

By

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In keeping with the theme of this conference, "Water and Land Use Planning," we must bear in mind that urbanization involves the use of land--usually the most choice land --for villages, towns, and cities. Thus, planning for city water supplies is an integral factor in land use planning.

Water, along with sunlight, soil, air energy, and other resources, is one of several indispensable resources without which the fundamental needs of the Nation's people cannot be satisfied. It cannot be determined which of several critical resources is most important to the Nation's welfare. Each is indispensable, and each must be cared for and protected from overuse and misuse in order to guarantee that the Nation can survive and flourish.

As with other critical resources, the rate of use of water in the United States is rapidly increasing. Moreover, the Nation has experienced deterioration in the quality of its surface and groundwater supplies. As the Nation's population increases, as it becomes more industrialized and urbanized, competing demands upon this scarce water resource also will increase. In recent years, the many social, economic, and environmental problems associated with urbanization--and with providing urban water supplies--have been tremendous, sometimes almost overwhelming. Determining what policies the Federal, state, and local governments and water utilities should adopt to ensure that their finite water resources are used in ways which yield the highest measure of welfare to society, now and in the future, is directly related to water and land use planning.

General Information

In my discussion of "Planning for City Water Supplies," I shall use as a typical example the Metropolitan Water District of Southern California. Thus, I wish to tell you about the Metropolitan Water District (MWD), how it was organized, how it operates, what it has done, its current plans, and some of its major problems and activities related to the use and management of water resources; all of which require extensive and continuous planning.

First, let me say that the Metropolitan Water District is one of the largest water wholesale agencies in the world. It is a regional agency serving six Southern California Counties, and is composed of 27 member agencies. There are 124 incorporated cities within the boundaries of the District, which encompasses an area of 4,832 square miles and has an assessed valuation of \$31.0 billion.

The District is governed by a Board of Directors selected by the member agencies, the number of directors and their voting rights being in proportion to the assessed valuation of the agencies which they represent, with each agency having at least one representative. The Board now consists of 47 directors. Most of its work is done by the committee system which nearly resembles a small version of a state legislature. The actions taken by the Board are based on discussions and recommendations of the committees. These directors include some of the foremost civic leaders in Southern California. They work hard at their jobs--which, incidentally, carry no salary--and they have a broad and deep understanding of what water means to Southern California.

The District furnishes water on a wholesale basis to its member agencies to supplement their local water supplies. These member agencies in turn supply water to over 10.5 million people. Metropolitan's water is used principally for domestic, municipal, and industrial purposes; but also for agricultural uses, for replenishment of underground basins, and for injection into seawater repulsion barrier projects.

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History of the District

In the early 1920s, some very far-sighted leaders in several Southern California cities, principally the City of Los Angeles, saw that with continued population growth to be expected in the Southern California coastal plain, an additional source of water was going to be essential. To the dismay of California's neighbor--Arizona--the best source, although about 300 miles away, was the Colorado River.

Thus, the Metropolitan Water District of Southern California was organized in 1928 under an act passed by the State Legislature. The District then became the means by which thirteen cities joined together to finance and build the Colorado River Aqueduct and the distribution system required to serve those cities.

In the 1930s, the District built the Colorado River Aqueduct, and in 1941 brought its first water across the desert and over and through the mountains into Southern California. From a small quantity of about 20,000 acre-feet delivered in the early 1940s, diversions from the Colorado River steadily increased until the aqueduct was running at full project capacity in 1965, conveying 1,212,000 acre-feet a year. It has been operating at almost full capacity every year since then.

Even in the 1950s, the members of the District's Board of Directors were looking ahead, and they foresaw the coming need for still another new major source of water to serve the still-continuing growth in population. From this awareness evolved the District's participation, in 1960, in the California State Water Project--a \$2.8 billion enterprise from which the District received its first State water last April. The State Department of Water Resources completed the initial development of the project right on schedule--a marvelous accomplishment on their part, when you consider the magnitude and complexity of this project. It was fortunate for the District that State water was delivered on schedule, because last year Southern California experienced one of the worst droughts of record, and the District had to partially curtail deliveries of water for groundwater replenishment. Without this first northern water, the District would have had to curtail water deliveries even further last summer, possibly even for agricultural purposes.

Last calendar year, the District took about 70,000 acre-feet of State project water. This calendar year, the quantity will be about 150,000 acre-feet. The quantity is expected to increase by about 75,000 acre-feet each year. When the Central Arizona Project goes into operation, in the early 1980s, the District must boost the deliveries of State water substantially to make up for the loss to Arizona of 660,000 acre-feet of Colorado River water a year. Eventually, under the District's contract with the State of California, the District expects to receive more than 2.0 million acre-feet a year of the northern water. Assuming that the District will be able to obtain the full amount, this should take care of the District's needs on the Southern California coastal plain until well into the next century. Possibly, the District's water needs beyond that time will be met by desalting of ocean water, along with greater reclamation and reuse of waste water.

Current Problems

Now let me mention some of the District's current problems--none of which is going to vanish very soon. First, it should be stated that the District is fully self-supporting--all of its costs are recovered from the people in its area, either by water charges or by taxation. Consequently, the District has a fundamental problem that will always exist--namely, how much of the District's costs should be borne by water charges and how much by the tax on property. It is safe to say there will always be differences of opinion among members of the Board as to the relationship between the tax rate and the water rate. This problem ties in with the problems encountered in the District's water pricing policies, which will be discussed next.

Water Pricing Policy

The District's water pricing program is one of the District's major and continuing problems, and requires continuing study. At the time of the District's formation, it was known that the costs of the Colorado River Aqueduct project could not be met from water revenues for many years, and that general property taxation would have to be relied upon to underwrite the development of a water supply required for the future economic development

of Southern California. Ultimately, however, when the quantity of water being delivered was great enough, it was intended that all costs be covered by water revenues.

The District's current water pricing policy was established in 1960 and it involves the repayment of the combined costs of the District's share of the costs of the State Water Project and the District's Colorado River Aqueduct project, with the understanding that all parts of the District's service area were to participate equally in the payment of such costs, and were to be given uniform treatment and consideration in the opportunity to use water from both projects. This policy requires the water users to pay all the operating costs and at least one-half of the capital costs of the combined projects, and permits taxpayers to be assessed up to one-half of capital costs, with the tax burden to decrease in the future as the projects become more fully used. Under this policy, the District's water rates were increased from \$10 per acre-foot in 1958 to \$52 per acre-foot at the present time for untreated Colorado River water used for domestic purposes. The tax rate was increased from 14 cents in 1968 to 17 cents in 1970, and then was cut to 15 cents for 1973. It is expected that the tax rate will be reduced even further in ensuing years, while additional increases in water prices will probably continue to be necessary.

In addition, the costs of water treatment, which are charged separately, are increasing. The cost of filtration has been \$5 per acre-foot for several years, but it will be raised to \$7 per acre-foot for the next two fiscal years. Staff studies indicate this rate should be increased eventually to \$14 per acre-foot. The cost of softening is now \$5 per acre-foot, and no further increases for softening are anticipated.

In fiscal year 1972, the District established a higher rate for State project water than Colorado River water because of quality differences. Beginning in fiscal year 1973, this charge will be \$10 per acre-foot, and may be increased later. The District plans to blend the better quality State project water and Colorado River water at certain key points, principally at the large-sized, regional Weymouth, Diemer, and Skinner water treatment plants. In any year, the percentage blend will be the same at these three plants, so that all users receiving water from these plants will receive the same quality of water and will pay a single, uniform water rate. It will be only those water users not served from these three plants--a minor portion of the District's total area--who will be affected by the separate rates for the two types of water.

At present, a family of five that uses an acre-foot of Colorado River water a year would pay \$57 to the District for filtered water, in addition to its payment of taxes. In fiscal year 1973, they would pay the District a total of \$63 for filtered Colorado River water, and \$73 for filtered State project water. These rates are just a few typical examples from a much more extensive rate schedule.

The final cost of water supplied to the urban water user in the District's service area cannot be estimated with great accuracy. As mentioned earlier, the District's costs represent only the wholesale costs of providing water. Each community purveyor has additional costs in delivering water to the ultimate consumer, so that the District's costs may represent as little as one-quarter to one-third of the final costs paid by water users. The domestic rates paid by the homeowner vary widely throughout Southern California, ranging from \$150 to as much as \$300 per acre-foot. It must be stressed that the figures on water costs to the ultimate consumer are very rough.

Water Deliveries to Non-District Service Areas

Another of the District's activities is the delivery of water through its facilities to adjacent areas outside the District's boundary. In 1967, the District entered into contracts with the Desert Water Agency and the Coachella Valley County Water District for the exchange of water. These contracts provide that the quantities of State project water scheduled to be delivered to Coachella and Desert under their contracts with the State would be delivered to the District, and in return, equal quantities of Colorado River water diverted by the District would be delivered to Coachella and Desert. These deliveries, to be made from the District's Colorado River Aqueduct about 20 miles east of the District's boundary, are anticipated to increase from 13,200 acre-feet in 1973 to 61,200 acre-feet in 1990.

In recent years, the City of Tijuana, Mexico, which has a population of 400,000 and is located south of the City of San Diego, has been suffering an acute water shortage which the government of Mexico was interested in relieving. Mexico is entitled by treaty with the United States to receive 1.5 million acre-feet annually from the Colorado River, but has no transportation facilities for delivering part of this treaty water to Tijuana. However, in June of last year a contract for temporary emergency delivery of a part of the Mexican treaty water to the International Boundary in the vicinity of Tijuana was signed between the United States and Mexico. This contract provides for emergency deliveries for a five year period to the City of Tijuana, reaching a maximum of 20,600 acre-feet annually of Colorado River water. The United States also signed an agreement with the Metropolitan Water District and three other water agencies within the District's service area for transportation and delivery of the water to Tijuana through the facilities of these districts. Water deliveries to Tijuana began last August, with the water being conveyed through the District's Colorado River Aqueduct system. The emergency deliveries are expected to give the Mexican government sufficient time to build a new seawater desalting plant, or its own aqueduct from the Colorado River to Tijuana.

Water for Nuclear Powerplants

Last month, Metropolitan's Board of Directors agreed, in principle, to furnish up to a total of 100,000 acre-feet per year of Colorado River water to remote sites in the Mohave Desert for nuclear powerplants. Of this quantity, 40,000 acre-feet annually would be available for the Southern California Edison Company for its proposed plant of two 770 megawatt nuclear units to go into operation in the early 1980s. The other 60,000 acre-feet would be provided for plants that may be built in the desert by the San Diego Gas and Electric Company; the State Department of Water Resources; and the Department of Water and Power of the City of Los Angeles. As these sites for the proposed plants are outside the coastal plain, certain institutional problems must be solved. The justification for this action is that the power produced will be used by the public within the District's service area, so that the water, in fact, is being used for the benefit of that public.

Diminishing Water Supply

As previously stated, it is known that the District's supply of Colorado River water will be reduced as a result of the U. S. Supreme Court decision in Arizona v. California, and the consequent construction and operation of the Central Arizona Project. Under the anticipated conditions, Metropolitan would have a maximum supply of 550,000 acre-feet of Colorado River water a year. From this amount must be subtracted operating losses; the amounts exchanged with Coachella Valley County Water District and Desert Water Agency; the preferential rights of other minor agencies in California along the Colorado River; the amounts reserved for Indians; and possibly the future needs of other users in California along the Colorado River. Some, but not all, of these amounts can be determined accurately at this time. Thus, the amount remaining available for use by Metropolitan could vary between 330,000 and 450,000 acre-feet a year. It would be from this remaining supply that water would be furnished for the proposed powerplants.

Environmental Considerations

In recent years, all public agencies have been encountering opposition from those concerned with the environment. In some cases, this opposition is taking strange forms. An example of unreasonable environmental opposition occurred when Northern California water first became available for use in Southern California. At that time, the District and other water utilities might have expected broad acclaim from the more than ten million people living in the Southern California coastal plain for having completed this important water project. The acclaim was just the opposite. A few very eloquent and persuasive people announced in the columns of our newspapers, on radio, and on television that it was all a horrible mistake--all of it--the Los Angeles Aqueduct, the Colorado River Aqueduct, and the California Aqueduct. Shut them all down, they said, water is the cause of all our present urban evils.

While most of the District's facilities were constructed prior to the recent concern for environmental matters, some of our current construction projects are coming under attack. The basic argument encountered is that new aqueducts and pipelines provide water and thereby "promote growth" in the areas they will serve, thus increasing the environmental problems associated with population growth, namely, air pollution, aesthetic problems,

urban sprawl, reduction of open space, etc. Up to this time, none of this opposition has stopped construction of our facilities, but some projects have been delayed.

Owing to greater public concern about the environment and the recent requirement for Environmental Impact Statements, the District is now giving more extensive consideration to the environmental aspects of its new construction. The District has substantially improved the appearance of above-ground facilities to better blend them into the surrounding environment. This has taken the form of increased architectural treatment of both existing and proposed structures, more extensive landscaping, etc. In addition, the District has attempted to reduce the inconvenience to the public during construction of new facilities. In most instances, these activities have substantially increased the costs of new facilities. Furthermore, the District is going to allow public recreational use of the Skinner Reservoir, which is now under construction. This can be permitted since a filtration plant is being built to treat all water released from the reservoir so as to protect public health.

Peripheral Canal

Another major problem confronting the District, relating directly to this question of the environment, appears in the form of a very essential feature of the State Water Project that still remains to be built. It is the so-called "Peripheral Canal"--a 43-mile canal that will extend around the east side of the Sacramento-San Joaquin Delta, east of San Francisco. It must be built, at a cost of more than \$200 million, to protect the environment in the Delta as well as to protect the quality of the water that will be transported south to supply the San Joaquin Valley and Southern California. This canal will also have many local benefits in the Delta area. This project, too, is being violently opposed by some environmentalists. Some of them, it appears, are interested only in doing all they can to impair the State Water Project.

The irony of this situation is that, from the environmental standpoint, the Peripheral Canal is probably the best major water facility that has ever been proposed. The principal reason that the canal was selected over many other alternatives was that it was the only one which would provide an assured means, not only for protecting, but for improving the environment of the Delta, including its valuable fishery resources. I should mention that the canal is planned as a joint State-Federal project, since it would also serve the United States Bureau of Reclamation's Central Valley Project. Thus, Congress will be asked to authorize the Federal share of the costs.

Conclusion

Finally, in concluding this discussion, I would like to make a brief comment on the key environmental question of whether water promote growth, and whether, in truth, the Metropolitan Water District is to blame for the inevitable problems that have come with the urbanization of the Southern California coastal plain. It is doubtful if any of the hundreds of thousands of people who have moved to Southern California since World War II gave any thought to the question of water supply. They came principally because of the attractive climate and because of the job opportunities; and, perhaps because they wanted to get out of some deteriorating city in the East, South, or Midwest. The growth in Southern California and throughout the western states is going to continue, although the pace has slackened somewhat. If the water is not there when it is needed, many thousands of people are going to be hurt. Not only will swimming pools and lawns dry up, the economy will dry up, too. There is no merit in the belief that controlling water supplies is the way to control growth.

There is a related argument to this question that opponents of urban water projects completely ignore. They maintain that more water means more congestion in already overcrowded central cities. To the contrary, with Northern California water being delivered to Southern California, greater dispersal of growth will be made possible by providing a water supply to undeveloped outlying areas. And with the great improvements such as green belts and recreational facilities which we are seeing in subdivision planning, design, and construction, these new communities should be very hospitable places to live and work. Thus, coordinated land use planning, as it is evolving in Southern California, and the long-range regional planning for the urban water supply, are two interrelated aspects of the endeavor to improve the environment for all those who live within our area.