

# The Daily Courier

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## Column: USGS model worthy of use

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Three recent articles in The Daily Courier have discussed the newly completed U.S. Geological Survey's (USGS) model of the Verde River groundwater system and the unwillingness of Prescott-area officials to use the model for one of its major intended purposes, i.e., to assist state and local officials in the management of their groundwater resources. Because of this developing conflict, the Citizens Water Advocacy Group (CWAG) asked me to provide a hydrologist's perspective on the model's value.

The numerical model will predict the feasibility of proposed groundwater pumping scenarios, and it will also predict the hydrologic consequences of existing and proposed pumping. In the Big and Little Chino Valleys, the model will predict the impact of existing and proposed pumping on the Verde River.

Given the reliance of the tri-cities on groundwater to meet existing and future demand for water, the model's ability to predict the feasibility of proposed pumping scenarios is locally very important. We are currently over-pumping our supply, making it imperative that we understand how much is available. This, in turn, would allow us to institute better management practices than are currently in place, if our supply is to be sustainable for the long term. Failure to do this will result in an eventual drying up of our water supply. Importantly, significant damage will occur as our groundwater diminishes. Indeed we have already seen effects from over-pumping.

Hydrologists are united in the concept that groundwater and surface water are a single resource. Thus pumping of groundwater will ultimately reduce the amount of water flowing to our springs, streams and rivers. It is clear from studies performed and data collected by the Arizona Department of Water Resources and the USGS that ground water pumping has reduced the flow of the Verde River. As pumping increases, this reduction will continue to increase over time. Unfortunately, the state of Arizona does not recognize the fact that groundwater and surface water are hydrologically connected and from a legal standpoint, essentially manages them as two separate entities. This fact significantly limits the ability of the state or individuals to protect Arizona's two remaining high priority rivers, the San Pedro and the Verde.

Although the present over-pumping of our groundwater system cannot go on forever, there is no existing plan or legal requirement to actually balance pumping with the system's ability to supply water indefinitely. There is a state goal to bring our source of supply into balance with pumping, but this is just a goal and there are no plans to make it happen. Rather than reducing demand or augmenting supply to the point that the system becomes balanced, demand is expected to continue to outpace supply. Despite these limitations, for our sake and that of our children, we need to

understand the limitations of our aquifers and the consequences on the Verde River of withdrawing water from them.

The USGS model encompasses a large part of northern Arizona and includes the Little Chino, Big Chino, and Middle Verde Valleys. As stated by the USGS, "the model can be used by resource managers to examine the hydrologic consequences of various groundwater development and climate-change scenarios for regions that are sub-basin or larger in area." This means that it would provide local officials, who have pledged to not harm the Verde River, with the ability to predict the impact of proposed and existing pumping in both the Big and Little Chino Valleys on the river. As recognized by the hydrologic community at large, the model is also the best scientific tool available for making this analysis.

The USGS did not create their model in a vacuum. The scientists that constructed the model are highly regarded hydrologists in Arizona and within the USGS at large. They had a technical advisory committee of state and university officials helping to guide its construction and following completion, the model underwent extensive scientific review. It took years to build and cost over one million dollars to complete. The Yavapai County Water Advisory Committee contributed funds to the effort and underwrote costs associated with developing pumping scenarios to be tested on the model. These scenarios need to be run on the model so that local officials and the public will be better informed. Others have already begun to use the model. So should we.

Submit your questions and comments to [info@cwagaz.org](mailto:info@cwagaz.org).

Gary Beverly, Ph.D. will discuss Upper Verde River issues when CWAG meets on Nov. 12 at the Granite Peak Unitarian Universalist Congregation, 882 Sunset. Details at [www.cwagaz.org](http://www.cwagaz.org).

Bill Meyer is a retired USGS hydrologist with more than 40 years' experience in quantifying groundwater resources and the impact of wells on rivers. He was Scientist-in-Charge of the USGS Pacific Islands Water Science Center when he retired. For the past 10 years he has advised our local officials and citizenry on our water supply issues.

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