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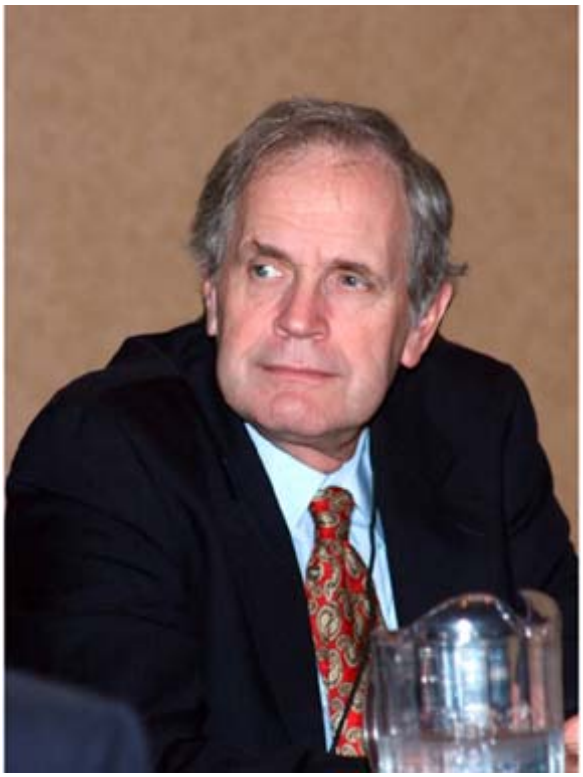

INDUSTRY AND WATER QUALITY: PRODUCED WATER

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As a representative of the New Mexico Energy, Minerals and Natural Resources Department, when I have Tom Shelley from Phelps Dodge and Frank Yates from Yates Petroleum on each side, I am in trouble. I also have only 12 minutes to speak, and that reminds me somewhat of a situation when I used to be a state district judge and I had to run for reelection. That was in Texas where the judges are publicly elected, and I went to all of these public meetings for voters. I had two minutes to explain why I should be reelected as a judge. It is about the same situation having 12 minutes to speak about the use of produced water. In those public meetings, they always put me right behind someone who was running for the school board and who got all kinds of questions. I had about the same feeling at the last water conference at which I spoke. The speaker immediately before me was a person from the Environment Department speaking on septic systems. There were a lot of questions for that speaker and not a lot for my presentation on salt water disposal wells. I would not, however, suggest that septic systems and school boards have anything in common.

I have been helped with my 12 minutes, because Frank Yates covered a lot of material I had in mind to talk about. I appreciate that. Produced water, of course, is water that is produced with oil and gas. There is a lot of it. Frank gave you the numbers, about 80,000 acre-feet per year. That seems very large because it

is a whole lot more than the amount of oil produced. It is about ten times the volume of oil that is produced. It is not a huge amount of water. Most of you are accustomed to thinking in acre-feet, so I do not have to give an illustration, but I'll give it anyway, because I have often addressed produced water in venues where people were not experts on water. This is about eight times the amount of water that is used annually in the city of Santa Fe. It is a pretty large amount of water, but of course in the overall context of New Mexico, it is not a huge amount of water.

Produced water is defined by a statute. I am going to be talking a little bit about legal theory. Most of your speakers have talked about facts. Lawyers do not talk much about facts, and we do not know any facts. If we want to know what facts are, we bring in 12 people who do not know anything about the subject and let them go into a back room and talk and then tell us what the facts are. Produced water means water that is an incidental byproduct from the drilling for or production of oil and gas. That was a negotiated definition. What the Office of the State Engineer, who negotiated that with us, was most concerned with was making sure that people did not go in and drill wells where there was no real opportunity to get oil and gas just so that they could get the water without having to get a permit from the state engineer. That is where we got that definition, but it is an accurate definition. It represents what we mean by produced water.

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How much of it is there? We have already talked about that. What is it good for? Well, it is not good for very much. It has got a lot of salt in it, and it has got a lot of hydrocarbon in it. You probably could not drink it with impunity in most cases. There are some exceptions to that. Up in the northwest in the Raton Basin for instance, we have got a fairly large amount of water that is around 3,500 TDS. That is pretty good water. It would not be very tasty to drink, but you could probably survive. Livestock are a lot less choosy than people. There is some possibility of usage for that and other water in agriculture. That is a very small amount of the total produced water.

Regionally, we have big differences. Up in the northwest, the water is from 8,000 up to about 20,000 TDS. It comes from the coal bed methane wells. Down in the southeast where Mr. Yates' company is most active, you have a lot of highly saline waters. He was talking about those very highly saline waters. As of now, there is no economic means of treating produced water. I have this information from New Mexico Tech, even though I said lawyers don't know facts. Technically, it is possible. You can extract distilled water from it if you have enough time and money, but the cost for produced water is a lot higher than water from other sources. There is a lot of research going on in this area. Apparently what is considered to be the most promising technology for treatment is reverse osmosis. Don't ask me what that means, but the problem they've encountered is that the hydrocarbon in the water tends to foul the filters that they use. They are experimenting with new kinds of filters.

Among the materials I have heard presented was a paper by my boss Mark Fesmire, the director of the Oil Conservation Division (OCD), at a water law conference. He makes the somewhat optimistic statement that by the time you read this there may be an economic means to treat produced water. It has not happened so far, and I would doubt that it is months away. It is probably years away, but probably not too many years.

I now come to my subject matter, which is the legal issues involved with produced water that might be a problem in trying to bring it to effective use. There are at least three different ways to look at who has the right to whatever economic benefit there is to produced water. Up to now, there has been no economic benefit. Someone has to drill an injection well, a deep well that is not good for any other purpose so that they can pump the water down. That costs a lot of money. Nobody is arguing at present with the oil and gas industry that is their water, because nobody else wants to have to dispose of it. There is a court decision that says about sewage that sewage is something that municipalities have on their hands. That is a graphic way of expressing it, but the same thing exists in the oil business with regard to produced water.

If produced water were to become a desirable thing, then you might have a lot of argument about it. On the one hand, one theory is that it is public water

that belongs to the state, and it is subject to the right of appropriation, just as freshwater is. That is backed up by the New Mexico state constitution and by the 1907 Water Code that declares all water to be public. Of course in 1907 when they wrote the Water Code and in 1912 when the constitution was adopted, they were not thinking about water that was produced with oil and gas. Another theory is that the water down under the surface belongs to the mineral owners. There is one court decision that says something about oil and gas operators have a right to use and dispose of water incident to oil and gas operations. I do not regard that as being a conclusion that they own the water, although Mr. Fesmire thinks that maybe it is. So I may be wrong.

The legislature has taken a crack at this issue in several instances. One that I should mention is that there was a tax credit adopted for contributing produced water to our obligation under the compacts to deliver water to Texas in the Pecos valley. Of course, there are some people who think delivering dirty water to Texas is a pretty good idea. Be that as it may, whatever the reasons, whether it had to do with necessary treatment or transport—and there were problems with both—no one took advantage of that statute in its five-year history, and it sunset. The interesting thing about that statute is it makes reference to the title of the water being transferred at the point of disposition into the Pecos River. That suggests that the legislature thought that the people who produced the water had title to it. That would ring contrary to the idea of the Water Code, the idea that the water belongs to the public. If you are arguing for private ownership, the fact that the legislature used the word "title" is suggestive that the legislature may agree.

What the legislature has addressed more concretely is who has the right to control produced water. Let me first touch very briefly on the concept of artificial waters. There is a statute regarding artificial waters that says that people who develop artificial waters will be the owners of them, and the public does not have the right to appropriate them. It only applies to surface waters. It is not strictly applicable. Mr. Fesmire suggests in his paper, and I think it is a very good suggestion, that this might be applied by analogy.

The legislature has spoken somewhat more clearly on who has the right to control produced water. There are some problems there too. The first time they spoke to that was back in 1965 in the Oil and Gas Act. The Oil Conservation Division was given the power to regulate the disposition of produced water. In the context of that statute, I think that it clearly means simply how to get rid of it. That was the time in the sixties when the industry and OCD were coming to the conclusion that water quality was suffering from surface disposition of produced water and that we had to start doing something else. That is when the widespread use of deep injection became the thing for produced water.

In 1967, in order to draw a line between the Oil Conservation Division's authority and the state engineer's authority, the legislature passed an amendment to the Water Code. They did not word it very well in my opinion, because it is a little difficult to know exactly what it does. It takes out of the jurisdiction of the state engineer water produced from aquifers where the top of the aquifer is below 2,500 feet and where the aquifer contains non-potable water. There are obvious problems with that. Does the top of the aquifer at 2,500 feet mean where the well penetrates it or the highest place where that aquifer exists in New Mexico? Since the term potable water is not used anywhere else in the statutes to my knowledge, what do they mean by potable water? Does it mean under 10,000 TDS? Much water under 10,000 TDS is not very potable. Does it mean some higher standard? There really are not any answers to those questions. It is a somewhat problematic statute. But we had to learn to live with that until 2004.

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In 2004, in contemplation of the fact that produced water may be usable—in fact, as a result of the Public Service Company of New Mexico's (PNM) initiative—the legislature passed a statute that gave the Oil Conservation Division permitting authority over use of produced water and provided that a permit from the state engineer was not necessary. PNM did not follow through with that. There were some tax angles in that statute that the legislature decided to strip out and that made it noneconomic at that particular time for them to follow through with it, and they did not apply for a permit. The statute does specifically allow the OCD to authorize use for electric utilities and also

for industrial use. The way the statute is drafted, we believe, authorizes the OCD to permit agricultural use as well. Mr. Fesmire said that, and I also said that at the water law conference that I mentioned earlier where we both spoke. The state engineer's counsel took exception to that and believes that is maybe not the case, so there may be some disagreement there. That is pretty important, because you notice that agricultural use is the leading use of water in New Mexico. Also, agricultural use can have relatively dirty water compared to municipal water systems. It is much more likely that we will have a practical agricultural use than that we will have a use for drinking water purposes.

For the regulatory approach, the OCD will be publishing rules soon on this subject. We do not have them out yet, but we have four objectives: encourage the treatment and use of produced water, maintain environmental control so that at the end of the day the water is disposed of in a way that does not cause natural water to exceed standards, to protect water rights in freshwater aquifers where they may have hydrologic communication between produced water and freshwater, and to permit use without reference to ownership or existing water rights, because that is a very complicated quagmire. If we have to get into that, it will delay and impede the use of produced water. Thank you.

Question: The first three criteria that OCD is looking at make a lot of sense. You talked about encouraging use, maintaining the environment, and protecting freshwater. The question I had is about the ability to use water without permits. Are there going to be limits or directions or time frames for use of produced water and application of it? Or are these going to be left open?

David: I did not intend to say use without regarding permits. What I was intending to say was to permit, that is, the OCD would issue permits for the use of produced water. What we would hope to do is to treat it as a license and not a water right. We would hope to avoid having to set up a regime that is dependent upon the doctrine of appropriation, which involves the ultimate possibility of adjudication. Our permits presumably will permit specific volumes of water to be used for specific purposes if it is demonstrated that it is not draining an aquifer for which other people have water rights, and if it is demonstrated that it can be done with environmental integrity.