

## PLANNING AS A MEANS OF AVOIDING CONFLICTS IN WATER USE

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The title of my paper implies that water is important, that people want it and need it, that we want more than we have, that we want what others claim, and that conflicts result. I shall assume that there is a strong demand for water and spend my time talking about the supply. Since ground water is of major importance in this area of the West, I would like to confirm my remarks to the ground water supply.

### Conflicts in Ground Water Use

One of our better known land economists has said that "Water resource planning frequently involves more complications than any other type of land resource planning and more complications than arise in the planning of private farm and business operations." \*\*

I will discuss two important reasons for conflicts in water use and then discuss methods of remedying these conflicts. The two reasons may be attributed to the peculiar nature of ground water and misunderstanding among users of ground water.

#### Nature of ground water

There are two natures of ground water that contribute to conflicts in water use. They are the commonality and exhausting features.

1. Commonality of ground water. In this respect ground water is like air, we can't distinguish what is our air from that of our neighbor. Its supply is common to all who use it. It can be polluted, as the smog of Los Angeles, or it can be scarce, as coal miners tell us. If we cannot distinguish our share, then how can our rights to it be established? We can pump it into a bottle and take title to it. This might be likened to the air rights upon which the Prudential Building in Chicago is built. Or it may be like the airplanes used by airplanes.

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\* Agricultural Economist, Colorado State University, Fort Collins, Colorado.

\*\* Raleigh Barlowe, Michigan State University, "Planning for Water Resource Developments," paper presented at Law Economics Institute, University of Illinois, July 31, 1958.

Underground water is a free good until diverted. The expense of putting it to use makes that portion an economic good. But, the water not used now may be needed tomorrow or this season or next. How can we be assured of our share? How can we be secure in our right to its use? How can we protect our capital investment in diversion structures? For the answer we look to the law of equity. When the ground water resource in its natural state is free, when it is common to several overlying owners, then it must be shared on an agreed, traditional, customary, expedient basis. We call this a water doctrine, which becomes basic to water law.

2. Exhausting nature of ground water. In this respect, ground water is like a forest. It can be depleted all at once or it can be used so as to provide sustained yield. If we mine it, then the total supply is treated as in oil or coal mining and the mineral is depleted. If we use it so as to sustain the yield, our pumping must be limited to the amount of recharge through seepage. Which shall we do? The answer depends upon economics and the law.

If the law does not protect your investment from continued over-development and mining of a ground water basin, then economics would say to get all you can while you can and get the highest profit possible this year from its use. But, if the law protects you from such action, then economics says to use the water so as to get the most profit possible over the years. This second approach may not give you as much profit this year as the first approach, but then your farm may be worth a lot more today based on the longer period of profitable water use. The greater advantage of the second choice is that everybody benefits and not just the farmer who gets the "mostest" in the "fastest" time.

Commonality present a legal problem. The exhausting nature of ground water presents an economic problem. They are not unrelated. Legal arrangements have adjusted to economic realities but there is a time lag so that man-made laws do not always accord with economic principles. Economic change calls for flexibility in water rights.

#### Misunderstanding in Use of Ground Water

Conflicts stem from misunderstanding and disagreements in ground water use. These conflicts are between uses and users, farmers and non-farmers, between watersheds, and even states. Why do they exist?

Our customs in water use have evolved from a period of abundant supplies and sparse population. This setting has changed. The question "who shall have the water?" calls for different answers. When first asked the answer was: whoever develops it. Later, the answer was: whoever has a legal right to develop it. Today the answer must be: whoever has a legal right to develop it and can do so economically.

Misunderstanding has stemmed from lack of information about ground water. Farmers and legislators alike are laboring under a number of misconceptions about ground water. They hold no clear picture about what happens underground. Legal information is lacking. Court cases are buried in District court files. Conflicting decisions have been handed down, often based on faulty hydrologic and geologic information.

#### Planning in Ground Water Use

About 2-1/2 years ago the Land-Grant College of the West began research on the economics of laws affecting ground water use.<sup>\*</sup> Five western states have engaged in that study and results already are beginning to show. One of the first discoveries was the dearth of pertinent information available on the physical and legal aspects of ground water use. How could economists evaluate the economic implications of legal rights to water use when there was no clear understanding about the water supply or rights to it?

As a result of this dilemma an informational and educational approach was adopted in the research efforts.

In 2-1/2 years of study, the 5 states of New Mexico, Colorado, Utah, Montana and Oregon, have contributed 3 master of science thesis, 1 Ph.D thesis, 4 published articles and 12 reports in preparation for publication, all as a part of this research effort in the economics of ground water use.

Time does not permit a review of each report. A few of the findings are outstanding. This New Mexico Water Conference was started in 1956 to provide a forum for information in water use, water law and economic implications. By means of detailed statistical analysis New Mexico economists have developed annual recharge estimates that may have considerable influences on water use in Lea County, New Mexico. Utah's pump drainage studies indicate that it is possible to increase production by more than 50 percent in the Logan-Hyde and Park-Benson areas of Cache County Utah. Oregon's study has helped clarify vague legal concepts embodied in ground water law and has provided a method of economically allocating a limited water supply.

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<sup>\*</sup>Western Regional Project (W-42) entitled? "Economic Analysis of Laws and Related Institutions Affecting Ground Water Use in the Western States."

Montana's research in ground water is laying the groundwork for drafting a comprehensive ground water code in that state. In Colorado 6 television programs have been presented on the subject of water. In 1957 Colorado passed its first ground water law. Legislators instrumental in drafting the bill were sent preliminary findings of ground water research.

Already accomplishments of research in ground water problems are proving of benefit to legislators and administrators and we hope to farmers in dealing with ground water resources. As for planning to avoid conflicts we feel that a conflict may be identified in economic terms before it arises in law as a controversy. We predict more complications, controversies and conflicts in the future use of ground water. Planning, based on the findings of research, is a solution. I recommend for your consideration.