drill wells a bit farther away from watercourses. In Arizona, pumping has dried up the Santa Cruz River in Tucson and many of the state's once-perennial desert streams and rivers.

The states of Oregon and Colorado have developed bright-line tests that protect surface-water seniors from junior groundwater pumpers. The advantage of these rules is that they are relatively easy to administer, reduce transaction costs, and encompass most groundwater that is hydrologically connected to surface flows. In Oregon, if an area is deemed "critical" by the Water Resources Department, the law restricts further appropriation of groundwater if the well is located between one-quarter and one mile from the watercourse. Colorado protects senior surface-water diverters by a definition of groundwater that makes almost all groundwater "tributary" to surface flows. If pumping would reduce the flow of a

natural stream at a rate greater than 0.1 percent within 100 years, then that pumped groundwater is tributary to the stream and administered under the prior-appropriation system. The state legislature has made an exception, infelicitously titled "not nontributary" groundwater, in response to the political clout of Denver's fast-growing suburbs.

Other western states, including Kansas, New Mexico, Nevada, North Dakota, Utah, Wyoming, and Idaho, have developed an integrated priority system under which all water – whether surface or ground – is within the appropriation system. Any senior user (whether of ground- or surface water) will receive protection against a junior user. There are complexities with trying to integrate management, but the system in general comports with hydrologic reality.

Conjunctive Use and the Environment

Western states need be careful that they do not embrace without reflection "conjunctive management" of water resources. Conjunctive management aims to coordinate ground- and surface waters in order to obtain the maximum economic benefits from both resources. There is nothing wrong with this objective, but its utilitarian bent means that environmental factors are not considered. Consider the systems in Idaho and New Mexico where "a reasonable means of diversion" and a "dedication" system allow surface-water diverters who face harm from more junior groundwater pumpers to switch from surface supplies to groundwater. These effectively oil the squeaky wheel, but they ignore the hydrologic impact on the nearby river or stream. From the river's perspective, it does not help if the senior surface-water diverter begins to pump groundwater from an aquifer that is hydrologically connected to the stream – which is what happens when the reasonable means of diversion or dedication system operates.

From an environmental perspective, the state of Washington offers the greatest protection for rivers and streams. The legislature has explicitly recognized the hydrologic interconnection between ground- and surface water and authorized the Department of Ecology to set minimum water flows in the state's streams and lakes. These minimum levels become appropriations within the prior-appropriation system.

Impact of Exempt Wells

What the various western states share in common in regulating ground and surface water is an unfortunate exemption for so-called "exempt wells." Exempt wells are used primarily for domestic purposes, perhaps with a certain amount of irrigation or other use. Historically, this exemption rested on the policy judgment that it was simply not worth the time and trouble to require small domestic users to obtain a permit and a water right for uses that appeared to be minor compared to the enormous quantities of water used for irrigation and other purposes. Unfortunately, water pumped by exempt wells is not *de minimus*. There are millions of exempt wells in the West, most located in rural areas, often in close proximity to rivers and streams, where their impact is profound. In Arizona alone, there are currently nearly 93,000 exempt wells, which, if pumped at their maximum allowed rate of 35 gallons per minute, would produce more than five million acre-feet per year of unaccounted-for water. The states should close this immense loophole.

The failure of western states to integrate the law regulating ground and surface water has caused an ironic recent development. Even though all western states celebrate the independence and sovereignty of state rules to determine the allocation of rights to use water and resist any intrusion of the federal government, federal law is increasingly playing a critical role. The Clean Water Act, interstate compacts, the equitable apportionment doctrine, the Endangered Species Act, and the federal reserved rights doctrine now place the thumbprint of federal law on the states' regulatory systems. This development will continue until the states take steps to reform their legal rules and to manage ground- and surface water in an integrated fashion.

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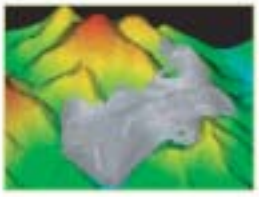
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