In the past, most people in the United States have taken their water supply for granted. The cost was generally low, and local, regional, and national governments assumed responsibility for quality and safety and managed supplies by constructing necessary wells, dams, and reservoirs. Scientific analyses of available supplies and user needs, however, indicate that many areas of the country will have water shortages with increasing frequency. Accompanying these shortages will be growing conflict among several sectors of consumers -- residential, industrial, agricultural, and recreational -- over who has the greatest rights to the water supply.

In recent years, widely publicized droughts and mandatory restrictions on water use, such as have occurred in California, have alerted the public that the nation faces major water problems. Public concern waxes and wanes, however, as periods of the hydrologic cycle of droughts and abundant rainfall come and go, and governments are not pursuing long-term solutions with the urgency that they deserve. Here are some facts to ponder:

* A human can survive with about 2 liters of water per day. In the United States, the per capita use for all purposes is about 6000 liters per day.
* Industry uses about 38 percent and agriculture about 43 percent of the water withdrawn from our reservoirs.
* Per capita domestic water use in the United States is two to four times as great as that in Western Europe, where users pay as much as 350 times more for their water.
* Although the states in the western United States receive one-fourth of the country's rainfall, per capita water use (mostly for irrigation) is 10 times as great as that of the eastern states, and at much lower prices. In California, for example, which imports most of its water, 85 percent of the water is for irrigation, 10 percent for municipalities, and 5 percent for industry. A 15 percent reduction in irrigation use would almost double the amounts of water available for use by cities and industries.
* The traditional ways of increasing water supply, such as building dams and reservoirs and drilling, have become extremely costly because most of the good (and therefore cheaper) sites have been used. The building of more dams to hold larger reservoirs carries environmental costs, such as flooding of inhabited areas and detrimental changes in river flows above and below dams. Factoring in these costs has led to delays or rejection of proposals for new dams.
* Almost all the fresh water used in the United States eventually returns to the hydrologic cycle, but it may return to a reservoir that is not well located for human use, and the quality is often decreased. Recycled irrigation water often has increased salinity and is loaded with pesticides. Polluted urban waste water ends up in the ocean.
* Global climatic change may lead to reduced rainfall in western states, exacerbating the problems there and making long-term solutions even more urgent.

Many analysts believe that the United States faces an allocation problem, not a supply problem. Some economists believe that shifting water usage from inefficient users to efficient users who contribute more to the economy might allow us to allocate water to places where it would do the most good economically. For example, 16 percent of California's water, enough to supply the needs of 30 million people, is used for subsidized irrigation of alfalfa, a feed for horses and cattle. With different allocation policies based on market forces, more efficient users would have higher priority and would pay water suppliers more realistic market prices. Most scarce resources are sold at market prices, and, according to some economists, charging market prices for water is a natural extension of this practice. In opposition to these beliefs are widely held views that emphasize the critical role of water in our personal as well as economic lives. It is important to allocate water in harmony with the needs of all of society, not just those who are able to pay steep prices.

But these conflicting views may exaggerate the difficulties. There is enough water available in the United States for the country to continue to grow economically and produce food cheaply. But institutional changes will be needed to alter our present haphazard allocation and pricing policies. New policies should promote conservation and efficiency. The decision-making process now dominated by economic considerations should include interested parties such as Native American tribes who may have treaty rights and wish to preserve traditional practices; recreational users; those interested in the environment; and not least, scientists who understand hydrology [the science of that part of the hydrologic cycle between rain and return to the sea; the study of the movement and characteristics of water on and within the land].