Problems of Water Districts

economic merit and feasibility are important considerations in justifying the construction of proposed district projects

Jerome W. Milliman

Under authority of the Metropolitan Water District Act—adopted by the California Legislature in 1927—groups of cities and certain other governmental subdivisions, such as water districts, can join together for the development of a cooperative water supply. However, a water project, just as any other project, should not be exempt from careful consideration of its economic merit.

The Colorado River Aqueduct illustrates the point that economic questions of project feasibility and repayment should not be made subsidiary to the engineering questions in initial project planning.

The major support for the Colorado River Aqueduct came from the City of Los Angeles and was originally proposed as a Los Angeles project. It was not until later that it became an intercommunity undertaking.

Evidence suggests that Los Angeles was not confronted with a serious water shortage at the time it proposed the Colorado River Aqueduct but possessed or could develop an additional water supply to meet future growth needs. Such a supply actually was developed after the Metropolitan Water District of Southern California was organized. Also, there is strong evidence to indicate that Los Angeles was faced with a shortage of electric power for its municipal power system, and that it looked toward Boulder Canyon as a site for the construction of its own hydroelectric power plant several years before it sought a Colorado River water supply.

The possibility of a water shortage in other areas of southern California was sufficient to provide a wide basis of support for the Colorado River Aqueduct and to give the movement more urgency.

Of 38 cities in southern California originally expressing interest in the project, only 11 actually voted to join the District in the enabling election of 1928.

All the demands for water, domestic, industrial, and agricultural, were computed as amounts completely independent of probable prices or costs of the aqueduct water to the various users.

The tentative repayment plan introduced in July, 1931—before the aqueduct was even financed—was based upon the premises that the aqueduct costs were to be distributed in such a manner as to encourage use of the aqueduct and that it was not feasible to make commitments as to water prices until after the aqueduct was put into operation.

The repayment plan involved a two-part charge: One part was to represent ownership in the project and to cover interest and bond repayment and thus was to be charged on the basis of assessed valuation; the second part was to cover operation and maintenance expense and was to be covered directly by water revenues.

Despite the lack of serious economic study of the aqueduct, the Metropolitan Water District of Southern California gained public approval for a $220 million bond issue in September, 1931.

The District constructed the Colorado River Aqueduct—completed in 1941—which when operating at full capacity, will supply approximately 180 gallons of water per person per day for six million people

At present the district has an area of 2,932 square miles with a population of approximately 6.5 million people. Included within district boundaries are some 79 cities and most of the coastal plain of southern California, roughly corresponding to the five counties of Los Angeles, Orange, Riverside, San Bernardino, and San Diego.

The Colorado River Aqueduct represents an engineering achievement, in regard to its technical planning and construction.

The aqueduct is the largest and longest domestic water supply line in the United States. It extends from its source at Parker Dam on the Arizona-California border for 242 miles across California to its terminal storage reservoir at Lake Mathews. At Lake Mathews, the District operates a distribution system approximately 310 miles in length for the wholesale delivery of water to its component members.

Engineering achievement aside, the economic record of the district has been one of operating losses, low water sales, and large tax collections.

In 1955-56—the best year to date—water sales revenues were less than $6 million while tax collections for the year were more than $24 million. When interest charges on the bond indebtedness were included, the district showed an operating loss of $5.6 million for the 1955-56 year.

In 15 years of operation—1941-1956—total water revenues were only $30,103,960 or average sales revenue of $2,177 an acre-foot. Total costs, not including bond amortization charges, were $814,758,762 or an average cost of $65.32 an acre-foot. The total operating loss for the 1941-1956 period was $112,627,802 or a deficit of $51.55 for every acre-foot of Colorado water delivered.

For the 1941-1956 period, tax collections were $207,249,242. For the 1929-1956 period, tax collections were $253,661,639, an amount more than eight times the revenue received from water sales.

Reliance on taxation to support the project has meant not only that water use has been subsidized by property taxes but that water users in some cities have been supported by taxpayers in other cities. The unevenness of the tax burden is best seen in the case of Los Angeles which had by June 30, 1956, purchased only 7% of all of the water sold yet had paid 57% of all district taxes.

If tax levies are included, the total cost of the Colorado River water purchased by Los Angeles would be approximately $1,200 an acre-foot. The San Diego County Water Authority, on the other hand, has purchased over 30% of its water from the district.

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all Colorado water sold by the District
yet has paid only about 5% of the total
tax burden.

The problem is further complicated by
the fact that the relatively large district
taxes paid by Los Angeles, and by most
other district member cities, do not show
up in the municipal water accounts with
the result that those charges are not usu-
ally recognized as water costs. Such poli-
cies do much to disguise the point that
Colorado River water is relatively ex-
pensive.

All of the available evidence suggests
that the sale of water could not have car-
ried the costs of the project.

With continued growth of population
and industry in the southern California
area, it is likely that the aqueduct will
achieve full use by 1975 or 1980, but the
cumulative tax burden over a period of
almost 40 years of underutilization and
large tax collections will mean that the
water will prove very expensive.

Because of the increasing importance
of water, there is danger that the cry of
water shortage might be used to gain
approval of projects which may have
questionable economic justification.

*Jerome W. Millman is Assistant Professor
of Agricultural Economics, University of Cal-
ifornia, Los Angeles.*

DONATIONS FOR AGRICULTURAL RESEARCH

Contributions to the University of California for research by the Division of Agricultural Sciences, accepted in November, 1957.

**BERKELEY**

California Redwood Association ........................................... $2,500.00
For research in improvement and utilization of redwood
(First payment on pledge of $10,000)
California Spray Chemical Corp. .............................................. 25 lbs. of Lindane 100
For research on soil nitrification
Cheney Sierra Lumber Company and Pacific Lumber Company
Douglas fir and redwood
For gluing studies and testing of finger-jointed material
Crown-Zellerbach Foundation ................................................. $2,500.00
For Colman Watershed Fellowship Fund
Foundation for American Resource Management ........................ $7,800.00
For the Agricultural Experiment Station Project No. 1771—
Redwood Volume Table
Charles Pfizer & Company, Inc. .............................................. $1,000.00
For research on antibodies for the control of plant disease
U. S. Plywood Corporation ................................................... $200.00
For the forest entomological research program
Various Donors ................................................................... $125.00
Turner & Williams ................................................................. $100.00
Mr. and Mrs. R. J. Cebrian ................................................... 25.00
For Colman Watershed Fellowship Fund

**DAVIS**

American Cyanamid Co. ...................................................... $1,000.00
For research on translocation of systemic herbicides, particularly
in relation to brush control
California Spray Chemical Corp.
For experimental and testing work on chemicals for
plant disease ................................................................. $2,500.00
For experiments and tests on insecticides ................................ $2,000.00
Chemagro Corporation ........................................................... $200.00
For flavor evaluation of guthion treated apples
The Dow Chemical Co. .......................................................... 3 54-gal. drums of Telone
For field experiments involving soil fumigation studies for the
control of nematodes in grape replants
Hershey California Fruit Products Co. ..................................... Fiber cartons
For experimental pack of clingstone peaches to be sent to
Kroger Food Foundation for evaluation
Kimber Farms, Inc. ............................................................... American Saddle mares
For studies on gonadotrophins
Shell Chemical Corp. ............................................................... Agricultural Chemical Sales Div.
For field experiments involving soil fumigation studies for
the control of nematodes in grape replants
Striling's Nurseries ............................................................... 500 S-37 peach seeds
For rootstock investigations
Sugar Research Foundation, Inc. ............................................. For study of effects of sweetness on consumers'
acceptance of apricots, pears and peaches ................................ $2,500.00
For study of role of the sweetener in food preservation ........ $2,250.00
For study to determine the consumer acceptance and
preference for wines sweetened with sucrose ........................... $750.00
For study on sweetness of ice cream ...................................... $600.00
Union Carbide Corporation .................................................... $8,000.00
For survey of use of chemicals in food

**LOS ANGELES**

Athletic & Recreational Turf Grass Association ....................... $200.00
For turf research
California Spray Chemical Corp. ............................................. $2,000.00
For research on the avocado root rot problems
Merck & Co., Inc. .............................................................. $5,000.00
For study of influence of Gibrel on induction of flowering
Old Orchard Turf Nurseries ................................................... 4 bags bentgrass sprigs
For floriculture and ornamental horticulture studies
O. M. Scott & Sons ............................................................. 1 lawn fertilizer spreader
For forage and ornamental horticulture studies

**RIVERSIDE**

American Cyanamid Company ............................................... $1,500.00
For studies on new insecticides
American National Growers Corp. ......................................... $360.00
For foreign citrus budwood research
California Avocado Society .................................................. $2,500.00
For research on the avocado root rot problems
California Spray Chemical Corp. ............................................ $500.00
For research on chemicals of potential value as nematocides
For research on insect control problems ................................. $2,000.00
Charles Pfizer & Company, Inc. ............................................. $3,500.00
For research on effect of ascorbic acid in prevention of crop smog damage

**STATEWIDE**

Agriform Company of Imperial Valley, Inc. .......................... 760 lbs. Aqua ammonia
For the Imperial Valley Field Station, El Centro
Border Fertilizer Company ...................................................... 400 lbs. Calcium nitrate
For the Imperial Valley Field Station, El Centro
Chemical & Fumigant Company ............................................ 500 lbs. zinc sulfate
For demonstrations of cereals and alfalfa in Colusa and Siskiyou counties
Holly Sugar Corporation ...................................................... 100 lbs. U.S. 75 sugar beet seed
For the Imperial Valley Field Station, El Centro
Soliserv Inc. ................................................................. Various insecticides, 3 insect light traps
For research and Agricultural Extension test plot work in Monterey County