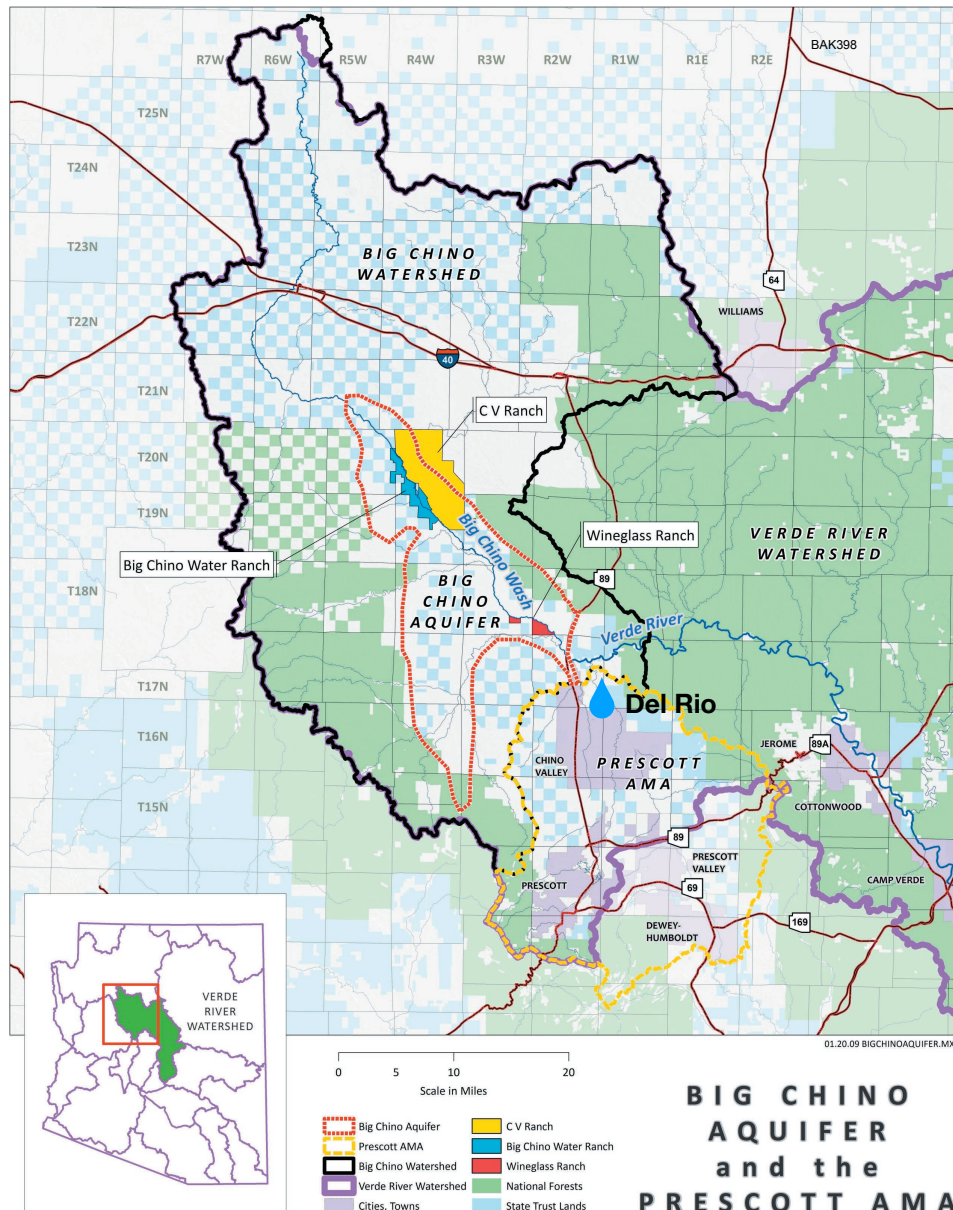


2024 CWAG Candidate Forum Yavapai County Board of Supervisors

Factual Basis For Questions

Because water policy must have a rational basis, CWAG provides this statement of “Basic Facts” that is a foundation for informed discussion. The map below displays the regions of concern: the Verde Valley, unincorporated Yavapai County, the Prescott AMA (PrAMA), and especially the Big Chino Watershed. Our water issues are larger than the PrAMA.



History of Regional Planning

Because we share the same groundwater supply, we should jointly and cooperatively manage the water resource. So far, neither logic nor law has generated effective and sustained regional management of groundwater.

Legally, ADWR holds the water users in the PrAMA responsible for achieving Safe Yield.

The Upper Verde River Watershed Protection Coalition was created in May 2007 as a regional water planning effort, but after 17 years with no significant accomplishments, it dissolved in 2023. The Board of Supervisors created the Water Advisory Committee in January, 2005. Although the WAC was successful in sponsoring many important scientific studies on the Verde Watershed, the Supervisors terminated it in 2014. Ultimately, these attempts at regional cooperation were unsuccessful.

Since 2014 there have been no effective regional water planning efforts.

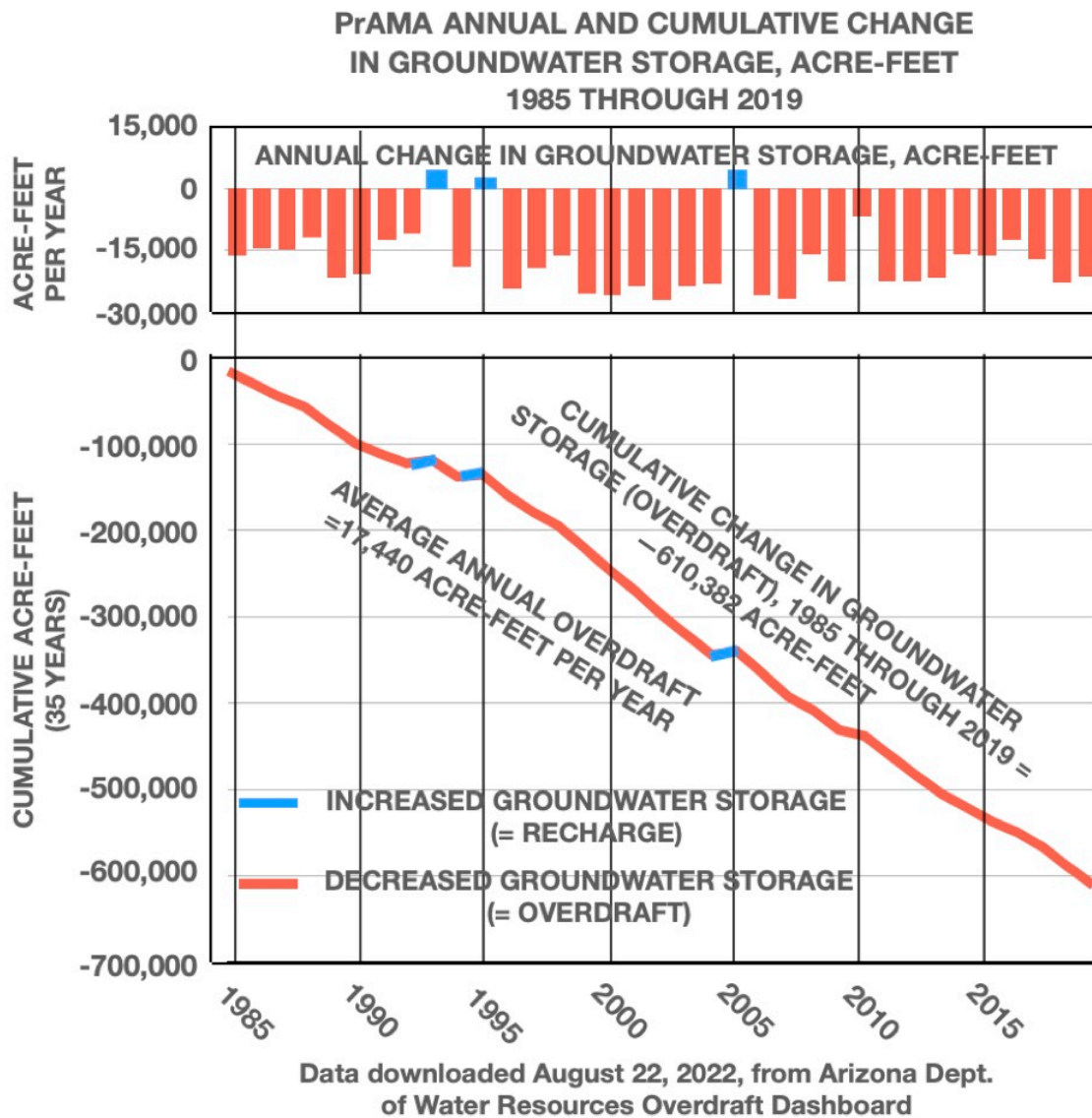
Current Status of the Prescott Active Management Area

Groundwater resources in the PrAMA are managed by the Arizona Department of Water Resources (ADWR). The management goal of the PrAMA is safe yield by 2025.

Safe yield is a long-term balance between recharge and withdrawal of groundwater. The graph below uses ADWR data and shows that the overdraft is accumulating, indicating that we are moving away from safe yield. In the recent 5th Management Plan, ADWR admits that, realistically, it is impossible to attain the management goal.

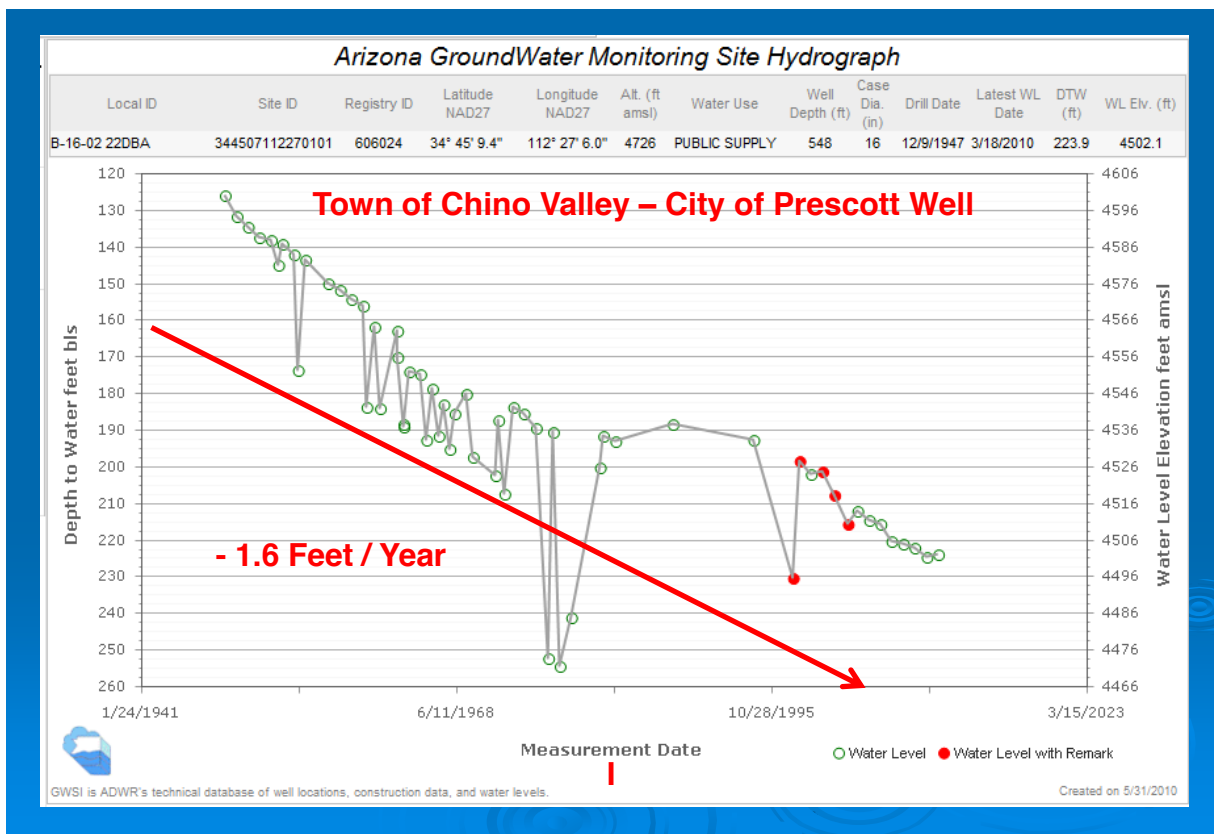
ADWR has managed the PrAMA for about two decades. In that time the annual overdraft has remained roughly unchanged and very large. The annual overdraft for 2019 exceeds 21,000 acre-feet per year (afy). To envision an acre-foot, imagine a football field with water one foot deep. The cumulative overdraft now exceeds 600,000 af. In 2019, we removed enough water from the aquifer to flood a football field 4 miles deep, and the cumulative overdraft would fill a football field 114 miles deep in water! This cannot go on forever.

Unfortunately, the PrAMA is moving away from, not toward, the management goal: safe yield. Safe yield is a goal, not a requirement. ADWR places the responsibility for a safe yield plan on elected officials in the PrAMA. At this time, no plan exists, and there are no planned discussions about a safe yield plan. There are no legal consequences for failing to achieve safe yield; there is no penalty for failure. There are no incentives. Therefore, safe yield is a policy designed to fail. The long-term consequences of failing to reach safe yield are loss of



water security for citizens and damage to the upper Verde River. The responsibility to plan for safe yield lies with local government, not ADWR.

Our domestic and municipal potable water supply is groundwater. The Little Chino sub-basin (within the PrAMA from Prescott north through Del Rio Springs) is our greatest concern because it is the primary source of water for Chino Valley, Prescott, and some Yavapai County residents, plus it supplies over 60% of Prescott Valley’s water. Wells in the Little Chino intercept groundwater flowing north from the Prescott basin through Del Rio Springs and to the Verde River. The relentless overdraft causes groundwater levels in the Little Chino aquifer to decline. You can see the decline in the plot below showing the declining water level in one of Prescott’s production wells in Chino Valley.

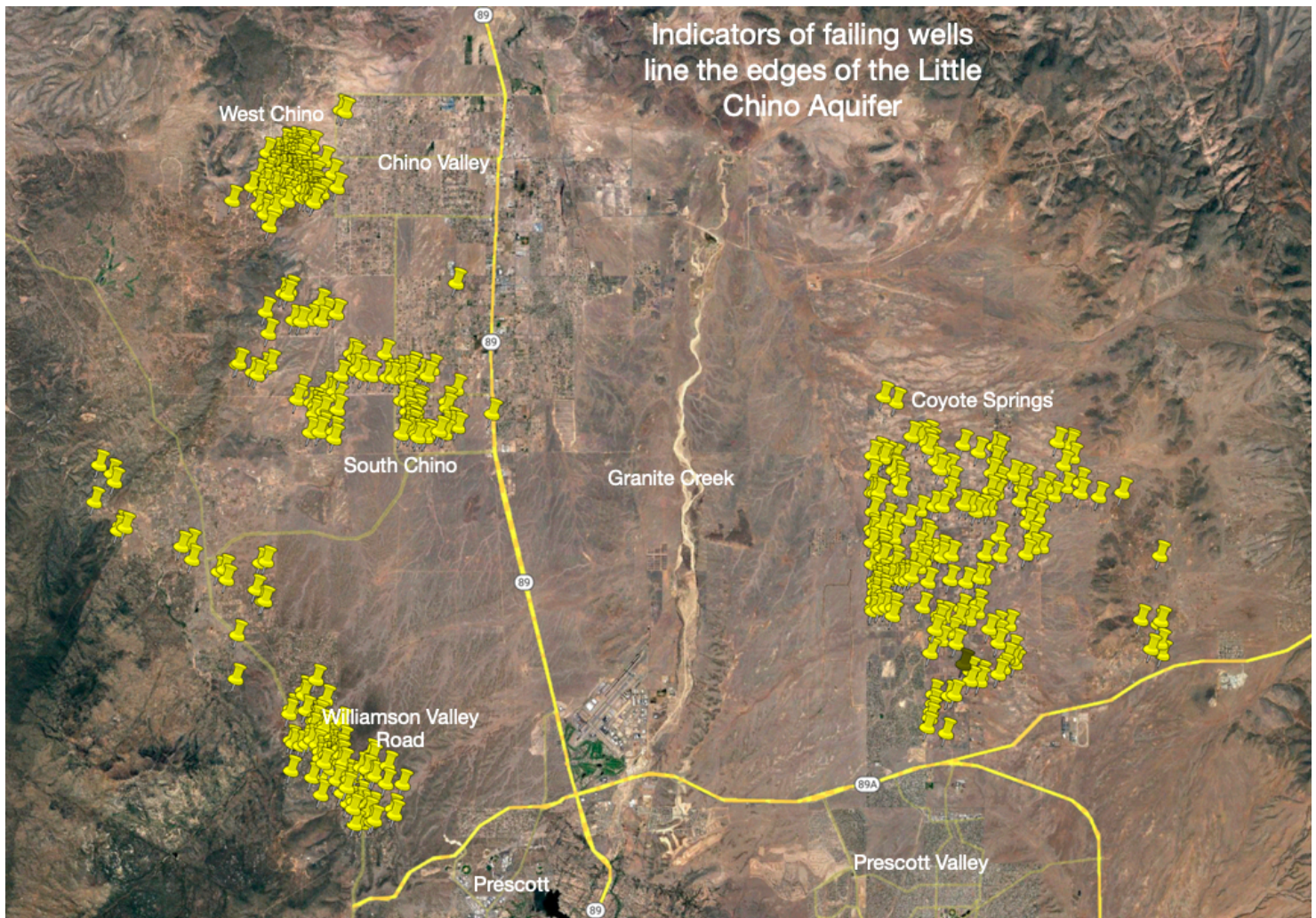


Who is Contributing to the Increasing Overdraft in the Prescott AMA?

Municipal water use is currently about 75% of the total demand in the Prescott AMA. Prescott and Prescott Valley each contribute approximately equally to the overdraft because both communities pump much more groundwater than the combined volume of natural and wastewater recharge.

Declining water levels western Yavapai County causes domestic wells to fail

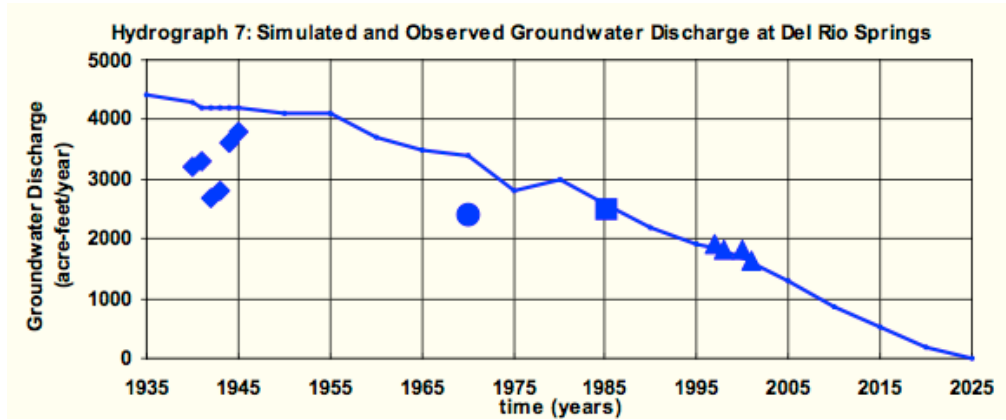
By inspecting aerial photos of the PrAMA, CWAG has identified about 500 large water storage tanks on rural lots not served by a municipal utility. These tanks indicate a failing well that cannot supply enough water for the home, forcing families to rely on commercial water haulers to refill the tanks. These failing wells are found on the outside edges of the aquifer: west and south of Chino Valley, in the Williamson Valley Road area, and in Coyote Springs. CWAG expects that there are many more failing wells, and that the number will increase. This is a financially devastating event for the families. A dry well adds hundreds of dollars in monthly water hauling bills and can cut the home's property value in half.



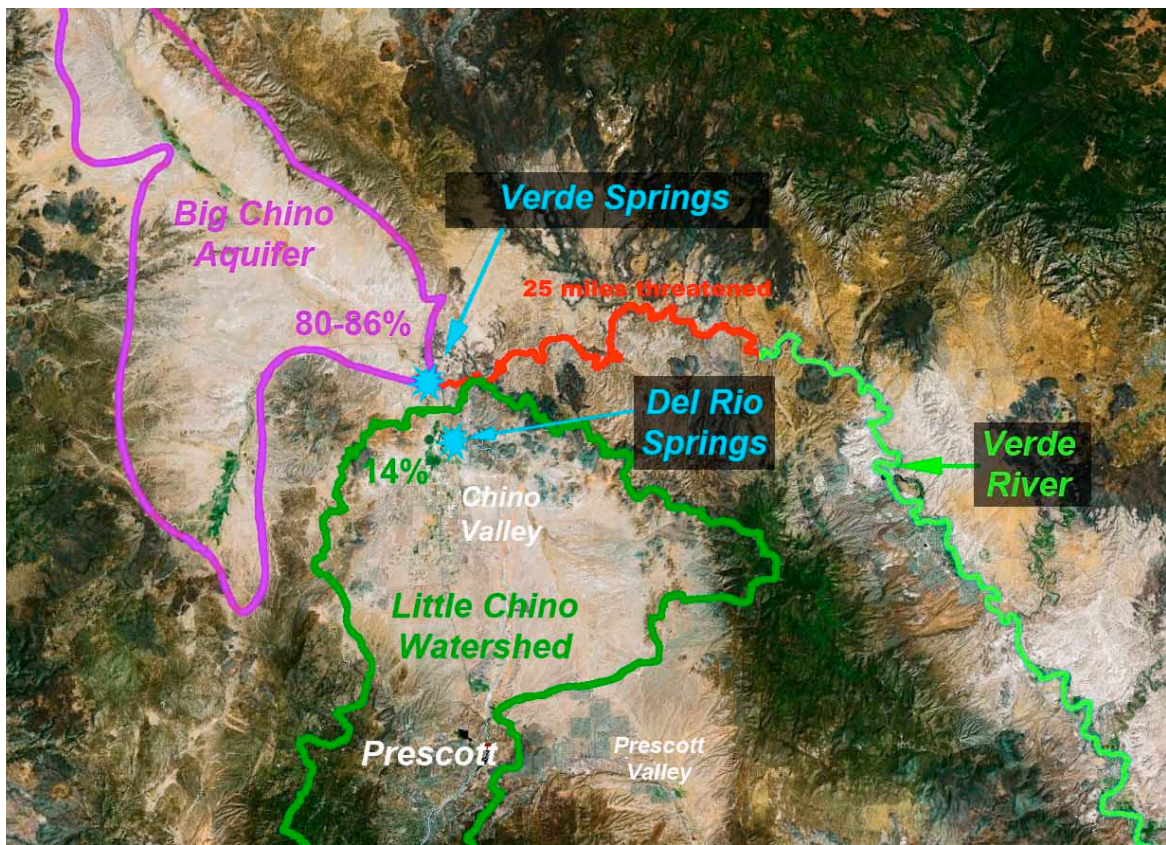
Declining water levels in the Little Chino sub-basin are also causing Del Rio Springs to dry up.

The graph below from ADWR projects that Del Rio Springs will cease flow in 2025.

The measured flow from Del Rio Springs is declining. Graph from the ADWR groundwater model for the PrAMA.



Note that Del Rio Springs was the historical headwaters of the Verde River, but now perennial flow begins 6 miles downstream at Verde Springs. We have already lost 6 miles of the river due to groundwater pumping. The Little Chino sub-basin contributes about 14% of the base flow of the upper Verde River; thus, the overdraft in the Little Chino Aquifer reduces the base flow of the river.



Current Status of the Big Chino and Upper Verde River

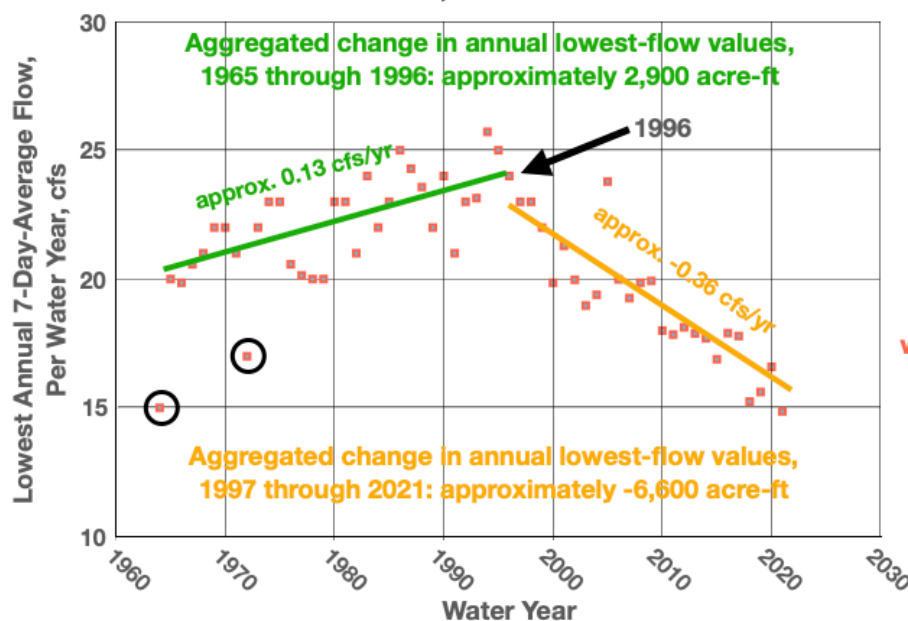
The Big Chino Valley, which overlies the Big Chino aquifer, consists of unincorporated lands within Yavapai County. They are not part of the PrAMA. There is no management, monitoring, or restriction on groundwater pumping; any landowner can pump groundwater without limit for a beneficial use.

The water quality on the upper Verde (above Sycamore Creek) is excellent and qualifies for designation as an Outstanding Arizona Water. The Arizona Department of Environmental Quality is now considering that designation.

Additionally, Prescott National Forest has declared that the upper Verde River is both eligible and suitable for Federal designation as a Wild and Scenic River. A group of national conservation organizations and local citizens has submitted enabling legislation - now pending - to Congress. There is broad support for designation, including: the Yavapai-Apache Nation; the Towns of Sedona, Camp Verde, Cottonwood, Clarkdale, Jerome, Prescott Valley, and Chino Valley; the City of Prescott; Yavapai County; several chambers of Commerce; over 150 local business owners; Governor Hobbs, former Secretary of the Interior; and former Arizona Governor Bruce Babbitt.

A geochemical analysis by the US Geological Survey (USGS) calculated that 80-86% of the base flow of the upper Verde River is groundwater from the Big Chino aquifer. Currently, that groundwater emerges between the beginning of Verde Springs (mile 2, measured from Sullivan Dam) and the Paulden stream gage (mile 9.8, not shown on map) to constitute most of the base flow (the groundwater component of streamflow) of the river. Groundwater pumping in the Big Chino will reduce the base flow by the amount pumped.

USGS PAULDEN STREAMGAGE, LOWEST 7-DAY ANNUAL FLOW



If declining trend at Paulden gage -0.36 cfs/y, or -260 af/y, continues unchanged, Verde River will be briefly dry annually through Perkinsville, 25 river miles, beginning in 2060s

The above graph uses data from the USGS Paulden stream gauge. It shows that the base flow (the average of the lowest consecutive 7-day flow in a water year) has been declining since the mid-1990s. In June 2020, this lowest annual flow was just below 15 cubic feet per second (cfs), which is approximately 60% of the lowest flow in the mid-1990s. In 2018 the annual volume flowing past the site of the Paulden gauge was 61% of the estimated pre-development flow in 1940. In other words, the lowest flow increased minimally and erratically until the mid-'90s but has declined drastically since then. The river is now in an especially vulnerable condition.

Groundwater pumping, higher temperatures, and regional drought are the likely causes. Climate change models project higher temperatures and reduced aquifer recharge which will further reduce streamflow in future decades.

Already, the ecological function of the river is compromised. Now, we are observing a steady decline in the upper Verde River base flow that will dry the river at Perkinsville Bridge in a few decades.

Big Chino Groundwater Pumping Threats

Unmitigated groundwater pumping from the Big Chino aquifer is an existential threat to the upper Verde River.

The Big Chino Valley is in unincorporated Yavapai County and is not part of the Prescott Active Management Area, so groundwater use is governed by the “beneficial use” doctrine. This permits a property owner to pump groundwater for a “beneficial use,” without limit. Three classes of groundwater pumping threaten to deplete the Big Chino aquifer and degrade the upper Verde River. Any single one of these threats can dry the river.

Expanded Agricultural Irrigation. It is legal under Arizona law for a farmer to irrigate with groundwater. In Kingman, agricultural pumping has increased over 25,000 afy - half of the Kingman pumping in the Big Chino would dry the upper Verde. The **Arizona Legislature** could control agricultural pumping in the Big Chino Valley. Additionally, there are now funded plans to purchase conservation easements from large landholders in the Big Chino. These easements would constrain new groundwater pumping and development while preserving ranching and open space.

Groundwater Export. Arizona water law (ARS 45-555) authorizes Prescott to export 8,068 afy of Big Chino groundwater to Prescott via the proposed Big Chino pipeline and to share that water with Prescott Valley. Also, cities may export water (approximately 10,000 afy) from historically irrigated but now fallowed agricultural fields. The total legally authorized exportable water is approximately 18,000 afy, far more than enough to dry the upper Verde River. **The City of Prescott and the Town of Prescott Valley** have promised to

offset the effects of their pipeline pumping on the river. No specific construction dates or mitigation plans have been released but the pipeline is under active consideration.

Population Growth. As Paulden grows and expands up the Big Chino Valley, groundwater pumping will increase. At the recent growth rates this will eventually dry the upper Verde. The ***Board of Supervisors*** is responsible for controlling the density and character of land use in the Big Chino Valley. There are many potential solutions that remain to be tried, including stormwater capture for recharge and aggressive water conservation requirements. *Nothing has been done - yet.*

Current Status of the Middle Verde River

The middle Verde River flows through the Verde Valley communities of Jerome, Clarkdale, Cottonwood, and Camp Verde. It is an important economic (over \$300 million per year) and recreational resource. Unlike western Yavapai County where groundwater pumping is the major concern, in the Verde Valley management of both surface water and groundwater is needed.

Legal Status:

Arizona water law manages groundwater and surface water differently. Groundwater outside of an AMA is governed by the beneficial use rule that permits landowners to *use* groundwater (note: groundwater is not a property right) for a beneficial use on their property without limit. Surface water is governed by the appropriative use rule that sets a priority system of surface water rights. Appropriative water rights are property rights attached to a specific parcel that specify the diversion point and quantity of surface water. The first user has the highest priority - a senior right. Junior right holders cannot divert water if senior rights are impaired.

However, in a watershed groundwater and surface water are intimately connected - a scientific fact that is not recognized by water law except in a defined subflow zone along streams. In some circumstances, groundwater wells located miles from the stream can withdraw surface water from the subflow zone and be subject to the appropriative water supply rule: "First in use, first in right."

The Gila Adjudication is an active judicial process intended to convert surface water claims into legally defined surface water rights in the Gila River Watershed. The Adjudication Court has been working in the San Pedro Watershed since 1974, and the Verde Watershed is next in line.

In the Verde Valley, there are several times more claims to surface water than is flowing in the river. This means that many current surface water users will have junior rights that may not permit them to use surface or groundwater. The most senior water rights holders will

be the Yavapai-Apache Nation and the Ft. McDowell Yavapai Indian Tribe with rights dating “from time immemorial.” The next most senior users will be Salt River Project and various Verde Valley ditch associations with rights dating to the 1860s. Although the Adjudication will provide certainty of water rights and benefit some water users, many newer water claims will be converted into junior rights that will be effectively useless. This has dire economic implications for some current agricultural users and especially for future growth. The cities and county have not yet started planning to address this looming problem.

Middle Verde Water Quality:

The AZ Dept. of Environmental Quality (ADEQ) has designated the stretch of the Verde River from Sycamore Creek to the confluence with Oak Creek as an “Impaired Waterway” due to high readings of E. coli and low dissolved oxygen. Additional monitoring is under way. The Oak Creek tributary is a designated Outstanding Arizona Water that has similar water quality issues.

Threats to Flow:

Downstream of Perkinsville Bridge, the Verde receives significant additional water from springs and tributaries. At Clarkdale, the middle Verde flow is approximately three times the flow at Paulden. However, the demand for groundwater and surface water from municipal and agricultural users sharply increases as the river flows to Beasley Flat, a few miles downstream of Camp Verde. There are plausible scenarios suggesting that, unless water management is improved, in coming decades the river will go dry in Camp Verde for several weeks in the summer.

Although the upper Verde River faces the most severe threat of dewatering, the middle Verde also needs attention to both groundwater and surface water management.

Why the Verde River Matters:

The first 25 miles of the upper Verde, from Verde Springs downstream to Perkinsville Bridge, provides some of the finest surviving wildlife habitat in Arizona. Verde Springs is the only significant source of water for base flow within this part of the river. Prescott National Forest has declared that the upper Verde River is eligible for Congressional designation as a Wild and Scenic River. A coalition of national and regional conservation groups is now working to achieve Congressional designation of the Upper Verde Wild and Scenic River.

See the following Op-Ed published in the Daily Courier:

Eleven Reasons to Protect the Verde

By Gary Beverly (gbverde99@gmail.com)

The Verde River is a green artery pulsing through the heart of Arizona, a jewel of the Southwest, continuously flowing over 190 miles from Paulden to the Salt River near Scottsdale.

The upper Verde, tucked away deep within the Prescott National Forest between Paulden and Clarkdale, is remote, unknown, under-appreciated, and threatened. The upper Verde's future is clouded by unmitigated groundwater pumping in the Big Chino Valley, which threatens to convert 25 miles of a living river into a dead, dry wash.

The Citizens Water Advocacy Group believes that we are smart enough to live here responsibly, enjoying a comfortable lifestyle while protecting our natural areas and our wildlife. The question is: Do we have the political will?

Here are eleven reasons we should protect the Verde:

Economy: The Verde sustains over 700 jobs and over \$100 million in economic value in the Verde Valley, plus 40% of the Phoenix area's surface water supply. Plus, natural areas are proven to benefit local economies.

Recreation: As our population grows, we require more recreational area. The upper Verde is a wonderful place for people to hike, hunt, fish, camp, backpack, kayak, canoe, view wildlife, photograph, ride horses, climb rocks, and observe birds.

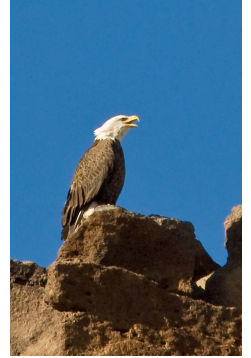
Quality of Life: Clean air, unfettered open spaces and bodies of water, and opportunities to view wildlife enhance our daily living.

Scenery: Primal colors and spectacular rock formations create scenery second to none in the state — red rocks, green plants, blue sky, and white clouds. The Verde displays tremendous natural beauty.

Cultural & Historic Values: The entire river corridor is laced with ancient rock art, campsites, structures, and artifacts revealing the historical lifestyle of Native Americans. The river and its springs are an essential spiritual and cultural foundation for the Yavapai-Apache Nation. Also, remnants of early Arizona ranching history dot the canyon.



Wildlife: Although the Verde River watershed comprises only 5.8 percent of the land area in Arizona, it contains the best remaining riparian areas — lush, green ribbons full of life. The Verde supports a surprisingly large fraction of Arizona’s vertebrate species: 78 percent of breeding bird species, 89 percent of bat and carnivore species, 83 percent of native ungulate species, and 76 percent of reptiles and amphibian genera — an impressive concentration of wildlife. Many bald eagles overwinter on the Verde. Seven eagle chicks have fledged at Del Rio Springs in the last five years. The Verde River, the lifeblood of the watershed, supports most of Arizona’s wildlife species, a heritage we all share.



Endangered Species: The Verde River supports a rich and diverse variety of plants, animals, and fish. The Endangered Species Act (ESA) lists 21 species in the Verde watershed, including the yellow-billed cuckoo, the southwestern willow flycatcher, native fish and snakes, and more. Wildlife managers monitor an additional 16 sensitive species of concern.

Native Fish: Of Arizona’s original 33 native fish, three are extinct, 19 are protected by the ESA, and the Verde supports ten. The upper Verde River sustains four ESA-listed native fish.



Uniqueness: Of Arizona’s six major perennial rivers, the Gila, Salt, and Santa Cruz Rivers have been consumed by dams and groundwater pumping, the Colorado is fully diverted and no longer flows to the Gulf of California, and the San Pedro is struggling for life. The Verde River is the longest surviving living river in Arizona.

Stewardship: Because we exploit our forests, rivers, and land for the resources that support our society, some environmental degradation is inevitable. Our challenge is to manage this rich and amazing world sustainably so our kids, and their children, can also live comfortably and enjoy nature and wildlife. We can learn from our local Native Americans, the Yavapai-Apache Nation in Camp Verde. Monica Marquez, a Yavapai, told me: “Water is Life. You never take it all.” Vince Randall, past YAN Tribal Chairman and Apache Cultural Chair, asks: “When are you going to learn to share with all living things? When will you learn the true meaning of stewardship? Will it be when there is only one of you left?”

Water is Life: To indigenous people, the land, plants, and animals are alive; they are identified as beings to be respected, not as nouns representing objects to be owned and exploited. When asked “Where is the river?” they reply “The river lives over there.”