OF PROFESSIONAL INTEREST

THE SACRAMENTO DIVERTERS CONTROVERSY—A STUDY IN THE LEGAL ADJUSTMENT OF EXTERNALITIES

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ABSTRACT. A water rights controversy involving the Bureau of Reclamation illustrates that public water projects may be built to eliminate ownership externalities (non-enforceable water rights) that were created by existing legal institutions.

The controversy followed the construction of the Shasta Dam in California and arose out of the use of the Sacramento River as a conduit for the projects water. Diverters along the river claimed rights to all water in excess of the "natural flow." As the Bureau had built the project without determining the rights involved, 20 years elapsed and $3 million was expended to resolve the controversy.

The Bureau's attempts at legal adjudication were thwarted by political pressures placed on the Secretary of the Interior who ordered a settlement that considerably deprived the Bureau of revenue and of water rights. The "shortages" created helped give impetus to the construction of the Trinity Project.

The description of the controversy is followed by numerical estimates of the wealth losses to the general public caused by the controversy itself in loss of revenues as well as the losses occasioned by the Bureau's permanent loss of water rights.

(KEY WORDS: ownership externalities; water rights; legal institutions; Shasta Dam; Trinity project)

Several economists have noted the deleterious effects of water law on the allocation of water. These effects have been spelled out by Hirshleifer, De Haven and Milliman and Bain, Caves and Margolis as well as by Mason Gaffney.[2] They have documented the fact that the laws of water rights have operated in a manner that renders the rational allocation of existing water supplies almost impossible. The reason for this is that the law inhibits the transfer of water rights in the market, and thus prevents water from being put to its highest valued use. This, in turn, creates artificial water shortages. These shortages lead the users of water to seek government aid to furnish additional sources of water. And in response to such request, the government often constructs large and costly projects. In at least one case, the government spent over $500 million on a water project that created a 20-year controversy and failed to

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[2] Jack Hirshleifer, James C. DeHaven and Jerome W. Milliman, *Water Supply Economics, Technology, and Policy* (Chicago, University of Chicago Press, 1960). Joe S. Bain, Richard E. Caves, and Julius Margolis, *Northern California's Water Industry* (Baltimore, Johns Hopkins Press, 1966). Mason Gaffney, "Diseconomies Inherent in Western Water Laws: A California Case Study," *Economic Analysis of Multiple Use* ("Water and Range Resources and Economic Development of the West," Report No. 9) Proceedings of Western Agricultural Economics Research Council, Tucson, Arizona, January 23, 1961.

solve the water shortage. This case was the Central Valley Project which was built in California in the 1930's to relieve such a legally created shortage. In this case, the government aid not only failed to relieve the shortage caused by legal diseconomies, but also created a new set of externalities. Failure to resolve these problems contributed to the decision to construct the Trinity River Project to relieve the continuing shortage. Let us examine the history of the Central Valley Project and see how this happened.

The Shasta Dam, the principal diversionary unit of the Central Valley Project, was constructed by the U.S. Bureau of Reclamation from 1937 to 1944 to impound waters in Northern California. The water was to be shipped by a complicated set of conveyances to the southern part of the state where the water shortage was thought to exist.

The Bureau started construction of the project without clarifying the legal rights of diversion by the property owners along the river. The officials probably reasoned—and rightly so—that any clarification of the rights involved would have created a long delay in the construction of the project. As this indicates, there was considerable uncertainty as to the ownership of the rights.

The controversy arose over the diversion of the project water from the Sacramento River by private individuals. This came about by the Bureau's use of the river as a conduit for transmission of the project waters to the Sacramento-San Joaquin Delta, 200 miles to the south. During the 200-mile journey, the water was subjected to diversion by private individuals. These individuals claimed so-called appropriative or riparian rights to the river's waters.

The extent of the appropriative rights constituted the primary issue. These are the rights of owners of land parcels to divert water if it can be put to beneficial use. However, "to maintain the right, the appropriator must continuously or regularly use the water to which the appropriative right applies; failure to use the water for a period of three years results in loss of the right."[3]

When the dam was completed and an increased amount of water started to flow down the river, the private users naturally stepped up their diversions. They took the water without payment. Bain, Caves and Margolis describe the situation this way:

> That such users might intercept water released by the Bureau during the dry season and destined for diversion from the Delta was foreseen when Shasta Dam was built during World War II. Channel users had taken a little less than 1 million acre-feet annually between World Wars I and II. The Bureau assumed that an extra 300,000 acre-feet allotted to these users would cover any foreseeable agricultural development along the Sacramento. They reckoned without the economic impact of World War II. Total diversions between Redding and Sacramento rose from 900,000 acre-feet in 1925 to about 2 million in 1951.[4]

After World War II, the Bureau attempted to collect payment for all water in excess of average pre-project diversions; at this time, negotiations began between the Bureau and the groups of diverters. In 1945, the Bureau offered to furnish without charge 1,086,000 acre-feet, but the diverters demanded 1,289,000 acre-feet. Whatever the figure agreed upon, the diverters would have to pay some price for any additional diversions. The Bureau and the diverters were unable to come to terms.

After the breakdown, the Bureau attempted to proceed to a legal determination of the issues. In preparation for a court hearing, the Bureau conducted a rather exhaustive investigation to determine "the extent and priority of all the water rights along the Sacramento River

[3] Bain, Caves and Margolis, p. 67.
[4] *Ibid.*, p. 476.

whether such rights are riparian, appropriative or prescriptive."[5] Armed by the results of this survey, the Secretary of the Interior in 1952 indicated a desire to effect a full adjudication of the water rights in a United States District Court.

When faced with the possibility of litigation, the individuals enlisted the aid of the powerful United States Representative Clair Engle who was the chairman of the Congressional Committee reporting on reclamation legislation. (In addition, the dam and the diversions were located in Mr. Engle's district.)

Engle convened a Special Sub-Committee in Sacramento in October 1952. The committee felt that "the burdensome chores and potential chaos of water rights hearings and litigation were to be greatly feared, and were to be avoided if at all possible."[6] One of Engle's proposals was to resolve these problems by the construction of a new water project—the Trinity River Project.

The Bureau decided not to go to court, but instead to make one more attempt to settle the matter. It reached a tentative agreement with the diverters, but internal dissension among the users prevented the plan from being carried out.

Another study was conducted under the joint auspices of the Bureau, the California State Engineer and some of the water users, and a new settlement seemed likely. The theory at this point seemed to employ some strange reasoning. The previous Bureau offer of 1,086,000 was based on the amounts that the diverters actually took throughout the year. However, given the pattern of water use in California, the greatest demand is during the summer. This, of course, is the period of the smallest supply. The diverters had appropriative claims during the summer that would exceed the supply if no project water had been furnished. However, with the project augmenting the supply, these claims could be satisfied. The second compromise allowed the diverters to satisfy their claims out of the augmented water supply. This still did not satisfy the diverters.

The parties then asked for a declaration by the State Water Rights Board. Extensive hearings were held, but nothing of substance was settled by this procedure. The board, in essence, suggested that the parties settle the matter among themselves.

Court adjudication appeared to be all but inevitable at this point. Nurtured by two circumstances, however, talk of settlement sprang up again. For one thing, the leader of the intransigent forces had died. For another, the Trinity project was nearing completion and its large increment of water would provide ample water for all. Still, intervention of Washington was required to effect the settlement, and the Secretary of the Interior, Stuart Udall, constituted a Special Panel in 1962 to study the matter. The panel made some recommendations that increased the free entitlement, but the Secretary himself directed that the diverters receive even more free water than the panel suggested.

Under Udall's terms, contracts were finally signed. The final settlement provided 1,789,000 acre-feet of free water to the diverters who agreed to buy an additional 500,000 acre-feet at $2 per acre-foot. The pricing of this water simply reflected the Bureau's desire to collect $1,000,000 yearly. But the Bureau collected nothing for the water during the years of controversy.

The settlement that emerged was a strange one, indeed. The contracts that were executed between the Bureau and the diverters contain escape clauses—any diverter can renegotiate if any other diverter receives better treatment. In addition, the Bureau failed to obtain satisfactory terms for extension of the contracts on expiration. The contracts are for a 40-year

[5] Bureau of Reclamation, Region II, "Sacramento River and Sacramento-San Joaquin Delta Water Rights Problems and Negotiations" (Unpublished paper, Sacramento).

[6] *Ibid.*, p. 10.

period although the project will not pay off by that time.

There is much to suggest that the Bureau was not sufficiently zealous in the pursuit of its rights. The U.S. General Accounting Office is critical of the Bureau on two interrelated counts. The Accounting Office charges that the Bureau gave away more water than was necessary and that it did not give ample consideration to whether water users:

1. Actually used the water to which they had claims but to which they could develop rights only through actual usage, and

2. Whether the diverters could without some storage facilities develop such rights.

Instead the Bureau accepted the users' claims at face value.[7]

As the General Accounting Office points out, should the users desire better terms at the end of their contracts (not an exceedingly remote possibility), litigation 60 years after the fact would be required. Furthermore, the contracts in existence could in many instances be invalidated at any time because of the failure of the Bureau to reach agreements under the equal treatment clause. In particular, two water districts—the Anderson-Cottonwood and Glenn-Colusa Districts—were supplied more water than they could reasonably use.

It is interesting to attempt an estimate of the total cost of the controversy. First, there is the matter of out-of-pocket costs. The Bureau estimates its costs at $3,600,000.[8] The GAO estimates the total cost to the government of the investigation to be about $5,000,000.

Of more concern to the economist, however, is some estimate of the total welfare loss. There are at least three ways of measuring the loss.

1. One is to assume that the loss is equal to the revenue sacrificed as a result of the controversy. The GAO estimates that 950,000 acre-feet of the water were given away by the Bureau unnecessarily. (See Table 1.) That is, the Bureau appeared to have had the law on its side in its attempt to charge for this water. It seems reasonable that the Bureau should have received $2 an acre-foot for this water since the $2 figure was finally agreed upon. The present value of the annual stream of payments of 950,000 x $2 over the assumed project life would give an estimate of the revenue foregone. The calculations use 1964 as the base year. Fifty and 100-year project lives are assumed. (See Table 2.)

2. A second revenue loss is the amount foregone by the Bureau during the controversy. If the rights had been settled in 1946 on the same terms as agreed on in the 1962-1963 settlement, the Bureau would have been collecting 500,000 x $2 during that period. (See Table 3—sums as of 1964 at varying interest rates.)

3. These estimates assume that the diverters had the right to buy all water above the natural flow. However, the Bureau had attempted to acquire these rights before building the project. Had the law allowed them to do so, 950,000 acre-feet of additional water would have been available to be shipped elsewhere. The water would then have been used in the Delta-Mendota service areas as had been the intention when Shasta Dam was built. It could also have supplied the Sacramento Canals unit consisting of the Corning and Tehama-Colusa service areas which are supplied by the Trinity Project. Therefore another gross measurement of the loss would be the benefits foregone of these units. The benefits of these units have been estimated previously by the writer.[9] To arrive at a net benefit figure, the benefits accruing to the diverters' use must be deducted. (Two dollars an acre-foot appears to be a reasonable

[7] United States General Accounting Office, Unpublished Report on the Sacramento River Diverters' Controversy.

[8] Personal letter to the writer.

[9] David L. Shapiro, *Statistical Appraisal of the Economic Efficiency of the Trinity River Division of the Central Valley Project of the United States Bureau of Reclamation*, Unpublished Ph.D. Dissertation (University of California, Berkeley, 1966), pp. 63 and 65.

TABLE 1. Schedule of Water Supplies

Base Supply (Free water)	1,800,000
Project Water (@ $2 per acre-foot)	500,000
Riparian Water (Supplied by project without charge)	250,000
Total Usage	2,550,000
Less average pre--project use	1,100,000
Net increase by project	1,450,000
Less project supply under project	500,000
Net increase in base supply over project usage	950,000

TABLE 2. Revenue Loss Based on 950,000 Acre-feet at $2 per Acre-foot
Base Year = 1964

2½%	3%	4%	5%	6%
		50 Years		
$53,887,800	$48,885,100	$40,815,800	$34,684,500	$29,945,900
		100 Years		
$69,566,600	$60,036,200	$46,557,600	$37,709,300	$31,572,300

TABLE 3. Estimated Value of Diverter Payments Lost During Controversy 1946-1964
(500,000 Acre-feet at $2 per Acre-foot) Base Year = 1964

2½%	3%	4%	5%	6%
		50 Years		
$22,386,348	$23,414,435	$25,645,412	$28,132,384	$30,905,652
		100 Years		
$22,386,348	$23,414,435	$25,645,412	$28,132,384	$30,905,652

TABLE 4. Estimated Benefits of Water in Delta-Mendota, Corning and Tehama-Colusa Areas Less Benefits to Diverters
Base Year = 1964

2½%	3%	4%	5%	6%
		50 Years		
$ 96,042,666	$ 84,113,873	$78,931,661	$50,484,033	$41,214,210
		100 Years		
$146,260,675	$111,823,778	$87,810,849	$61,251,187	$36,347,131

TABLE 5. Present Value of Capital and Operating Costs Trinity River Project
Base Year = 1964

2½%	3%	4%	5%	6%
		50 Years		
$320,315,988	$320,689,314	$323,812,348	$328,568,865	$336,792,354
		100 Years		
$332,654,502	$330,262,817	$328,332,283	$330,949,247	$336,072,208

Source: See Text

estimate of these benefits according to Bain, Caves and Margolis.[10]) The results are shown in Table 4.

The third approach is to hold that the Trinity Project would have been rendered superfluous had the rights situation been resolved. Another measure of the loss would simply be the capital expenditures on Trinity, which took about eight years to build and cost about $300 million. The estimated capital and operating costs of the Trinity River Project are shown in Table 5.

The case of the Shasta Dam controversy illustrates the deficiencies of the legal process in adjusting clear ownership externalities. The remedy for the type of misallocation detailed above is a thorough overhaul of our water law.

[10] Bain, Caves and Margolis, p. 710.