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Hydrologist Claims Groundwater Rules Are Politics Over Science

By David Bowser

ALPINE, Texas — Bob Harden, a consulting hydrologist with R.W. Harden and Associates, says with all the things happening in the groundwater arena today, it seems that groundwater districts and groundwater law have lost touch with their origins.

With regard to Texas groundwater, Harden says there are certain milestones in history.

When Texas became a state in 1845, it took English Common Law as a basis for its legal system.

With regard to water law, the state had little other than common law to govern it, until the *East* case came up in 1904.

But even then there was little regulation of groundwater.

In 1949 came the first groundwater district legislation in Texas.

"It defined two terms" Harden says.

The first term was "underground water reservoir." The second was "subdivisions of underground reservoirs."

"Part of the statute essentially said a subdivision is that part of a reservoir that when you produce it, someone next door could also produce it," Harden says.

Interestingly enough, in 1949, general science guided the legislature.

"It was known that a groundwater district had to be formed along the boundaries of aquifer subdivisions," Harden explains. "That was a requirement for the legislature to have to follow. They couldn't shortcut the system."

Since then, however, there has been a proliferation of groundwater districts as the laws have changed.

Most of the state's groundwater districts have been formed in the last 50 years.

"A lot of them were formed in the last 10 or 20 years," Harden adds.

There are now 95 different groundwater districts.

"I don't know exactly when but somewhere in the mid-1970s, I think, the requirement to follow subdivisions when defining groundwater districts was dropped by the legislature so that they could expediently create more and more districts."

All the groundwater districts relying on the major aquifers were right up against each other.

In many cases, different districts were regulating the same water.

"In 2006," he says, "they realized that they had a problem."

The state legislature came up with joint planning areas called Groundwater District Management Areas.

"They defined them mostly along aquifer subdivisions. The idea was that all of the districts within each joint management area would coordinate their regulations."

There are 16 joint management areas across Texas.

Harden says the joint management areas are going to come up with desired future conditions for aquifers, subdivisions of aquifers and other geographic areas.

"Geographic areas underlie the intent of the joint planning areas, because now we can go and divide up the Groundwater Management Areas how we want and they are being divided up however anybody can do it."

He says it is a difficult thing to coordinate different interests and issues.

"It's really hard but when you allow somebody to do it, they will do it."

Geographic areas are undefined.

"Everybody uses it however they want."

Up in the Panhandle, the Ogallala Aquifer has been divided along the Canadian River into two subdivisions. Each subdivision has different desired future conditions.

"Districts point to these areas as being geographically different. They're not hydrologically different, and they're not visually different. They are politically different."

The different political entities have adopted different standards within a common aquifer, he notes.

"The 80 percent standard is in Hemphill County, and the 50 percent standard is in the other counties."

Hemphill County Underground Water Conservation District has set a goal of maintaining 80 percent of the water in the ground for the next 50 years.

The surrounding counties, which include two other water conservations districts, have the standards at 50 percent of the water in place at the end of 50 years.

But water flows downhill.

When groundwater is divided up that way in Hemphill County, it will flow from Hemphill County to adjoining counties.

"Landowners in those adjoining counties are going to be the beneficiaries of Hemphill County's water," Harden points out.

In models that show the projected flow of the water, the water today is flowing toward the Canadian River that bisects Hemphill County.

But if more water is pumped surrounding Hemphill County, a single-county district, the water will reverse its flow.

"The water happens today to be flowing toward the Canadian River," Harden says.

But that could change.

As time goes on, the model shows, the flow will change. The flow will be to neighboring counties that are pumping more water than Hemphill County.

Under prevailing law, the state can allow landowners to drain the water from other landowners.

"It's easy for me to see this, because this is basic hydrology," Harden says. "It's easy to see that it's going to take 30 or 40 or 50 years to prove itself out."

He predicts numerous fights concerning water over the next 40 or 50 years.

The Panhandle Groundwater Conservation District, which neighbors the Hemphill County Underground Water Conservation District, has divided itself into 13 different depletion management areas.

"They defined a minimum rate that these individual areas will never be cut back," he says. "These are pretty small areas in some cases."

Different areas could have different allocations or allowables over time.

Today, the water is draining toward the Canadian River, but Harden says the 50-50 standard that the area outside Hemphill County has adopted (50 percent water at the end of 50 years) will allow the counties with higher pumping to drain Hemphill County.

Landowners in Hemphill County will get less allowable pumping while the surrounding counties will get more.

Down in Groundwater Management Area 8, along the Trinity River, the situation is even more complex.

The desired future conditions along different portions of the Trinity vary widely.

Neighboring counties may have double or half the desired future condition.

"When you translate that to water volumes," Harden says, "one county may get 3000 acre-feet and one will get 200."

McLennan County gets 14,000 acre-feet.

Harden questions whether groundwater owners in this region will sit back and watch as their land gets drained by neighboring counties.

"They might just for a little while because they don't know what's going on," he says, "but after decades and decades of this and having it forced on them, the system will break."

One of the things that is misunderstood about groundwater is how the effect of wells works.

The cone of depression of one pumping well may change the groundwater.

"If we add another well next to it," Harden says, "that cone changes."

The first well still has the same total effect on the aquifer, but the combined effect is different.

"If we keep adding wells, we keep getting different overlaps and effects," Harden explains, "and we get different water level surfaces."

Some pumping may not appear to be affecting the aquifer, while other pumping may appear to affect it greatly.

In reality, he says, they're all affecting the aquifer exactly the same.

"It's the special arrangement of the hydraulics that causes this response to happen."

The key is to regulate the hydraulics to equalize them, he claimed.

"We're going to have areas with greater declines and areas with less declines forever." There's nothing you can do about it. It's like trying to regulate how much food each person eats."

He outlined groundwater managers need to be thinking about regulating the water because depletion is too much in some areas or too little in other areas.

"We need to regulate the whole thing," Harden offered. "We need to regulate all the users and not go in and try to figure out specific problems."

One of the problems right now is that science no longer plays a leading role.

"Science is way in the back to law and politics," Harden elaborated. "Politics is driving the decisions."

He says politicians are looking for self-substantiation.

"What we need to do is turn that around. We need to create

procedures that obey the science."

He offered that if man is going to try to regulate global warming, it won't help much to deal with tractors in Pecos County and not worry about what's happening in China.

"It would be a futile effort."

But that's what is happening, he claims.

"You have to get your arms around the problem and regulate the whole problem, not in piecemeal parts that make it feel like you're doing something good piece by piece."

Dealing with the peripheral issues may make everyone feel good, but it won't solve the problem.

"If you develop management that honors the aquifer subdivisions," Harden insists, "quite a bit can be done."

If common allocation rates are developed for all the landowners within a subdivision, it can be useful.

"Of course, that means groundwater districts have to get together and have to work together, but as hard as that is today to give each one their own authority, long-term it might be the way to survive."

He suggested they might do a better job than having someone in the state Capitol trying to regulate the subdivision.

Most people's reaction is that if all the landowners in the aquifer are getting the same right, all the water is going to get up and leave.

But the reality is that for 150 years, all the landowners have had the same right.

"We didn't have regulations, and the water survived."

If landowners have all the same rights, he enumerated, the world isn't going to change very much.

"But we will start a regulatory program that can withstand legal tests," Harden says, "and it also can honor fairly, the best we can, the competitive forces of groundwater production."

Groundwater is a competitive process.

On top of the hydraulics of groundwater production, which is competitive, is capitalism, which is competitive, and there is a government process to regulate it all, Harden says.

"That's a tall order to succeed fairly but there are ways of doing it by honoring the subdivision, giving landowners an equal allocation and monitoring the aquifer through time."

An aquifer changes over time, because there is too much production.

The production rights have to be slowly and gradually modified.

In terms of regulating groundwater a decade is a short span of time.

"You've got to think of it in terms of decades," he says, emphasizing the plural, "or centuries."

In that kind of timeframe there are opportunities.

"The Edwards Aquifer Authority could sustain some spring flows and give every landowner over the Edwards Aquifer an equal right without any problem," Harden contends. "It can be done, and I think in the end, groundwater districts would be better off. Landowners would have a more known environment."

Today, landowners have no idea what is going to happen in many of the groundwater districts.

"You go apply for a permit," Harden says, "and all kinds of things occur between submittal and approval or denial."

No two permits are reviewed the same way.

"It's just a mess."