

## WATER DEVELOPMENT TRENDS

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Back when I first entered federal service as the Commissioner of Reclamation in 1981, I decided it would be a good idea for reclamation to focus its planning activities and organization on the issues that were going to be "current" five or 10 years down the road. We did a lot of work at that time, looking at water development trends. We talked to some people from high-powered think tanks. We hired Joe Coates, who is also on today's program, to take a look in his crystal ball for us. We also asked our younger, mid-level managers what they thought were going to be the water issues over the next few years. All of them basically gave us the same answers: water quality, ground water, and improved management of the supply we've already developed.

I thought those were good answers then and I think they're good answers today. When you decide 10 years from now to take a look at megatrends in water, you'll probably hear some similar things from someone else in government. In fact, many long-time employees of the Bureau of Reclamation are a little bit amused by all of the talk about new ground water recharge and conservation programs. They point out, and rightly so, that the Central Valley Project is the biggest ground water conservation project ever designed. Our ground water situation has not changed markedly over the past few years, what has changed is our way of looking at ground water. We've always known that you can't pump ground water forever. What is changing is our growing store of knowledge, which is pointing to new considerations. The same attitude is evident throughout the water field. The situation hasn't changed as much as has our definition of the problem.

From what I've seen as the mayor of a small western city, a county commissioner, and federal official, I'd say there really are few

megatrends in water. Perhaps over the past 80 years we've brought water to people instead of bringing people to water. But most water use patterns have not changed all that much over the past thousand years. Where there have been changes, they have been related to the project construction, water quality problems such as salinity, or transfers of agricultural water to other uses. The infrastructure itself only fails when there are breakdowns in political leadership.

By its nature, the task of developing water supplies is complex, time consuming, and conservative. It has to be. Building water supply systems has never been cheap or easy. Every expenditure, every change, has to be justified. Even in the days before the deficit was a national issue, taxpayers, bondholders, and water district boards were watching the books very closely. However, financial considerations are not the only reason for the continuity of water development's history. In the United States, at least, all of our water development is based on a system of law that is centuries old. The very age of such laws makes even the smallest alteration in past practice a difficult task. The fact that the water laws of each state are different compounds the difficulty of predicting what the overall result of any legal action will be nationwide. But changes do come about and it is these small changes that are pointing the way to the commonly accepted practices of tomorrow.

The proposed conservation agreement between the Metropolitan Water District of Los Angeles and the Imperial Irrigation District has been widely heralded as the opening of a new water market that will improve our management of existing supplies. The state of California told Imperial that it must implement conservation measures. Metropolitan has proposed to fund the necessary construction for a share of the water that will be saved. While I agree that this transfer agreement is an outstanding example of the kind of things transfers can do, I really don't think it's new. In some states, water trading, perhaps on a more limited basis than we see in the proposal in Southern California, has been going on for more than a century. Some states have made provisions for such transfers in their water laws. It's nothing unusual. The

attention that's being generated by this agreement is the result of the unusual combination of players. In the past, farmers usually traded water with farmers. Here, we've got farmers trading the construction of a conservation system they need, dealing with a city water supply organization that has the financial resources to back up the deal for the water they need. The fact that two California water agencies reached an agreement without a court suit also makes it unique.

We've been discussing various details of the proposed transfer with the different parties for almost five years, and I understand that proposals to do the same sort of thing have been talked about for years before that. The discussions have finally led to a draft agreement between the two parties, but it's far from finished. Water district elections must be held and approval granted by other water users in California who rely on the Colorado River for their supply.

For a number of years people have been saying that the federal government, because of its position as a kind of water master on the Colorado, was standing in the way of this agreement. That's plain wrong. Shortly after the Colorado River Compact was signed, the Department of the Interior informed the state of California that division of its share of the Colorado's waters was a matter to be settled by the state. That policy is still in force. We haven't changed our minds. That policy holds true for all reclamation projects as well. As long as a proposed water transfer does not reduce repayment to the U.S. Treasury or violate a congressional authorization, we will support the decisions made by the states.

While we are seeing more transfers of water from agricultural uses to municipal and industrial uses -- the Central Arizona Project is a good example of that -- several management changes in other areas do more than simply change the party on the receiving end of the aqueduct. We are looking seriously at the potential of improving system yields and reliability by removing restrictive or outdated constraints.

It's widely recognized that some legal and operational restrictions placed on water projects over the years have the effect of limiting yield

and state agencies are involved in trying to find a solution to continue providing drainage service to the lands near the reservoir while still protecting the environment. One of the major problems we face is the fact that we know very little about the processes involved in selenium contamination and toxicity. Only in the last few years have we had technology capable of measuring trace elements in parts per billion. Few standards exist for human health of fish and wildlife effects. In fact, you can get bottles full of selenium at health food stores around the nation.

The Department of the Interior is involved in a major study program in an attempt to better handle the problems at Kesterson. Reclamation, the U.S. Geological Survey, and the Fish and Wildlife Service are working together in carrying out a research program. The program not only should answer some of the questions we have about dealing with the non-point source problems in the San Joaquin Valley, but should have some application in other areas of the country that might experience related problems in the future. We've asked a panel of experts from the National Academy of Sciences to provide oversight in the research program plan to ensure that the work we do will be useful in areas outside the San Joaquin Valley.

At the same time, we are looking at the U.S. Geological Survey proposal to do a national water quality assessment. Part of that assessment would specifically involve the quality of agricultural drainage. In response to congressional directives, we are looking at selenium and agricultural drainage in the West. Newspaper reports have charged that the West is laden with Kesterson-like situations. Some of the sites mentioned in the press are in New Mexico, and Congressman Richardson has expressed a keen concern about the potential for such problems in his state. While our preliminary surveys, which did not involve new water quality sampling, failed to turn up any similar situations, we do realize that we need to take a closer look. We will look first at areas that have been identified by the press as potential hotspots, but plan on conducting a more comprehensive assessment of

agricultural drainage and its effects over the long term.

The concerns over the quality of our agricultural drainage do not stop at surface water development. We have discovered that our ground water may not be as clean as we had frequently assumed it was. Quality considerations will play a larger role in both traditional surface water development and management and ground water development.

As many of you know, two years ago Congress authorized ground water recharge demonstration projects for the 17 western states, with work to be focused in the Ogallala aquifer area of the High Plains states. In recognition of the fact that it is generally more difficult and costly to clean polluted ground water than it is to deal with surface water pollution, Congress required that the U.S. Geological Survey and the Bureau of Reclamation coordinate their work on ground water with the Environmental Protection Agency (EPA). The Interior Department was already working with EPA in the organization of a ground water quality technical assistance program, so the development work was wrapped into that agreement. After several months of negotiation, we now have an agreement between the three agencies, which spells out responsibilities of each of them in ground water protection.

Now that this agreement has been worked out, we are moving ahead to get our recharge program underway. Congress has provided \$500,000 to begin planning. All of the states have expressed an interest in selecting an appropriate site for the recharge demonstration projects. Here again, the change is one of perception. Several of our conventional water projects are designed to provide conjunctive use of ground and surface water. They are, in a sense, ground water projects. The idea of artificial recharge is not new either. Recharge projects have been attempted in a number of places and the problems associated with them have been documented. It is the widely publicized depletion of the Ogallala aquifer that has focused the public's attention of ground water supply and the potential for recharge. Public awareness is usually the first step in political action.

Those of you who follow water politics will remember that the

Garrison Commission made a number of recommendations dealing with artificial recharge in its report. The state of Nebraska has proposed scrapping plans for a conventional dam and irrigation system in favor of a ground water project in the O'Neil area. The interest in recharge is definitely there, but there are a few engineering and geology issues, as well as the water quality issues I discussed earlier, that need to be addressed. We have the scientific and engineering ability not only to resolve the problems that have shown up in past recharge projects, but also to make a valuable contribution to our nation's water development expertise. Changes in the way we deal with our water problems have been the result of advances in our ability to solve engineering problems with new materials, computers and the availability of better data. These resources weren't available when we were building the Hoover Dam. Increasingly cost conscious times are ensuring that we look at projects that are not as costly. The institutional barriers to management are more likely to be breached under these circumstances. But, the basics of water remain as they have since the beginnings of civilization. People still need water and the more water they need, the more valuable limited supplies become. That is the one true megatrend in water.

There may be one other megatrend, and that's the involvement of politicians, such as myself, in the water field. We're the people who are responsible for some of the institutional barriers that have been built up over the past. It may take an engineer to show us what those barriers are and how they can be broken, but we're the ones who make the decision to act. As long as water is valuable and important to meeting the daily needs of civilization, we politicians are going to be involved. That may come as a frightening thought to some of you. If it does, might I suggest that it's time for you to think about entering politics?

Over the course of history, different people are assigned the political tasks of carrying out our engineers' plans. Sometimes it's the federal government, sometimes it's the state and local governments. Under President Reagan's direction, there is no question that we are

headed into an era of reduced federal involvement. In the long run, that's a good thing. Even more creative local leadership is going to be needed to meet the challenges in both engineering and financing that the continued need for water present. The federal government stands ready to provide the engineering and technical services it always has, but local governments will be playing a much larger role.

Much has been made of the coming water crisis. I doubt we'll see such a thing. Many areas have problems, but positive actions are being taken to address them at the local level. "New" solutions to local problems are being found all the time. Water development will continue just as it has continued and will continue into the future. It's something people can't afford to ignore for long.