

4-15-1966

Water For All the West

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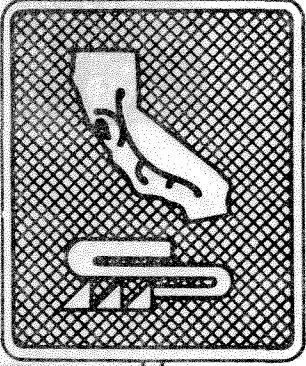
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Recommended Citation

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California. Department of Water Resources.



State of California
THE RESOURCES AGENCY
Department of Water Resources

(WATER FOR ALL THE WEST)

by
William E. Warne
Director

Department of Water Resources

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A speech delivered at
Spokane, Washington
April 15, 1966

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WATER FOR ALL THE WEST

by

William E. Warne
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Department of Water Resources
The Resources Agency
State of California

There is a parable in the Bible which I believe provides sound advice for the development of natural resources. It applies equally well to management of natural resources in any region, whether endowed with coal and mineral resources, with land resources eminently suited for agriculture, or with abundant water and power resources.

The parable of the talents tells of parceling out basic resources to servants -- it could have been to regions just as well. Each servant received a different number of talents, but regardless of the quantity, was charged with making use of those he received.

Those who used their talents wisely were rewarded. But he who was apprehensive that he might lose his talent and hid it had it taken from him. The just master insisted upon wise use of the resource he had allotted.

This may appear harsh in the context of our subject today -- the new water challenge faced in the Pacific Northwest.

There are those of you who will ask, "Who amongst us is able to predict the future and so to define wise use of our resources?"

No human is omniscient, I will answer, but experience, history, and facts provide us with insight which, when properly applied by experts and considered by all interests involved, can furnish the basis for sound decisions on appropriate water use in the West. Who will claim the omniscience to insist on a regional status quo in the face of marshalled facts?

I can think of several modern parallels to the parable of the talents. You may recall that President Johnson's initial Anti-Poverty Program was concentrated primarily in certain eastern and southeastern states in a region called Appalachia. Many problem areas were found in once-active coal mining districts.

A number of years ago, when efforts were undertaken to develop the water resources in and adjacent to those districts, interests jealous of the coal resource sought to protect it beyond normal reason. The water resource was wasted by this rejection of its development. The neighboring Tennessee Valley Authority developed cheap hydroelectric power and used it to develop other resources, while waters of Appalachia ran off to the sea.

You here in the Columbia River Basin know what happened in the Tennessee Valley under the impetus of the new program, because you felt also the drive of great hydro-turbines in your economy.

Today, we are attempting to rectify at great public cost the impact of a shortsighted, however well-intentioned, decision in Appalachia. These districts have failed to maintain their former substandard economy, let alone to meet the challenge of keeping pace with the rapidly burgeoning prosperity of the

rest of the nation. As a national burden of conscience, we are attempting to lift these districts back into the mainstream of American life.

My letter of invitation to speak to you today started: "As you well know, the Number 1 topic in the field of Water Resources in our state (Washington) is that of diversion of Columbia River water to the Southwest. Too often it is emotion and not facts which are being heard."

I can assure you a potential diversion from the Columbia River to the Southwest occupies the same spotlight in all parts of the West, including my State of California.

I have read and heard both harsh and kind words about those of us who believe that joint planning of the water resources of the entire West must be initiated soon if the challenge of the future is to be met throughout this region.

All of us in the Pacific Southwest, and we are legion, who seek early study of the water resources and needs throughout the West and of the potentials for interchanges between areas of surplus and areas of deficiency, have been branded as "connivers".

In many quarters I am being accused of masterminding a plot to pirate Northwest water for the benefit of California. I am not flattered or shocked by becoming the target of such an accusation. I find great solace in the facts.

California has used facts to develop a command of her own water destiny. All water development within the State, whether federal, state, or local, will be in consonance with the State's master program of the water development needed to meet growing needs in all areas of the State.

California has expended great effort and has many marvelous accomplishments to her credit in the field of water resource planning and development. California has for many years planned to assure adequate water supplies for all areas of the State, not only for the immediate but also for the long-range future.

I see no reason why the western states collectively cannot do as much in the planning of their future as has been done in the State of California.

It is a challenge, but one that can be and must be met if all areas of the West are to realize their full economic potential.

Otherwise we will be developing in the years ahead spots of chronic depression where the resources are inadequately used in western areas and the dust blows off fields that should be irrigated and houses are never painted in towns of scanty water.

I trust you will bear with me as I boast of California's success in developing a statewide water project. The California Water Project is a magnificent conception, even when its limitations are understood.

In history, aridity has been a crushing force to impoverish people. In California, however, through wise marshalling of scant waters, aridity not only has been overcome but, through the extension of irrigated agriculture, the long growing season and unclouded sunshine hours of the deserts have been made factors of enrichment. And these accomplishments have enriched the West and the nation, including areas from which water has been transported.

No other people, perhaps since Cyrus the Great who founded the Persian Empire, have done more than the Californians in gaining mastery over limited water resources and utilizing them to build a large, prosperous, and influential community.

The limitation of the State Water Project, of course, is that it is designed to meet the developing needs only until about 1990. But California has undeveloped water resources which can be used fully to satisfy our estimated requirements beyond even the year 2020.

We can meet, through our reservoirs, extended drought as well as anyone; and now we are developing desalters that in an emergency could draw on the sea itself.

In California we have a consistent record of planning and building water projects, of avoiding the economic constraints of scarcity, and meeting growing needs. This record started with San Diego's construction of the aqueduct to Cuyamaca Reservoir in 1886, and comes right down through the pages of history to the enactment and construction, under Governor Edmund G. Brown's leadership, of the State Water Project of today.

In 115 years of statehood, Californians have built 1,150 dams, irrigated about 8.5 million acres of land, and provided domestic and industrial water to support almost 19 million people.

Federal agencies have helped by building great projects in California, but the works of the Bureau of Reclamation and the Corps of Engineers do not dominate those of the local districts, on the one hand, nor now those of the State on the other.

California as a state is a smaller model of the eleven western states.

On the North Coast of California, there is an excess water supply; in the southwest part of the State there is a water supply deficiency. In my view, the Pacific Northwest has a bountiful supply of water; the Pacific Southwest, a very deficient supply of water.

When the great interbasin diversion project that California is now constructing as the State Water Project was first proposed, northwestern counties of the State protested and developed various types of anxieties, but they were eventually reassured by the California area-of-origin doctrine and now they are willing partners in the statewide program.

Recently, in California, we have completed an updating of studies done ten years ago totaling water supply and requirements in our State. These studies will continue to be revised periodically because they serve as a foundation for statewide planning.

I believe the eleven western states should likewise prepare and periodically review the West's total water supply and requirements. I believe we in California can suggest time- and money-saving procedures which we discovered by trial and error as the eleven western states undertake this regional task.

I would like to summarize for you this up-to-date information for my State.

California is 1,000 miles long by 150-375 miles wide, covering an area of approximately 160,000 square miles. We have

almost every possible combination of contrasting extremes of topography, climate, and soils.

About 20 percent or 20 million acres of this area is considered to be irrigable. We are irrigating about $8\frac{1}{2}$ million acres now, and this acreage is being extended at the rate of approximately 50,000 acres per year. We expect the present population of almost 19 million to triple in the next 50 years.

The net annual water requirement (applied water requirement less allowance for reuse) for 1960 is estimated to be 23 million acre-feet allowing for 9 million acre-feet of water which has been reused. By the year 2020, we anticipate the net annual requirement will be 38 million acre-feet assuming a reuse of 12 million acre-feet at that time.

The long-time mean annual natural water supply of California is about 71 million acre-feet. The average annual water supply during the most critical seven-year period, however, was only 42 million acre-feet.

Even though California seems to have an adequate water supply to meet her foreseeable requirements, the State suffers from a serious maldistribution of supply, both from point of location and in time.

Whereas two-thirds of the precipitation falls in the northern part of the State, two-thirds of the requirement is in the southern part -- that is, south of Sacramento. Practically all of the precipitation falls in the late fall and winter months, oftentimes resulting in destructive floods at the lower elevations.

The supply problem, both in terms of time and location, is being solved by the multiple-purpose projects being constructed by federal agencies, the State, and local agencies, all in conformance with the California Water Plan, which has been developed over 50 years and is constantly being studied.

Similar facts and figures for the entire Pacific Southwest, including the Colorado River Basin, are available. Commissioner Floyd Dominy of the Bureau of Reclamation recently estimated that the Colorado River Basin water supply will fall short of meeting the anticipated demand in the year 2030 by 9.5 to 10 million acre-feet per annum.

This anticipated need for additional supplies assumes complete use of Colorado River Basin supplies; including an appreciable supply salvaged by strict conservation measures, complete development of local supplies, imports from the Owens Valley, and imports from Northern California under the State Water Plan. The estimated water requirements assume no expansion of irrigated acreage in the Pacific Southwest with but minor exception for Indian lands, small areas on headwater streams, and long-planned minor extension of irrigated areas under already constructed project works.

The Colorado River is the most completely used major river system in the country. Since 1961 no water has escaped from the river to the Gulf of California. All of the river's flow has been used.

Since 1961 salinity problems in the Lower River have created international problems. Special works to enable separation of highly saline return flows from the main river and

conveyance of these brines to a point downstream from Morelos Diversion Dam in Mexico have been constructed to provide a temporary solution to this problem.

In the headwaters of the Colorado, transbasin diversions are either made, or soon will be made, from tributaries of the Colorado River to the Provo, Spanish Fork, and Sevier Rivers in the Great Basin; to several tributaries of the South Platte and Arkansas rivers in the Missouri-Mississippi River Basin; and to the Chama River in the Rio Grande River Basin.

Short as its natural supply is when compared with its area, the Colorado River Basin is the only one that I can think of with so many projects that export its waters. Almost all adjacent basins dip into the Colorado River supply. Presently the Colorado River Basin receives virtually no water diverted from other watersheds.

There are several alternative sources of supply to meet water deficiencies in the Pacific Southwest.

One is by even more strict -- and I might add expensive -- conservation and reclamation of waste waters. This alternative, while of highest priority, will meet but a minor fraction of the subregion's estimated requirements.

Another is through the possibility of a cost breakthrough in desalting ocean water. I believe that the desalting of sea and brackish water will provide an important source of supplemental water for the Pacific Southwest, especially the coastal metropolitan areas. Desalters, however, cannot be relied upon as a practical solution for the inland states nor for inland areas of California.

Other alternatives, and seemingly the most logical ones, involve diversions of water either from the North Coast of California or, perhaps, from as far away as the Columbia River Basin and, possibly, in time from both.

Finally, there are the more remote possibilities of weather modification and comprehensive watershed management. Even though much progress has been made in these two fields, most planners feel it would be improvident for the Southwest to wait and rely upon cost and scientific breakthroughs. That is not to say that research and development should be reduced. I believe, on the other hand, that they should be increased.

The greatest efforts should be made in studying the alternatives of augmenting the inadequate supplies of the Pacific Southwest from streams where long-term surpluses appear to exist.

In brief, and my summary is intended to provide only a glimpse of the factors involved, I will provide a few facts concerning (a) the surplus supplies of California's North Coastal area, and (b) the aggregate supplies of the Columbia River Basin and the entire Pacific Northwest. I do not pretend to have all of the facts on water surpluses in the Columbia River Basin and the Pacific Northwest.

According to our recent Bulletin No. 160-66, published earlier this year, the long-term mean annual runoff of all streams, large and small, in the North Coastal area of California totals 29.7 million acre-feet. This supply is divided among more than a dozen separate streams. The runoff is highly erratic; reservoir

and damsites are at a premium; and the streams are shielded by mountain ranges from areas of need.

Although significant facilities are needed to meet in-basin needs, the major conservation facilities are being planned primarily for export. Estimates indicate approximately 10 million acre-feet of firm water supply could be developed for export, of which 6 million would have to come from the Lower Trinity and Klamath Rivers. A sizable part of the 10 million could be used in California north of the area served from the Colorado River. Future studies will determine how much.

The facts available to me show a Columbia River flow of about 170 million acre-feet a year, on the average. I appreciate that there are large fluctuations from the average, and that there are many existing and future demands on the river. In addition to the Columbia, there are many other significant streams in the Northwest of a character similar to those in California's North Coastal area.

I understand the aggregate discharge into the Pacific Ocean from streams north of the Sacramento River to the Canadian border totals about 300 million acre-feet per annum. Discharge from streams along California's North Coast represents about 10 percent of this amount. Together these resources are a great talent bestowed upon the West.

I have read much in the past two or three years about "fallacious" pricing of water in the West. Some writers even blame our water deficiencies in the Pacific Southwest on "unrealistic" pricing policies.

They argue that if the price of water were raised the demand would lessen, and selection of a sufficiently high price would eliminate all deficiencies without imports.

The same line of reasoning might be applied equally well to solution of our country's vexing transportation problems. If the price of gasoline were raised high enough, automobile traffic would be reduced to the point where the capacity of existing roads would be more than adequate to handle the remaining demand.

I recognize the problem that the pricing of water presents to project planners and builders, the difficulty of cost allocations among multiple uses and of justifying benefits to be borne by the general public rather than by specific groups of users, but I reject outright price manipulation as a means of solving our water problems. Deprivation of water would return the West to the desert that Daniel Webster so little valued before all our effort began. Price rigging for such a purpose is not worthy of present discussion.

California's dynamic growth in population and prosperity serves to spark the entire nation's economy. Ours is not the progress of a planned scarcity philosophy. Dynamic development and planned scarcity are incompatible concepts.

Californians have chosen the course of planned but dynamic growth. I am certain that we will continue to develop our water resources to meet the desires of the people at the lowest possible cost, and not in conformance with a policy of charging the maximum to produce a planned scarcity. The whole West, and not just California, has consistently followed this road.

I appreciate the fact that the northwest states, and the State of Washington, in particular, have not had sufficient time to evaluate their water supplies and future requirements.

I appreciate the fact that most of the western states, which are smaller and have less monetary resources than California, have had many reasons why long-range water planning programs were not initiated until recently.

An element of fear continually crops up as a consequence, however, and as a major roadblock to sorely needed efforts to solve water problems of the West on a regional basis. The fear is that either the State of California or the Federal Government will dominate such planning to the disadvantage of the other states.

I sincerely believe that these fears are unjustified. In any event, I believe, there is little protection to be gained in refusing to play the game.

The best protection and the greatest rewards will be found in active participation by all of the states in the regional planning that is needed and inevitably must be undertaken.

Frankly, I feel that most states in the West have a lot of catching up to do. They have been lax in meeting their responsibilities for the development of natural resources, including water. These are facts.

The problems of the West are not going to wait, and they are not going to be solved by putting a tight rein on the imaginative people who would plan for the future just so that states may be allowed, in their own due course, to catch up, regardless of how long it takes.

Instead, I suggest that we take heed of the Biblical parable to which I referred at the outset, and to the situation which developed in Appalachia. Let us not try to hide the natural resources that are here. Let us evaluate them as soon as possible. Let us determine the profitable uses of these resources. Let us not build any artificial boundaries around them.

The Northwest will find, I think, that it has as much if not more to gain through intensified regional development than other subsidiary areas. The water resources are greater in the Northwest and will, if used, produce more wealth in that area.

I predict that regional development of the West's water resources will be accompanied by a great expansion of agriculture in areas having a plentiful natural water supply.

The agricultural expansion in the Pacific Northwest that will accompany a marshalling of the West's water for efficient regional development will be greater than any of you residents of Montana, Idaho, Washington, or Oregon have anticipated.

This has been our experience in California. The costs of importing water long distances from the north have limited expansion of agriculture in coastal Southern California, though only a short time ago this was our prime farm area. There has been a marked regression in agriculture in that region as urban development mushroomed and water costs increased.

On the other hand, the municipal and industrial growth of Southern California made possible by water importations have stimulated agricultural development closer to water sources in

Northern and Central California beyond all expectations. The San Joaquin Valley is now the richest agricultural area we have, a jewel of increasing lustre, and the Sacramento Valley is commencing a new era of agricultural expansion.

An expanding urban economy in the Pacific Southwest will have a similar impact on the water rich areas of the Pacific Northwest. The talents are for use.

In regard to area-of-origin protection, I appreciate that the Pacific Northwest wants assurance that a surplus in that area will exist for all time and that an export of water to other areas will in no way infringe on future local development.

Our experience in California demonstrates that no study alone can give this assurance. We have made repeated studies of the resources and ultimate needs of Northern California. Some of the counties have made their own studies. But studies only estimate foreseeable requirements. What the surplus area really wants and needs is protection against its own fallibility in attempts to foresee the future.

Is this such an unreasonable desire? I think not. But you cannot satisfy it with studies. The necessary assurances must be contained in provisions of the legislation authorizing any regional program. This we think can be done, for it was done in California.

We have proposed and found widespread support throughout the Pacific Southwest for the concept that the importer assumes all risk; that is, if the studies of resources and future needs prove to be erroneous, the importer assumes the financial responsibility to augment the supply from more distant sources.

Expressed another way, the importer sets money aside in a development fund to assure his ability to perform in the event the studies do prove shortsighted. With that kind of protection it seems to me that it is the importer, not the exporter, who should have the greatest concern over the accuracy of predictions of future supply and use, because he has both the sharpest need pressing on him and the responsibility of footing the bill to make good on the objectives of the plans adopted. Our State Water Project is based on this concept, and it is moving ahead successfully.

Much has happened over the past year which bears on western states water planning. Very important among these events was the creation of the Western States Water Council under the auspices of the governors of the eleven western states. Because of the widespread interest and large numbers of delegates, the matter of organization and implementation of the part of the program that is to be accomplished by the states on the Council will take time. But, I caution you, there is not much time available.

I, for one, think that the Council has done a remarkable job under trying circumstances. But even a more remarkable job must be done in the years ahead.

I am convinced that the time is too short for the states gingerly to approach the business of the Council on Western States water planning. I believe that each state will have to expend maximum effort if it is effectively to influence the overall program and assure receipt of its proper share of the West's growth and prosperity. I believe this to be fact, not emotion.

I see no good purpose in skirting the basic issues, and so have discussed them. I trust you will appreciate my frankness.

In another capacity, 20 years or so ago I had a hand in helping to plan and develop some of the great water and power projects of this northwestern region. I have not lost my enthusiasm for the Pacific Northwest, and I have always been a Californian, even then as now. In those days, however, as now, I argued for the development of the whole West, which is one region characterized by aridity and the need to control and marshal all of its waters.

California has a stake in a western regional water development, because we have a stake in the West. We Californians want none of our neighbor states cut off and relegated to the dustbin of our inherent western deserts.

We want them all and the whole region to be developed and to prosper.

We think the talents; i.e., the resources, that have been bestowed upon us each should be used so that in the end we may all make a good accounting of our stewardship.