



# Water, Growth and the Future of Agriculture

Grady Gammage Jr. – Morrison Institute and Gammage & Burnham

Arizona farmers have never matched the idyllic Jeffersonian model of self-reliant individuals whose flinty independence formed the backbone of American democracy. Because we rely on elaborate irrigation systems to make agriculture possible, our farms have always been large, often corporate, and dependent on contractual obligations. Also, Arizona agriculture has historically focused not on food crops, but fiber. Perhaps these are some of the reasons that as farming began to disappear in central Arizona, we never heard an outcry, as in the Willamette Valley or in the northeastern United States, about the need to create agricultural preservation zones so as to preserve a “special lifestyle” while saving open space.

In Arizona, the survival of agriculture has never been about a shortage of land. *Land* we have in abundance—the question always is *water*: Is it available? Where? And at what cost?

When I was first elected to the Central Arizona Project (CAP) Board more than twelve years ago, I took my seat with the expectation that I was essentially the representative of urban interests, since I made my living representing real estate developers. I have always lived in urban Arizona and had no particular affinity for agricultural uses. As a basic believer in

the free market, I viewed agriculture as kind of a holding zone: what you did with property until it was ripe for subdividing.

Interestingly, in Arizona even most farmers hold a similar view. Part of the reason why Arizona has so successfully represented its water interests in the larger western context is that, in comparison to states such as California, farmers and city dwellers in central Arizona get along relatively well because they grow both crops and houses in the same area. In California, urbanization takes place on the coast and developers must grab water from farmers in the central valleys. But here, we tend to convert farmland to urban land at the same time that we convert agricultural water to urban water.

A section of housing requires on average no more and often less water than the same section of land used to grow crops. So as we convert land to residential use, we use less water, and we explain this to citizens to calm their fears.

Yet agricultural water and urban water are not the same commodity. An essential component of water is its reliability as a resource. Domestic urban water must be especially reliable; it is very difficult to take water away from homes. Agricultural uses, especially for non-food crops, lie at the opposite end of the dependence/

demand scale and therefore, logically, at the opposite end of the price scale. It took me a while on the CAP Board to understand why we would sell water to farmers below the cost of getting it here but there is logic to that idea: doing so preserves and protects our water supply from others who would claim it. It has therefore been in the interest of cities to subsidize the price of water to farmers.

---

*Part of the reason why the Phoenix area has weathered the western drought with far fewer water restrictions than ... other cities in the Southwest is that agricultural water has been available to move to urban uses in our time of shortage.*

---

We are now beginning to face the question of what happens as we convert the remaining agricultural land in central Arizona to urban uses. Left to the free market, agriculture will ultimately disappear as the urban population grows and water flows toward higher-value uses. Toward the end of my tenure on the CAP Board, I came to the conclusion that there is great value in retaining agriculture as part of the mix of land and water use in central Arizona. There are at least three reasons for doing this.

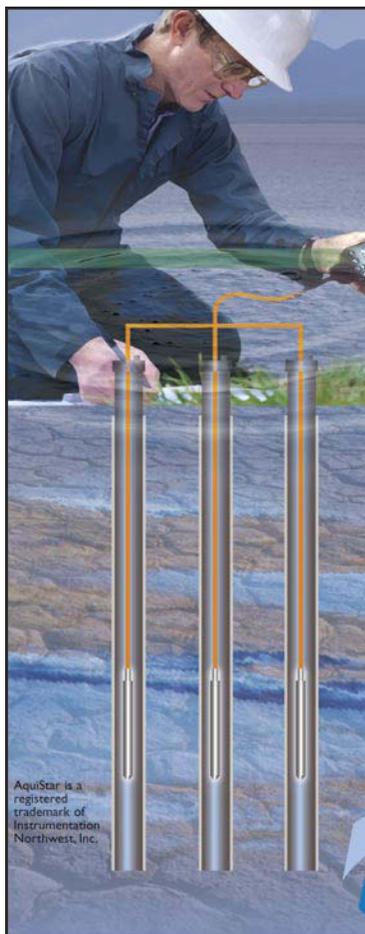
First, agriculture is the only real reason we are here at all. Despite abundant land and sunshine, the Hohokam were able to create a civilization here only because water could be moved and applied to the land. Some living remnant of why we are here would be instructive to our grandchildren. Our civilization "rose from their ashes."

More concretely, the urban heat island is increasing at an alarming rate. In the last fifty years in central Arizona, average nighttime summer temperatures have increased 11 degrees and now hover in the mid 90s. If the temperature increases another 11 degrees in the next fifty years, it is unlikely that people will continue to move here. Studies by researchers at Arizona State University show that irrigated agriculture fields actually cool off more at night than the native desert. The continued presence of agriculture has a mitigating effect on the heat island.

Third, and most importantly, agricultural water use is a buffer. In times of shortage, it is relatively simple to tell farmers they cannot plant their crops. It is relatively simple to let their water migrate to the higher priced and less interruptible urban uses. Part of the reason why the Phoenix area has weathered the western drought with far fewer water restrictions than Denver, Las Vegas, San Diego, or other cities in the Southwest is that agricultural water has been available to move to urban uses in our time of shortage. If our urban population increases to where it requires the entire available water supply, we lose that safety valve.

In 1999 in *Phoenix in Perspective*, I suggested that we permanently set aside a block of 500,000 acre-feet of water for agriculture, and model urban growth based on that assumption. It is now six years later; in that time we went deeper into drought and may only now be starting to climb back out. We still have not seriously debated the relationships between long-term agricultural use, urban growth, and the ultimate sustainable size for our city. I still think it is a good idea.

Contact Grady Gammage at [ggammage@gbllaw.com](mailto:ggammage@gbllaw.com).



# PT2X

SMART SENSOR

## HANDHELD OR LAPTOP

The AqStar® PT2X Smart Sensor – ideal for all your level and temperature monitoring needs – wells, tanks, surface waters...

- Integrated datalogger / sensor
- Measures and records
- Pressure, Temperature, Time
- Digital Accuracy
- Real-Time Monitoring
- Easy Export



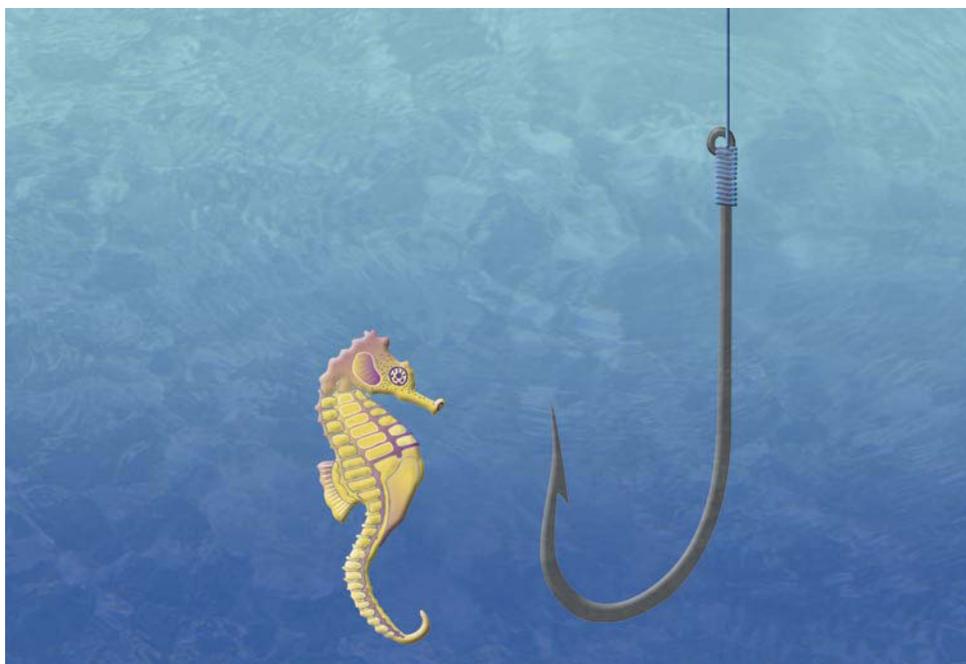
### Easy-to-Use Software

With INW's powerful software, create test sessions, examine data, and monitor real time readings from either a laptop or a handheld.

AqStar is a registered trademark of Instrumentation Northwest, Inc.



**Instrumentation Northwest, Inc.**  
Protecting our water resources since 1982  
1-800-776-9355 / [www.inwusa.com](http://www.inwusa.com) / [info@inwusa.com](mailto:info@inwusa.com)



## Are you sure you have the right tools for managing your water resources?

Contact Greg Bushner, RG: 602-371-1100 • e-mail: [greg\\_bushner@urscorp.com](mailto:greg_bushner@urscorp.com)  
Phoenix Location – 7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020  
Tucson Location – 333 East Wetmore, Suite 611 • Tucson, Arizona 85705

