Groundwater Oral History Project
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Abstract: Excerpt focused on legal groundwater definitions and Denver Basin groundwater management

0:00	Explains the legal definitions of tributary, non-tributary, and not non-tributary groundwater. Explains determination of water rights findings and recharge rates in the Denver Aquifer Basin. Describes the difference between the General Assembly and water court, and their difference in policy creation. Outlines how water is designated within basins and provides unique examples within Colorado.
11:52	Explains the State Engineer's Office and the General Assembly's cooperative role in creating and implementing Colorado groundwater law.

Interview Transcript:

Andy Jones: So Colorado groundwater law consists of a rule and exceptions to that rule. Okay, so the rule is that any groundwater encountered anywhere in the state is presumed to be tributary to the natural stream. So that's where you start. And so that would apply to all groundwater throughout the state at the initial stage. The exceptions, the principle exceptions, have to do with non-tributary groundwater and exempt wells. But. Let's talk about non-tributary first, non-tributary water. This is on a statewide basis because we're going to get a little bit more specific in a minute and deal with Denver Basin, but on a statewide basis, non-tributary groundwater is groundwater that affects the flows in a natural stream less than one-tenth of one percent in one hundred years. As a practical matter, what this means is it's very, very remote, and very small number of wells would qualify for this, particularly in what you'd consider to be the uppermost aquifer, an alluvial aquifer or an unconfined aquifer. Now, throughout the state, there are various places where we have confined or semi-confined aquifers that will meet this standard. And the burden is on the parties saying that it's non-tributary.

So, for example, in northern Larimer County, I can apply for a determination of non-tributary status for X number of acres. And the burden is on me to bring the engineering showing that it influences the rate of a stream less than one-tenth of one percent in 100 years. So that's non-tributary. So we have tributary and non-tributary so far. Now we have to talk about Denver Basin. And the Denver Basin is a large prehistoric aquifer on the Front Range. It actually consists of a number of aquifers that are layered. One of them is called the Denver Aquifer, which is confusing. The entire structure is the Denver Basin. This water was laid down by the advance and retreat of inland seas in prehistoric times. As each sea advanced and retreated, laid down a layer of fine silt that then becomes shale, which is largely impermeable. So the layers are separated by essentially impermeable layers of shale and other materials. And so

what happens is, as these layers were laid down through vast amounts of time, they were filled with water and some of the water is trapped in a sense and under pressure. It's under hydrostatic pressure. The only place that water enters these aquifers now is where the basin turns up at the edges.

So if you think of the hogbacks along our Front Range, a lot of those would be the turning up of those sedimentary layers. So very limited recharge. A lot of water. Yet much of it does not influence the flow in our streams or does to only a limited extent, depending on how much of a connection there is between that particular aquifer and the uppermost layer. So you can imagine that the deepest aquifers have very little interaction with the stream, whereas those that are closer to the surface have more interaction. And there's one that is essentially intermingled with the surface aquifer in a lot of areas called the Dawson Aquifer. So there's a bunch of different layers.

The Denver Basin is very important economically to the development of Denver and the South Metro Area and was tapped very early on for use by the developing city and cities. And for a long time, we didn't really have any good law governing that. We knew that it was an available aquifer. We knew that it was often under hydrostatic pressure. So much, in fact, that early on the elevators in the Brown Palace Hotel were powered by the Denver Basin, right, Denver Basin water coming up. But there wasn't really good law around that. And the General Assembly and the policymakers in the state began to realize, you know, as we increased our knowledge about the aquifers and we began to understand how they operated. Policymakers began to realize that this was an incredibly important water source for the Front Range, this Denver Basin. And although it was essentially nonrenewable, it was powering a lot of development, and bringing in a lot of, people were able to build in places that they couldn't otherwise build.

And so there was a desire to provide a policy that would encourage actually the use of that nonrenewable aquifer to power development. Essentially to recognize what had already occurred and then to provide, in a sense, an incentive to use it more. Which sounds kind of crazy in today's age. I mean, most of us now in this sort of environmental age would think, why on earth would you incentivize the rapid use of a nonrenewable resource? Well, we have a different way of looking at things now, I mean, is the short answer. But that's what we did. And so in the course of looking at this Denver Basin, remember, there's lots of wells already in it and lots of people relying on them, and lots of money wrapped in it and lots of development. And you're in the General Assembly. You're not in the court, right, which is a whole different set of rules. More having to do with politics than it does good groundwater policy necessarily. And so they looked at it and they discovered, they established a committee, and engineering looked at it and they found that some of these aquifers were truly non-tributary, which was great because it meant that they didn't have to make any special tweaks in the law to allow the continued use of them. That was already happening.

But to their alarm, they discovered that some of the aquifers that were being heavily relied upon and that they wanted to open up for more development did not meet our non-tributary definition. That's one thing. So what they did is they said, okay, we're gonna give the Denver Basin a boost. We're gonna give it an extra advantage because of its great economic importance. And what we're gonna do is we're gonna pretend that everywhere in the Denver Basin, all of the aquifers, that the hydrostatic pressure is at the surface, the top of the aquifer, essentially sort of eliminating the hydrostatic pressure in the aquifer, just from an engineering standpoint, just on paper. We're gonna make this change and we're gonna say by legislative fiat, signature of the pen, we've reduced the hydrostatic pressure in those aquifers.

So that brought a bunch of those aquifers that weren't quite non-tributary into non-tributary status. I could just see the legislative conference rooms now. You know, everybody's like, great. All right, we got it. And I know I was not involved in these discussions. That was before my time. You probably interviewed those that were and I'm gonna be really interested to hear their take. Looking from the outside, I have to use my imagination and picturing people say, great, we've got all these in. But then the engineer has to sort of stumble and stutter and say, but, you know, there's still a bunch of water that we're relying on, we want to extract, that are outside the definition still, even with this beneficial presumption. So then the room goes silent, right? Nobody knows what to do because we're trying to make it legal to withdraw all this water and incentivize it.

And so, you know, in true legislative form, somebody speaks up and says, well, we should create another category. And the question is, what should we call it? What should we call this type of water that doesn't meet the non-tributary of definition in the Denver Basin, even with our extra assumption. And, you know, naturally, it's not very creative, but you can see where somebody would say, well, it's not non-tributary and that's what's stuck. So not non-tributary of water is water in the Denver Basin that does not meet the non-tributary definition, even with the extra help. And what that means is that it's at least partially connected to the stream. Even with those beneficial assumptions and the extent to which it's connected to the stream requires that there is some form of augmentation. So with the not non-tributary category for the Denver Basin, what we have is something that will allow you to use that portion of the Denver Basin Aquifer for development with a couple of advantages. One is the assumption that the hydrostatic pressure is reduced to nothing at the top of the aquifer applies there. And so you sort of get that boost. That makes it less, it makes it appear less tributary than it actually is.

So we're actually, that was a decision by the General Assembly to short the river I mean for economic reasons, very odd in the context of my career, which had to do with accounting for every drop in the South Platte. But anyway, with the non-tributary, you have the benefit of that presumption. And then what that allows you to do is to use that resource with either, you know, in many cases a small amount of augmentation, a fraction of the depletions as opposed to the full amount.

Now, I should say and just emphasize again that it sort of tips the hat to our system throughout the rest of the state, because there are places where the not non-tributary aquifer requires the replacement of 100 percent of depletions. It depends where you are and all that. That's the benefit of not non-tributary. So you have the rule and the exception, rule throughout the state: tributary. The exception is non-tributary. There's a couple others. But for this purpose, the exception is non-tributary. And then within the Denver Basin, which is this important prehistoric aquifer on the Front Range that we rely on for development, you have portions of that that are non-tributary and you have portions of that that are not non-tributary. In the non-tributary sections you don't have to provide an augmentation plan to use that. In the not non-tributary sections, most of them you do. But there are substantial advantages that the General Assembly sort of baked in the cake that will encourage the use of that Denver Basin Aquifer.

You know, the vision that we've always had, there's always been a tension in Colorado between the state engineer as kind of the administrator of the river. In other words, the court provides the decrees and the state engineer implements them. The General Assembly provides the laws on groundwater and the state engineer implements them. Between that scenario and an alternative scenario that many of our Western states have, in which the state engineer has substantially more decision-making authority, more like sort of like the court and the administrator. And

Colorado chose a system where the courts and the General Assembly make the rules and the state engineer enforces them.