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FROM DUST TO DUST? A LEGISLATOR'S VIEW OF CALIFORNIA'S COMING WATER CRISIS

*Thomas H. Kuchel**

Two centuries ago, when the Spanish padres came into California, the Central Valley was a vast area of lakes and tule bogs. In some places tall rushes waved as far as the eye could see, piling up century after century to build fertile deep soil. The sight one sees today is entirely different. The vast plains of reeds and bogs are no more; early irrigation systems, using the then-plentiful ground water supply, and the later development of the Central Valley Project¹ have enabled the land to be cultivated to yield a bountiful gift of food for our whole nation.

In the north, beautiful Shasta Lake now stands on the Sacramento River. Near Fresno, at the southern end of the valley, Friant Dam diverts the San Joaquin River through two giant canals, the Madera Canal and the Friant-Kern Canal, to meet the irrigation needs of the arid southern valley area. The Sacramento River crosses the Sacramento Delta and is lifted into the Delta-Mendota Canal. The Delta-Mendota Canal irrigates the lands along its 120-mile length then releases the remaining Sacramento River water into the old San Joaquin River bed to replace the diverted flow of the San Joaquin River.

While the Central Valley Project is a masterpiece of engineering,² it was conceived and built at a time when the pressures on California's water supply were different from those which we must face today and in the future. The "population explosion" is a fashionable term to use these days. Most of the time it is thought of in terms of the increasing difficulty of finding parking spaces or apartments, but numbers may be helpful to emphasize that the population explosion is truly awesome. Anthropological finds have indicated that man's earliest ancestors were on this earth millions of years ago. From the early dawn of man's time on earth until the time of Christ, the popu-

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¹ Funds for the Central Valley Project were first authorized under the authority of the Emergency Relief Appropriation Act of 1935, ch. 48, 49 Stat. 115, and were reauthorized as a federal reclamation project in 1937. 50 Stat. 844, 33 U.S.C. § 540 (1937).

² See U.S. DEPARTMENT OF THE INTERIOR, RECLAMATION PROJECT DATA (1961) (as supplemented 1966), for general description of project features.

lation of the earth grew to one-quarter of a billion people. It was not until 1650 that the earth's population doubled, reaching one-half billion. It has doubled twice since then, reaching one billion about 1830 and two billions about 1930. At the present rate of growth, one-quarter of a billion people are added to the earth's surface every four years, a far, far cry from the length of time taken to produce the first one-quarter billion men. The quarter billion people existing at the time of Christ have doubled three times; first in 1,650 years, then 180 years, then 100 years. At the present rate of population growth, the 1930 figure of two billion will be doubled by 1980, a period of only 50 years.³

California's development is even more dramatic. Between 1860 and 1960 the State's population increased forty-fold. Between 1950 and 1960, California's population increased 48.5 per cent. Each 24 hours, 1,500 inhabitants are added to the State of California.⁴ Just three years ago, California passed New York to become the largest state in the Union. Projections of the population growth of California estimate that there will be 25 million people in the state by 1980 and 50 million people by the end of the century.⁵ The most basic requisite for the existence and sustenance of this vast number of people is water.

The development of water resources typically is measured in decades rather than years. Therefore, we simply must look ahead to the turn of the century, three decades from now, when those 50 million people will depend for their survival upon what is done today. This is not to say that the United States is the Sahara Desert. Our country has an *average* annual precipitation of approximately 30 inches. This converts to a runoff of about 4.4 trillion gallons of water each day. After evaporation and various natural withdrawals, only 1.1 trillion gallons per day of that water is considered potentially usable. This appears to be a fixed amount. It is unlikely that technology will raise the ceiling of water available to support human life in this country. However, even the 1.1 trillion gallons per day is not all available for use since there are great variations in the amount of precipitation in various regions. Much water is wasted in the areas of high precipitation, such as the East and Northwest, while areas such as the arid Southwest region of our country are water-

³ Cook, *How Many People Have Ever Lived?* POPULATION BULLETIN, Feb. 1962.

⁴ Cook, *California: After 19 Million, What?* POPULATION BULLETIN, June 1966.

⁵ STATE OF CALIFORNIA, CALIFORNIA STATISTICAL ABSTRACT 1965; Cook, *supra* note 4, at 32.

deficit areas. The portion of the 1.1 trillion gallons which is available for human use is also reduced by water pollution and by our failure adequately to store the water available to us. After all of these avoidable and unavoidable losses are taken into account, less than half of the 1.1 trillion gallons per day is still available to support human life.⁶

Long range water requirement forecasts indicate a possible requirement of nearly 900 billion gallons a day by the year 2000. Even within the next decade water needs may exceed 600 billion gallons per day.⁷

Whatever water crises exist in this nation, they will be greatly magnified in California where, by the end of the century, we are destined to have wall-to-wall people jammed into the vast coastal metropolitan areas. To support that civilization water must be provided. How can this be done?

One [answer] is relatively simple and involves not "planning for population growth." This means not encouraging new industries to move into an area. It means not developing our water resources to a maximum, and thus not providing the water that would make possible additional urban or industrial growth, or bring into production new farming areas. It means not building those new power stations or those new freeways. No real estate development will be built in an area where electricity and water will not be provided. No industry will come where it will not receive space, power or water.⁸

To paraphrase: make Arizona and California uninhabitable and people will move elsewhere. This approach certainly offers an unacceptable solution. Non-preparedness in the field of water development and conservation would thrust California, and perhaps our nation, into economic and social cataclysm. Those who reject non-preparedness must roll up their sleeves and work today in the hope that they will leave a California in which their children's children may lead a happy and productive life.

⁶ SENATE SELECT COMM. ON NATIONAL WATER RESOURCES, 86TH CONG., 2D SESS., NATIONAL WATER RESOURCES AND PROBLEMS 3 (Comm. Print No. 3, 1960); See also Nace, *Are We Running Out of Water?*, U.S. GEOLOGICAL SURVEY CIRCULAR 536 (1967).

⁷ SENATE SELECT COMM. ON NATIONAL WATER RESOURCES, 86TH CONG., 2D SESS., NATIONAL WATER RESOURCES AND PROBLEMS 1 (Comm. Print No. 3, 1960).

In 1954, nearly 60 percent of the total United States water requirements were for irrigation. But by 1980 this use will fall to approximately one-third of the total national requirements. DASMANN, *THE DESTRUCTION OF CALIFORNIA* (1965).

⁸ DASMANN, *supra* note 7, at 211-13.

Since 70 per cent of the precipitation in the State of California occurs in the northern third, and 77 per cent of the requirements are in the southern two-thirds,⁹ difficult problems of water storage and transportation exist. California, being the largest user of both surface and ground water in the nation with ever increasing needs, has performed engineering wonders in its quest to provide water for its people. However, present water consumption of over 25 million acre-feet per year¹⁰ is a mere percentage of what the needs of the State will be by the turn of the century. The vast-ground water basins which have provided much of the needed water for California are fast becoming overdrawn. It is estimated that the present water sources, including the Colorado River and the State Water Project, will handle adequately all of the projected growth only until about 1990.¹¹ But that is less than 25 years away. When that date comes, there must be supplemental sources of water or severe restrictions in water use will follow.

Fortunately, there exists a spectrum of possibilities for supplying the projected requirements for additional water. The gravity of the situation dictates that all of these possibilities be examined in detail. We must learn to control and abate pollution where it has despoiled water sources. We must develop and improve our techniques of waste-water reclamation, since, although we have only a fixed amount of water, by reuse we might multiply the supply manyfold. We must continue the development of techniques for desalination of sea water and brackish water. We must continue our research into weather modification in the hope that every available ounce of moisture can be wrung from the clouds in the most advantageous locations and then conserved for human use. Finally, we must put aside narrow sectional bias and seriously study the feasibility of major interbasin transfers of water. Let us examine each of these areas in more detail.

WATER POLLUTION CONTROL

Pollution control is one hope for the future of both California and our nation. To study it is to see examples of the disgraceful way in which America has treated this God-given resource. Anyone who

⁹ U.S. DEPARTMENT OF THE INTERIOR, MINERAL AND WATER RESOURCES OF CALIFORNIA, 452 (1966).

¹⁰ *Id.*

¹¹ *Hearings on S. 3823 Before Senate Comm. on Interior and Insular Affairs*, 89th Cong., 2d Sess. 58 (1966).

had walked along the banks of the Potomac River in our nation's capital in mid-August last year could have confirmed the scientists' judgment that it would be safer to swim in a cesspool. New York City discharges 400 million gallons of untreated sewage into the Hudson River each day. Recently several children found a watermelon floating in the Hudson, took it home, washed it off and ate it. Eight of them were later hospitalized with typhoid fever.¹²

Lake Erie is quickly becoming a pile of industrial sludge, and it is no surprise. The Detroit River, which flows into Lake Erie, daily absorbs 19,000 gallons of oil, 200,000 pounds of acid, 2 million pounds of chemical salts and 100,000 pounds of iron, along with the raw sewage of the city.¹³

California is blessed to have been spared the ravages of the worst kind of water pollution. Perhaps it is because the men who built the largest state in the Union in a semi-arid region had a greater than usual respect for the gift of water which God had bestowed upon them. Geography has also protected California from the tandem development of major industrial cities along the length of a single river.

Perhaps because water pollution is the most visible aspect of our water crisis, it is the area in which the most is currently being done. In 1965 and 1966, Congress approved amendments¹⁴ to the Federal Water Pollution Control Act¹⁵ which will go far toward cleaning up our country's waters. The 1965 amendments,¹⁶ collectively entitled the "Water Quality Act of 1965," established the Federal Water Pollution Control Administration (FWPCA) under the Department of Health, Education and Welfare. The FWPCA was designed to administer an all-out fight on water pollution by use of federal facilities and grants to local areas, as well as cooperation with the Public Health Service and institutions of higher learning throughout the country. In 1966, the FWPCA was transferred from the Department of Health, Education and Welfare to the Department of the Interior which is the Department having primary responsibility for development of our nation's water resources.¹⁷

¹² Bird, *Our Dying Waters*, Saturday Evening Post, April 23, 1966.

¹³ *Id.*

¹⁴ 79 Stat. 903 (1965); 80 Stat. 1246 (1966).

¹⁵ 70 Stat. 498, 33 U.S.C. § 466 (1956).

¹⁶ 79 Stat. 903 (1965).

¹⁷ REORGANIZATION PLAN NO. 2 OF 1966. H.R. Doc. No. 388, 89th Cong., 2d Sess. (1966).

The 1966 amendments, the "Clean Water Restoration Act of 1966,"¹⁸ gave the administering Department new financial weapons, and also provided sanctions to be used in the battle for clean water. At the same time, it removed the ceiling on individual grants. This should prove to be a valuable incentive to larger cities to get busy on construction of waste-treatment facilities which were heretofore not eligible for federal assistance, and were being held in abeyance because of financial difficulties. Under varying circumstances, federal grants may be increased to as much as 55 per cent of construction costs, providing the States also extend financial assistance.

WASTE-WATER RECLAMATION

Waste-water reclamation goes hand in hand with our efforts to control pollution of our streams. Although the concept of purifying and reusing secondhand water is new in some parts of the country, it is an old and growing practice in the Southwest. The fact of the matter is that the human race has been using and reusing the same water from the beginning. A dramatic example of this reuse is present in Los Angeles. For several years the city has been reclaiming about 11 million gallons of water a day at Whittier Narrows where large sand beds along a river provide an almost perfect filter system.¹⁹ The Whittier Narrows plant taps a large trunk sewer coming from an area which has little of the hard-to-handle industrial waste. The purified effluent is piped to sand beds along the Rio Hondo and the San Gabriel Rivers and helps to recharge the groundwater supply. The plant has been in operation for four years and produces purer water than that from the Colorado River at slightly over half the cost of Colorado River water.

The Pomona Valley area began 40 years ago its pioneering works for reclamation and reuse of waste water. Recently its capacity was increased to 8 million gallons per day.²⁰ Similarly, the Supervisors of my home County of Orange have completed an excellent, comprehensive plan for the disposal and reclamation of waste-water in that county over the next 40 years.²¹ Orange County will use re-

¹⁸ 80 Stat. 1246.

¹⁹ COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY, A PLAN FOR WATER RE-USE (1963); Bart, *Los Angeles: Second-Hand Water*, Saturday Review, 41-42, Oct. 23, 1965.

²⁰ COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY, *supra* note 19, at 49-51.

²¹ LOWRY AND ASSOCIATES AND ENGINEERING SCIENCE, INC., WASTE WATER DISPOSAL AND RECLAMATION FOR THE COUNTY OF ORANGE, CALIFORNIA, 1966-2000 (1966).

claimed water for irrigation, for recreation, to build up an underground barrier against salt water intrusion and for many other industrial and domestic uses. This plan is recommended reading for those who charge that California's water crisis is the result of mismanagement of our existing resources.

DESALINATION OF SEA WATER

A new, major area of hope in development of our water resources is desalination of sea water and purification of brackish water. The federal effort in desalting sea water began in 1952 with the establishment of the Office of Saline Water in the Department of the Interior.²² At the beginning of this decade the federal government, realizing that the vast oceans that cover 80 per cent of the earth's surface must be tapped if the most arid regions of our world land mass are to sustain human life, greatly increased the level of funding to support this program.²³ Over the first ten or more years of the program, roughly \$100 million has been spent in basic research.²⁴ The processes which were known at the beginning of the program have been greatly refined.²⁵

Most desalination units which have been built produce on the order of 1 to 2 million gallons of fresh water per day at a cost of about \$1.00 per 1000 gallons. The President recently signed a bill, sponsored in the Senate by this author,²⁶ to allow the Department of Interior to contribute \$57.2 million toward the construction and operation of a massive nuclear-powered dual-purpose desalting and electrical power generating facility to be built off the coast of Orange County.²⁷ This facility will be built at a total cost of approximately \$450 million by the Metropolitan Water District of Southern California in conjunction with Southern California Edison Company, the Department of Water and Power of the City of Los Angeles and the San Diego Gas and Electric Company. The plant will produce 150 million gallons of water per day (or 168,000 acre-feet per year) and will generate approximately 1800 megawatts of electric power.²⁸

²² 66 Stat. 328, 42 U.S.C. §§ 1951-53 (1952).

²³ 75 Stat. 628, 42 U.S.C. §§ 1951-58 (1961).

²⁴ For a short history of the saline water conversion program see S. REP. NO. 319, 89th Cong., 1st Sess. 3-5 (1965).

²⁵ The basic processes include: distillation, freezing, humidification, chemical separation, and membrane. For a basic discussion of these processes see U.S. DEPARTMENT OF THE INTERIOR, *THE A-B-SEAS OF DESALTING* (1966).

²⁶ The bill, S. 270, became P.L. 90-18 on May 19, 1967.

²⁷ S. REP. NO. 49, 90th Cong., 1st Sess. (1967), reporting on S. 270.

²⁸ *Id.*

California now draws 5.1 million acre-feet of water from the Colorado River each year. Thus, the one-half billion dollar desalting plant, which will not be completed for a decade, will provide just a drop in the bucket of water (approximately 3.3%) that is drawn annually from the Colorado River. There is also a cost differential, since it is estimated that the proposed plant could supply water to Southern California at the Metropolitan Water District Diemer Reservoir in Orange County at 27¢ per 1,000 gallons, contrasted to 10¢ per 1,000 gallons drawn by the Metropolitan Water District from the Colorado River for municipal and industrial use.²⁹

While the desalinized water will cost \$71 per acre-foot as it comes out of the plant, transporting it to the Diemer Reservoir will increase the cost to \$88 per acre-foot. This is by far too expensive for agricultural use, and California agricultural users presently utilize about 3.85 million acre-feet of water annually from the Colorado River.

A secondary benefit derived from desalinized water is its high purity. By blending the distilled water with the less-pure water received from other sources, a softening effect can be achieved without the need to install softening equipment at treatment plants.³⁰

Making sea water potable is a giant step forward, and nuclear energy will reduce the cost, but it would be a cruel delusion to depend upon this source alone—a source which is still in the experimental stage—as the answer to the water needs of the 50 million thirsty Californians who will be with us in a short three decades.

WEATHER MODIFICATION

Our nation is engaged in an extensive research program to test the potential of weather modification as a source of supplemental water.³¹ Scientists are probing the secrets of weather so that water in the clouds might fall where it will do the most good. Their laboratory is the whole outdoors. Our scientists have had to be very ingenious to know with assurance when they themselves have in fact changed the weather and when the thanks for the rain should go to Mother Nature.³²

²⁹ See *Hearings Before the Subcomm. on Water and Power Resources of the Senate Comm. on Interior and Insular Affairs*, 90th Cong., 1st Sess. 110, 119 (1967).

³⁰ *Id.* at 112.

³¹ U.S. DEPARTMENT OF THE INTERIOR, *PLAN TO DEVELOP TECHNOLOGY FOR INCREASING WATER YIELD FROM ATMOSPHERIC SOURCES* (1966).

³² See generally, *Hearings on Progress in Weather Modification Before Subcomm. on*

INTERBASIN TRANSFERS

A final hope and, I submit, the best hope for adequate water for all of the semi-arid West, is the importation of water into the Colorado River from outside its basin. Aqueduct systems have been developed in California which are engineering miracles. When proposed, each met stiff opposition, and the resulting water wars were a sad, if colorful, chapter in western history. In the early 1940's, the Owens Valley Aqueduct and the Metropolitan Water District Colorado River Aqueduct were opened to deliver water to the Los Angeles Basin. By 1972, the State Water Project will be in operation bringing water from Oroville Dam south to the Los Angeles Basin. These projects have shown the feasibility of massive long-distance transfer of water for municipal, industrial and irrigation uses.³³

A series of drought years at the turn of the century forced Los Angeles to look to the Owens Valley for its domestic water supply. The 40-year fight which ensued included undercover land purchases for the City of Los Angeles, dynamited irrigation ditches, a scheme by which President Theodore Roosevelt extended the boundaries of the Inyo National Forest eastward to incorporate treeless federal lands which were needed for the Los Angeles water system, and an incompetently built dam which broke, inundating towns below and killing several hundred persons.³⁴

The effort to use Colorado River water in California met with similar resistance. In the early 1930's, the Arizona Governor called out his National Guard to prevent Parker Dam from being built.³⁵ Since the days when Arizonans and Californians stood gunbarrel to gunbarrel across the Colorado River, a spirit of cautious cooperation has grown. This is due, principally, to the statesmanship and understanding of the water leaders of these two great States.

Within California we have seen the fears of Northern Californians finally assuaged by adequate "County-of-Origin" protection³⁶ so that

Water and Power Resources of Senate Comm. on Interior and Insular Affairs, 90th Cong., 1st Sess. (1967); *Hearings Before Senate Comm. on Commerce*, 89th Cong., 2d Sess., ser. 89-59 (1966); *Hearings on S. 2875 Before Subcomm. on Water and Power Resources of Senate Comm. on Interior and Insular Affairs*, 89th Cong., 2d Sess. (1966).

³³ U.S. DEPARTMENT OF INTERIOR, MINERAL AND WATER RESOURCES OF CALIFORNIA 521-70 (1966).

³⁴ DASMANN, DESTRUCTION OF CALIFORNIA 138-73 (1965).

³⁵ *Id.* See generally, 1 TERRELL, WAR FOR THE COLORADO RIVER (1965).

³⁶ The Water Resources Development Bond Act, CAL. WATER CODE §§ 12930-44 (West 1956). See generally Johnson & Knippa, *Transbasin Diversion of Water*, 43 TEXAS L. REV. 1035, 1042 (1965).

the great State Water Project, the most massive water project ever undertaken, might progress and bring the waters of the Feather River to the Central Valley and to Southern California.

Meanwhile, as an increasingly thirsty Pacific Southwest becomes a vast megalopolitan complex, this area is compelled to look, perhaps afar, for a new water supply to slake its thirst. That water supply could be as far away as the Yukon River, or as near as the Eel. And, indeed, the supply could be the mighty Columbia River.³⁷ If an area has surplus water—surplus to both its present and future requirements—and if another area is parched and unable to grow because of a water shortage, this nation has a solemn duty to study, scientifically and with the utmost care, the problem of efficiently utilizing its water resources.³⁸

Unfortunately, in the last two years a legislative foundation has been laid for a high wall around the water resources of the Pacific Northwest. Section 8 of the Federal Water Projects Recreation Act³⁹ forbids the Secretary of the Interior to undertake feasibility studies on any reclamation project without prior Congressional authorization.⁴⁰ The Water Resources Planning Act⁴¹ creates the Water

³⁷ It is estimated that over 262.5 million acre-feet of Columbia River water finds its way into the Pacific Ocean each year. U.S. GEOLOGICAL SURVEY, MINERAL AND WATER RESOURCES OF WASHINGTON 349 (1966).

³⁸ Corker, *Save the Columbia River for Posterity or What Has Posterity Done for You Lately?* 41 WASH. L. REV. 838, 842 (1966):

My conclusion is a hard one. I shall state it just as bluntly as I know how. At some time in the future, water will flow from the Columbia River Basin to the Colorado River Basin in substantial quantities. There are only two hedges to that prediction: First, cataclysmic disaster, like nuclear war, may overtake us. Second, a breakthrough in desalting the ocean may alter every basis of prediction.

We disregard the first contingency, because optimistic or pessimistic, we must plan for survival. The second contingency is unlikely to have a significant effect, even if a major breakthrough occurs. Most of the Colorado River basin is an inland empire, meeting the ocean only at the Gulf of California, in Mexico. In any event, we should not gamble with people's futures on the basis of breakthroughs which may or may not occur.

³⁹ 79 Stat. 213, 217, 16 U.S.C. §§ 4601-12-21, 4601-19 (1965).

⁴⁰ The Act has been effective in preventing any study by the Secretary of the Interior of diversion into the Colorado River Basin. *Hearings on S. 3034 Before the Subcomm. on Water and Power Resources of the Senate Comm. on Interior and Insular Affairs*, 89th Cong., 2d Sess. 35-37 (1966); Similarly PUB. L. NO. 89-672, 80 Stat. 951, which authorized the Secretary of the Interior to hire private organizations to conduct technological studies for the Department of the Interior provided that the contemplated private studies could only be on matters previously authorized by statute. While the limitation to previously authorized projects was not in the original bill, S. 3460, 89th Cong., 2d Sess. (1966), the restriction was added in the Senate Committee on Interior and Insular Affairs before the bill was reported to the Senate. S. REP. NO. 1523, 89th Cong., 2d Sess. (1966).

⁴¹ 79 Stat. 244, 42 U.S.C. § 1962 (1965).

Resources Council and the River Basin Commissions and then forbids them to take any action to study, plan, or recommend the transfer of waters between river basins. The National Water Commission bill,⁴² which passed the Senate recently, is the only legislation which would even permit the study of interbasin transfers. That legislation requires no report at all for five years and would permit the Commission, if it so desired, to ignore the plight of the Southwest, and to steer clear of any interbasin transfer studies.

Those who oppose even studying the water needs of the Northwest and Southwest and diversion as a possible solution to our water shortage remind me of Aesop's fable of the dog and the ox:

A dog was lying in a manger full of hay. An ox, being hungry, came near and was going to eat of the hay. The dog, getting up and snarling at him, would not let him touch it. "Surly creature," said the ox, "You cannot eat the hay yourself, and yet you will let no one else have any".⁴³

Make no mistake, supplemental water will be added to the Colorado River Basin and it will benefit every basin state. It will ease the honorable burden of the Mexican Water Treaty.⁴⁴ Tens of millions of people are going to be added to the population of the

⁴² S. 20 passed the Senate Feb. 6, 1967, and is pending in the House.

⁴³ Professor Ralph W. Johnson of the University of Washington, chief consultant on water problems to the Senate Committee on Interior and Insular Affairs, captured the statesman's attitude, which should be a model to all, when he said:

What I am urging is that you not use the diversion issue as a whipping boy and let it blind you to the fact that 95 percent or more of the water problems and opportunities of this region will continue to exist and will have to be planned for and handled by the people of this region whether or not a diversion occurs.

This is not to suggest that the Pacific Northwest should be unconcerned with the diversion issue, but rather that it should be kept in perspective. Our attitude should not automatically be against diversion, but rather should be one of ascertaining as accurately as possible the exact cost, social, economic, and political, of diversion, to this region, the true needs of the Southwest and which of the various alternatives available, including a possible diversion, might best provide the answer to those needs. We cannot simply be negative about this question. Rather, we must realize the very real water-related problems of the Southwest and attempt to assist in the solution of those problems. This does not deny the necessity for some tough, hard looks at the way the Southwest is using its present water supply, as I have attempted to point out on other occasions. Nor does it mean to imply that a diversion of the Columbia must ultimately come about. Rather it does suggest an attitude of mutual acceptance of responsibility for a problem that must be considered as regional, and profoundly important to the whole of the west.

Address by Professor Ralph W. Johnson, Statewide Water Resources Forum, Seattle, Washington, Dec. 12, 1966.

⁴⁴ The "Mexican Water Treaty," (Treaty with Mexico Relative to Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Feb. 3, 1944) obligates the United States to deliver to Mexico 1.5 million acre-feet of water each year from the Colorado River.

semi-arid Southwest in the next several decades and they must have water to satisfy their needs.⁴⁵

THE COLORADO RIVER

No discussion of western water would be complete without mentioning the Colorado River. After many years of angry struggle, consummated by a decision of the United States Supreme Court in 1963,⁴⁶ California and Arizona finally have begun building an atmosphere of cooperation and friendship. Out of the amity built up between these two States, a seven-State agreement emerged in the form of a bill⁴⁷ which was pending before the House Committee on Interior and Insular Affairs last year. That bill is one of the significant documents in the history of western water. It marks the first time that representatives of an entire region have met, argued, compromised and finally hammered out an agreement on the water resources development of their region. Unfortunately, in the closing days of the last Congress, it was not possible to pass that bill.

Earlier this year this author introduced in the Senate a bill⁴⁸ which incorporates most of the features of the seven-State legislation considered last year. The proposed bill would:

- 1) authorize the construction of the Central Arizona Project to alleviate water shortages in Phoenix and Tucson;
- 2) protect California's existing uses in the water to which the United States Supreme Court said California is entitled;⁴⁹
- 3) authorize the development of projects in the Upper Colorado River Basin;

⁴⁵ Some suggest that the 50 million people expected to be in California by the year 2000 could be kept out by regulating immigration. Fifty years ago, when the infamous Bisbee, Arizona deportation was investigated by a young lawyer named Felix Frankfurter, Arizona found that deportation of United States citizens from its borders was prohibited by the Constitution of the United States. See letter of Nov. 6, 1917 to the President of the United States from the President's Mediation Commission, *quoted in* FREUND, SUTHERLAND, HOWE & BROWN, *CONSTITUTIONAL LAW* 823-25 (1954). In 1941, when California tried to keep refugees from the dustbowl from entering California, the Supreme Court held that such action by the State was a violation of the commerce clause of the United States Constitution. *Edwards v. California*, 314 U.S. 160 (1941).

⁴⁶ *Arizona v. California*, 373 U.S. 546 (1963).

⁴⁷ H.R. 4671, 89th Cong., 1st Sess. (1965).

⁴⁸ S. 861, 90th Cong., 1st Sess. (1967).

⁴⁹ The Court allocated to California 4.4 million acre-feet of Colorado River water per year when 7.5 million acre-feet are delivered at Lee Ferry in accordance with the Colorado River Compact. *Arizona v. California*, 376 U.S. 340, 342 (1964).

- 4) authorize vital studies on the augmentation of the water supply in the Colorado River under the supervision of the National Water Commission;
- 5) retain authorization of Hualapai Dam;
- 6) provide for the creation of a basin fund to finance the augmentation of the Colorado River flow; and,
- 7) eliminate Marble Canyon Dam.⁵⁰

⁵⁰ The essential elements of this legislation were spelled out in the author's testimony before the Irrigation and Reclamation Subcommittee of the House Committee on Interior and Insular Affairs on March 13, 1967:

(1) We propose early, vigorous and meaningful steps to augment the inadequate flows of the Colorado River. We propose, as a first step, that the Secretary of the Interior, functioning under guidelines established by the National Water Resources Council and the proposed National Water Commission, investigate long-range water supply and demand, determine how much should be imported, determine what sources can furnish this without injury to the areas of origin, and what importation projects can be recommended to Congress for authorization.

Do we not, in this wonderful Nation of ours, seek to prevent waste wherever it occurs? Should not our government determine where the great rivers in this country, which annually dump vast amounts of fresh water into the seas might be used to slake its people's thirst, if the area of origin were first carefully protected? The Northwest California streams, and the mighty Columbia River system, the possibilities of desalting seawater, all should be inventoried with the utmost care, for each one of them will help sustain Americans in future times.

There is an impending water shortage in the Colorado River Basin. It is not imaginary. It is very real. And no amount of investigation or delay will make it go away.

(2) We insist on adequate protection for the states and areas of origin of water exported to the Colorado, including full protection of the priorities of those areas, in perpetuity. California may well be such an area of origin. The Columbia Basin, if that is the area of origin, requires the same protection.

(3) We ask recognition of the Mexican Treaty burden as a national obligation, and that an appropriate share of the cost of importing water be allocated to the performance of that Treaty. The Budget Bureau agreed to this principle in the 89th Congress. We agree with the Upper Basin States that whenever importations into the river system are accomplished to the extent of 2.5 million acre-feet annually, both basins should be relieved of the danger of curtailment of their own uses to perform the Nation's treaty obligations to Mexico. The 2.5 million acre-feet includes 1.5 million acre-feet of water which must be delivered to Mexico at the border, and 1 million acre-feet of losses between Lee Ferry and the border.

(4) We agree on the necessity of balancing the operation of Lake Mead and Lake Powell, so that the benefits of wet years and the burdens of drought shall be equitably distributed between Upper Basin and Lower Basin reservoirs. The two reservoirs should go up and down together.

(5) We agree upon the authorization for construction of five Upper Basin projects.

(6) We agree to reimbursement of the Upper Colorado River Basin fund for prior payments out of that fund to compensate reduction of the power operations at Hoover Dam occasioned by filling of Lake Powell. The bill spells out the method.

(7) We agree upon the authorization for construction of Bridge Canyon (Hualapai) Dam and Power Plant, and for creation of a basin account to help finance the Central Arizona project and importation works, fed by revenues from Hualapai Dam and by revenues from Hoover, Davis and Parker Dams after they have paid out. I have gone along on the elimination of

This author believes that broad regional support can be established for this legislation, but in early February, the concept of regional cooperation was dealt a shattering blow by one of its strongest supporters. Secretary of the Interior Udall announced that he now supports legislation which would authorize construction of the Central Arizona Aqueduct and Hooker Dam in New Mexico, but which would eliminate any basin development fund, eliminate any protection of existing uses in California, eliminate any development of upper basin projects, eliminate any study of water importation, and eliminate any new hydroelectric revenues to fill the basin development fund.⁵¹ In short, Secretary Udall proposes to eliminate "regional cooperation" and to push instead a "stripped down" Central Arizona Project bill. Perhaps prophetically he once said, "If a Secretary or a Commissioner becomes a champion of one region, I think this is a way to insure failure of any plan."⁵²

Marble Canyon Dam. But if this source of revenue is removed, I have proposed that Arizona, not the development fund, pay the cost of any increase in size of the Central Arizona aqueduct above the 1,800 c.f.s. project described by the Bureau of Reclamation in its cost estimate last year.

(8) We agree to the authorization for the construction of the Central Arizona Project, as part of the regional plan. But we agree only on the condition that, if the water supply of the Colorado River is insufficient to satisfy the requirements of the projects already in existence or heretofore authorized by Congress for construction in Arizona, California and Nevada, these existing uses shall be protected. This is subject to the limitation on California's protection imposed by the Boulder Canyon Project Act. The effect is that when the supply drops to 7.5 million acre-feet, the Metropolitan Water District of Southern California will lose nearly 700,000 acre-feet of its present supply before Arizona loses any water at all. However, the Central Arizona project shall bear the next share of the shortage if the supply drops below 7.5 million acre-feet annually before imported water arrives. To this end the priorities of existing and authorized projects will be protected as against the proposed Central Arizona Project, but only until works have been constructed to import at least 2.5 million acre-feet each year. This is the quantity which must be added to the river to assure availability in the Lower Basin of the 7.5 million acre-feet apportioned by the Supreme Court, if and when the Upper Basin depletes the flow at Lee Ferry to the minimum allowed by the Compact. The protection thus given to an existing and authorized project in Arizona and Nevada would be unrestricted in quantity. But the protection to California's existing projects would be limited to 4.4 million acre-feet annually.

I may add, with respect to the exact language now in our bill protecting existing uses, that it was the acceptance of this compromise by Arizona's Governor and three Congressmen in the 89th Congress, at the urging of Secretary Udall, that enabled California to support construction of the Central Arizona Project. This language simply recognizes the century-old foundation of western water rights, the protection of existing uses on which California relied in building a half-billion dollars worth of projects. Without this agreed language, we would have to oppose the Central Arizona Project with all the means at our command.

⁵¹ S. 1013, 90th Cong., 1st Sess. (1967). A similar bill, S. 1004, 90th Cong., 1st Sess. (1967), was introduced by Senator Hayden of Arizona and cosponsored by Senators Fannin of Arizona and Jackson of Washington.

⁵² *Hearings on H.R. 4671 Before Subcomm. on Irrigation and Reclamation of House Comm. on Interior and Insular Affairs*, 89th Cong., 1st Sess. 194 (1965).

Although Secretary Udall contends that the Central Arizona Project can be financed by high property tax rates and high water rates within the project area, the construction of the project without any provision for augmentation of the existing water supply in the Colorado River would spell water disaster to the remaining basin states.

Both the bill introduced this year by Arizona Congressman Udall⁵³ and the proposal of his brother, Secretary Udall,⁵⁴ delete protection of existing uses in California which had been agreed upon previously. California now draws 5.1 million acre-feet per year from the Colorado River, and the Supreme Court set California's allocation of the normal flow at only 4.4 million acre-feet.⁵⁵ Last year's seven-State bill provided that in time of scarcity, existing uses of Colorado River water in California—to the extent of 4.4 million acre-feet per year—and in Arizona and Nevada, should be given priority over new uses in Arizona.⁵⁶ The existing uses were to be protected until an additional 2.5 million acre-feet of water per year are delivered into the Lower Colorado River from sources outside the natural drainage area of the river.⁵⁷ Congressman Udall has called this "4.4 guarantee" a mere "piece of paper,"⁵⁸ but this piece of paper may be the difference between life and death for Southern California a little more than two decades from now. All California seeks is assurance that in water-short years, newly created uses in the Central Arizona Project area will not reduce California's use of the river below 4.4 million acre-feet. There is no sound reason for shifting the use of water from its historic uses—taking it off the table in Los Angeles and off the land in the Coachella and the Imperial Valleys—merely to service new uses in Phoenix and Tucson.⁵⁹

CONCLUSION

In this article I have tried to indicate the urgent need for additional sources of fresh water that now faces California. While the actual

⁵³ H.R. 9, 90th Cong., 1st Sess. (1967).

⁵⁴ S. 1013, 90th Cong., 1st Sess. (1967).

⁵⁵ See note 49 *supra*.

⁵⁶ H.R. 4671, 89th Cong., 1st Sess. § 305(a) (1965).

⁵⁷ *Id.*

⁵⁸ Address by Congressman Udall, Annual Convention Irrigation Districts of California, San Diego, California, Dec. 8, 1966.

⁵⁹ In 1965, prominent members of the State administration proposed that the protection of existing uses in California exist for only 25 years. Since it seems clear that the existing sources of water will be adequate only until about 1990, it is obvious now, as it was then, that such a limited protection is like buying a life insurance policy which lapses upon the death of the insured.

times of shortage will be in the future, the urgency exists now. Now is when we must develop the technology which will provide fresh water from the sea and allow us to control the weather. Now is when steps must be taken to abate the pollution of our waterways, and to develop a program of reuse of waste water. Now is when studies of interbasin transfers must be conducted. It must be realized that the preliminary steps alone will take years to accomplish. Construction of the facilities to implement the technological advances and to carry out the recommendations of the studies will take more time.

It can be seen that while the faucets will not run dry for a few decades, it will take these decades to evolve and implement orderly solutions to our coming water problems.

We have come a long way from the water wars of the West to the legislation reported out of the House Interior Committee last year, which embodied seven-State regional cooperation. I would hope that in the near future the representatives of the entire Western United States might sit down together once more and plan to meet the water needs of the West in a lasting spirit of cooperation and understanding. We must act now. When the water shortages are upon us it will be too late.