

The Colorado River*

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The Colorado River flows some 1,300 miles from its headwaters in Wyoming and Colorado to its mouth in Baja California, Republic of Mexico, where it empties into the Gulf of California, an estuary of the Pacific Ocean. The main stream and the tributaries comprising this system drain 242,000 square miles of land in the United States and 2,000 square miles in Mexico.¹ The system is the only significant source of surface water in an area bounded by the Rocky Mountains on the east and the Sierras on the west and encompassing one-twelfth of the continental United States, excluding Alaska.

The Colorado River has been the cause of bitter and protracted struggles. Control of the river means potential wealth and prosperity; without water from the river, a state may be condemned to desert and destitution. Yet, as high as the stakes are, the allocation of the waters of the Colorado River system has been accomplished largely by agreement rather than by litigation.

This Article endeavors to identify the forces that have led to the settlement of the conflicts by agreement, the nature of the settlements, and the areas of disagreement left open (intentionally or unintentionally) in the documents of settlement.

Following a description of the geography, hydrology, and economy of the basin and of the out-of-basin areas dependent upon the river (Part I), the discussion of the controversies over use of the river is divided into four sections: the Upper Basin–Lower Basin conflict, which produced the Colorado River Compact of 1922—the effective date of which was 1929 (Part II); the controversy among the states of the Upper Basin, which was resolved in large part by the Upper Colorado River Compact of 1948 (Part III); the controversy among the states of the Lower Basin, the most significant recent development in which is the decision of the United States Supreme Court in *Arizona v. California*² (Part IV). The conflict between

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1. American Section of the Int'l Water Comm'n, *United States and Mexico*, H.R. Doc. No. 359, 71st Cong., 2d Sess. 17 (1930).

2. 373 U.S. 546 (1963) (opinion), 376 U.S. 340 (1964) (decree).

the United States and the Republic of Mexico, which produced the Treaty With Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande,³ will be discussed in a subsequent article.

I. DESCRIPTION OF THE BASIN

A. Upper Basin

1. *Physical description.*

The Colorado River Basin is divided both physically and politically into two divisions, the Upper and the Lower Basins. The river and its tributaries drain some 110,000 square miles in the Upper Basin.⁴ The main stream originates in the 14,000-foot-high peaks of the Colorado Rocky Mountains, whence it flows through high mountain valleys into the arid plateau of western Colorado and eastern Utah, where it has cut deep and spectacularly beautiful canyons. The main stream is joined by two principal tributaries in this area, the Green River, which rises in Wyoming, and the Gunnison River, which rises in the Rocky Mountains south of the main stream. The Gunnison contributes an average of nearly 2 million acre-feet of water to the stream annually,⁵ and the Green contributes 4.7 million acre-feet.⁶

The main stream is also joined by a third large tributary, the San Juan River, in the arid plateau region of southern Utah, downstream from the Green and the Gunnison. The San Juan, which contributes an annual average of 2 million acre-feet to the stream,⁷ originates in the high mountains of the southwestern corner of Colorado and in its upper reaches flows through fertile mountain valleys in Colorado and New Mexico. Farther downstream it winds through canyons in the barren and deeply eroded desert plateau of New Mexico, Utah, and Arizona. The San Juan is a principal contributor to the heavy silt load of the main stream in the Lower Basin.⁸

Below the junction of the main stream and the San Juan, the Colorado meanders through desert plateaus to Lee Ferry, Arizona, the division point between the Upper and Lower Basins under the Colorado River Compact of 1922 and the point at which the Upper Basin's delivery obligation is calculated. While the average annual historic flow at Lee Ferry for the period 1911-1960 was 13,017,000 acre-feet,⁹ the discharge fluctuates widely from year to year. For example, in 1952 the flow was 17,980,000 acre-feet;

3. Feb. 3, 1944, 59 Stat. 1219, T.S. No. 994 (effective Nov. 8, 1945).

4. S. REP. NO. 128, 84th Cong., 1st Sess. 2 (1955).

5. U.S. GEOLOGICAL SURVEY, WATER SUPPLY PAPER NO. 1713, SURFACE WATER SUPPLY OF THE UNITED STATES 132 (1960).

6. *Id.* at 283.

7. *Id.* at 334.

8. U.S. DEP'T OF INTERIOR, THE COLORADO RIVER 36 (1946) [hereinafter cited as COLORADO RIVER].

9. U.S. GEOLOGICAL SURVEY, *op. cit. supra* note 5, at 335.

just two years later it was barely more than a third of that—6,116,000 acre-feet.¹⁰ These extreme variations have prompted the construction of large storage units in the Upper Basin so that the Upper Basin's delivery obligations under the 1922 compact may be met.

2. *Economy of the basin.*

The Upper Basin is an area of sparse population and limited industry. Its largest city is Grand Junction, Colorado, with a population of 18,694.¹¹ The two principal industries are ranching and mining.¹² Soils of the mountain valleys of the Upper Basin are naturally fertile,¹³ but agriculture is limited by a short growing season. Crop production is almost totally dependent upon irrigation and consists primarily of feed for livestock.¹⁴ Moving downstream to lower elevations, one encounters large areas of residual soils so shallow or so alkaline that farming is impossible; use of the land is limited to grazing by livestock.¹⁵ In its natural state the area suffered from flashflooding and erosion; overgrazing has aggravated these difficulties and added to the sediment problem.¹⁶

The second important industry of the Upper Basin, mining, has evolved from the early-day bonanzas of gold and silver mining to the mundane but orderly development of base metals.¹⁷ In addition, there is a growing oil and gas industry in the San Juan Basin¹⁸ and the potential for a shale oil industry in northwestern Colorado and northeastern Utah.¹⁹ Little water is consumed in the extractive phase of mining, but large quantities are needed to carry away wastes. Because mines are generally located in the upper reaches of streams, present concern is over pollution control, but future conflicts may develop with those interests desiring more water for irrigation.²⁰ Only a small amount of water is used in the production of crude oil,²¹ but large supplies may be needed to support communities developing around this and other mineral industries.²²

A limited quantity of irrigable land and the short growing season will

10. 13 UPPER COLO. RIVER COMM'N ANN. REP., app. D (1960-1961).

11. 1 U.S. DEP'T OF COMMERCE, BUREAU OF THE CENSUS, UNITED STATES CENSUS OF POPULATION: 1960, pt. 7, at 12.

12. COLORADO RIVER 72.

13. *Id.* at 73.

14. 2 PRESIDENT'S WATER RESOURCES POLICY COMM'N, REPORT, TEN RIVERS IN AMERICA'S FUTURE 365 (1950) [hereinafter cited as TEN RIVERS].

15. *Ibid.*

16. *Id.* at 417-24.

17. *Id.* at 405.

18. COLORADO RIVER 82.

19. TEN RIVERS 360.

20. *Id.* at 405.

21. Approximately 170,000 acre-feet per year per 500 million barrels of oil produced. *Id.* at 406. However, shale oil production in the future may require much larger amounts of water. See *Hearings Before the Subcommittee on Irrigation and Reclamation of the House Committee on Interior and Insular Affairs*, 89th Cong., 2d Sess., ser. 17, pt. 2, at 1266 (1966) (statement of Edward F. Morrill).

22. TEN RIVERS 405.

probably tend to keep the Upper Basin's population small compared to other rapidly expanding areas of the Far West. However, many communities just outside the Upper Basin are growing rapidly. A short distance beyond the perimeter of the basin are the major cities of Denver, Colorado; Salt Lake City, Utah; and Albuquerque, New Mexico. These expanding urban areas will place increasing pressure on the Upper Basin states to divert greater amounts of Colorado water to out-of-basin uses, thereby creating a conflict with agricultural interests, which believe that the river should be used principally for the expansion of in-basin irrigated acreage. Projected transbasin diversions have been estimated at some 2.7-3.0 million acre-feet annually, for use not only by Salt Lake City, Denver, and Albuquerque for municipal and industrial purposes, but also by farmers on the arid lands of eastern Colorado and Wyoming and in parts of New Mexico.²³

In addition to supplying out-of-basin users, water must be allotted to fulfill federal obligations to the approximately 140,000 Indians within the basin.²⁴ Approximately 1 million acre-feet are consumptively used for 262,000 acres of Indian land, and projections indicate that 3 million acre-feet will ultimately be required for some 610,000 acres.²⁵

3. *Water supply.*

The Colorado River originates in the web of many small streams on the western slope of the Rocky Mountain range where precipitation is heavy, ranging from 15 to a little over 30 inches per year.²⁶ Since the rains are gentle, much of the precipitation falling below the snow line percolates into the ground.²⁷ The greater part of the river's course—and of the courses of its two principal tributaries—is, however, through arid land, where maximum precipitation is 15 inches and average precipitation is 10 inches or less per year.²⁸ Moreover, much of the rain evaporates before reaching the river, and channel losses amount to about 6 per cent of the virgin flow²⁹ reaching Lee Ferry.³⁰

Uneven precipitation on the eroded terrain of southern Utah and northern New Mexico produces a heavy sediment load in the main stream, especially after it is joined by the San Juan River.³¹ The accumulation of sediment sharply decreases the utility of engineering works. One hundred

23. COLORADO RIVER 151; TEN RIVERS 444.

24. TEN RIVERS 436. The largest concentration of Indians is found in the "four corners" area of New Mexico, Colorado, Utah, and Arizona where the Navajo tribe is located.

25. *Ibid.*

26. COLORADO RIVER 124.

27. TEN RIVERS 357.

28. COLORADO RIVER 41 (facing page).

29. Virgin flow is defined as the flow of the river before man entered the basin.

30. 2 UPPER COLO. COMPACT COMMISSIONERS, RECORD, Meeting No. 7, at 19 (covering the period 1914-1945) [hereinafter cited as RECORD].

31. TEN RIVERS 429.

thousand acre-feet of sediment are deposited annually in Lake Mead, and it is estimated that 43 per cent of the storage space in the major Upper Basin projects will have to be devoted to sediment detention.³²

Another natural force affecting water supply is the growth along the river of water-consuming vegetation such as willow, salt cedar, and cottonwood trees. One estimate places the total consumption of "valley bottom vegetation" at 20 to 25 million acre-feet per year for the Upper and Lower Basins.³³

4. *Storage works and irrigation projects.*

Large-scale irrigation projects were first constructed in the Upper Basin after the passage of the Reclamation Act in 1902,³⁴ but irrigation has developed "mainly in scattered small developments on the main stream and many tributaries."³⁵

When the Upper Colorado River Compact of 1948 was negotiated, average annual depletion at the sites of use for the period 1914-1945 was as follows: (1) agricultural "cropped lands," 1,449,000 acre-feet; (2) trans-basin diversions, 43,713 acre-feet in Colorado and 79,000 acre-feet in Utah; (3) domestic use, 14,100 acre-feet.³⁶

Reservoir and evaporation losses and depletions for incidental uses for the same period brought total Upper Basin consumption to 1,923,124 acre-feet at sites of use and to 1,849,900 acre-feet of depletion at Lee Ferry.

Ratification of the 1948 compact gave new impetus to Upper Basin development and resulted in passage of the Colorado River Storage Project Act of 1954,³⁷ the present master plan for Upper Basin development. The act authorizes three types of projects: (1) major storage units, four of which were authorized so that the Upper Basin could meet its 1922 compact delivery obligations at Lee Ferry; (2) initial irrigation units, called "participating projects," eleven of which were authorized; and (3) projected irrigation units, twenty-four of which are the subject of studies authorized by the act. It has been estimated that prior uses, uses by the initial participating projects, and reservoir evaporation will consumptively use 4.187 million acre-feet annually.³⁸

The principal storage units in the Upper Basin are Flaming Gorge Dam and Reservoir at Green River, Wyoming, a multipurpose project storing 3.92 million acre-feet; Navajo Dam on the San Juan River, storing nearly

32. *Id.* at 429-30.

33. *Id.* at 439.

34. 32 Stat. 388-390 (1902) (codified in scattered sections of 5, 43 U.S.C. (1964)).

35. COLORADO RIVER 56-57.

36. 2 RECORD, Meeting No. 7, at 21. The breakdown by states for agricultural use was: Arizona, 3,790; Colorado, 821,378; New Mexico, 56,174; Utah, 384,043; and Wyoming, 183,620.

37. 6 U.S.C. §§ 620-200 (1964).

38. *Hearings Before the Subcommittee on Irrigation and Reclamation of the House Committee on Interior and Insular Affairs*, 83d Cong., 2d Sess., ser. 11, at 147 (1954).

1 million acre-feet; Curecante Dam on the Gunnison River, also with storage of nearly 1 million acre-feet and with an installed hydroelectric generating capacity of 152,000 kilowatts; and the gigantic Glen Canyon Dam on the main stream at Page, Arizona, storing 26 million acre-feet and producing 800,000 kilowatts of electric power. A number of irrigation projects are under construction in the Upper Basin and more are authorized but have not yet received appropriations for their construction.³⁹

5. *Transbasin diversions.*

The waters of the Colorado and its tributaries in the Upper Basin have long been used for transbasin diversions.⁴⁰ Early diversions were made from the Strawberry River, a tributary of the Duchesne, into the Bonneville Basin to the west and from the Colorado to the South Platte and Arkansas watersheds in eastern Colorado. Early in the 1920's, Denver, which desired additional water to support its growing munitions industry, considered large diversions totaling over 400,000 acre-feet to augment its supply. In urging negotiation of the 1922 compact, Denver stated: "We have no other source of water than the Colorado River."⁴¹ The cities of Pueblo and Colorado Springs and southeastern Colorado farming interests also urged diversion of 900,000 acre-feet per year from the Gunnison into the Arkansas Basin.⁴² At present, the largest Upper Basin transbasin diversion is the Colorado-Big Thompson project, which is being constructed by the United States Bureau of Reclamation and which supplies Denver and the eastern slope with water from the Colorado River.

Transbasin diversions were a factor considered by the parties to the 1948 compact in arriving at a state's share of the waters of the Colorado River system. Agricultural interests near the streams wanted to confine use of the state's share to those adjacent lands,⁴³ but the prevailing view in the compact negotiations was that the state had to be regarded as an integral unit and that out-of-basin growth, often industrial, should be considered in allocating the water to the states.⁴⁴

Colorado's transbasin diversions totaled 412,328 acre-feet in 1959, an amount representing steady yearly increases from 1949, when only 109,064 acre-feet were diverted. Utah diverted 111,034 acre-feet in 1959, a figure

39. 8 UPPER COLO. RIVER COMM'N ANN. REP. 14-63 (1956-1957).

40. In 1922, 115,000 acre-feet per year were being taken outside the Upper Basin. COLORADO RIVER 57.

41. 1 RECORD, Meeting No. 3, at 57.

42. 1 *id.*, Meeting No. 3, at 66. Colorado Springs indicated it might get water from Denver's project, but Pueblo claimed it was in "desperate need of water and there remains no water to be developed on the Eastern slope." *Ibid.*

43. 1 *id.*, Meeting No. 3, at 95.

44. 1 *id.*, Meeting No. 3, at 92; *see* 1 *id.*, Meeting No. 3, at 97 (Utah "can't go without some transmountain diversions.").

which represented a smaller but still constant increase from 1949, when 81,332 acre-feet were diverted.⁴⁵

B. Lower Basin

1. Physical description.

The geography of the Lower Basin was described in detail by the Special Master in *Arizona v. California*,⁴⁶ and that description is briefly summarized here. The Lower Basin contains two principal streams, the Colorado River itself and the Gila River, which rises in western New Mexico and flows westerly through Arizona to join the main stream near the international boundary. The Lower Basin is comprised mainly of basin and range province, a region of lower elevations than the Upper Basin and containing a series of northwest-trending mountain ranges, with intervening valleys and desert. Lee Ferry marks the political division between the Upper and Lower Basins on the main stream; between Lee Ferry and Hoover Dam the river passes through very rugged country characterized by deep canyons and little habitable land. Below Hoover Dam intermittent level areas suitable for cultivation are encountered, some of which are inhabited. West of the river at the international boundary of the United States and Mexico, but outside the natural drainage basin of the river, lies the Salton Basin, a large sump of 7,500 square miles containing the Salton Sea. Some of the earliest irrigation from the lower Colorado is found on both sides of the border in this area. The climate of the Lower Basin is extremely arid, but the soil is rich in many places, and with irrigation the land is extremely productive throughout a long growing season. Surface water supplies are supplemented by groundwater in some portions of the basin, especially in Arizona, but the latter source has been subjected in recent years to serious overdraft.

The principal part of the water supply of the Lower Basin is found in the main stream of the Colorado and is derived, of course, from the Upper Basin. Tributaries joining the main stream in the Lower Basin make a modest contribution averaging less than half a million acre-feet a year.⁴⁷ In many years the Gila contributes not a drop to the Colorado. For example, from 1942 to 1950 its inflow amounted to only 400 acre-feet, all of which occurred in the year 1947.⁴⁸ Even when the Gila does discharge water into the main stream, the water is not available for use in the United States, since the point of confluence is below all existing American works. Presumably

45. 12 UPPER COLO. RIVER COMM'N ANN. REP., app. E (1959-1960).

46. See Report of the Special Master 12-14 (1960), *Arizona v. California*, 373 U.S. 546 (1963) [hereinafter cited as *Master's Report*].

47. U.S. DEP'T OF INTERIOR, REPORT ON THE PACIFIC SOUTHWEST WATER PLAN III-5 (Table 7) (1963) [hereinafter cited as *WATER PLAN*].

48. *Master's Report* 122.

such inflow is a credit against the United States' treaty obligation to Mexico.

The Gila River system is nevertheless of great importance to the Lower Basin. The system and its related subsurface supply are the source of substantially all the water used in central Arizona at the present time. It was estimated by the Commissioner of Reclamation in 1963 that a firm water supply of approximately 2.3 million acre-feet per year is available at diversion points on the Gila system to users in the area. One million acre-feet are from surface supply and the remainder comes from a safe annual yield of groundwater basins. In fact, to maintain the Arizona economy, a substantial overdraft (estimated to amount to an additional 2.2 million acre-feet annually) has been imposed on groundwater basins, and groundwater tables fell as much as 180 feet during the period 1952-1959.⁴⁹

2. *Economy of the basin.*

The economy of the Lower Basin—excluding out-of-basin areas using Colorado River water—is based primarily on agriculture. In second place, but some distance behind, are mining and manufacturing, followed by recreation and service industries.

The principal farming areas in the United States' portion of the Lower Basin are the Palo Verde Valley, near Blythe, California; the Imperial and Coachella Valleys, in the Salton Sink; the territory around Yuma, Arizona, near the confluence of the Gila and Colorado Rivers, where there are several large-scale reclamation projects in both Arizona and California; and the central Arizona region, which is centered in Phoenix and has a number of irrigation projects using surface water from the Gila and its tributaries together with substantial amounts of groundwater.⁵⁰ Agriculture in the Lower Basin is wholly dependent upon irrigation; and the controversy between Arizona and California, discussed in Part IV of this Article, arose in part from the desire of Arizona to bring supplemental water from the main stream of the Colorado to the region.⁵¹

The crops raised in the Lower Basin vary from district to district and, to a lesser extent, vary within a given district from year to year. Generally speaking, they include cotton, feed grains, citrus fruits, melons, and specialty crops such as dates.

Outside the basin, the sprawling metropolitan areas of southern California receive water from the Colorado through the Colorado River Aqueduct. Two major cities, Los Angeles and San Diego, are served by this system, together with many smaller municipalities and other entities that are

49. *Hearings on S. 1658 (Central Arizona Project) Before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs*, 88th Cong., 1st & 2d Sess. 45 (1963) (statement of Floyd E. Dominy, Commissioner of Reclamation).

50. *Master's Report* 45-60.

51. *Hearings on S. 1658 (Central Arizona Project)*, *supra* note 49, at 168-71.

members of the Metropolitan Water District.⁵² In Nevada three municipalities receive water from the main stream: Las Vegas, Henderson, and Boulder City.

3. *Water supply and principal storage works.*

As noted above, the only important source of main-stream water for the Lower Basin is the Upper Basin, and the flow is extremely erratic. Beginning with the year 1929, for example, we find a high flow of 19.2 million acre-feet, followed the next year by 13.1 million acre-feet, then a low flow in 1931 of 6.4 million acre-feet, rising in 1932 to 15.3, in 1933 dropping to 9.7, and in 1934 reaching a record low of 4.4, only to rise again in 1935 to 9.9—all figures being the measured, historic flow at Lee Ferry.⁵³ For the period 1896–1963 the average historic flow at Lee Ferry was 13.4 million acre-feet, and the reconstructed virgin or undepleted flow for the same period was 14.9 million acre-feet.⁵⁴

Both Hoover and Glen Canyon Dams were built to regulate and even out this variable supply. Glen Canyon Dam, besides generating power revenues to pay for the Upper Colorado River Storage Project, provides enough storage capacity to enable the Upper Basin to meter its water deliveries to the Lower Basin rather precisely, a practice that has already caused some friction between the two basins. Hoover Dam, with an active storage capacity of 27.2 million acre-feet, and a smaller regulating dam 67 miles downstream, Davis Dam, enable the Bureau of Reclamation, which operates the river, to make weekly deliveries of water to customers along the entire reach of the river, including Mexico.⁵⁵ For example, farmers in the Imperial Valley report their needs for the next week to an office in the district. The orders are totaled and transmitted to the Boulder City office of the Bureau (located at Hoover Dam), and in due course water is released at the dam in time to reach each farmer in accordance with his order.

Two other dams on the main stream, Parker and Imperial, serve respectively as diversion structures for the Colorado River Aqueduct (leading to Los Angeles) and for the All-American Canal (serving Imperial and Coachella Valleys). The Colorado River Aqueduct is 242 miles long and is designed to transport 1.3 million acre-feet per year.⁵⁶ Morelos Dam is the last structure on the main stream in the United States and was built under the Mexican water treaty of 1944 to serve as the diversion point for the Mexican irrigation works.⁵⁷

52. See generally *Master's Report* 61–71.

53. *Id.* at 117.

54. *WATER PLAN* III–1.

55. *Master's Report* 32–33.

56. *Id.* at 39.

57. *Id.* at 36.

The only important tributary waters, the Gila system, which consists of the Gila main stream and the Salt and Verde Rivers, are fully developed in central Arizona in the general vicinity of Phoenix.⁵⁸

The last major development contemplated for the Colorado River in the Lower Basin is the diversion of water from the main stream to central Arizona to relieve the overdraft on groundwater supplies. Several plans have been put forward, at least one of which contemplates dams at each end of the Grand Canyon, the power revenues of which would help finance the project.⁵⁹ The current status of the Central Arizona Project will be developed later in this Article.

C. Mexico

The Colorado River flows approximately one hundred miles in Mexico, forming the international border for a few miles and then crossing into Mexico to become the border between the Mexican states of Baja California on the west and Sonora on the east. Roughly one thousand square miles of the Salton Basin lie in Mexico and some of this land (primarily in the Mexicali Valley) has been irrigated from the Colorado for many years.⁶⁰ In addition, Colorado River water is used in the vicinity of San Luis, Sonora, Mexico. The author has been unable to obtain reliable information about the amount of Mexican land irrigated from the Colorado, but records are available showing water deliveries to Mexico as follows:⁶¹

YEAR	ACRE-FEET (MILLIONS)
1959	3.2
1960	2.5
1961	1.8
1962	2.0
1963	2.0

II. UPPER BASIN-LOWER BASIN CONFLICTS

A. Negotiation and Ratification of the 1922 Compact

The 1922 compact grew out of conditions that are commonly present in interstate and international disputes over river systems. Lower states tend to develop first and to continue to develop at a faster rate than upper states. Such development causes the upper states to fear that downstream uses will have exhausted the supply before they are able to use the water originating within their own boundaries.⁶² But the lower states have their

58. *Id.* at 39-43.

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

60. *Hearings on the Treaty With Mexico Relating to the Utilization of the Waters of Certain Rivers Before the Senate Committee on Foreign Relations*, 79th Cong., 1st Sess. 73-78 (1945).

61. *Hearings on S. 1658 (Central Arizona Project)*, *supra* note 49, at 493-94.

62. These fears were prevalent in the Upper Basin states before and during the ratification of



LEGEND
 Reservoirs
 Constructed
 Proposed

COLORADO RIVER BASIN

TIPTON AND KALMBACH, INC. - ENGINEERS
 DENVER, COLORADO AUGUST, 1965

problems, too. There is always the danger that the upper states will simply shut off the water. In the United States, of course, the Supreme Court can prevent the upper state from persisting in this drastic course of action, but the Court has been indulgent of later developing upper uses, even though they diminish the supply available to earlier downstream users.⁶³ Moreover, the downstream state cannot be sure of getting into the Supreme Court, since in many cases the United States will be an indispensable party whose consent to be sued must be obtained.

Thus, upper states' need for protection against monopolization of the water supply by lower states and lower states' need for a secure supply produce favorable conditions for the settlement of disputes by agreement. Almost as important in prompting negotiated settlements is the lower states' need for river regulation to prevent floods and to provide, through storage, a stable supply in dry years. In the early part of the twentieth century, these fears and these needs were felt throughout the Colorado River Basin.

The Supreme Court described the situation thus:⁶⁴ Lower Basin interests had from the early part of the century agitated for regulation of the river in its lower reaches. Particularly interested were the farmers in California's Imperial Valley, who had suffered a disastrous flood in 1904-1905 and who feared a recurrence. Moreover, Imperial Valley was supplied with irrigation water through canals and works in Mexico, which subjected them to the uncertainties of dual sovereignty and to the requirement that the water be shared with Mexican users. Imperial Valley and other users also sought storage on the river to provide a supply in times of drought and to reduce the silt burden of the stream. Investigation of river control possibilities soon revealed that the magnitude of the project would for both financial and legal reasons require the participation of the federal government. Such participation depended, at least in part, on the assent (or, perhaps, acquiescence) of the federal representatives of Upper Basin interests. The Upper Basin was fearful that construction of the dam in the Lower Basin would give to Lower Basin users legally enforceable claims to a disproportionate amount of river water. These fears were not without foundation, for in 1922 the Supreme Court of the United States had declared "priority of appropriation"⁶⁵ to be the governing rule in litigation between states for the equitable apportionment of a stream.⁶⁶ With the

the 1922 compact and were intensified by the decision in *Wyoming v. Colorado*, 259 U.S. 419 (1922), which gave great weight to priority of appropriation in interstate equitable apportionment suits. See *Arizona v. California*, 373 U.S. 546 (1963); Wilbur & Ely, *The Hoover Dam Documents*, H.R. Doc. No. 717, 80th Cong., 2d Sess. 22 (1948).

63. See, e.g., *Colorado v. Kansas*, 320 U.S. 383 (1943); *Kansas v. Colorado*, 206 U.S. 46 (1907).

64. The following description is summarized from the majority opinion in *Arizona v. California*, 373 U.S. 546 (1963).

65. Priority of appropriation can be defined with substantial accuracy as being a rule of "first in time is first in right."

66. *Wyoming v. Colorado*, 259 U.S. 419 (1922).

Lower Basin guaranteed water from storage and with the Lower Basin and, especially, California, growing at a phenomenally rapid rate, the Upper Basin felt it could not accede to the storage needs of the Lower Basin without assurance that some water would be left for future Upper Basin use. Thus, the scene was set for an agreement between the two interests that would give the Lower Basin the river regulation it needed and would preserve a supply of water for use by the Upper Basin in the future.

But the desirability of reaching an agreement—even the dire necessity of reaching an agreement—does not always produce agreement, the Jordan River controversy being but one example. In the case of the Colorado, however, agreement was forthcoming in a comparatively short time. Serious attention was focused on the problem shortly after the conclusion of World War I, and compact commissioners were appointed by the states and by the federal government in 1921 and early 1922. The federal representative was Herbert Hoover, then Secretary of Commerce (and later the President who promulgated the compact). Hoover was elected chairman of the commission and was a dominant figure throughout the proceedings. After desultory meetings in Washington and various state capitals in the West, the commission settled down in the Bishop's Lodge, outside Santa Fe, New Mexico, and in the short space of two weeks (November 9 to November 24, 1922) turned out the compact. No doubt it would be ungrateful to remark that perhaps speedy agreement was bought at the price of clarity of meaning, but the fact remains that many observers are uncertain in their understanding of the document. A close examination is made of its provisions in the next section.

Once the compact itself had been signed, ratification took six years. From the first, Arizona steadfastly refused to join. Although the six other states thereupon waived the requirement of seven-state approval, Utah had a later change of mind and blocked ratification by withdrawing her consent. In 1928 Congress approved a six-state compact,⁶⁷ and thereafter Utah affirmed its original ratification. Finally, on June 25, 1929, President Hoover proclaimed its effectiveness.⁶⁸ Arizona did not ratify until 1944.

B. *The Provisions of the Compact Described and Analyzed*

Article I states the purposes of the compact.⁶⁹ Article II contains definitions, several of which merit special attention. The "Colorado River Sys-

67. The Colorado River Compact was approved by Congress in § 13(a) of the Boulder Canyon Project Act, 45 Stat. 1064 (1928), 43 U.S.C. § 617l (1964).

68. The Presidential Proclamation declaring the compact and act to be in effect was issued June 25, 1929. 46 Stat. 3000 (1929). For details of the negotiation, ratification, and congressional consent to the 1922 compact, see Wilbur & Ely, *op. cit. supra* note 62, at 17-23, 32-44, 60-63.

69. The full text of the compact is reprinted in many places. *E.g.*, U.S. DEP'T OF INTERIOR, DOCUMENTS ON THE USE AND CONTROL OF THE WATERS OF INTERSTATE AND INTERNATIONAL STREAMS 39 (1956); Wilbur & Ely, *op. cit. supra* note 62, at A17.

tem" is defined as including the river and its tributaries in the United States; thereafter, the compact deals with the system, except in a few instances where it explicitly deals with the main stream. The "Colorado River Basin" is defined as including not only the natural drainage area of the river system but any other territory in the United States to which the waters of the river are beneficially applied. Thus, it contemplates transbasin diversions. Article II also divides the basin into two sub-basins, selecting as the division point Lee Ferry, Arizona—a recognition of the natural division of the drainage area into upper and lower basins with diverse economic interests. Finally, "domestic use" is defined to exclude hydroelectric power generation.

Article III contains the apportionment, which is designed to reserve water from the system for future development in each basin. Article III(c) recognizes the possibility of a treaty with Mexico requiring the delivery to her of Colorado River water, and it provides for the discharge of the treaty obligation by the two basins. Article III(d) establishes the duty of the Upper Basin to deliver a specified quantity of water to the Lower Basin. Other provisions of this article deal with future division of water not apportioned in the compact, setting forth the conditions and procedures for initiating a further apportionment.

Article IV(b) is relevant to this study because it establishes a preference for agricultural and domestic uses of Colorado water over use for power generation. Article V requires certain state and federal officials to cooperate in gathering and disseminating information regarding run-off and use of system water. No compact provision establishes a commission or other permanent agency for administration of the agreement. Instead article VI contemplates the appointment of *ad hoc* commissioners to settle controversies arising between the signatory states. The concluding paragraph of this article preserves the states' rights to pursue other modes of settlement, a choice of remedies reiterated in article IX, which specifically preserves the right of the states to litigate controversies arising under the compact.

One other article of the compact is relevant to this study. Article VIII deals with the rights of downstream users against upstream users in the event that storage should be provided for the benefit of the former. After declaring that present perfected rights are unimpaired by the compact, article VIII in effect transforms such Lower Basin rights into rights against the reservoirs. The compact accomplishes this change while protecting present perfected rights by conditioning the substitution upon the construction of reservoirs of sufficient size to satisfy existing claims of up to 5 million acre-feet. In fact, the reservoir that was constructed (Lake Mead at Hoover Dam) had a capacity of 32 million acre-feet.

1. *Analysis of compact provisions.*

Article I begins and ends with a declaration that the compact applies the principles of equitable apportionment:

The major purposes of this compact are to provide for the equitable division and apportionment of the use of the waters of the Colorado River System To these ends the Colorado River Basin is divided into two Basins, and an apportionment of the use of part of the water of the Colorado River System is made to each of them with the provision that further equitable apportionments may be made.

Article II, the definitional section, is of great importance in understanding the compact's apportionment scheme. The compact does not attempt to apportion water among the individual states; it is directed solely to the legal relationship of the Upper Basin states and the Lower Basin states as entities. As has been seen and will be seen in greater detail, this was but a beginning in the effort to achieve an equitable sharing of the waters of the Colorado. The long canyon section of the river in the southeastern part of Utah and the north-central and northwestern parts of Arizona provided the natural division in the river between the arable land in the mountain valleys of the Upper Basin and the arable but extremely arid land in the Lower Basin. The compact merely took account of the common interests of the Upper Basin states, the common interests of the Lower Basin states, and the conflict of interest between the two basins, all of which interests were produced by geography.

Article III contains the apportionment or, more accurately, contains one apportionment and contemplates another in the future.⁷⁰ Great care must be taken in considering the effect of article III, for its meaning is not entirely self-evident; conflicting interpretations have abounded in the past and no doubt will continue to flourish. The Supreme Court has not yet

70. The text of article III(a)-(e) follows:

"(a) There is hereby apportioned from the Colorado River System in perpetuity to the Upper Basin and to the Lower Basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which may now exist.

"(b) In addition to the apportionment in paragraph (a), the Lower Basin is hereby given the right to increase its beneficial consumptive use of such waters by one million acre-feet per annum.

"(c) If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the Colorado River System, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then, the burden of such deficiency shall be equally borne by the Upper Basin and the Lower Basin, and whenever necessary the States of the Upper Division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (d).

"(d) The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact.

"(e) The States of the Upper Division shall not withhold water, and the States of the Lower Division shall not require the delivery of water, which cannot reasonably be applied to domestic and agricultural uses."

undertaken a comprehensive construction of the compact, leaving as perhaps the most authoritative commentary on the text the analysis of the Special Master in *Arizona v. California*, whose report to the Supreme Court sets forth in some detail the meaning of the compact. Several conclusions reached by the Master in construing the compact merit attention here.⁷¹

(1) The apportionment is not confined to main-stream water but applies to water uses on both the main stream and the tributaries.

(2) The apportionment of article III(a) and (b) of 7.5 million acre-feet to the Upper Basin and 8.5 million acre-feet to the Lower Basin is a limitation on use—a ceiling placed upon the “beneficial consumptive use” of water from the Colorado River System—rather than a grant of specified quantities of water. As between the basins, the Upper can acquire no firm rights in uses in excess of 7.5 million acre-feet and the Lower, no firm rights in uses in excess of 8.5 million acre-feet. The effect of these limitations is twofold. Article III(a) confines the claims of existing users (as of 1922) in each basin to an aggregate of 7.5 million acre-feet; no vested rights in excess of that amount will be recognized as antedating the compact. However, the Lower Basin is permitted to increase its uses to 8.5 million acre-feet under III(b); but this increase in use cannot qualify as a “present perfected right.” Secondly, these limits on use inferentially define the word “surplus,” a term of operative significance with respect both to a future apportionment and to the burden of supplying Mexico with water under any future treaty.

While it is not entirely clear, the apparent theory of the compact is that the basins may develop their respective uses up to a maximum of 7.5 million acre-feet in the Upper Basin and 8.5 million acre-feet in the Lower Basin. Any water not needed to supply such uses is “surplus.” Pursuant to article III(c) surplus is to be used first to supply Mexico if the United States should obligate itself by treaty to deliver Colorado River water to that country. Under articles III(f) and (g) the remaining surplus was to become available for further division by compact after October 1, 1963, if and when either basin had utilized its full apportionment.

(3) The ceiling on appropriations is measured in terms of “beneficial consumptive use,” a term not defined in the compact. As will be more fully developed later, the two basins disagree over the meaning of this term, each advocating a method of measuring uses that favors itself. There seems to be general agreement that the adjective, “beneficial,” modifying “consumptive use,” puts some limit, however vague, on the nature and manner of use.

71. The report of the Special Master, Simon H. Rifkind, in *Arizona v. California* is dated December 5, 1960, and was received by the Supreme Court on January 16, 1961. 364 U.S. 940 (1961). The Special Master's analysis of the compact appears in *Master's Report* 138-51.

To these conclusions of the Special Master two more observations may be added.

(4) Since sections (a) and (b) of article III impose limits on the amount of consumptive use and do not constitute grants of title to water, the actual grant occurs in article III(d), which prohibits the Upper Basin from depleting the flow of the river at Lee Ferry below an aggregate of 75 million acre-feet in any period of ten consecutive years, measured "in continuing progressive series." This article together with the regulating reservoirs at Glen Canyon (Lake Powell) and Hoover Dam (Lake Mead) should ordinarily cause the Lower Basin to have available at Lee Ferry an average annual supply of 7.5 million acre-feet of water in the main stream—plus inflow and less reservoir evaporation and channel losses between Lee Ferry and the final points of diversion.

The delivery obligation imposed by article III(d) establishes a minimum, in that article III(e) prohibits the Upper Basin from withholding any water which cannot reasonably be applied to domestic and agricultural uses. If the Lower Basin can apply to such uses any such excess water, it can require the water's delivery. Since "domestic use" is defined in article II(h) to exclude the generation of electrical power, the Lower Basin cannot require the delivery of excess water for power generation, and the Upper Basin cannot store water for that purpose when Lower Basin needs for other uses are unsatisfied. In a contest between the basins over the generation of power with water in excess of article III(d)'s 75-million-acre-feet obligation, article III(e) seems to create an impasse because the Upper Basin cannot withhold and the Lower Basin cannot demand water for such use. Article IV(b), which permits the storage and use of water for power generation, does not resolve the problem, for it merely provides a preference for agricultural and domestic uses over hydroelectric use and establishes no priority between competing hydroelectric uses.

(5) Finally, the provisions of article III(c) contemplate the execution of a treaty with Mexico and provide for the discharge of the burden of supplying water under the treaty. A treaty has been concluded under which Mexico has the right to receive 1.5 million acre-feet per year. It has already been noted that the Mexican burden is to be supplied first from any "surplus." If surplus is insufficient, article III(c) requires the two basins to bear the burden of the deficiency equally.

The meaning of these provisions is difficult to determine. Read literally, article III(c) would operate in the following manner. First, the article assumes that under article III(a) and (b) the supply can and will be diminished in the year in question by 16 million acre-feet. If it is then determined that in such year the supply will exceed 16 million acre-feet of consumptive use, there is "surplus" which will go to supply Mexico. If, however, the

supply exactly equals, or is less than 16 million acre-feet, there is then a deficiency which is to be shared equally. Thus, if the supply is 15 million acre-feet and if the Upper Basin is in fact using only 3 million acre-feet, but the Lower Basin is consuming its full apportionment of 8.5 million acre-feet, the Lower Basin would have to cut back in order to supply Mexico, under this literal reading of III(c).

A second question relates to the right of the Upper Basin to satisfy III(c) over a ten-year period. Since article III(d) is expressed as a ten-year requirement of 75 million acre-feet, arguably the Upper Basin has satisfied its III(c) obligation if it has supplied an additional 7.5 million in the preceding ten-year period (750,000 being one-half of the 1.5 million owed annually to Mexico). The contrary argument is that article III(c) operates on a year-to-year basis and that the Upper Basin therefore gets no credit for any water in excess of that 75 million contributed in the previous ten-year period.

Cutting across this analysis are the provisions of article III(e), which may require the Upper Basin to deliver from storage that amount of water necessary to satisfy Lower Basin needs if the Upper Basin cannot use the water for agricultural and domestic purposes. Thus, article III(c) could require release of water to Mexico by the Lower Basin, but article III(e) could require the release of replacement water to the Lower Basin for agricultural and domestic use.

Finally, there is the question of the delivery point of the Upper Basin's share of the deficiency. Is the Upper Basin's obligation satisfied by delivery of one-half the deficiency at Lee Ferry or is the Upper Basin required to deliver enough water at Lee Ferry to satisfy one-half the obligation at the Mexican border? The difference is substantial because of heavy channel and reservoir evaporation losses between Lee Ferry and the border.

2. Summary and conclusions.

The Colorado River Compact recognizes and applies the doctrine of equitable apportionment in resolving a controversy over the use of the waters of a successive river—that is, a river that flows through two or more states but does not necessarily form their boundary. In conception, the compact has some noteworthy merits. The agreement recognizes that upper riparians and lower riparians may develop at different rates and guarantees a supply to both riparians by limiting the lower riparian's ability to build up claims by the expansion of uses. It permits one state to make temporary use of water originating in a less fully developed state, but provides that uses in excess of the apportionment are subject to termination when the latter state needs the water. It also recognizes that a settlement between two

of three riparians should make provision for the possibility of a subsequent treaty with the remaining riparian.

In execution, as distinguished from conception, the compact has some serious shortcomings. The limit on appropriation of water is expressed in terms of "beneficial consumptive use," a term not defined in the document. The method of satisfying third-party claims is far from clear: when is there a deficiency, and what amount is the Upper Basin required to supply to satisfy the deficiency? Article III(e) is pregnant with problems of interpretation which have already been noted. Furthermore, while the compact wisely includes tributary supply and uses in the apportionment scheme, it does not establish a truly systemwide accounting procedure, since no express provision brings related groundwater within the compact's compass.

Thus, the 1922 compact solves some problems but leaves others unsolved and, in fact, by its language creates problems that have become the subject of continuing controversy.

C. *Continuing Controversies*

At least five controversies were not laid to rest by the 1922 compact. Three of the problem areas were considered briefly in the preceding section: (1) the standard for measurement of "beneficial consumptive use," (2) the priority for releases of water for electric power generation, and (3) the method of sharing the Mexican treaty obligation. They are all disputes of which the compact negotiators were aware but failed to resolve because of imperfections of language and perhaps because of an underlying lack of agreement.

In addition to the three problems touched on by the compact, there are two more unresolved problems which the compact makes no overt effort to solve and which were perhaps not recognized by the negotiators: (4) the quality of water that the Upper Basin must deliver to the Lower Basin and (5) the proper procedure for accounting for the use of groundwater tributary to the surface system.

Controversy over these matters has already arisen, is likely to sharpen in the future as uses increase, and may well result in litigation if the water shortage persists. If, on the other hand, the Pacific Southwest Water Plan is enacted and a plentiful supply is imported into the basin, the ambiguities will be submerged by the flood of extra water, for litigation over water in the West seems inversely proportional to supply. Each of the five controversies is considered in turn.

1. *Beneficial consumptive use.*

As heretofore noted, the compact does not define the term "beneficial consumptive use" as employed in apportioning water between the basins

in sections (a) and (b) of article III. There is some evidence that the two basins disagree over the definition of this term.⁷² Article VI of the Upper Colorado River Compact (the 1948 agreement of the four Upper Basin states) provides that "the quantity of the consumptive use of water, which is apportioned by Article III hereof, for the Upper Basin [shall be determined] . . . by the inflow-outflow method in terms of man-made depletions of virgin flow at Lee Ferry (net depletion)"⁷³ On the other hand, section 4(a) of the Boulder Canyon Project Act, which governs the division of main-stream water among the three Lower Basin states, defines consumptive use as "diversions less returns to the river."⁷⁴

The "net depletion" formula takes account of the fact that the Colorado River system is, on the whole, a wasting stream—that is, a stream that loses water as it flows to its mouth. The net depletion formula does not charge users for water they apply to beneficial use if the water would have been lost anyway in a state of nature. Two examples suffice to make the point. Suppose a stream naturally overflows a meadow, and a farmer enters and converts the meadow to a pasture for his livestock. This beneficial use of water would not be charged under the "net depletion" formula. The use of salvaged water is also not charged. Suppose an oxbow in the channel is eliminated by an artificial cut, decreasing losses from evapo-transpiration and from percolation to groundwater. This salvaged water may be used without charge under the net depletion formula. As a general proposition, apart from the effects of channelization, increased consumptive use decreases channel losses downstream because there is less water in the stream to be lost.

On the other hand, under the formula "diversions less return flows to the river," users are charged with actual consumption at the sites of use. The Upper Basin naturally advocates the "net depletion" definition of "beneficial consumptive use," while the Lower Basin contends for "diversions less return flows."

This dispute over the meaning of consumptive use must be resolved not only in construing article III(a) and (b) but also article III(c) of the compact, because article III(c) defines "surplus" as the excess over the aggregate of the apportionments in article III(a) and (b) (which, of course, are expressed in terms of "beneficial consumptive use"). As heretofore indicated, the Special Master in *Arizona v. California* construed the compact in dictum as adopting the formula "diversions less return flows."⁷⁵

72. See Clyde, *Conflicts Between the Upper and Lower Basins on the Colorado River*, in *RESOURCES DEVELOPMENT: FRONTIERS FOR RESEARCH* 113, 129-31 (Western Resources Conference 1960).

73. 63 Stat. 35 (1949).

74. 43 U.S.C. § 617c(a) (1964).

75. *Master's Report* 148.

2. *Hydroelectric power.*

The discussion above noted that article III(e) seems to create an impasse on the release of water for generation of electric power. The issue is one of growing significance with the closing in of Glen Canyon Dam, for now the Upper Basin has the physical means of withholding water if it can establish the legal right to do so. The article provides that the Lower Basin cannot demand water unless the water can be applied in the Lower Basin to domestic and agricultural uses and similarly that the Upper Basin cannot withhold water except for application to such uses. "Domestic uses" are defined in article II(h) to exclude generation of power. In addition to this internal problem of article III(e), there is also the problem of the relationship of article III(e) with article III(d), which provides for the delivery of 75 million acre-feet at Lee Ferry every ten years "reckoned in continuing progressive series." Does article III(d) establish the Upper Basin's minimum obligation, so that article III(e) applies only to water in excess of such amount, or does article III(e) modify the Upper Basin's III(d) delivery obligation? Several hypothetical cases illustrate the difficulties.

Case 1. Runoff is so low that the minimum of 75 million acre-feet has not been supplied at Lee Ferry in the previous ten years. The Lower Basin, however, does not need additional water for agricultural and domestic uses but rather demands it for hydroelectric power purposes. In order to comply with the demand, the Upper Basin will be required to reduce its agricultural and domestic uses. Does article III(e) permit the Upper Basin to avoid the III(d) obligation? The question, though unlikely to arise, nevertheless has relevance to an interpretation of the two sections. If we say that the Upper Basin is relieved of the III(d) obligation in this case, then we have concluded that article III(d) does not provide the minimum amount of water that the Upper Basin must deliver under all circumstances. Such a conclusion furnishes an argument, but not a conclusive one, in support of definite answers to the next two hypothetical cases.

Case 2. By withholding water through storage, the Upper Basin, while having only 3 million acre-feet of consumptive use, has delivered to Lee Ferry only 70 million acre-feet in the last ten years. The Lower Basin consumptive uses have been fully satisfied, but the Lower Basin nevertheless demands release of an additional 5 million acre-feet to be used for generation of power. It could be argued that, in the light of the answer to *Case 1*, we have decided that article III(e) modifies article III(d); hence, the Lower Basin cannot require delivery of the 5 million. In other words, if the Lower Basin cannot demand water for power purposes in one case, it cannot demand water for such purposes in any case because III(e) prohibits such a demand.

However, the two cases are distinguishable. In *Case 1* article III(e) was construed to relieve the Upper Basin of its III(d) obligation when the granting of the Lower Basin's demand for power water would have reduced established agricultural and domestic consumptive uses. In *Case 2* satisfaction of the III(d) obligation would have no effect upon such Upper Basin consumptive uses. Thus, the following interpretation of article III(d) and III(e) seems reasonable: the Upper Basin must supply 75 million acre-feet to the Lower Basin in each progressive ten-year period, although some of this water is used to generate power in the Lower Basin, provided, however, that the Upper Basin may reduce deliveries below that figure to maintain existing agricultural and domestic uses where the water withheld would be used by the Lower Basin to generate electric power. While this result requires a distributive reading of article III(e), it conforms with article IV(b), which in general terms declares a preference for domestic and agricultural uses over uses for generating electric power.

Case 3. The Upper Basin has delivered in the prior ten-year period 75 million acre-feet at Lee Ferry. After satisfying all Upper Basin agricultural and domestic uses, the supply still exceeds 75 million, and the excess has been stored in Lake Powell. The Lower Basin demands some of the excess for generation of power at Hoover Dam, but the Upper Basin retains the water as a reserve against future III(c) and III(d) obligations and for hydroelectric power generation. It is this third case that is the most difficult to solve under the compact.

In an article dealing with interbasin conflicts, Edward W. Clyde, a leading water lawyer of the Upper Basin, notes that from the first there was disagreement on the matter.⁷⁶ A. P. Davis, Commissioner of Reclamation in the 1920's, took the position that all water not beneficially used for agricultural and domestic purposes in the Upper Basin must be allowed to run down to the Lower Basin.⁷⁷ The State of Colorado has taken exactly the opposite position: the Upper Basin may impound in Lake Powell all the water of the Colorado "except waters required . . . to pass Lee Ferry for downstream domestic and agricultural purposes, not to exceed 75,000,000 acre-feet in any consecutive ten-year period" plus the Upper Basin's share of the Mexican burden.⁷⁸ When the ratification fight was in progress, Herbert Hoover submitted written answers to a series of questions on the interpretation of the compact. One such question and answer was:

Question 14. Can paragraph (d) of Article III be construed to mean that the States of the upper division may withhold all except 75,000,000 acre feet of water within any period of 10 years and thus not only secure the amount to which they

76. Clyde, *supra* note 72, at 119.

77. See Wilbur & Ely, *op. cit. supra* note 62, at A56.

78. Clyde, *supra* note 72, at 119.

are entitled under the apportionment made in paragraph (a) but also the entire unapportioned surplus waters of the Colorado River?

[Answer] No. Paragraph (a) of Article III apportions to the upper basin 7,500,000 acre-feet per annum. Paragraph (e) of Article III provides that the States of the upper division shall not withhold water that cannot be beneficially used. Paragraphs (f) and (g) of this article specifically leave to further apportionment water now unapportioned. There is, therefore, no possibility of construing paragraph (d) of this article as suggested.⁷⁹

To paraphrase an old song, "No, we have some bananas!" Clyde quotes Hoover again as noting further "in his answer to Question 17 that probably neither basin would particularly benefit from the provisions of Article III(e), for that paragraph 'applies only to an unreasonable or arbitrary withholding or demand.'"⁸⁰

Clyde's conclusions on *Case 1* and *Case 2* would be the same as those reached here. He then concludes that where there is excess water over the domestic and agricultural needs of the Upper Basin and where the 75-million delivery obligation has been satisfied the Upper Basin can withhold the excess water for power or carry-over storage. Clyde argues:

It is harder to support this statement by reference to the language in the compact—in fact, there is no express provision to this effect. Still, on a priority basis, when the first rights have been filled, secondary rights then come into play, and where the compact expressly requires the delivery of 75,000,000 acre-feet during each ten-year period it seems to me that there is at least a negative implication that from the apportioned water the upper basin need release no more.⁸¹

While the issue may ultimately be resolved by litigation in the Supreme Court, in the meantime the final authority will continue to be the man who operates the storage works on the river on behalf of the United States as owner—the Secretary of the Interior. Given the fact that seven states, fourteen Senators, and an oversized platoon of Congressmen are involved, the Secretary's discretion is hardly unfettered, but, until the Supreme Court speaks, the decision is inescapably the Secretary's.

In 1964 Secretary Udall exercised his power by opening the gates at Glen Canyon Dam to provide water for power production at Hoover Dam. Lake Powell at the time had filled only to one-half the power production level, and the order would necessarily reduce Upper Basin power revenues, which are used to pay for irrigation projects. The reaction was swift and vigorous: Ed Johnson, former Governor of Colorado and a member of the Upper Colorado River Commission, described Udall's order simply and directly as theft.⁸² Udall met with the governors of the Upper Basin states

79. 64 CONG. REC. 2710-13 (1923), reprinted in Wilbur & Ely, *op. cit. supra* note 62, at A38.

80. Clyde, *supra* note 72, at 119.

81. *Id.* at 127.

82. Western Water Congress Newsletter, June 23, 1964.

in a closed meeting on May 15, 1964. The press announcement at the end of the meeting left little doubt that Udall intended to meet the commitments of the Hoover Dam power contracts so far as possible and that he intended to charge the Upper Basin for the cost of any replacement power required to be purchased because of the detention of water at Glen Canyon. At the same time, Udall announced that he had ordered a ten-per-cent reduction in water use at all points of delivery in the Lower Basin—an order that withstood later court attack.⁸³ At the time of this writing, the two basins have worked out an operating agreement for Glen Canyon and Hoover Dams and have incorporated it as title VI of the committee print of H.R. 4671.⁸⁴ The title directs the Secretary of the Interior to promulgate “equitable criteria for the coordinated long-range operation of the reservoirs” on the Colorado River system. The criteria are to be reviewed annually after comments have been received from the seven basin states and from parties with United States contracts affected by the operation of the reservoirs. The Secretary is generally directed to operate the dams to assure the availability of water to supply the consumptive uses apportioned by the 1922 compact, and he is specifically bound by the following priorities:

(1) Water is to be released from Lake Powell for Mexico when necessary to satisfy the Upper Basin’s article III(c) obligation to supply half the deficiency arising from the treaty requirement. The bill does not undertake to define “deficiency” or to determine whether the delivery point is Lee Ferry or the international boundary.

(2) Releases are to be made from Lake Powell to satisfy the Upper Basin’s article III(d) obligation to deliver at Lee Ferry 75 million acre-feet in running periods of ten successive years.

(3) After the first two priorities are satisfied, carry-over storage in Lake Powell is permitted as a reserve against future demands for article III(c) and III(d) water. Such carry-over storage is limited to the amount necessary to protect Upper Basin consumptive uses from impairment by calls under the first two priorities.

(4) Water not required for storage to protect Upper Basin consumptive uses against article III(c) and III(d) demands is to be released from Lake Powell as follows: (i) for domestic and agricultural uses under article III(e) of the 1922 compact if active storage in Lake Powell is not less than that in Lake Mead; (ii) to maintain active storage in Lake Mead equal to that in Lake Powell; (iii) to avoid projected spills from Lake Powell.

The first priority is abolished when, pursuant to the act, the President

83. See *Yuma County Water Users’ Ass’n v. Udall*, 231 F. Supp. 548 (D.D.C. 1964).

84. For the committee print of H.R. 4671, see *Hearings Before the Subcommittee on Irrigation and Reclamation of the House Committee on Interior and Insular Affairs*, 89th Cong., 2d Sess., ser. 17, pt. 2, at 963 (1966).

proclaims completion of works capable of importing 2.5 million acre-feet of water into the basin below Lee Ferry. Similarly, the second priority is released, *pro tanto*, when imported water is delivered to the Lower Basin to the credit of the Upper Basin. The statutory clause is complex, but the following characterization of it by one of the draftsmen seems fair:

The net effect of section 601, in layman's language, is that Lake Powell is not to be drained while Lake Mead remains full, and Lake Mead is not to be drained while Lake Powell remains full, but that both reservoirs shall rise and fall in general but not necessarily exact correlation with each other. Lake Powell is not to be filled to the maximum to protect the upper basin against the recurrence of the most extreme drought, but only against reasonable probabilities of shortage, and Lake Mead, in turn, is not to be maintained at a higher level, in terms of active storage, than Lake Powell. The intent is to spread the risk fairly between the two reservoirs.⁸⁵

As is apparent from the bill's language and the draftsman's statement, a considerable amount of discretion is left in the Secretary. While the bill is not yet law, and may never be, it seems likely that such an adjustment between the basins on this crucial question will ultimately, one way or another, be given the effect of law.

3. *The Mexican treaty obligation.*

We have already noted ambiguities in the Mexican treaty provision of article III(c). The negotiators labored under a heavy handicap in having to provide for a future diminution of supply, the nature and amount of which were beyond their knowledge. Nevertheless, not all of the difficulties in article III(c) can be traced to this handicap. The question of the amount of water that the Upper Basin must supply in the event of deficiency and whether it is obliged to supply one-half the losses between Lee Ferry and the Mexican border could have been solved in the text of the compact. Furthermore, the negotiators failed to make clear just when a deficiency arises.

Read literally, the compact establishes the existence of a deficiency when the supply fails to provide 16 million acre-feet of consumptive use, even though existing uses are far less than that figure. Thus, the supply may be adequate to satisfy all American uses and to supply Mexico, and there may still be a deficiency. Suppose the supply is sufficient to satisfy the 8.5 million acre-feet of existing uses in the Lower Basin (its full compact apportionment) as well as 3 million acre-feet of existing uses in the Upper Basin. This presupposes a minimum system supply of 11.5 million acre-feet, disregarding for this purpose river losses. Suppose further that the flow at Glen Canyon Dam is another 3.5 million acre-feet so that the total supply

85. *Id.*, pt. 2, at 1164 (testimony of Northcutt Ely).

aggregates 15 million acre-feet, enough to supply all demands but not enough to supply the article III(a) and III(b) apportionments. Can the Upper Basin withhold all but 750,000 acre-feet of the 3.5 million acre-feet at Glen Canyon and require the Lower Basin to cut back its existing uses by 750,000 acre-feet? Taken alone, article III(c) seems to give an affirmative answer. Article III(e) may modify this conclusion by requiring the release of water which the Upper Basin cannot apply to agricultural and domestic uses. Once again the question is whether the two compact sections are interdependent or independent. The commonsense answer seems to be to give article III(e) primacy in order to avoid economic loss. Doing so, however, renders the "surplus" provisions of article III(c) virtually inoperative.

Another difficulty presented by the application of article III(c) is only partly attributable to the compact negotiators' draftsmanship. The Mexican treaty requires annual deliveries, while the Upper Basin's III(d) obligation is calculated in continuous periods of ten years. A question arises whether the Upper Basin can obtain a credit against its III(c) obligation by the delivery to Lee Ferry of water in excess of its III(d) obligation. Suppose that on October 1, 1964, the aggregate flow at Lee Ferry for the previous ten years was 85 million acre-feet, but that the flow for the water year 1963-1964 was only 6 million acre-feet. Assume further that, as the term is interpreted, there is a deficiency under article III(c). Has the Upper Basin satisfied its obligation by providing an average annual excess of 1 million acre-feet of water? Since, until recently, the only sizable storage on the main stream was at Hoover Dam, it seems fair to credit the Upper Basin for excess deliveries which the Lower Basin can store and use to supply Mexico. However, article III(c) seems to define surplus and deficiency by reference to articles III(a) and (b), in which the water accounting is on an annual basis.

Again, these ambiguities of language do not create merely academic problems. From the time of the signing of the Mexican treaty, if not long before,⁸⁶ there have been conflicting interpretations of article III(c).⁸⁷

4. *Water quality.*

The compact contains no explicit provision regarding water quality. Article III(d) speaks only of delivery of 75 million acre-feet of water in each ten-year period. The nearest approach the compact makes to the ques-

86. See, e.g., Herbert Hoover's analysis of the compact in answer to questions by Representative Carl Hayden, question no. 15, 64 CONG. REC. 2710-13 (1923), reprinted in Wilbur & Ely, *op. cit.* *supra* note 62, at A38.

87. See *Hearings on the Treaty With Mexico*, *supra* note 60, at 596-600, 604-06, 847-48, 1128. The recent hearings on the Central Arizona Project have produced the same conflicts. See *Hearings on S. 1658 (Central Arizona Project)*, *supra* note 49, at 487-94.

tion of quality is found in article IV(b), which could, but need not, be read as implying a duty to deliver water usable for the purposes there made paramount—agricultural and domestic uses.

The quality problem has not yet become a major issue between the Upper and Lower Basins, because the former does not now depend heavily upon return flow to meet its Lee Ferry obligation. It is conceivable that as uses increase in the Upper Basin the reuse of water will so affect the quality at Lee Ferry that controversy will arise on the question.

5. *Groundwater.*

The compact contains no express provision regarding groundwater, and the pervading spirit of the document suggests that its authors did not intend to subject groundwater to the terms of the agreement. This is unfortunate (although perhaps unavoidable given the state of knowledge in 1922), because surface water and groundwater are often hydrologically inseparable.⁸⁸ This scientific fact was recognized by the Supreme Court in its decree in *Arizona v. California*, wherein it is provided: "Consumptive use from the mainstream within a State shall include all consumptive uses of water of the mainstream, including water drawn from the mainstream by underground pumping"⁸⁹

The issue becomes significant in applying the apportionment provisions of article III(a) and III(b), in which ceilings on appropriations are established by reference to specified amounts of consumptive use. An accounting that includes consumptive use of related groundwater naturally will produce a higher figure for appropriations (and one which more accurately reflects depletion of the water supply) than an accounting which excludes it. This determination in turn affects the application of article III(c).

Any answer offered on the groundwater question at this time is speculative, but it is worth remembering that in *Arizona v. California* the Supreme Court, in establishing the accounting system in the Lower Basin under the Boulder Canyon Project Act,⁹⁰ treated consumption of related groundwater as a use to be charged. This was done with no more textual authority in the act than there is in the compact.

III. CONFLICTS AMONG THE STATES OF THE UPPER BASIN

In 1920, shortly before the execution of the Colorado River Compact of 1922, the Bureau of Reclamation estimated Upper Basin consumption at 2.4 million acre-feet of water per year and Lower Basin consumption at

88. Piper & Thomas, *Hydrology and Water Law: What Is Their Future Common Ground?*, in *WATER RESOURCES AND THE LAW* 7 (1958).

89. 376 U.S. 340 (1964). See also part IV of the decree. *Id.* at 347-50.

90. 43 U.S.C. §§ 617-617t (1964).

some 2.56 million acre-feet per year.⁹¹ By 1938 Upper Basin consumption decreased slightly while Lower Basin consumption, with the benefit of storage, had increased to 5 million acre-feet. Thus, nearly two-thirds of the water apportioned to the Upper Basin states under the 1922 compact was flowing unused to the Lower Basin states.⁹² The increase in Lower Basin uses was accompanied by a decrease in Upper Basin supply. The negotiators of the Colorado River Compact had "assumed that the River produced about 16,000,000 acre feet annually that could be safely apportioned and about 5,000,000 acre feet surplus subject to division at some later date,"⁹³ but later flow figures at Lee Ferry indicated that in years of low runoff it would be impossible for the Upper Basin to increase consumptive use greatly and still meet its Lee Ferry delivery obligation.⁹⁴ Thus, if the Upper Basin's economy was to expand, large expenditures were necessary to provide the carry-over storage that would enable the upper states to meet their delivery obligations and yet have water for new projects.⁹⁵ The traditional source of such financing (and perhaps the only source) was the federal government,⁹⁶ which insisted on a water-rights settlement before putting up the money for further development.⁹⁷ As the Lower Basin imbroglio demonstrates, interstate water settlements in the West can involve protracted litigation. No such delay occurred in the Upper Basin, probably because no state would gain by it. All were underdeveloped; none had the resources to go it alone. It was a classic case of hanging together or hanging separately.

A. *Negotiation of the Upper Basin Compact*

In order to understand the different positions taken by the individual states as to the appropriate standard for apportioning the waters of the upper Colorado, it is necessary to appreciate the geographical relationship among the states concerned and their relative contributions to the river.⁹⁸ The state of Colorado is in the eastern portion of the basin and historically

91. See Wilbur & Ely, *op. cit. supra* note 62, at A47, A50.

92. 6 UPPER COLO. RIVER COMM'N ANN. REP. 23 (1954-1955).

93. 1 RECORD, Meeting No. 3, at 87-88.

94. For example, in the period 1945-1959 inclusive, the annual flow of the river at Lee Ferry was 10 million acre-feet or less in seven years and only twice did it exceed 16 million acre-feet. 12 UPPER COLO. RIVER COMM'N ANN. REP., app. D (1960).

95. 6 *id.* at 49 (1954-1955).

96. For example, Congress authorized a maximum of \$760 million to carry out the Colorado River Storage Project Act § 12, 43 U.S.C. § 620k (1964).

97. "The formulation of an ultimate plan of river development, therefore, will require selection from among possibilities for expanding existing or authorized projects as well as from among the potential new projects. *Before such a selection of projects can be made, it will be necessary that the Seven Colorado River Basin States agree upon their respective rights to deplete the water supply of the Colorado River or that the courts apportion available water among them.*" COLORADO RIVER 13 (emphasis added).

Parts of five states are within the Upper Basin: Arizona, Colorado, New Mexico, Utah, and Wyoming. Only the last four have obligations under the 1922 compact.

98. For the data reported in this paragraph, see 2 RECORD, Meeting No. 7, at 19.

has contributed 72.18 per cent of the eventual discharge at Lee Ferry. That part of New Mexico which is in the Upper Basin (in the southeastern portion) must take its Colorado system water from the San Juan and its tributaries, which rise in Colorado. The state itself contributes only 1.29 per cent of the Lee Ferry discharge. Wyoming, in the northern portion of the basin, depends upon the Green River for its part of Colorado system water and contributes 10.94 per cent of the Lee Ferry discharge. Utah is both a carrier and a contributing state, for all major tributaries except the Gunnison join the Colorado within her borders. Tributaries rising in the northern portion of the state account for 14.63 per cent of the Lee Ferry discharge. The portion of Arizona which falls within the basin accounts for but 0.96 per cent of the discharge. These hydrological conditions, combined with the inability of the river to supply all of the water required for full development, account for the apportionments advocated by the several states. Each of the apportionments had some plausibility, and each had substantial advantage for its proponent.

Colorado naturally wanted historic Lee Ferry contributions to be the basis of the apportionment. New Mexico, a substantial user but a small contributor, wanted present depletion and equal division of the unappropriated water to form the basis.⁹⁹ Wyoming wanted ultimate depletion as projected by the 1945 Bureau of Reclamation report to form the basis.¹⁰⁰ Utah did not suggest ultimate depletion as the standard, but did propose an apportionment based upon present and future uses.¹⁰¹ Application of any method was difficult because of the lack of accurate data acceptable to all four states.

The Bureau of Reclamation's 1946 report, *The Colorado River*, proposed a master plan for development, but it was unacceptable as a basis for negotiation because it forecast ultimate Upper Basin depletions totaling some 9,136,500 acre-feet yearly if all of the 134 potential projects were built and the proposed transbasin diversions were actually made. This amount of water was not legally available to the Upper Basin, and the report contained no basis for evaluating the projects by cost, benefits, and potential revenue.¹⁰²

99. "Streams originating in the mountains [of Colorado] are almost the only source of water for present and potential developments within the [San Juan] division." COLORADO RIVER 140.

In 1945 New Mexico was using only 68,000 acre-feet annually. Ultimate depletion was projected at 518,400 acre-feet per year. However, Colorado's ultimate depletion in the San Juan was projected at 599,000. *Id.* at 150.

From 1917 to 1943 the San Juan carried an average of 2.1 million acre-feet to the New Mexico border, but from 1931 to 1940 it dropped to 1.745 million acre-feet. *Id.* at 140. It seems that taking into account her delivery obligation New Mexico stood to gain by an equal division of the consumptive use of the San Juan.

100. Wyoming is the uppermost state and has a small population; it was afraid more populous states would get the first projects and build up prior appropriative rights. 1 RECORD, Meeting No. 3, at 75. Wyoming in 1945 was using 391,000 acre-feet, but ultimate depletion was projected at 967,000 acre-feet per year. COLORADO RIVER 124.

101. 1 RECORD, Meeting No. 3, at 92. See also 1 *id.*, Meeting No. 5, at 129-32 (statement of Utah emphasizing her potential development).

102. U.S. DEP'T OF INTERIOR, THE COLORADO RIVER: INTERIM REPORT ON THE STATUS OF INVES-

Early in the negotiations, the Compact Commission dropped the idea of formulating and using a master economic development plan.¹⁰³ An engineering advisory committee was established to provide water resource data to aid the commission's consideration of various methods of apportionment.¹⁰⁴ In time, the Compact Commission decided to apportion the water on a percentage basis rather than on the basis of maximum acre-foot depletion allowances.¹⁰⁵ This solution was favored by the chairman of the engineering advisory committee because the variable yearly flow of the river made it difficult to apportion the water by mass allocation.¹⁰⁶

The Compact Commission, while initially unable to agree on the percentage allocations for each state, did agree on the relevant factors to be considered in arriving at the percentage division. Colorado delayed the final determination of percentages until the engineering committee reported on the production of water by individual states.¹⁰⁷ Wyoming and New Mexico then "forced" Colorado to recognize that present and future consumptive uses were also relevant considerations.¹⁰⁸

Once it was agreed to divide the stream on percentages, even though the figures themselves were not agreed on, it became necessary to determine a uniform method of measuring water supply and use. The length of the river system and the aridity of the terrain make water losses critical but difficult elements to measure. The negotiators accepted an engineering report that gave figures for historic state-line flow, out-of-state losses, and historic contributions at Lee Ferry and provided a method for measuring channel losses. Comparisons of virgin flows between two points were used to calculate evaporation and transpiration losses.¹⁰⁹ To calculate depletion at state lines, the engineering committee reconstructed the virgin flow and subtracted man-made depletions. A credit was given for salvaged channel losses by deducting them from man-made depletion values before the latter were deducted from virgin flow.¹¹⁰ This calculation expressed as a formula is:

$$\text{depletion at state line} = \text{virgin flow} - \text{man-made depletion} + \text{salvage.}$$

TIGATIONS AUTHORIZED TO BE MADE BY THE BOULDER CANYON PROJECT ACT AND THE BOULDER CANYON PROJECT ADJUSTMENT ACT 57-58 (1947) (comments of the seven Colorado River Basin states in response to *The Colorado River*).

103. 1 RECORD, Meeting No. 1, at 44.

104. *Ibid.*

105. 1 *id.*, Meeting No. 4, at 3.

106. *Ibid.* The commission apparently did not consider the feasibility of a mass allocation in light of the storage units proposed to be constructed.

107. 1 *id.*, Meeting No. 4, at 12. The chairman of the engineering committee considered the report of historic state-line contributions essential to a percentage allocation. 1 *id.*, Meeting No. 4, at 10.

108. 1 *id.*, Meeting No. 4, at 11-12. The engineering committee also recognized that potential uses "constitute important factors . . . and are considered to be involved up to the 7,500,000 acre feet . . . allocated" 1 *id.*, Meeting No. 4, at 10.

109. See 2 *id.*, Meeting No. 7, at 43.

110. See, e.g., 2 *id.*, Meeting No. 6, at 59 (remarks of Mr. Breitenstein of Colorado).

The engineering committee calculated the man-made depletions as a function of (1) irrigated acreage, (2) crop distribution, (3) consumptive use values derived from experiments, (4) additional uses of water in connection with irrigated land, and (5) climatic data.¹¹¹

The many thousands of small diversions in the Upper Basin were thought to make it impossible to measure consumptive use at the site of use. Therefore, in article VI the 1948 compact adopts the inflow-outflow method as the measure of consumptive use. The method essentially measures the reconstructed virgin flow at inflow gauging stations and compares it with the flow at the outflow gauging stations. To obtain the virgin flow values it is necessary to extrapolate from historic flow and historic loss figures. The difference between total inflow and total outflow constitutes the state's beneficial consumptive use.¹¹² The inflow-outflow method cannot, of course, be used for transbasin diversions.¹¹³

The Upper Basin's delivery obligation under article III(d) of the 1922 compact made it necessary to determine the relationship between a state's contribution at its border and its ultimate contribution at Lee Ferry. Essentially this involves calculating the amount of channel loss (from both evaporation and transpiration), much of which occurred in Utah. Utah, of course, could not be charged for all losses occurring within her borders. Therefore, each state would have to contribute enough excess water at its border to meet its share of channel losses occurring between the border and Lee Ferry.

The compact commissioners, having adopted the "net depletion of the virgin flow" for measuring uses within the basin, were urged to apply the same formula externally—that is, against the Lower Basin.¹¹⁴ The effect would be to relieve the Upper Basin of any charge for uses that occurred in a state of nature and for use of water salvaged through the efforts of man. Testimony presented to the commissioners indicated that the difference between the "net depletion" formula and the "consumptive use at sites of use" formula could be significant. Colorado (it was asserted) had increased her irrigated acreage in the Arkansas River Basin by 200,000 acres without increasing the net depletion at the Kansas line.¹¹⁵ Moreover, when Kansas complained of this increase, the Supreme Court accepted the net depletion theory (so the witness asserted) and dismissed the complaint because Kansas had suffered no injury.¹¹⁶

While obviously impressed with the utility of the "net depletion" for-

111. See 2 *id.*, Meeting No. 7, at 19.

112. *Ibid.*

113. See 2 *id.*, Meeting No. 7, at 58.

114. 2 *id.*, Meeting No. 7, at 42-63.

115. 2 *id.*, Meeting No. 7, at 44. The witness, Royce J. Tipton, a prominent engineer, also furnished the commissioners with studies of other rivers to make the same point.

116. *Colorado v. Kansas*, 320 U.S. 383 (1943).

mula for measuring consumptive use, the commissioners hesitated to insert a provision in the Upper Basin compact claiming it to be the proper definition of the term "beneficial consumptive use" in the 1922 compact. A powerful deterrent was the certainty that strong opposition to the Upper Basin compact would thereby be aroused in the Lower Basin, leading possibly to Congress' withholding its consent to the compact. Since an Upper Basin compact was the *sine qua non* of Reclamation Bureau support for Upper Basin development, the external application of the net depletion formula had to be forgone.¹¹⁷ In litigation between the two basins it will undoubtedly be a principal contention of the upper group of states.

B. *The Provisions of the Upper Basin Compact of 1948
Described and Analyzed*

Article I declares that the Upper Basin compact was made pursuant to and in subordination of the 1922 compact.¹¹⁸ Its declared purposes are to divide the Upper Basin's allocation of water from the Colorado River system among the states according to the principles of equitable apportionment and to establish each state's obligation respecting delivery of water at Lee Ferry. Article II incorporates some uncontroversial technical definitions contained in the 1922 compact and adds a definition of "virgin flow."

The most important provision of the compact is article III, which apportions fixed percentages of the consumptive use of water legally available to the Upper Basin among Colorado, New Mexico, Utah, and Wyoming in perpetuity.¹¹⁹ Arizona, which has only a small part of its area in the Upper Basin and contributes less than one per cent of the Colorado's flow, is given a mass allocation of 50,000 acre-feet per year. Arizona initially demanded 140,000 acre-feet per year, or 1.81 per cent of the water being apportioned,¹²⁰ although the Bureau of Reclamation had estimated her ultimate yearly consumptive use in the Upper Basin at a mere 49,200 acre-feet.¹²¹ When negotiations seemed to be blocked because the other states asked for more water than was available, Arizona readily agreed to accept 50,000 acre-feet per year¹²² since she was principally interested in the Colorado in her capacity as a Lower Basin state.¹²³ That interest accounts for article XVIII, which preserves her rights as a Lower Basin state under the

117. Wyoming suggested another reason for opposing the formula: while the Upper Basin might benefit from the "depletion of the virgin flow" formula by an additional 400,000 acre-feet, the Lower Basin would benefit by an additional 2.15 million acre-feet. 2 RECORD, Meeting No. 7, at 58-59.

118. For the official text of the compact, see 63 Stat. 31 (1949). It is also reprinted in U.S. DEP'T OF INTERIOR, DOCUMENTS ON THE USE AND CONTROL OF THE WATERS OF INTERSTATE AND INTERNATIONAL STREAMS 218 (1956).

119. Art. III(a)(2). The percentages are: Colorado, 51.75%; New Mexico, 11.25%; Utah, 23%; and Wyoming, 14%.

120. 2 RECORD, Meeting No. 7, at 98-99.

121. COLORADO RIVER 151.

122. 2 RECORD, Meeting No. 7, at 109.

123. 1 *id.*, Meeting No. 2, at 5.

Colorado River Compact. This article is intended to allow her to contest any construction that the Upper Basin placed upon essential terms of the 1922 compact (for example, "beneficial consumptive use") should she believe herself to be prejudiced thereby.¹²⁴

The Upper Basin compact's apportionment of water "in perpetuity" was approved with little discussion.¹²⁵ Since the states were contemplating long-term development and had enough potential projects to exhaust their share of the river, an apportionment in perpetuity was thought to be necessary to safeguard their projected investments.¹²⁶

The final percentage allocations were the result of compromises. Initial demands of the four states amounted to 117 per cent of the available supply.¹²⁷ The chairman of the commission called on the states to justify their demands—a request not lightly ignored because the chairman was Harry Bashore, former Commissioner of Reclamation and representative of the federal government, which would finance the water resource development. After private negotiations among the parties, modified demands were presented to Bashore, who formulated a compromise that was readily accepted.¹²⁸

Article III also reflects the Upper Basin's determination to preserve its rights in any future apportionment of "surplus" under article III(f) of the 1922 compact by declaring that the percentage allocations apply only to the 7.5 million acre-feet apportioned by article III(a) of the 1922 agreement.¹²⁹

Article IV is also extremely important because it provides the formula and mechanism for curtailing consumption if a drought should make it impossible for the Upper Basin to meet its Lee Ferry delivery obligation and still maintain all existing uses. The Upper Colorado River Commission is charged with determining the extent of the necessary curtailment—a curtailment which negotiators thought would be required only if the storage reservoirs were empty.¹³⁰ Curtailment is to be based upon the extent of use during a designated period prior to the drought and not upon the percentage allocations.¹³¹

There are two curtailment formulae: (1) if a state or states have been using more than their allotted share of water for ten years preceding the time of curtailment,¹³² they will be required to contribute to Lee Ferry

124. *Ibid.* (position statement of Arizona).

125. 2 *id.*, Meeting No. 6, at 8.

126. *Ibid.*

127. 2 *id.*, Meeting No. 7, at 123.

128. 2 *id.*, Meeting No. 7, at 123-29.

129. Commissioner Stone of Colorado declared that it would be bad policy to agree to make the Upper Basin percentage binding on any surplus allocated to the Upper Basin since not all states signatory to the 1922 compact were present. 2 *id.*, Meeting No. 6, at 106-07.

130. 2 *id.*, Meeting No. 7, at 76.

131. *Ibid.*

132. The commission accepted the use of a ten-year average as a basis for curtailment because the chairman of the engineering committee argued it would be "fair" to calculate both delivery obli-

"water equal to its, or the aggregate of their, overdraft or the proportionate part of such an overdraft, as may be necessary to assure compliance with Article III of the Colorado River Compact";¹³³ and (2) if no state is overdrawn (or states have replaced amounts equal to their overdrafts and there is still a deficiency), then under article IV(c) each state will be called upon to contribute a portion of the deficiency based on its percentage of the total water use in the Upper Basin during the preceding water year.¹³⁴ Thus, the curtailment concept used in the compact is based not upon a duty to meet an annual delivery schedule fixed in advance, but upon a duty to contribute to flow by curtailing uses if a deficiency develops in meeting the ten-year obligation.¹³⁵

Article V deals with the Upper Basin states' cooperative use of major storage units such as Glen Canyon and Flaming Gorge Dams. During the negotiations the suggestion was made and subsequently adopted that the Upper Basin's delivery obligation under the Colorado River Compact of 1922 is joint and several.¹³⁶ Since any Upper Basin state could theoretically be compelled to meet the entire deficiency, the states agreed to apportion the delivery obligation among themselves to minimize this potential threat—in other words, to create a liability in favor of one state in the Upper Basin as against another if the states do not carry out their obligations.¹³⁷ There is, however, no fixed annual delivery obligation on the individual states except in times of scarcity (that is, empty reservoirs) as provided by article IV. As article V(b)(1) expresses it, water used for Lee Ferry deliveries is "for the common benefit of all of the states of the Upper Division."

Article V also provides for apportionment of reservoir losses. Reservoirs existing at the time of the execution of the 1948 compact are dedicated to the use of the states in which they are situated, and the evaporation losses are charged to them. The commission is directed to determine the use of a new facility. If the facility is used to meet the Lee Ferry delivery obligation, reservoir losses are charged to each state on the basis of the ratio of its consumptive use to total consumptive use. If, on the other hand, the facility is used to supply water for consumptive use in the Upper Basin, the using

gations at Lee Ferry and proration in times of scarcity on the same basis. 2 *id.*, Meeting No. 7, at 79-80.

133. Art. IV(b).

134. A proviso in the article exempts from this calculation uses antedating November 24, 1922, the date the 1922 compact was executed. The clause was probably thought to be necessary because of article VIII of the 1922 compact, which declared "present perfected rights" to be unimpaired by the agreement. It has since been determined, however, that "present perfected rights" are those antedating June 25, 1929, the date the 1922 compact and the Boulder Canyon Project Act were declared effective. *Arizona v. California*, 376 U.S. 340 (1964) (decree).

135. See 2 RECORD, Meeting No. 7, at 76 (curtailment will apply "only . . . after the reservoirs are empty and there is still a shortage at Lee Ferry").

136. 1 *id.*, Meeting No. 5, at 98.

137. *Ibid.*

state is to bear the reservoir losses. If two or more states use water from the reservoir, their proportionate shares of the losses are to be determined by the commission. This provision for apportionment of reservoir losses (which are of some magnitude) represents a substantial advance over both the 1922 compact and the Boulder Canyon Project Act, and is a useful provision for draftsmen to keep in mind.

Articles VI and VIII are the chief sources of the Upper Colorado River Commission's authority. The commission, composed of one representative from each of the four Upper Basin states and one from the federal government, is empowered to make findings regarding: (1) "the quantity of water of the Upper Colorado River system used each year in the Upper Colorado River Basin and in each state thereof";¹³⁸ (2) "the quantity of water deliveries at Lee Ferry during each water year";¹³⁹ (3) "the necessity for and the extent of the curtailment of use" in case of drought;¹⁴⁰ and (4) "the quantity of reservoir losses and . . . the share thereof chargeable."¹⁴¹ As we have already noted, under article VI the quantity of consumptive use is to be determined by the inflow-outflow method.

The negotiators clearly intended to limit the commission's powers. Article VIII(g) provides that its findings of fact shall be prima facie rather than conclusive evidence before any agency or tribunal. The negotiators also expressly rejected a provision requiring the appointment of an Upper Basin watermaster with powers to compel delivery¹⁴² and declined to give the commission authority to determine what projects should be curtailed in the event of a water shortage, leaving that choice to the individual states.¹⁴³

Moreover, the commission's authority is also circumscribed by the paramount power of the federal government. When the Secretary of the Interior recently decided to transfer water from Lake Powell in the Upper Basin to Lake Mead in the Lower Basin, the commission charged that his action was a breach of a "contract" with the Upper Basin states, but he adhered to his decision.¹⁴⁴ The commission's early activities give little indication of how it will exercise its power in the event of a scarcity. Its first years were spent pressing for passage of the Colorado River Storage Project Act,¹⁴⁵ and the commission's engineering committee has been engaged in

138. Art. VIII(d)(6).

139. Art. VIII(d)(7).

140. Art. VIII(d)(8).

141. Art. VIII(d)(9).

142. 2 RECORD, Meeting No. 6, at 37.

143. See 2 *id.*, Meeting No. 6, at 50-51.

144. Time, April 24, 1964, at 23.

The Department of Interior favors a construction which contemplates Upper Basin storage, but has indicated it will follow its own criteria for operation of the dam. See Clyde, *Conflicts Between the Upper and Lower Basins on the Colorado River*, in RESOURCES DEVELOPMENT: FRONTIERS FOR RESEARCH 113, 119-20 (Western Resources Conference 1960).

145. See, e.g., 4 UPPER COLO. RIVER COMM'N ANN. REP. 5 (1953).

detailed studies perfecting the inflow-outflow method of measuring consumptive use.

While the Upper Basin states did not establish specific delivery quotas at state lines for fulfillment of the Lee Ferry obligation, individual states negotiated separate agreements governing their respective delivery duties on certain interstate streams. Previous settlements in earlier compacts (for example, between Colorado and New Mexico regarding La Plata River) were recognized by article X of the 1948 compact. In cases where no previous agreements existed, the affected states met in private sessions and negotiated what were, in effect, subcompacts. Moreover, once the states had each been allotted a fixed percentage of the virgin flow, they reached agreements among themselves designating the streams from which each could take its apportioned share.¹⁴⁶ These agreements are found in articles XI-XIV of the compact. Since the commission is not charged with enforcing the compact, future interstate conflicts regarding apportioned and unapportioned streams presumably will be resolved by litigation or by direct negotiation.

Article XIV, which deals with apportionment of the San Juan River, merits special consideration. As the commissioner from Colorado noted, the San Juan is treated, in effect, as a "separate river." New Mexico, for which the San Juan is the sole source of supply in the Upper Basin, was naturally concerned about its potential diversion by Colorado for projects outside the San Juan sub-basin. Colorado assured the commission that this would not be done because the San Juan sub-basin is dependent upon the river for its development,¹⁴⁷ but New Mexico was unwilling to enter into the compact absent protection of its rights to the river.¹⁴⁸ Colorado therefore agreed to allow New Mexico to take its full percentage apportionment from the San Juan and its tributaries rising in Colorado. Article XIV provides that any curtailment of uses on the San Juan that may become necessary is to be based on a percentage of average use "during times of average water supply as determined by the Commission."

Article XV provides that agricultural and domestic uses in the Upper Basin shall be preferred to storage for power generation. However, the Lower Basin's claims and the Secretary of the Interior's power to manage the major storage units cast doubt on the effectiveness of this declaration beyond its influence on the Secretary's determinations.

Article XV also bears on the Lower Basin's assertion of prior claim to water which may be used for power generation. The Lower Basin maintains that Glen Canyon Dam is to be used solely for the generation of power

146. 2 RECORD, Meeting No. 6, at 121.

147. 2 *id.*, Meeting No. 6, at 113.

148. 2 *id.*, Meeting No. 6, at 114.

and that releases should be regulated to facilitate operation of Lower Basin hydroelectric projects, while the Upper Basin maintains that the dam is also to be used for agricultural and domestic purposes.¹⁴⁹ The Upper Basin argues that release of Glen Canyon water for Lower Basin hydroelectric projects will give the Upper Basin a right to divert the Colorado upstream for agricultural and domestic uses. Thus, because Glen Canyon water is "exchanged" for upstream water that is used for agricultural and domestic purposes, Glen Canyon water is itself being devoted, by substitution, to such uses.¹⁵⁰ An Upper Basin authority discounts this argument, since the limited quantity of present uses—hence, the absence of any need for an "exchange"—means that Glen Canyon water will be used for power, not "exchange," while Lake Powell is filling.¹⁵¹ Article XV's effectiveness to stop release of water for downstream power and to provide a means of facilitating "exchanges" has yet to be tested.

Article XVI, which provides that failure of a state to use apportioned water shall not constitute a surrender of any of its water rights to another state or to the Lower Basin, reflects an upper riparian's traditional concern with priorities gained by earlier downstream development. The rate of development of the water resources of a state or nation depends upon its financial resources, which include its credit and ability to secure aid. In the United States the pocket with the most money is the federal government, and obtaining this money for local development requires skillful use of the political process. Often one state is able to secure a project at the expense of another state because it possesses more influence in Washington. Fearing uneven development and inequality in priorities, the Upper Basin states rejected provisions requiring periodic review and modification of substantive provisions of the compact.¹⁵²

Article XVII merely allows states to import water into the Colorado Basin without regard to the compact, which deals only with waters of the Colorado River system. Article XIX contains the last of the compact's important provisions. The five Upper Basin states were not the only claimants to water; the federal government had water rights on the river system which were, in some instances, superior to state claims (for example, its right to supply Indian reservations).¹⁵³ In general, the compact disclaims

149. See Clyde, *supra* note 144, at 120-21.

150. *Id.* at 121-22.

151. *Id.* at 122-23.

152. 2 RECORD, Meeting No. 6, at 12-14. Utah argued that periodic review would benefit the Upper Basin because if one Upper Basin state was not using the water, it would go to another upper state at the expense of a Lower Basin state. However, Colorado's argument that if one state was unable to make full use of her water in the future a supplemental compact could be drawn ultimately prevailed.

153. Water rights for Indian reservations are created when the reservations are established. *Arizona v. California*, 373 U.S. 546, 600 (1963) (opinion); *Winters v. United States*, 207 U.S. 564, 577 (1908). The extent of these rights has not been fully defined, but a reservation probably has the right

any intention of impairing or affecting the rights, duties, and privileges of the federal government.

C. Ratification of the Compact

Ratification of the Upper Colorado River Compact by Congress was relatively routine. Hearings were held before the Subcommittee on Irrigation and Reclamation of the House Committee on Public Lands for four days,¹⁵⁴ after which the committee recommended approval.¹⁵⁵ Apart from the five signatory states, the only parties to comment extensively on the compact were the Lower Basin states and the federal government. California was especially concerned over adverse consequences of the compact, and one of her Congressmen, Clair Engle, a water expert, propounded a series of questions about it. These questions and the answers to them were the chief subject of the hearings in the House. Engle wanted to make sure that the compact was not binding on a nonsignatory state.¹⁵⁶ He first sought, and ultimately received, assurances that the Lower Basin states would not be bound by any definitions contained in the 1948 compact¹⁵⁷ and that the Upper Basin states considered themselves bound by the 1922 compact,¹⁵⁸ especially to their Lee Ferry delivery obligations¹⁵⁹ and to future divisions of any surplus. California also obtained assurance that she was not to be bound in future litigation by the flow figures found by the Upper Basin Commission.¹⁶⁰ With California satisfied, Congress promptly consented to the compact.¹⁶¹

IV. CONFLICTS AMONG THE STATES OF THE LOWER BASIN

Contrasting with the harmony in the Upper Basin has been the clamorous strife in the Lower Basin, where Arizona and California have been in baleful opposition for at least forty-four years. Out of this have come five lawsuits in the United States Supreme Court,¹⁶² a filibuster in the

to as much water as is necessary to cultivate the irrigable acreage within the reservation. *Arizona v. California*, 376 U.S. 340 (1964) (decree); see *United States v. Walker River Irr. Dist.*, 104 F.2d 334 (9th Cir. 1939), noted in 18 ROCKY MT. L. REV. 427 (1946); text accompanying notes 258-79 *infra*.

154. *Hearings Before a Subcommittee on Irrigation and Reclamation of the House Committee on Public Lands*, 81st Cong., 1st Sess., ser. 5 (1949).

155. *Id.* at 166.

156. See *id.* at 16.

157. Congressman Barrett of Wyoming remarked that California is "left in the mess they are in" with Arizona. *Id.* at 17. The Upper Basin states formally answered that nonsignatories are not bound. *Id.* at 58-59.

158. *Id.* at 58.

159. *Ibid.*

160. *Ibid.*

161. 63 Stat. 31 (1949).

162. *Arizona v. California*, 283 U.S. 423 (1931) (suit to declare Boulder Canyon Project Act unconstitutional); *Arizona v. California*, 292 U.S. 341 (1934) (suit to perpetuate testimony of negotiators of 1922 compact); *United States v. Arizona*, 295 U.S. 174 (1935) (suit to enjoin Arizona's interference with construction of Parker Dam); *Arizona v. California*, 298 U.S. 558 (1936) (suit for equitable apportionment of the waters of the Colorado); *Arizona v. California*, 373 U.S. 546 (1963)

Senate,¹⁶³ a muster of troops by Arizona at the California border,¹⁶⁴ and hundreds of thousands of words in congressional hearings and judicial proceedings. As Judge Simon H. Rifkind, the Special Master in *Arizona v. California*, once had occasion to remark, the problems of the river would be solved if only the scientists could turn words into water.

As this Article goes to press a truce between the two states has endured for almost eighteen months, and if history could be forgotten one would be tempted to look forward to a new era of mutual trust and cooperation in the Lower Basin. Whether that optimistic view is justified can best be judged after a review of the past.

A. *History of the Controversy Between Arizona and California*

From the moment the Colorado River Compact of 1922 was signed in Santa Fe by a reluctant representative of Arizona,¹⁶⁵ the compact was in trouble in that state. The story is briefly told in the following account, taken from a recent book:

During the time that the compact was being negotiated, Arizona was in the throes of an election campaign for governor and other state officials, a campaign in which the approach to a solution of Colorado River problems became involved. The Republicans, led by their incumbent Governor Campbell, in general supported the reclamation policies of the federal government, while the Democrats, led by the redoubtable George W. P. Hunt who had formerly been governor for three terms, expressed a suspicion of developmental projects except on such terms as Arizona laid down. Hunt won a victory of landslide proportions and immediately indicated that he would give his consent to no part of the agreement then being completed at Santa Fe which in any way compromised the rights of Arizona. He questioned the adequacy of the engineering data on which a compact could be based, expressed fear of allowing any water to cross the border into Mexico for irrigating land for "asiatic colonies," and suspected the demands of California for power developments.¹⁶⁶

The issue of ratification became immersed in politics, with the lame-duck Republican governor leading the campaign for the compact (supported by the Republican administration in Washington, particularly Herbert Hoover) and with Governor-elect Hunt calling for its defeat. The legislature

(opinion), 376 U.S. 340 (1964) (decree) (suit for declaration of water rights of Lower Basin states under Boulder Canyon Project Act).

163. Wilbur & Ely, *The Hoover Dam Documents*, H.R. Doc. No. 717, 80th Cong., 2d Sess. 40 (1948).

164. D. MANN, *THE POLITICS OF WATER IN ARIZONA* 86 (1963).

165. The Arizona commissioner, W. S. Norviel, had been a suspicious and somewhat obstreperous member of the negotiating group from the beginning. The inclusion of the asymmetrical article III(b) (giving the Lower Basin the right to increase its consumptive use by 1 million acre-feet a year) was probably due to Norviel, who was greatly concerned about Arizona's Gila River, a part of the Colorado River system located almost exclusively in Arizona.

These conclusions are based on the Author's reading of the minutes of the Colorado River Compact Commissioners which were offered but not received in evidence in *Arizona v. California*.

166. MANN, *op. cit. supra* note 164, at 82-83 (footnotes omitted).

in its 1923 session followed the lead of the new governor and refused ratification.

The reasons for the failure of the compact in the 1923 legislature and thereafter have been variously assigned. Some attributed the opposition of the mining, agricultural, and power interests as the most important factor. Undoubtedly these groups were by and large opposed along with a large proportion of the general public. The farmers feared they would not receive a fair share of the water supply. The power interests opposed public power development of the Colorado. The mining companies objected to federal development since the installations constructed by the federal government would contribute nothing to a relief of the tax burden they were carrying. Uncertainty, however, played a most important role. . . . Viewing the Colorado River as the state's most important resource, the spokesmen for Arizona did not wish to take precipitate action they might later regret. They did not believe the river could be developed without the consent of Arizona and that Arizona's only bargaining power lay in refusing to ratify the compact.¹⁶⁷

In the years following 1923, opposition to the compact stiffened, losing its partisan flavor and becoming the "state" position. In 1928 even the Republican governor opposed ratification. It would appear that politicians of both parties found political gain in defending Arizona against the compact and against the California "octopus."

Fearful of the compact, and even more fearful of California, Arizona opposed the Swing-Johnson bills that would have given congressional consent to the compact and would have authorized the construction of a high dam at Boulder Canyon. Various efforts were made to achieve a settlement between the two states, but they foundered, primarily over the division of water—each state wanting more than the other would agree to give. Finally, after a long debate, the Senate limited California to 4.4 million acre-feet and enacted the fourth Swing-Johnson bill as the Boulder Canyon Project Act on December 21, 1928.¹⁶⁸ Thirty-five years later, long after the great Hoover Dam had been built and many other subordinate works put into operation, the act was invoked by the Supreme Court as the basis—and the sole basis—for its disposition of the Arizona-California water litigation.

Upon losing the congressional fight to keep a high dam off the river, Arizona turned to the courts. In its first suit¹⁶⁹ Arizona sued the Secretary of the Interior and all six of the other Colorado River Basin states to enjoin the building of Hoover Dam and the All-American Canal, to stop the formation and performance of contracts for delivery of water from the projected reservoir, and to declare the Colorado River Compact and the Project

167. *Id.* at 83-84 (footnotes omitted).

168. 45 Stat. 1057 (1928), 43 U.S.C. § 617 (1964). For a brief description of the congressional history of the several Swing-Johnson bills, see *Arizona v. California*, 283 U.S. 423, 453-56 (1931); Wilbur & Ely, *op. cit. supra* note 163, at 38-41.

169. *Arizona v. California*, 283 U.S. 423 (1931).

Act unconstitutional. The case was heard by the Supreme Court on the plaintiff's bill of complaint and defendants' motions to dismiss. Holding that the Boulder Canyon Project Act was a valid exercise of congressional power under the commerce clause, the Court dismissed the bill without prejudice to a later suit for relief if the dam should be operated so as to interfere with Arizona's rights. Apart from its significance to the parties, the case has a general importance since the Supreme Court, for the first time, upheld congressional power under the commerce clause to authorize construction of multipurpose dams on navigable streams.¹⁷⁰ While the Court preserved the fiction that a navigation purpose would be served, it recognized that other purposes not authorized by the navigation power would also be served, primarily the generation and sale of electric power. On this foundation rest many mighty dams that dry up the stream below, thus destroying navigability entirely, if indeed any ever existed.

In its second suit¹⁷¹ Arizona changed tactics. Conceding that there was as yet no interference with her water rights (Hoover Dam was under construction but had yet to be closed in), Arizona alleged that such interference was threatened in the future. In order to prepare for the lawsuit to come, she sought to commence an action to perpetuate testimony relating to her interpretation of the Project Act and the compact. In essence, Arizona relied upon the act and compact and desired to obtain and record testimony favorable to her construction of each—namely, that the article III(b) water was intended to belong exclusively to Arizona. This bill was dismissed, one ground being that the testimony sought to be preserved would be inadmissible as evidence of the meaning of the compact and the act.

After this rebuff events moved rapidly. In 1934 work began on Parker Dam, the diversion point for the Colorado River Aqueduct. (The aqueduct was designed to carry about 1.3 million acre-feet of water per year to the southern California coastal plain.) Claiming that construction of the dam, which had one foot on Arizona soil, was unauthorized, Arizona's governor sent troops to halt the work.¹⁷² The United States sued for an injunction in the Supreme Court, but lost when the Court determined that Congress had not authorized the dam.¹⁷³ Within months after the decision Congress specifically authorized the dam,¹⁷⁴ and Arizona withdrew her troops.

In November of 1935 Arizona filed suit for a general equitable apportionment of the unappropriated water in the river.¹⁷⁵ The United States had not consented to be sued and was not a party. The Court dismissed the com-

170. See Morreale, *Federal Power in Western Waters: The Navigation Power and the Rule of No Compensation*, 3 NATURAL RESOURCES J. 1, 10-11 (1963).

171. *Arizona v. California*, 292 U.S. 341 (1934).

172. MANN, *op. cit. supra* note 164, at 85-86.

173. *United States v. Arizona*, 295 U.S. 174 (1935).

174. Act of Aug. 30, 1935, 49 Stat. 1039.

175. *Arizona v. California*, 298 U.S. 558 (1936).

plaint without reaching the merits, holding that joinder of the United States was indispensable.

Upon the rendition of this judgment, Arizona found herself stymied. She could secure no judicial relief until the United States consented to be sued. She had not ratified the Colorado River Compact and had no contract for delivery of water from Lake Mead. Her rival, California, on the other hand, had contracts calling for the delivery of water from the main stream to satisfy 5,362 million acre-feet of consumptive use per year,¹⁷⁶ and work was going forward in California on projects which would enable her to make full use of this water.¹⁷⁷

For nearly ten years Arizona was beset by drought and racked with dissension over the proper course of action.¹⁷⁸ The agricultural interests of central Arizona suffered greatly from lack of water but also feared the effect that compact ratification might have on the Gila supply. Finally, Arizona did what she had to do—she ratified the compact and obtained a contract for the delivery of water from the main stream to supply 2.8 million acre-feet of consumptive use per year.¹⁷⁹

Unfortunately for Arizona, a contract for water and the actual receipt of water are two very different things. For another ten years she struggled in vain to obtain federal authorization and financing of the works necessary to bring water to her central farming region. Every step of the way she was fought by California, who had a telling argument in the enormous cost of the Central Arizona Project—roughly one billion dollars. Bills to authorize the project were introduced in the 79th, 80th, 81st, and 82d Congresses, and, while some passed in the Senate, all failed in the House, where California was immensely more powerful than Arizona.

The endless squabbling must have tried the patience of Congressmen from other states. For that reason and probably because of genuine unwillingness to consider a project of such magnitude when rights to the water involved were in dispute, the responsible House committee resolved in 1951 that consideration of the Central Arizona Project "be postponed until such time as use of the water in the lower Colorado River Basin is either adjudicated or a binding and mutual agreement as to the use of the water is reached by the States of the lower Colorado River Basin."¹⁸⁰

For thirty years the states had been unable to reach agreement, and no evidence exists of a serious effort to do so after the committee's resolution.

176. *Master's Report* 208.

177. *Id.* at 33, 35, 36-38, 65-66.

178. MANN, *op. cit. supra* note 164, at 86-88.

179. The Arizona contract, which is appendix 5 of the *Master's Report*, was signed February 11, 1944. Its effectiveness was conditioned by paragraph 14 upon Arizona's ratification of the compact. In due course, the Arizona legislature ratified both the contract and the compact. Act of Feb. 24, 1944, Ariz. Laws 1944, ch. 4, at 419 (contract), ch. 5, at 427 (compact).

180. *Master's Report* 131 n.3.

A little more than a year later, apparently with an understanding that the United States would intervene to give the Court jurisdiction, Arizona filed another original suit in the Supreme Court in an effort to get a judicial determination of her water rights. Nearly four years were devoted to the filing of pleadings and motions, the holding of pretrial conferences, and the preparation and entry of a pretrial order. On June 14, 1956, twenty-six years after Arizona made her first attempt to obtain an adjudication of her water rights in the Colorado, the trial on the merits began before a Special Master.

The courtroom was overflowing. Dozens of lawyers were there, representing not only Arizona and California but also three other states having Lower Basin interests—New Mexico, Nevada, and Utah—all of which had joined the litigation, though not all voluntarily. Present also, of course, was the United States, a brooding omnipresence, which could have been going along for the ride but which, as it turned out, laid a claim to a large part of the vehicle and to the right to drive besides.

The personalities present were a rich assortment. For Arizona there were the contrasting figures of the local lawyers, with tanned and weathered skin, and of outside counsel—the elegant New Yorker, Theodore Kendl, and the loquacious John Frank, a writer of popular works on law, ex-law-teacher at Yale, and now a resident of Arizona, though hardly a native. Both would in a year or so fade from the scene, leaving the case in the hands of long-time Arizona practitioners.

On the California side the contrast was as great, though not of the same kind. Leading counsel, with the task not only of defending against Arizona (and, as it turned out, against the United States) but also of suppressing any mutinous tendencies in his own ranks, was Northcutt Ely, a Washington, D.C., lawyer who had spent a career on the Colorado River beginning as an aide to Ray Lyman Wilbur, President Hoover's Interior Secretary and author of the Boulder Dam water delivery contracts with the California agencies. In the courtroom Ely is a human computer—dry, unemotional, imperturbable, loaded with information instantly available. At his right hand sat M. J. Dowd, for years the chief engineer of the Imperial Irrigation District, a veteran of many a tangle in the hearing room, and a quick-witted, well-informed, cagey witness. To provide the drama on the California side was Harry Horton, long-time attorney for the Imperial Irrigation District, highly emotional, quick-tempered, absolutely certain of the justice of his cause, and suspicious of everybody—even (it would seem) of his erstwhile allies.

These and many, many more were present on that opening day, and an air of Armageddon pervaded the room—though of course there was sharp disagreement over the identity of the forces of Good and Evil. Men were present on both sides who had literally spent their lives on the battle over

the Colorado. And for Arizona it was the long-awaited moment; it was now or never. For California, who had long played the waiting game, the crisis was now at hand—having contracts and works for 5.362 million acre-feet, she had nothing to gain, only water to lose.

Promptly at ten o'clock, Judge Simon H. Rifkind took his place on the bench to begin the trial. He is a short, energetic man with quick, alert eyes. A highly respected federal district judge who resigned to engage in an extremely successful New York litigation practice, Rifkind very quickly captured the respect of the lawyers for his rapid perception, his intelligence, and his forthright willingness to rule. He was, however, not much of a prophet, for his opening remarks were: "It is good to see a lot of friendly faces again after a long lapse of time. I am very hopeful that we will get started this time and really move along at a very fast pace."¹⁸¹ This was June 14, 1956. On December 5, 1960, he filed his final report with the Supreme Court, having heard some 106 witnesses (who filled 22,500 pages of transcript) and having received volumes of exhibits numbering in the hundreds. In addition, depositions were taken from 234 witnesses, filling a transcript of 3,742 pages, on a minor dispute between Arizona and New Mexico. The final report (with a proposed decree) ran 433 pages.

Coming then before the Supreme Court, the case was first argued for sixteen hours in the 1961 term and then, with the retirement of Mr. Justice Whittaker, was set for reargument in the 1962 term. By the time the second argument was held, Mr. Justice Frankfurter had also retired; so the bench contained two new Justices, Goldberg and White. Both voted with the majority, providing the necessary difference in the five-to-three division (Mr. Chief Justice Warren not participating). The Supreme Court gave its judgment on June 3, 1963,¹⁸² and entered the decree on March 9, 1964.¹⁸³

B. *The Decision in Arizona v. California*

The Supreme Court's opinion has been extensively commented upon,¹⁸⁴ and perhaps the only excuse for another, and much delayed, comment is the opportunity to evaluate the Court's opinion in the light of the full discussion the opinion has received.

The main points of the decision will be briefly stated first and commented upon thereafter.

(1) Under its power over navigable streams granted by the commerce

181. Reporter's Transcript, vol. 1, at 5, *Arizona v. California*, 373 U.S. 546 (1963).

182. 373 U.S. 546 (1963).

183. 376 U.S. 340 (1964).

184. The fullest and best discussion is Trelease, *Arizona v. California: Allocation of Water to People, States, and Nation*, 1963 SUPREME COURT REV. 158. Other comments are: Clyde, *The Colorado River Decision—1963*, 8 UTAH L. REV. 299 (1964); Haber, *Arizona v. California—A Brief Review*, 4 NATURAL RESOURCES J. 17 (1964); Wilmer, *Arizona v. California, A Statutory Construction Case*, 6 ARIZ. L. REV. 40 (1964). Professor Sax has also made a thorough study of the opinion. *Problems of Federalism in Reclamation Law*, 37 U. COLO. L. REV. 49 (1964).

clause, and perhaps under its power to spend for the public welfare, Congress has the power to divide the unappropriated waters of the Colorado River in the Lower Basin among the three bordering states—Arizona, California, and Nevada. (This proposition is stated narrowly; it can be stated more broadly, a point that will be raised later in the discussion.) This congressional power to apportion the waters of a navigable stream is a third method of dividing a stream among states, the other two (formerly thought to be exclusive) being by compact or by litigation in the Supreme Court.

(2) Congress exercised its apportionment power in the Boulder Canyon Project Act of 1928 partly by dividing the river itself and partly by delegating to the Secretary of the Interior power to divide the river. This statutory division is the sole basis for the interstate apportionment. Neither the Colorado River Compact nor the doctrine of equitable apportionment as fashioned by the Supreme Court is applicable to the apportionment since the compact did not purport to divide the Lower Basin and the equitable apportionment doctrine was preempted by congressional apportionment.

(3) The water that Congress divided was the main stream of the Colorado River at Hoover Dam, not the main stream and the tributaries.

(4) The statutory scheme of apportionment was as follows:

(a) California was limited to 4.4 million acre-feet of consumptive use of water from the main stream plus not more than one-half of surplus. Acceptance of this limitation by California was a condition precedent to the effectiveness of the Project Act, and California, by legislation, did accept it.¹⁸⁵

(b) The Secretary of the Interior was delegated authority to divide the water of the main stream in the Lower Basin by contract, subject to the limitation on California.

(c) The Secretary had executed valid contracts for delivery of water to the three states as follows:

(i) To California—4.4 million acre-feet of consumptive use plus one-half of surplus, subject to physical availability; (ii) To Arizona—2.8 million acre-feet of consumptive use plus one-half of surplus, subject to physical availability, less four per cent of surplus if Nevada should in the future contract with the Secretary for such water; (iii) To Nevada—300,000 acre-feet plus four per cent of surplus if Nevada should contract with the Secretary for such water, subject to physical availability.

(d) "Surplus" is defined to mean water available in the Lower Basin to supply consumptive uses in excess of 7.5 million acre-feet.

(e) In the event the Secretary determines there exists a shortage of water so that 7.5 million acre-feet of consumptive use cannot be satisfied from the available supply, the Secretary is to allocate the water as Congress

185. Act of March 4, 1929, Cal. Stat. 1929, ch. 16, at 38.

may direct or in the exercise of his discretion. Among the methods of allocation that the Secretary is free to adopt are prorationing on the basis of the states' contracts (44/75 to California, 28/75 to Arizona, 3/75 to Nevada), priority of appropriation, or some other reasonable mode of allocation. However, by virtue of section 6 of the act, the Secretary, under whatever system adopted, must first satisfy "present perfected rights." "Present perfected rights" are defined as water actually applied to beneficial use on the effective date of the act, June 25, 1929. However, in no event can the Secretary allocate more than 4.4 million acre-feet to California to satisfy present perfected rights.

(5) Federal law controls both interstate and intrastate distribution of water.

(6) Indian reservations and other federal establishments are entitled to use water in the amount necessary to accomplish the purposes for which they were created, with priority date and perfected-right status as of the time the establishment was created by withdrawal of the land from entry. The decree establishes the priority dates and the quantities of water for these establishments.

There were three dissents from the decision. Justices Harlan and Stewart agreed with the majority on the interpretation of section 4(a) of the Project Act—to wit, that the water subject to the act was main-stream water only and that California had, therefore, limited herself to 4.4 million acre-feet of consumptive use of main-stream water plus not more than one-half of surplus. They also apparently agreed that "surplus" should be defined as water available to supply consumptive uses in excess of 7.5 million acre-feet.¹⁸⁶ Thus, the Court voted seven-to-one to reject California's accounting system, which would have charged Arizona for Gila River uses and thus would have increased the main-stream surplus available to California in the amount of one-half of Arizona's Gila uses—about 1 million acre-feet more a year. Justices Harlan and Stewart disagreed with the majority over the interpretation and effect of section 5 of the act.¹⁸⁷ They contended that the Project Act did not establish a statutory scheme of apportionment through which the Secretary of the Interior could by exercising his contract power allocate the water—subject, of course, to the California Limitation Act. Instead, they read the Project Act as doing no more than establishing a ceiling on California's appropriations. Subject to that ceiling, the water of the river was to be divided by the usual means: either equitable apportionment in a lawsuit or a compact among the states. It follows from this conclusion that the Secretary would have no authority to determine the allocation of water in periods of shortage. The rights of the states to water

¹⁸⁶. See 373 U.S. 546, 603 (1963).

¹⁸⁷. *Id.* at 603-04.

—during periods of plenty as well as periods of drought—would be dependent upon an agreement among the states. If there is no agreement the rights would depend upon the principles of equitable apportionment applied by the Supreme Court, wherein priority of appropriation has been a very substantial ingredient. It also follows that the Secretary has no power to allocate water intrastate—that is, state law, not federal law, controls water rights within each state—a conclusion buttressed by express provisions of the act.

C. *Analysis of the Decision*

1. *Congressional power to make interstate apportionments.*

We turn now to a critical examination of the principal points of the decision, the dissents, and the commentary thereon. Dean Trelease, whose discussion of the case is the most thorough and the most thoughtful, expressed reservations about the congressional power to make an interstate apportionment of a stream.¹⁸⁸ Two questions arise: (1) Can this congressional power be found in the Constitution? (2) Even if the answer to this question is yes, is the power one that Congress ought to have or, having it, ought to use?

The constitutional power for congressional apportionment is easy enough to find for a navigable stream. Before *Arizona v. California* the Supreme Court found plenary power in Congress to manage navigable streams¹⁸⁹ as well as nonnavigable streams when Congress had declared that their regulation was related to downstream navigation.¹⁹⁰ The only question for serious debate is whether a congressional apportionment that destroys vested water rights gives the user a fifth amendment claim for compensation. This question did not arise in *Arizona v. California* because Congress protected present perfected rights, which the Court defined as “a water right acquired in accordance with state law, which right has been exercised by the actual diversion of a specific quantity of water that has been applied to a defined area of land or to definite municipal or industrial works”¹⁹¹ Such a right was preserved if it existed on the effective date of the Project Act. It could be argued that this definition excludes rights

188. Trelease, *supra* note 184, at 172–83.

189. *United States v. Twin City Power Co.*, 350 U.S. 222 (1956). “It is not for courts . . . to substitute their judgment for congressional decisions on what is or is not necessary for the improvement or protection of navigation. . . . The decision of Congress that this project will serve the interests of navigation involves engineering and policy considerations for Congress and Congress alone to evaluate.” *Id.* at 224.

190. *United States v. Grand River Dam Authority*, 363 U.S. 229 (1960); *Oklahoma ex rel. Phillips v. Guy F. Atkinson Co.*, 313 U.S. 508 (1941). “There is no constitutional reason why Congress cannot, under the commerce power, treat the watersheds as a key to flood control on navigable streams and their tributaries.” *Id.* at 525.

191. 376 U.S. 340, 341 (1964) (decree). Section 6 of the Boulder Canyon Project Act provides that the dam and reservoir shall be used for “satisfaction of present perfected rights in pursuance of Article VIII” of the compact.

recognized under state law—for example, a water right for works commenced before the act took effect and completed with due diligence thereafter. Such a state-created right would not have been a perfected right, because no diversion had taken place by the time the Project Act became effective. So far as appeared, no such unperfected right existed in the Lower Basin, but, if it had, the Court would have had to face two questions—questions which could arise in any future congressional apportionment:

(1) Apart from the question of compensability of water rights in navigable streams, does the fifth amendment protection of “private property . . . taken for public use” extend to expectations generated by state-protected investments in waterworks if the investor is deprived of water by apportionment before the works are completed? The author would expect an affirmative answer to this question. State law has validated the expectation, for it has said the investor has a protected right if he completes his works and puts the water to beneficial use. This would have been done but for the act of Congress. The Supreme Court has given protection under section 8 of the Reclamation Law to riparian rights that consisted of no more than overflow from the annual spring flood of the San Joaquin River.¹⁹² Similarly, courts regularly protect substantial investments made before a zoning change prohibits the proposed use.¹⁹³ However, the answer to the second question may render the first question moot when the apportioned stream is navigable.

(2) Is a consumptive water right in a navigable stream, whether the right is perfected or unperfected, constitutionally compensable when taken in the exercise of the navigation power? As yet this question has not been answered by the Supreme Court, but the existing authority would clearly permit a negative answer.¹⁹⁴ The conclusion can thus be supported that Congress has power to make an interstate apportionment of a navigable stream and thereby divest existing water rights without compensation if it chooses. However, in the one interstate apportionment it has made so far, Congress chose to divest only “unperfected” rights, for which no claims for compensation have been made.

Apart from the navigation power—which can probably extend to any body of water Congress would deign to divide¹⁹⁵—the spending power, as Dean Trelease notes, also provides a basis for a congressional interstate apportionment of a stream.¹⁹⁶ It seems clear that this power permits Congress

192. *United States v. Gerlach Live Stock Co.*, 339 U.S. 725 (1950).

193. *See, e.g.*, *Jones v. City of Los Angeles*, 211 Cal. 304, 295 P. 14 (1930); *Glenel Realty Corp. v. Worthington*, 4 App. Div. 2d 702, 164 N.Y.S.2d 635 (1957).

194. *See United States v. Twin City Power Co.*, 350 U.S. 222 (1956). The matter is fully discussed in Morreale, *supra* note 170, at 63–76.

195. *See United States v. Grand River Dam Authority*, 363 U.S. 229 (1960); *Oklahoma ex rel. Phillips v. Guy F. Atkinson Co.*, 313 U.S. 508 (1941); *United States v. Appalachian Elec. Power Co.*, 311 U.S. 377 (1940).

196. *See Trelease, supra* note 184, at 180–82.

to direct the building of dams on any stream in the country, navigable or nonnavigable.¹⁹⁷ Once the dam is built no one can interfere with the United States' operation of the works, even though the United States takes water from an old user and gives it to a new user. One whose property has been taken by such acts of the United States may be entitled to compensation, but the power to control and thus to reallocate the water is not subject to restraint.¹⁹⁸

Congressional power to allocate rivers interstate would thus appear to have a firm constitutional basis, although discovery of the power in the 174th year of the Republic might strike some observers as slightly late. If late, is the discovery also to be regretted? The author thinks not. Water resource development will increasingly involve river basin management, and operations will transgress state lines and require large federal expenditures. Such basin development plans must necessarily come before Congress, and it is a highly appropriate time when they do so to settle interstate conflicts over water allocation. Without such a settlement development cannot go forward.

Not only is the time appropriate but so is the place. First, a congressional division is likely to be more expeditious than compact or Supreme Court apportionment. A division by compact may never take place; a Court division is unlikely to be completed in less than ten years. Such delays can be very costly. Second, a congressional apportionment is likely to obtain as satisfactory a division as either a compact or an adjudication. A congressional apportionment is in fact a form of compact, negotiated by the states' water officials through their congressional delegation rather than through appointed commissioners. It is true that congressional apportionment deprives the state legislatures of their veto power, but some substantial residue of a veto power remains in the Senate if the state seriously objects to the division. Most compacts represent compromises reached by the water resource establishments of the signatory states against a background of urgent need (or at least desire) for federal benefits that are contingent upon agreement being reached.¹⁹⁹ To have the settlement become binding through congressional action rather than state legislative action does not change actual practice very much.

In the author's view, congressional interstate stream apportionment is an institutional arrangement to be preferred to Supreme Court division. The apportioning of water among several states is not a judicial act, for

197. See *United States v. Gerlach Live Stock Co.*, 339 U.S. 725 (1950).

198. *Dugan v. Rank*, 372 U.S. 609 (1963); see *City of Fresno v. California*, 372 U.S. 627 (1963). *City of Fresno* is a companion case to *Dugan*. The Court held in *City of Fresno* that Friant Dam in the Central Valley Project did not have to be operated in conformity with state law and left injured parties, if any, to a suit for compensation in the Court of Claims.

199. Both the Colorado River Compact and the Upper Colorado River Compact are examples.

there are no normative principles to guide the decision. A team of economists, hydrologists, and water engineers, after doing extensive research and fact finding in the field, could undoubtedly make a rational recommendation for allocating the water in such a way as to maximize economic gains. But in a federal system where the Supreme Court is arbiter among equal, quasi-sovereign states economic maximization has not been adopted as the rule of decision in stream adjudications. Instead the norm has been something called "equitable apportionment," a vague set of standards that are impossible to quantify. The most recent expression of the rule by the Supreme Court is in *Nebraska v. Wyoming*:

Apportionment calls for the exercise of an informed judgment on a consideration of many factors. Priority of appropriation is the guiding principle. But physical and climatic conditions, the consumptive use of water in the several sections of the river, the character and rate of return flows, the extent of established uses, the availability of storage water, the practical effect of wasteful uses on downstream areas, the damage to upstream areas as compared to the benefits to downstream areas if a limitation is imposed on the former—these are all relevant factors. They are merely an illustrative, not an exhaustive catalogue. They indicate the nature of the problem of apportionment and the delicate adjustment of interests which must be made.²⁰⁰

This standard has left many Justices uneasy and therefore unwilling to adjudicate the controversies. In the case just quoted three Justices out of eight would have dismissed the bill of complaint because the record, though showing an overappropriated river, failed to show "actual damage in the past, or . . . any threat of substantial damage in the near future . . ."²⁰¹ The dissent continues by pointing out the embarrassment to the Court of interstate stream adjudications:

The precedent now made will arise to plague this court not only in the present suit but in others. The future will demonstrate, in my judgment, how wrong it is for this court to attempt to become a continuing umpire or a standing Master to whom the parties must go at intervals for leave to do what, in their sovereign right, they should be able to do without let or hindrance, provided only that they work no substantial damage to their neighbors. In such controversies the judicial power should be firmly exercised upon proper occasion, but as firmly withheld unless the circumstances plainly demand the intervention of the court. Such mutual accommodations for the future as Nebraska and Wyoming desire should be arranged by interstate compact, not by litigation.

Such controversies between States are not easily put to repose. Even when judicial enforcement of rights is required, the attempt finally to adjudicate them often proves abortive. Our reports afford evidence of this fact. Kansas and Colorado came here twice, at the instance of Kansas, in a dispute over the flow of the Arkansas River. In a case presenting, on the whole, less difficulty than the present one this

200. 325 U.S. 589, 618 (1945).

201. *Id.* at 657 (dissenting opinion).

court entered a decree June 5, 1922, only to find it necessary to revise it on October 9, 1922. But the controversy would not down. The parties came back here on three occasions because of misunderstandings and disagreements with respect to the effect of our decree.²⁰²

The consequence of an understandable reluctance to apportion water on a vague, if not meaningless, standard and thereafter to supervise the development of the water resources of the litigant states has been a judicial abstinence which in essence favors the upstream state. The dismissal of a suit as nonjusticiable often amounts to a decision allowing the upstream state to continue its diversions. Thus, in the Arkansas River litigation, Kansas lost twice in an effort to halt or reduce Colorado's ever-increasing upstream uses.²⁰³

Even when the refusal to adjudicate does not have the effect of confirming upstream uses, it may deprive the plaintiff of the certainty of title necessary to secure development of its water resources. To safeguard, so far as it can, the integrity of its processes, the Supreme Court will not adjudicate an interstate water dispute until existing consumptive uses in one state cause harm or give rise to the immediate threat of harm in another state. Yet Congress and other financing agencies are inclined to take the position that until clear rights are established in the unappropriated water supply, no projects can go forward.²⁰⁴ These two forces tend to stymie timely development. The upper state, where the water originates, cannot presently use the water economically; the lower state cannot obtain financing for an economic project because it cannot get a decree for a fixed supply of water—its suit against the upper state being nonjusticiable since no present "harm" to the lower state from the use of water upstream can be shown.

Finally, the Supreme Court as an institution is not equipped to deal with the mass of technical data introduced into evidence in equitable apportionment litigation. There is no inconsistency between asserting the absence of any acceptable norm for dividing water interstate and insisting that the technical evidence is important and ought to be understood by the decision makers. While no acceptable principle tells us whether the division between state *A* and state *B* should be 50-50 or 60-40, the technical evidence can tell us what supply we have to divide, how much reservoir evaporation to expect, the amount of return flow, and the point at which it returns to the stream. Evaluating conflicting evidence on these points requires the help of a trained technician, and the tradition of the courts tends to restrain them from securing such help. For example, neither the Supreme Court nor the Master in *Arizona v. California* had any expert assistance from a

202. *Id.* at 658-64 (dissenting opinion) (footnotes omitted).

203. See *Colorado v. Kansas*, 320 U.S. 383 (1943); *Kansas v. Colorado*, 206 U.S. 46 (1907).

204. See *Master's Report* 31.

water technician, although dozens of highly trained engineers, geologists, and hydrologists testified in the case and submitted hundreds of exhibits, some of which appeared to represent advanced work in the science.²⁰⁵

This claim that the Court is institutionally unfit to divide water interstate does not, of course, prove that Congress is fit. But the weaknesses of the Court are the strengths of Congress. Congress is not expected to proceed in accordance with substantive norms; it is a political institution and can take account of the economic and political power of the contending states in reaching a division. Yet it cannot ride roughshod over the weaker states, for in the United States Senate a state's power does not depend on its population or economic strength. Congressional apportionment, then, is partly compact and partly compulsion. The states' congressional delegations can influence the settlement more than Supreme Court litigants can, but they cannot block settlement as a compacting party can. The existence of a congressional power of apportionment may facilitate the settlement of interstate water disputes. The water officials and governor of the state can reach an agreement with their counterparts in another state in private negotiations, have the settlement effectuated by Congress, and both sides avoid the blame for the less favorable parts of the settlement that are inevitable in a compromise. The availability of congressional apportionment may tend to raise the number of interstate settlements because congressional apportionment does not need the consent of the Attorney General, as many interstate litigations do.²⁰⁶ Congressional apportionment should also be cheaper: in *Arizona v. California* the compensation for the Special Master alone amounted to 185,000 dollars.²⁰⁷

In addition to being an institution whose structure, functions, and traditions are more adapted to the task of dividing water among states, Congress has available to it the staff assistance necessary to make comprehensible the technical evidence supplied by the parties. Moreover, Congress is not limited to a record made by the parties; it can gather its own evidence from the files of the Bureau of Reclamation, the Corps of Engineers, and the U.S. Geological Survey, and it can order studies to be made by these agencies or by congressional staff personnel. Congress thus has the capability of being better informed about the nature of the problem than the Court.

205. See, e.g., Reporter's Transcript, vol. 126, at 21415-80, *Arizona v. California*, 373 U.S. 546 (1963) (testimony and exhibits of Dr. Luna B. Leopold, then Chief Hydraulic Engineer of the United States Geological Survey).

206. See *Arizona v. California*, 298 U.S. 558, 568 (1936).

207. This is exclusive of expenses. The first Special Master, George I. Haight, died in 1955 after preparing a pretrial order and an opinion on a joinder question. His estate received compensation of \$35,000. 351 U.S. 977 (1956). Simon H. Rifkind succeeded as Special Master, tried the case and prepared the report. He was engaged in the matter from time to time from 1956 to 1960. He received \$150,000. 354 U.S. 918 (1957); 357 U.S. 902 (1958); 377 U.S. 921 (1964).

Finally, the existence of congressional apportionment power permits the achievement of results that the Court could not accomplish and that a compact is not likely to. The Pacific Southwest Water Plan,²⁰⁸ in immediate prospect, and the North American Water and Power Alliance,²⁰⁹ in remoter view, both exemplify the emerging concept of long-distance, trans-basin water transfers. The Court could not apportion a part of the Columbia River system to Arizona—since equitable apportionment is limited to bordering or successive streams. A compact between Washington and Arizona allocating Columbia water to Arizona is without precedent and is likely to remain so because there is insufficient inducement for one state to export its water to another. As a practical matter, then, if we are to have interregional water transfers, Congress must make them and must have the concomitant power to settle interstate disputes generated by the development plan.

It can be fairly objected that the grant of power to Congress to apportion rivers will weaken the institution of the interstate compact. First, state officials who must bear the responsibility for a compact settlement can avoid the political liabilities of the unfavorable parts of a settlement by blaming them on Congress. Even the states' congressional delegations can take the position that they were overwhelmed by superior numbers. To dilute the responsibility of elected officials is to weaken democratic government. In addition, and cumulative in effect, congressional apportionment may be a welcome alternative to Supreme Court adjudication, the threat of which formerly drove the parties to a compact agreement. With the availability of congressional apportionment, over which the state has greater control than it does over litigation, the stimulus for compact settlement is reduced.

Do we care that compacts will decline in use? Those who wish to bring decision making closer to the voter will care. The action of a state legislature approving or disapproving a compact is more likely to express the views of more voters in a signatory state than is approval or disapproval by the Congress. The author is not wholly convinced of the value of bringing the decision to approve or reject an instrument as complex as an interstate stream compact closer to the people, but, even if he were, the gains from congressional power to apportion would have to be weighed against the loss of greater citizen participation in the decision. In assessing the gains we must recognize that failure to reach agreement by compact has occurred

208. The Pacific Southwest Water Plan is designed to provide supplementary water resources for the Lower Colorado River Basin and for southern California. It contemplates merging portions of the water resources of the Colorado River Basin, the Great Basin, the Central Pacific Basin, and the South Pacific Basin.

209. The North American Water and Power Alliance concept contemplates distributing the excess water of the northwestern areas of the North American continent to the water-deficient areas of the Canadian prairies, the United States, and northern Mexico in sufficient quantities to ensure adequate water supplies for at least the next hundred years. One of the central features of this long-range plan is a 500-mile-long reservoir in the section of western Canada known as the Rocky Mountain Trench.

in a significant number of cases, that this state of affairs is likely to continue in the future, and that a disappointed state is likely to turn to a body with dispositive power, the Supreme Court or now the Congress. Allocating to Congress the power to apportion stream systems among states is thought to have advantages because Congress has the capacity to make quicker, better-informed decisions, which can be coordinated with federal plans for development of a basin, and because the decision-making process that produces an apportionment is more compatible with a legislative institution than with a judicial institution.

2. *Exercise of the power.*

While it has been questioned elsewhere, no Justice of the Supreme Court disputed the power of Congress to apportion the lower Colorado River among Arizona, California, and Nevada. The dissent by Justices Harlan, Stewart, and Douglas was from the Court's holding that Congress intended to exercise this power. The legislative history was elaborately traced both in the *Master's Report* and in the Supreme Court opinion, and nothing much is gained by going over the same ground again. Looking at the legislative materials, especially the Senate debate, through a telescope, one might question whether in 1928 Congress would really have delegated to the Secretary of the Interior the power to divide the Colorado River. But the struggle to reach a compromise had been a long one, and the debate is studded with both implicit assumptions and express statements that Congress had broken the stalemate by dividing the river itself. And the Secretary's role is in actuality a small one. When Congress required a limit on California of 4.4 million acre-feet the apportionment was complete for practical purposes. Congress knew that California would be the first to use the new supply of water from Hoover Dam²¹⁰ and that she would very early press against the ceiling. In fact, before the dam was completed in 1935, California had water delivery contracts of 5.362 million acre-feet. With 4.4 million acre-feet apportioned in practical effect to California in the Project Act, it takes no leap of faith to believe that Congress left to the Secretary the apportionment of the remainder between Arizona and Nevada.

A second point in the Harlan dissent is more persuasive—the denial that Congress intended to delegate to the Secretary the power to handle shortages as he saw fit. The Master, with no statutory foundation, decreed that shortages should be prorated in proportion to each state's share of the main stream. Thus, if the available supply in a given year was only 6 million acre-feet California would take 44/75, Arizona 28/75, and Nevada 3/75. This result was attributed to something called the “principle of sovereign

²¹⁰. The Boulder Canyon Project Act included an authorization for the All-American Canal to serve the Imperial Valley. 43 U.S.C. § 617i (1964).

parity,"²¹¹ a doctrine which the Master found implicit in the Project Act but which he apparently could not locate elsewhere, for there are no citations supporting it.

The legislative history reveals nothing about the apportionment of water in times of drought, and it may well be the fact that the Senators concerned with the Project Act never considered the problem and acted on the optimistic forecasts supplied to the compact commissioners. If statutory construction is to be guided by what Congress would have provided if it had considered the question, the likelihood is that priority of appropriation would have been the governing rule. The three affected states followed that rule on the Colorado,²¹² the Supreme Court had been guided by it in an interstate apportionment in 1922,²¹³ and, in the states of all the other Senators taking a serious part in the debate, it was the exclusive means of allocating water in time of shortage. Yet the author is not as willing as he once was to assert dogmatically that a provision in the act on shortages would have adopted priority of appropriation. Further evidence indicates the need for some caution. The author taught classes in water law in the summer of 1966 to engineers and hydrologists—including senior personnel in the Corps of Engineers, the Bureau of Reclamation, and several state agencies. When the class was asked how it would vote as Senators on the question of handling shortages, it supported the Master's solution of prorationing by a substantial majority.

Whether or not delegation to the Secretary can be defended on the basis of legislative intention, a presentable argument can be made that the Court contrived a sound political and institutional solution in leaving the standard for apportioning shortages undetermined and delegating to the Secretary the power to fix the standard when it became necessary to do so. It can be argued that the Court's disposition of the question is the one most likely to produce a voluntary congressional solution. The Secretary of the Interior is not likely to rush into print with a set of regulations on a subject involving millions of dollars and powerful political forces on each side.²¹⁴

Yet the existence of the Secretary's power tends to create an uncertainty that the parties may wish to dispel through mutual agreement. The argu-

211. *Master's Report* 236.

212. California has a double system of riparian *cum* appropriative rights, but all rights on the Colorado have been treated as appropriative, and the Seven Party Water Agreement among users of the Colorado proceeds on the principle of priority of appropriation. The Seven Party Water Agreement is incorporated in the Secretary's water delivery contracts with California agencies. *See, e.g.*, the Coachella Valley County Water Dist. Contract of Oct. 15, 1934, reprinted in Wilbur & Ely, *op. cit. supra* note 163, at A633.

213. *See Wyoming v. Colorado*, 259 U.S. 419 (1922).

214. If the supply for consumptive use in the Lower Basin is 6 million acre-feet, the difference to California between priority of appropriation and prorationing is nearly 1 million acre-feet, or substantially all of Los Angeles' Colorado River supply. Priority of appropriation would protect California priorities up to 4.4 million acre-feet. Prorationing on the basis of 44/75 of 6 million acre-feet would give California only 3.52 million acre-feet. Eight hundred and eighty thousand acre-feet is worth fighting for.

ment in defense of the Court's action would run as follows: In 1928, when Congress apportioned a supply of 7.5 million acre-feet plus any surplus, it did not foresee a supply of less than 7.5 million acre-feet and accordingly gave no thought to and made no provision for a shortage. The prospect of shortage presently exists, and ideally the apportionment of shortages should now be made by Congress or by compact. The technique that has the best chance of getting the matter back to Congress or into compact negotiations is to leave the shortage rule indefinite but subject to being made definite—and unfavorable—if the parties fail to reach agreement. Of course, it follows under this line of reasoning that the Court should *not* have guessed at what Congress would have done in 1928 if it had considered the problem and upon that basis laid down a rule. The aim is to get a decision from Congress (or from the states in a compact) that is appropriate for present conditions. True, Congress could overturn a judicially created rule purporting to rest on the Project Act, but the chances of this being done are much more remote than the chances of congressional action if the Court provides no rule at all.

But, it can be objected, this line of reasoning really leads to the conclusion that the Court should have refused to rule at all on the shortage question on the ground that it was not yet ripe for decision. The answer to this is that, if the Court had refused to pass on the question, it would have put Arizona right back where it started before filing its complaint. To satisfy the Bureau of Reclamation, the Bureau of the Budget, and the Congress, Arizona needed a judicial declaration of the supply legally available to her. For the Court to refuse to say what amount of water the three states were entitled to if the supply was less than 7.5 million acre-feet would be almost the same as dismissing the entire complaint. But, it may be claimed, Arizona can now come back to Congress armed with a decision that Congress has clear power to apportion the Colorado, and Arizona should thus ask Congress for a further apportionment. The difficulty here is that California would have no incentive to compromise. With the Court refusing to decide the question for lack of ripeness and with the Secretary lacking any power of decision, there is nothing to keep California from using her power in the House to keep the shortage question from ever being decided by Congress. And of course there would be no compact.

This long and tortuous tracing of a justification for the Court's finding power in the Secretary when Congress almost certainly intended no such thing ends up as little more than partisan help for poor, struggling Arizona—surely an indefensible thing for the Court to do. But before the whole structure is carried away with a breath, recall what Congress sought to do in 1928. It thought it had made provision for dividing the river so that development could proceed. It neglected to do the full job because it did not consider

the problem of shortage. The Court could accomplish the fundamental purpose of Congress—dividing a river as fully as necessary to secure development—by applying to shortages the rule Congress would have adopted in 1928. But the Court also had the opportunity to arrange matters so that a rule making sense for 1966 could be adopted. However, to do justice to the congressional desire that the river be divided, it had to be sure that *some* rule would be put into effect. The power to divide the river was therefore placed with the Secretary, in the hope that the parties would reach a compromise settlement in Congress or by compact. But if they did not, the Secretary, whose agency is an expert on water, could decide the matter.

Fabrication of this elaborate justification for an apparently indefensible piece of statutory interpretation has benefited somewhat from hindsight. Within two years after the decision, Arizona and California reached a tentative settlement on the shortage question. But the settlement does not vindicate completely the hypothesis advanced above, nor does it prove beyond question the prescience of Mr. Justice Black and his companions in the majority. The two antagonists have decided, for the time being, to stop fighting each other and to combine to fight outsiders to obtain a supplementary supply from another basin. If the plan to import water fails, we will then see if agreement can really be had on the shortage issue.

The dissenting Justices not only disputed the Court's holding on the allocation of water in times of shortage, but denied that Congress had delegated any apportionment power to the Secretary of the Interior and accordingly argued that the water delivery contracts had no allocative effect at all. Under their reasoning, the case had to be retried (or at least the record reconsidered) and decided upon principles of equitable apportionment. To advocate disregarding the contracts entirely seems contrary to the legislative history and the administrative construction of the act and contrary as well to the physical facts. Except for owners of "present perfected rights" no one could, under section 5 of the act, obtain water from Hoover Dam without a contract. Since Hoover Dam can impound the full flow of the stream, this means that no one can have a dependable supply of water from the main stream of the Colorado below Hoover without a contract. So, at the least, a contract was prerequisite to acquiring an appropriation right—a sort of license to seek an appropriation. But the contract was more. It also put a ceiling on the amount of water the state could have, at least until a new contract is executed. Considering this combination of physical circumstance and statutory provision, together with the fact that the Secretary executed contracts for the full amount of the statutory 7.5 million acre-feet plus some surplus, it seems somewhat blind to deny any effect at all to the water delivery contracts.

There is, in addition, another defect in the dissenters' reasoning. If we assume that the Secretary's contracts were bare licenses to appropriate, but not allocations, then the dissenters should have voted to dismiss Arizona's complaint on the ground that the case was nonjusticiable. As noted earlier, an equitable apportionment suit between states is not justiciable unless the stream is overappropriated.²¹⁵ If Arizona's claims depended upon valid appropriations the stream was far from being overappropriated. The total diversion from the main stream for use in Arizona in the year 1955 was 1.239 million acre-feet, and a substantial (but unknown) portion of this quantity came back to the river as return flow. Consumptive use in California and Nevada for the period 1955-1957 was approximately 4.5 million acre-feet. The historic flow at Lee Ferry for any period of ten consecutive years was never less than 100 million acre-feet and even in the recent dry years has been 10 to 15 million acre-feet in excess of 100 million. Subtracting the Mexican burden and evaporation and channel losses and crediting substantial inflow between Lee Ferry and Hoover Dam produces a supply in Lake Mead greatly in excess of existing uses.²¹⁶ Thus, Arizona's complaint should have been dismissed, since she was seeking a judicial declaration of rights to the use of water in the future, and such a decree has regularly been denied by the Court. The result of a denial would have been to continue the impasse. Arizona could not obtain federal consent and federal financing for the one-billion-dollar, one-million-acre-foot Central Arizona Project until her water rights were judicially determined;²¹⁷ she could not obtain a judicial determination of her water rights until her project was built and the stream became overappropriated.

The dissenters painted themselves into this corner because they believed that the Project Act did not (1) authorize proration of water in time of shortage (the Master's proposal) or (2) give the Secretary discretion to allocate water in periods of shortage (the majority holding). The author believes that the water delivery contracts should be regarded as the foundation of the states' water rights, that the contracts embodied claims to the river which presented a justiciable controversy, and that, in the absence of any express language to the contrary in the act, Congress would have intended the traditional western water law rule of priority of appropriation to apply in case of shortage—subject, of course, to the California Limitation Act. It is unnecessary to deprive the water delivery contracts of all effect in

215. *Colorado v. Kansas*, 320 U.S. 383 (1943); *Washington v. Oregon*, 297 U.S. 517, 522 (1936); *New York v. Illinois*, 274 U.S. 488 (1927); *Missouri v. Illinois*, 200 U.S. 496 (1906); *cf.* *Arizona v. California*, 283 U.S. 423, 463-64 (1931).

216. The data is taken from *Master's Report* 126-28.

217. See text accompanying note 180 *supra*.

order to maintain that the doctrine of priority of appropriation governs in periods of shortage.

3. *The relationship between state and federal law.*

The majority's construction of sections 14 and 18 of the Boulder Canyon Project Act as not requiring the application of state law to project water, even after it has passed within state boundaries, has produced the strongest criticism of the decision. Mr. Justice Douglas said: "In spite of the express command of § 14 . . . the Secretary of the Interior is given the right to determine the priorities by administrative *fiat*. Now one can receive his priority because he is the most worthy Democrat or Republican, as the case may be."²¹⁸ Some of the commentators were equally concerned, though (not being Supreme Court Justices) less outspoken.²¹⁹

There is not much to support the majority's conclusion, either on the face of the statute or in its legislative history. The text of the statute reads as follows:

[Section 14.] This Act shall be deemed to supplement to the reclamation law, which said reclamation law shall govern the construction, operation, and management of the works herein authorized, except as otherwise herein provided.²²⁰

[Section 18.] Nothing herein shall be construed as interfering with such rights as the States now have either to the waters within their borders or to adopt such policies and enact such laws as they may deem necessary with respect to the appropriation, control, and use of waters within their borders, except as modified by the Colorado River compact or other interstate agreement.²²¹

The apparent intent of section 14 is to incorporate in the Project Act the harmonious provisions of section 8 of the original Reclamation Act, which provided:

That nothing in this Act shall be construed as affecting or intended to affect or to in any way interfere with the laws of any State or Territory relating to the control, appropriation, use, or distribution of water used in irrigation, or in any vested right acquired thereunder, and the Secretary of the Interior, in carrying out the provisions of this Act, shall proceed in conformity with such laws . . .²²²

It is clear that sections 14 and 18 ought not to be construed as providing for the application of state law to the *interstate* apportionment contemplated by sections 4(a) and 5 of the act. Of necessity, the law governing an

218. *Arizona v. California*, 373 U.S. 546, 629-30 (1963) (dissenting opinion).

219. See, e.g., Trelease, *supra* note 184, at 183-96.

Other commentators are better disposed toward the holding. See Sax, *supra* note 184. It is not clear, however, that Professor Sax fully approves of the decision to wipe out state law in administering project water intrastate. Professor Haber, on the other hand, seems to endorse the opinion completely. He describes as one "policy accomplishment" of the decision the placing of extensive powers in the national government, making "it possible to accomplish a fully integrated development-allocation scheme without interference of conflicting state authority." Haber, *supra* note 184, at 26.

220. 43 U.S.C. § 617m (1964).

221. 43 U.S.C. § 617q (1964).

222. 32 Stat. 390 (1902) (now 43 U.S.C. § 383 (1964)).

interstate apportionment—whether it be accomplished by compact,²²³ by Supreme Court adjudication,²²⁴ or by congressional enactment—is federal law. The substantive rules may be drawn from the jurisprudence of the states,²²⁵ but the power to impose a solution is federal power and the rule applied is a federal rule. There is no doubt, too, that federal law may be applied to the use of federal water all the way down to the furrow in the farmer's field if Congress chooses to extend federal power that far.²²⁶ But, despite the assertions of the majority to the contrary, there is nothing in the structure or scheme of the Project Act that is inconsistent with the application of state law to the use of the water after it crosses state boundaries. The Special Master's construction of the statute set forth a workable system for operating the dam and works that confided to the Secretary of the Interior sufficient power for him to achieve the federal objectives and yet gave enough power to the states to allow them to accomplish local aims. In reconciling section 5 with sections 14 and 18, the Master in effect found that Congress established a double veto on applications for use of main-stream water. Under section 5, a user must have a contract with the Secretary, and thus, by implication, the use must be satisfactory to the Secretary. But under sections 14 and 18, the user must also be under no disability to receive the water under applicable state law. This accommodation of the interests of both governments is sensible and practicable; no very compelling federal interest requires that the Secretary override state law in deciding who gets water. In a water-short area like the Lower Basin, there is little danger that the Secretary will run short of customers qualified to receive water under state law.

The Court also disapproved the Master's conclusion that state law governs priorities within the state between users having contracts with the Secretary, except as other federal statutes may displace state law. The majority justifies its conclusion that federal law governs intrastate priorities in the following language:

The argument that § 8 of the Reclamation Act requires the United States in the delivery of water to follow priorities laid down by state law has already been disposed of by this Court in *Ivanhoe Irr. Dist. v. McCracken*, . . . and reaffirmed in *City of Fresno v. California* In *Ivanhoe* we held that, even though § 8 of the Reclamation Act preserved state law, that general provision could not override a specific provision of the same Act prohibiting a single landowner from getting water for more than 160 acres. We said:

"As we read § 8, it merely requires the United States to comply with state law

223. *West Virginia ex rel. Dyer v. Sims*, 341 U.S. 22 (1951); *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92 (1938).

224. *Nebraska v. Wyoming*, 325 U.S. 589 (1945); *Kansas v. Colorado*, 206 U.S. 46 (1907); *Missouri v. Illinois*, 200 U.S. 496 (1906).

225. *See Wyoming v. Colorado*, 259 U.S. 419 (1922).

226. *See Ivanhoe Irr. Dist. v. McCracken*, 357 U.S. 275 (1958).

when, in the construction and operation of a reclamation project, it becomes necessary for it to acquire water rights or vested interests therein. But the acquisition of water rights must not be confused with the operation of federal projects. As the Court said in *Nebraska v. Wyoming* . . . : "We do not suggest that where Congress has provided a system of regulation for federal projects it must give way before an inconsistent state system." . . . We read nothing in § 8 that compels the United States to deliver water on conditions imposed by the State." . . . Since § 8 of the Reclamation Act did not subject the Secretary to state law in disposing of water in that case, we cannot, consistently with *Ivanhoe*, hold that the Secretary must be bound by state law in disposing of water under the Project Act.²²⁷

This use of the *Ivanhoe* case can be politely described as either disingenuous or muddleheaded. The issue in *Ivanhoe* was extremely simple: Was section 8 of the 1902 act intended to override section 5 (limiting the size of farms receiving reclamation water to 160 acres) when state law embodied a policy against such limitation?

The Court gave the obvious answer: (1) that, to the extent there was conflict between the particular language of section 5 and the general language of section 8, the former prevailed, and (2) that, to the extent federal policy embodied in section 5 conflicted with state policy, the former also prevailed under the supremacy clause. Such a holding, which essentially came down to the reconciliation of sections 5 and 8 of the 1902 act, provides no authority for the interpretation of sections 14 and 18 of the 1928 act, for nothing in the latter act has the specificity of section 5 to cause a conflict. In order to rely on *Ivanhoe*, the Court must say that section 5 of the 1928 act, which requires a contract,²²⁸ is as specific in overriding state law as section 5 of the 1902 act, which says: "No right to the use of water for land in private ownership shall be sold for a tract exceeding one hundred and sixty acres to any one landowner. . . ." The analogy will not stand up.

Equally fatuous is the Court's treatment of section 18:

Nor does § 18 of the Project Act require the Secretary to contract according to state law. That Act was passed in the exercise of congressional power to control navigable water for purposes of flood control, navigation, power generation, and other objects, and is equally sustained by the power of Congress to promote the general welfare through projects for reclamation, irrigation, or other internal improvements. Section 18 merely preserves such rights as the States "now" have, that is, such rights as they had at the time the Act was passed. While the States were generally free to exercise some jurisdiction over these waters before the Act was passed, this right was subject to the Federal Government's right to regulate and develop the river. Where the Government, as here, has exercised this power and

227. 373 U.S. at 586-87, quoting *Ivanhoe Irr. Dist. v. McCracken*, 357 U.S. 275, 291-92 (1958), and *Nebraska v. Wyoming*, 325 U.S. 589, 615 (1945).

228. "Contracts respecting water for irrigation and domestic uses shall be for permanent service and shall conform to paragraph (a) of section 4 of this Act. No person shall have or be entitled to have the use for any purpose of the water stored as aforesaid except by contract made as herein stated." Act of Dec. 21, 1928, ch. 42, § 5, 45 Stat. 1060, 43 U.S.C. § 617d (1964).

undertaken a comprehensive project for the improvement of a great river and for the orderly and beneficial distribution of water, there is no room for inconsistent state laws. As in *Ivanhoe*, where the general provision preserving state law was held not to override a specific provision stating the terms for disposition of the water, here we hold that the general saving language of § 18 cannot bind the Secretary by state law and thereby nullify the contract power expressly conferred upon him by § 5.²²⁹

One might have thought, before receiving this instruction, that a provision reciting that "nothing herein shall be construed as interfering with such rights as the States now have . . . to adopt such policies and enact such laws as they may deem necessary . . . except as modified by the Colorado River Compact" spoke prospectively, saving to the states after the passage of the act the power they had before it was passed as to water within their borders. "Nothing herein" would seem to include section 5 therein.

An objective appraisal of the text and legislative history of the act would lead any fair-minded observer to the conclusion that Congress intended the states to have a veto on who could get water from the Secretary, and intended further that the highly developed state law would govern distribution of a state's allocation within its borders, rather than a nonexistent federal law.

The sad truth is that this part of the opinion in *Arizona v. California* reflects a doctrinaire conceptualism that has dominated a majority of the Court for twenty years. Since the *First Iowa* case²³⁰ the Court has uniformly overridden congressional attempts to establish a system for state and federal governments to share the decision-making power on water resource development. The system Congress seemingly adopted was the double veto; the Court, however, has uniformly eliminated the state veto. A brief review of the leading cases will sustain the contention that the Court steadfastly adheres to the view that the decision-making power in water resource allocation should be an exclusive federal function, regardless of what Congress says.

In the *First Iowa* case, the State of Iowa objected to the licensing of a dam because the project involved a transbasin diversion in violation of an Iowa statute. The Court held that the FPC could grant the license notwithstanding the state's objection to the violation of state law. Section 27 of the Federal Water Power Act of 1920 contains a provision much like that of section 18 of the Boulder Canyon Project Act, and it met the same fate. Section 27 provides:

That nothing herein contained shall be construed as affecting or intending to affect or in any way interfere with the laws of the respective States relating to the

229. 373 U.S. 587-88 (1963) (citations omitted).

230. *First Iowa Hydro-Elec. Co-op. v. FPC*, 328 U.S. 152 (1946).

control, appropriation, use, or distribution of water used in irrigation or for municipal or other uses, or any vested right acquired therein.²³¹

The section, the Court explained, does not really apply to state resource development policies, but only to "proprietary rights" or "property rights."²³² Nor did section 9(b) of the Power Act grant any power to the state to share in the decision on licensing the dam. Superficially, the language might appear to dictate otherwise:

That each applicant for a license hereunder shall submit to the commission—

• • •
(b) Satisfactory evidence that the applicant has complied with the requirements of the laws of the State or States within which the proposed project is to be located with respect to bed and banks and to the appropriation, diversion, and use of water for power purposes and with respect to the right to engage in the business of developing, transmitting, and distributing power, and in any other business necessary to effect the purposes of a license under this Act.²³³

But no, the statutory "reference to state laws is by way of suggestion to the Federal Power Commission of subjects as to which the Commission may wish more proof submitted to it of the applicant's progress."²³⁴ The dam went up over Iowa's protest.²³⁵ Mr. Justice Douglas' peevisish dissent that the decision in *Arizona v. California* will ". . . be marked as the baldest attempt by judges in modern times to spin their own philosophy into the fabric of the law, in derogation of the will of the legislature"²³⁶ rings a little hollow in light of his vote with the majority in *First Iowa* (only Mr. Justice Frankfurter dissented) and his failure to explain that vote, or even mention the case, in his *Arizona v. California* dissent.²³⁷

As the people of the State of Washington had reason to learn, state power over licenses for dams on navigable streams, and now for dams on nonnavigable streams if the power is transmitted interstate,²³⁸ amounts to nothing more than the right to receive notice that the application has been filed²³⁹ and the right to appear and oppose the application on the merits. In the Cowlitz River litigation²⁴⁰ the Supreme Court held that the only opportunity a state has to oppose a dam that offends state policy is during the pendency of the application before the FPC and on appeal from the

231. 16 U.S.C. § 821 (1964).

232. 328 U.S. at 176.

233. 16 U.S.C. § 802(b) (1964).

234. 328 U.S. at 177-78.

235. *Iowa v. FPC*, 178 F.2d 421 (8th Cir. 1949).

236. 373 U.S. at 628.

237. It is also worth noting here that Mr. Justice Douglas voted with the majority to override state law in *City of Tacoma v. Taxpayers of Tacoma*, 357 U.S. 320 (1958), and in *City of Fresno v. California*, 372 U.S. 627 (1963). These cases are discussed in the text accompanying notes 238-45 and 253-56 *infra*.

238. See *FPC v. Union Elec. Co.*, 381 U.S. 90 (1965).

239. See 16 U.S.C. § 797(f) (1964).

240. *City of Tacoma v. Taxpayers of Tacoma*, 357 U.S. 320 (1958).

Commission action before the court of appeals. After the license in issue had been granted and the order upheld by the court of appeals,²⁴¹ the Washington Supreme Court held that, as a matter of state law, the licensee city lacked condemnation power to acquire the dam and reservoir site.²⁴² In reversing, the United States Supreme Court relied on the exclusiveness of review provided by section 313(b) of the Power Act,²⁴³ and avoided the state law question by finding that the licensee obtained federal eminent domain power.²⁴⁴ The people of the State of Washington made one more attempt to defeat the dam by adopting an initiative measure prohibiting its construction, but the Washington Supreme Court quite correctly invalidated the measure on the basis of the earlier United States Supreme Court ruling.²⁴⁵

*FPC v. Oregon*²⁴⁶ (the Pelton Dam case) has been a *cause célèbre* for western water lawyers. The holding, in brief, was that the FPC could license a dam on a *nonnavigable* stream over the veto of the State of Oregon (whose interest was the preservation of fish) where the dam abutted on reserved land of the United States. The Court found constitutional power in Congress to regulate dams abutting on reserved lands, though located on nonnavigable streams, in the property clause (article IV, section 3). Mr. Justice Douglas' contention that the Desert Land Act²⁴⁷ gave the western states jurisdiction over nonnavigable rivers was rejected, and the Court held that a license was authorized under section 4 of the Federal Power Act²⁴⁸ and required under section 23 of that act.²⁴⁹ Once FPC jurisdiction attaches, *First Iowa* disposes of any claim of state veto power.

The last remnant of state power left after these two cases was virtually obliterated in *FPC v. Union Elec. Co.*²⁵⁰ The question decided was the one left open in the famous New River case, *United States v. Appalachian Power Co.*²⁵¹ Does the Federal Power Act require a license for a project on a nonnavigable stream where the dam does not affect downstream navigation but where the power is transmitted in interstate commerce? In a six-to-three decision, the Court answered affirmatively, holding that the sale of power across state lines falls within the language of section 23(b). Section 23(b) requires a license when "the interests of interstate or foreign com-

241. *Washington Dep't of Game v. FPC*, 207 F.2d 391 (9th Cir. 1953).

242. *City of Tacoma v. Taxpayers of Tacoma*, 49 Wash. 2d 781, 307 P.2d 567 (1957).

243. 16 U.S.C. § 825l(b) (1964).

244. *City of Tacoma v. Taxpayers of Tacoma*, 357 U.S. 320, 339-41 (1958).

245. *City of Tacoma v. Taxpayers of Tacoma*, 60 Wash. 2d 66, 371 P.2d 938 (1962). The court chided the city for being so anxious over the initiative measure as to bring still another validation suit to reassure bondholders.

246. 349 U.S. 435 (1955).

247. 43 U.S.C. §§ 321-39 (1964).

248. 41 Stat. 1065 (1920), *as amended*, 16 U.S.C. § 797(e) (1964).

249. 41 Stat. 1075 (1920), *as amended*, 16 U.S.C. § 817 (1964).

250. 381 U.S. 90 (1965).

251. 311 U.S. 377 (1940).

merce would be affected by such proposed construction"²⁵² It is reasonable to suppose that the Court will also uphold FPC claims to jurisdiction over a project on a nonnavigable stream that transmits power only intrastate if the Commission finds that such intrastate transmission affects interstate commerce—such as by affecting demand for out-of-state power. Mr. Justice Douglas voted with the majority.

The last case for consideration in this short history is *City of Fresno v. California*.²⁵³ The city had obtained injunctive and declaratory relief in the district court that required Friant Dam, a key feature of the Central Valley Project, to be operated in such a way as to honor various claims to priority held by the city. The Court held that the city was not entitled to injunctive or declaratory relief since the United States is immune from suit for injuries caused by the operation of Reclamation Bureau dams. The sole recourse for injured parties is through a Tucker Act²⁵⁴ suit. The Court stated:

[Section 8 of the Reclamation Act] . . . does not mean that state law may operate to prevent the United States from exercising the power of eminent domain to acquire the water rights of others. This was settled in *Ivanhoe Irr. Dist. v. McCracken*. . . . Rather, the effect of § 8 in such a case is to leave to state law the definition of the property interests, if any, for which compensation must be made.²⁵⁵

The practical effect of this decision is to eliminate the operation of state law under the Reclamation Act in all cases other than those in which the Government takes state-created water rights by eminent domain or inverse condemnation. Since it is unlikely that county-of-origin and watershed protection statutes²⁵⁶ create vested property rights compensable under state law, the federal government can ignore them with impunity. Similarly, the Bureau of Reclamation is no longer required to file with the state water resources agency to secure appropriative rights for its irrigation projects; the decision empowers the Bureau to seize the water it desires, leaving the state powerless to enforce its laws and leaving private proprietors with an action in the Court of Claims. The decision thus reverses sixty-four years of administrative interpretation and practice.

This review of the principal cases concerned with federal-state relations in water resource development leads the author to the conclusion that neither judicial precedent nor legislative history nor administrative construction nor even the plain meaning of the statute will stand in the Court's

252. 16 U.S.C. § 817 (1964).

253. 372 U.S. 627 (1963); *accord*, *Dugan v. Rank*, 372 U.S. 609 (1963).

254. 28 U.S.C. § 1346 (1964).

255. 372 U.S. at 630.

256. *E.g.*, CAL. WATER CODE §§ 10505, 11460-65, 11500 (1945). *See also* CAL. WATER CODE: § 12931 (Supp. 1959).

way of allocating exclusive decision-making power on water resource development to the federal government.²⁵⁷ For this reason, the Court's treatment of sections 14 and 18 of the Project Act came as no surprise, although as no less of a disappointment.

4. The "reserved rights" doctrine.

The last ruling of general importance is the Court's reaffirmation and expansion of the "reserved rights" doctrine of *Winters v. United States*.²⁵⁸ The full development of the origin, growth, and present status of the reserved rights doctrine would take another full-length article. It must suffice here to describe briefly the doctrine's origin and operation and to raise some questions about its future.

The reserved rights doctrine holds that, upon the creation of a federal reservation on the public domain—whether by treaty, legislation, or Executive order—the reservation has appurtenant to it the right to divert as much water from streams within or bordering upon it as is necessary to serve the purposes for which the reservation was created. Thus, in *Arizona v. California* reserved water rights were decreed for Indian reservations, national recreation areas, national wildlife refuges, and national forests.²⁵⁹

Several aspects of the reserved rights doctrine have significant, operative consequences:

(1) The priority date is the date the reservation is created. State-created water rights in existence before this date are superior; those arising thereafter are subordinate.²⁶⁰

(2) The reserved right, unlike state-created appropriative rights, does not depend upon diversion from the stream and application to beneficial use. The reserved right arises when the reservation is established even though the water right is not exercised for decades thereafter.²⁶¹ In this respect the right is like a riparian right. In time of shortage, however, it is unlike a riparian right, for it does not share the available supply pro rata

257. A parallel development is emerging with respect to petroleum resources. See Meyers, *Federal Preemption and State Conservation in Northern Natural Gas*, 77 HARV. L. REV. 689 (1964).

258. 207 U.S. 564 (1908). The only other Supreme Court case on the reserved rights doctrine prior to *Arizona v. California* is *United States v. Powers*, 305 U.S. 527 (1939), which merely adopts the *Winters* doctrine. There is some periodical discussion of the subject. See Sondheim & Alexander, *Federal Indian Water Rights: A Retrogression to Quasi-Riparianism?*, 34 SO. CAL. L. REV. 1 (1960); Veeder, *Winters Doctrine Rights—Keystone of National Programs for Western Land and Water Conservation and Utilization*, 26 MONT. L. REV. 149 (1965); Notes, 18 ROCKY MT. L. REV. 427 (1946); 5 UTAH L. REV. 495 (1957).

259. 376 U.S. at 344-46, 350 (decree).

260. This proposition is stated explicitly in *Master's Report* 257. It is implicit in the Supreme Court opinion, particularly in the decree. See 376 U.S. at 340.

261. *Master's Report* 257. See 376 U.S. at 345, where water rights are decreed to the Ft. Mohave Indian Reservation for 18,974 acre-feet with priority dates of 1890 and 1911. The largest amount of land ever irrigated on the reservation was 23 acres, and the population of the reservation in 1957 was one family. Transcript of the Oral Argument 329, *Arizona v. California*, 373 U.S. 546 (1962) (opinion).

but rather takes its place on the priority schedule and receives water ahead of all rights of later date.

(3) As may be inferred from the statement above, the federal reserved right need not be created or exercised in accordance with state law. Not only does its creation not depend on diversion of water and application of it to beneficial use, but the right does not depend upon a filing with the state water agency or upon recording of the claim. And it is not subject to state laws on forfeiture and abandonment.²⁶²

(4) The quantity of water to be enjoyed under a reserved right is measured by the quantity necessary to fulfill the purposes of the reservation, both at the present time and in the future. *Arizona v. California* quantified this amount for the Indian reservations as the amount of water necessary to irrigate all the irrigable land on each reservation. This quantity represents for those reservations the amount of water they are entitled to for all time, unless, of course, the reservations are enlarged by additional withdrawals. For five Indian reservations and two wildlife refuges, reserved water rights aggregated just under one million acre-feet in diversions.²⁶³

Although the Court in *Arizona v. California* wrote six and one-half pages in the official reports on reserved water rights, we know very little more about the basis of the right now than we did before. The best the Court could do to establish a constitutional foundation for the reserved rights doctrine was to make a general reference to "the broad powers of the United States to regulate navigable waters under the Commerce Clause and to regulate government lands under Article IV, § 3, of the Constitution [the property clause]. [The Court had] . . . no doubt about the power of the United States under these clauses to reserve water rights for its reservations and its property."²⁶⁴ All other support is found in *Winters v. United States*²⁶⁵ and *United States v. Powers*.²⁶⁶

Winters itself pays scant attention to the constitutional problems. The question of power was disposed of as follows: "The power of the Government to reserve the waters or exempt them from appropriation under the state laws is not denied, and could not be."²⁶⁷ The Court's citation of *United States v. Winans* does not help to explain the modern doctrine of reserved rights since the *Winans* case suggests the treaty-making power as the basis of the reserved right. Elsewhere in the *Winters* opinion the suggestion is repeated that the Indians owned the land they occupied and the water

262. *Master's Report* 257, 261-62.

263. 376 U.S. at 344-46 (decree).

264. 373 U.S. at 597-98 (opinion).

265. 207 U.S. 564 (1907).

266. 305 U.S. 527 (1939).

267. 207 U.S. at 577, citing *United States v. Winans*, 198 U.S. 371 (1905), and *United States v. Rio Grande Ditch & Irr. Co.*, 174 U.S. 690, 702 (1898).

appurtenant thereto and were therefore reserving only what they owned when they entered into the treaty. But the treaty-power explanation will not suffice for *Arizona v. California*, since not one of the reservations was created by treaty; rather, all were created by congressional enactment or Executive order.

United States v. Rio Grande Ditch & Irr. Co., also cited in *Winters*, is more helpful. On the page cited by the Court begins a discussion of the rights of the United States in the flow of rivers, both navigable and non-navigable. The Court in the *Rio Grande* case first sets forth the common-law rule of riparian rights. It then continues:

[I]t is also true that as to every stream within its dominion a State may change this common law rule and permit the appropriation of the flowing waters for such purposes as it deems wise. . . .

Although this power of changing the common law rule as to streams within its dominion undoubtedly belongs to each State, yet two limitations must be recognized: First, that in the absence of specific authority from Congress a State cannot by its legislation destroy the right of the United States, as the owner of lands bordering on a stream, to the continued flow of its waters; so far at least as may be necessary for the beneficial uses of the government property. Second, that it is limited by the superior power of the General Government to secure the uninterrupted navigability of all navigable streams within the limits of the United States.²⁶⁸

With this general language in mind, the first half of which was dictum, we can turn to the opinion of the circuit court of appeals in *Winters*,²⁶⁹ which does set forth a partial rationale for the law of reserved water rights. In brief, the court's theory is this:

(1) At the time the reservation was created, the Government owned both the land and the water therein, since it was part of the public domain.

(2) The Desert Land Act²⁷⁰ had empowered others to acquire rights in water that the Government owned: an individual whose right was recognized by local custom or state law could, because of the Desert Land Act, acquire rights in a government stream superior to those of the Government.

(3) But the Desert Land Act applied only to "public lands"; lands reserved for use as Indian reservations are not public lands, and water on such land is therefore not available for appropriation under the act.

268. 174 U.S. at 702-03.

269. *Winters v. United States*, 143 F. 740 (9th Cir. 1906). A later appeal is found in 148 F. 684 (9th Cir. 1906), but it adds nothing to the first opinion.

270. 19 Stat. 377 (1877), as amended, 43 U.S.C. § 321 (1964). When enacted, the act applied to the states of California, Oregon, and Nevada, and to the territories of Arizona, Idaho, New Mexico, Montana, Washington, Wyoming, and the Dakotas. Colorado was included in an 1891 amendment. 26 Stat. 1097 (1891).

A proviso in § 1 of the act is the keystone of this part of the argument: "all surplus water over and above such actual appropriation and use, together with the water of all lakes, rivers, and other sources of water supply upon the public lands and not navigable, shall remain and be held free for the appropriation and use of the public" (emphasis added).

The constitutional basis for this analysis is never stated, but the property clause is clear authority for a congressional grant of authority to acquire water rights and for congressional withdrawal of the authority. Thus, if the premise of Government ownership is granted, the conclusion works out well enough, at least in appropriation states.

To illustrate the operation of the doctrine in a state that follows the appropriation doctrine and is subject to the Desert Land Act, let it be supposed that the Government owns one hundred square miles of land traversed by a nonnavigable stream. The land is open for entry under any one of the applicable land statutes and thus is public land rather than reserved land. In 1880 *A* diverts water from the stream below the public lands and acquires an appropriative right under state law. In 1885 Congress by statute (or the President by Executive order pursuant to statutory authorization) withdraws fifty square miles of the land from entry and establishes thereon an Indian reservation, one boundary of which is the stream. In 1890 *B* diverts water from the stream above the Indian reservation and acquires an appropriative right under state law. In 1895, for the first time, water is diverted from the stream and put to use on the Indian reservation. Under state law the order of priority is *A* (1880), *B* (1890), and the reservation (1895). Under the reserved rights doctrine the order of priority is: first, *A*, who obtained his right according to the Desert Land Act before the reservation ceased to be public land; second, the reservation; third, *B* (if any water is left), because he could acquire no rights superior to the Government's in water that had been withdrawn from the operation of the Desert Land Act.

Of course this reasoning does not work in any state in which the Desert Land Act does not apply. It also runs into difficulty in states that recognize riparian rights, as California does. Applying to the case stated above the riparian system of water rights with a prorationing system of sharing the supply in times of shortage,²⁷¹ *A* and the Government are presumably riparians sharing the supply on a basis of parity. But what is the relationship of *B* and the Government? If they, too, are ordinary riparians, sharing the supply on a basis of equality, then in riparian states the priority of federal reservations is meaningless. As each parcel of land along the river is patented out to private ownership (and perhaps even when it is conveyed by the federal government to the state government), the quantity of water available to the Indians shrinks. Not the least anomaly in this analysis is the vast difference between the rights of the Indians in an appropriation state and their rights in a riparian state. Moreover, can it be said that when the federal government creates an Indian reservation in a state, it intends for the

271. *California-Oregon Power Co. v. Beaver Portland Cement Co.*, 295 U.S. 142, 163-64 (1935), holds that, under the Desert Land Act, a state is free to adopt any system of water rights it wishes.

water rights of the reservation to be established under state law? Certainly this has not been true in appropriation states, where the right arises irrespective of state law.

On the other hand, to try to devise a combination riparian, prior appropriation, and reserved-right system also causes difficulties. If *A* and the federal government are treated as riparians, sharing the supply pro rata, but the federal government is also treated as a prior appropriator so far as *B* is concerned, then a circuitry of priority problem exists between *A* and *B*, for *A* and *B* under the riparian rule should also share the supply pro rata. In other words, *A* and *B* are to be treated equally and *A* and the federal government are to be treated equally, but *B* is inferior to the federal government.

One is led to conclude, then, that there is no unifying theory that satisfactorily explains either the creation of reserved water rights or their relationship to state-created water rights. Only if the doctrine is limited to Desert Land Act states and to streams subject exclusively to the law of prior appropriation is a coherent system of law on reserved rights achieved.

Turning, however, to the remaining problems the doctrine presents, we can briefly dispose of the frequently made and rarely accepted contention that, conceding the power of the Government to reserve the water, it had no intention of doing so. The *Winters* opinion was devoted principally to this argument, and it was rejected on two main grounds:

(1) The purpose of the agreement with the Indians was to change their nomadic way of life to a settled, pastoral mode of existence. To this end, a tract of land capable of sustaining agriculture with irrigation was assigned to the Indians. Although the agreement is silent about the right of the Indians to use water from streams on the reservation, it is more probable than not that the right to use the water was intended to pass to the Indians. Such an interpretation would accomplish the purposes of the agreement, while the contrary would frustrate them. In essence, this is the analysis that has been applied ever since to the construction of instruments creating Indian reservations, whether the instrument be a statute,²⁷² Executive order,²⁷³ or treaty.

(2) Ambiguities in treaties with Indians are to be construed in favor of the Indians. This rule of construction has been extended to statutes and Executive orders creating Indian reservations.

A more difficult problem than the intention *vel non* to reserve for the

272. The Colorado River Indian Reservation was established in part by statute and the presumption of the reservation of water rights was applied to it. See *Arizona v. California*, 376 U.S. 344, 345 (decree); *Master's Report* 269, 271.

273. The Cocopah Indian Reservation was established by Executive order, and the Chemehuevi Indian Reservation was established by order of the Secretary of the Interior. Both were awarded reserved water rights. See *Arizona v. California*, *supra* note 272, at 344; *Master's Report* 267-68.

Indians some water is the question of how much. *Winters* sustained a decree awarding the Indians 5,000 miner's inches, but gave no reason for the figure other than such was the amount the Indians had used in the past.²⁷⁴ The opinion contains a suggestion that the Indians were entitled to the entire flow of the stream, but this was on the theory that they owned it originally and reserved it in their treaty, a theory already shown to be inapplicable to reservations created by statute and Executive order.

With no guidance on the admeasurement of Indian rights from the Supreme Court, the lower federal courts have been struggling with the problem of quantification since *Winters*. A case decided immediately after *Winters*, *Conrad Investing Co. v. United States*,²⁷⁵ measures the entitlement of Indian reservations by the present and future needs of the Indians in the reservation, fixes an amount presently allowable, and leaves the decree open to modification as needs increase. This arrangement is ideal for the Indians, but it plays havoc with the rest of the watershed, for no one knows or can know what his water rights are. Existing users with priority dates later than the establishment date of the reservation suffer from an inchoate lien on their supply. New users cannot be attracted to the basin because the supply is uncertain. This difficulty was avoided in *United States v. Walker River Irr. Dist.*,²⁷⁶ in which the reservation's entitlement was determined upon consideration of the population of the tribe over a period of seventy years, the number of acres cultivated, the quantity of water in the area, and the needs for domestic, stock-watering, and power-generating purposes. The decreed right was permanently fixed, the court holding that seventy years of experience with a static population enabled the court to determine future needs.

Arizona v. California may or may not have put the question to rest. The Master recommended, and the Court adopted, a decree that permanently fixed each reservation's quantity of water. The Master stated explicitly that his purpose in quantifying the Indians' water rights was to promote development elsewhere on the stream as well as on the reservation by making the water budget as precise as possible. The Master's standard for fixing quantities was irrigable acreage. He defended this standard somewhat negatively—that no other standard was as good. The open-ended decree has the vice of uncertainty already noted; the prediction of future needs might be wrong and therefore injurious to the Indians as well as contrary to the creating intent.²⁷⁷ An irrigable acreage standard, while it made a lot of

274. 207 U.S. at 577.

275. 161 F. 829 (9th Cir. 1908).

276. 104 F.2d 334 (9th Cir. 1939). The Ninth Circuit went back to the open-ended decree in *United States v. Ahtanum Irr. Dist.*, 236 F.2d 321, 327 (9th Cir. 1956), 330 F.2d 897 (9th Cir. 1964).

277. See Master's Report 263-65.

water available to reservations sparsely inhabited (and in at least one instance not inhabited at all), provides the only safe measure for a permanent allotment. The Master also sought, so far as he might, to facilitate the best economic use of Indian water. He noted that his quantification of the Indian water on the basis of irrigable acreage was not intended to limit the use of the water to agriculture. While he did not decide the question of change of use, as it was not before him, he at least struck off one shackle that might impede economic maximization. He also suggested that nothing in his proposed decree forbade the transfer of the land and water together or of the water right alone. By thus inviting attention to two essential characteristics of a marketable property right—freedom of transfer and freedom of use—and by establishing a third in the recommended decree—quantification—the Master opened the door to the creation of a market in Indian water rights, if the Indians and Congress so desire.²⁷⁸

Regrettably, the Supreme Court mentioned neither the transferability of the Indians' rights nor the possibility of their change from agricultural to a higher use. Even the measurement of quantity is left somewhat obscure in a single paragraph of six short sentences.²⁷⁹ The paragraph can be read as adopting as a general rule the Master's standard of irrigable acreage; it can also be read, however, as merely approving the Master's decision on the particular reservations.

The Master's proposed decree also reserved water rights for the Lake Mead National Recreation Area, the Havasu Lake and Imperial National Wildlife Refuges on the main stream, and the Gila National Forest on a tributary. These rights were sustained by the Court without discussion.²⁸⁰ It is regrettable that the Court failed to write even a word on the issues presented, for they were questions of first impression on which the Master could proceed only by analogy.

The Master saw no difference in principle between reserving water for Indian reservations and reserving water for other federal reservations.²⁸¹ On the question of federal power to do so, he was doubtless correct. If the United States "owned" the land and water in the western states, then Congress had the power under the property clause of the Constitution to enact the Desert Land Act, which severs water from public lands and permits the creation of private property rights in that water in accordance with state law. Similarly, under the property clause, a properly authorized reservation of land for Government purposes could withdraw water on the land from the operation of the act and thus restore its ownership to the Government. But neither the *Winters* case nor the *Powers* case, the only two Su-

278. See *id.* at 265-66.

279. 373 U.S. at 600-01 (opinion).

280. See *id.* at 601.

281. *Master's Report* 292-93, 297, 335.

preme Court cases in point, sustains a holding that reservation of land for non-Indian purposes reflects an intention to withdraw the water as well. The *Winters* case emphasizes that in an instrument silent on the question, the intention to reserve water is inferred because the parties to the agreement are Indians who expect and are expected to make an agricultural home on the reserved land.²⁸² All reserved water rights cases in the lower federal courts have also involved Indians and employ the same reasoning. Thus, when land is withdrawn from entry for some non-Indian purpose, there is little basis on which to judge whether the water on it has also been withdrawn. The picture is even less clear with regard to the amount of water reserved. Irrigable acreage is not an acceptable standard for national forests, parks, recreation areas, and wildlife refuges. The Master attempted no quantification for the national forest and the national recreation area, resorting to the general formula of the quantity "reasonably needed . . . for appropriate purposes."²⁸³ He justified this conclusion by noting the lack of evidence of ultimate water requirements, but then somewhat inconsistently said that, in any event, the quantities were so small as to be *de minimis*, an observation that suggests that no great harm would have come to the Government if he had quantified the claims.

Western water users are understandably alarmed over the implications of the reserved rights doctrine.²⁸⁴ The doctrine casts a cloud over many privately owned water rights. One can feel sympathy for users on the lower Colorado who discover that the earliest priority on the river is enjoyed by the Colorado River Indian Reservation for nearly one-half million acre-feet.²⁸⁵ But, at least since 1908 when *Winters* was decided, anyone planning a water project could have learned of the Indians' rights, and even before that it would not have taken much imagination to suppose that Indian reservations were entitled to some irrigation water. The parks, monuments, forests, wildlife refuges, recreation areas, and so forth are less obvious.

What are the reasonable needs of a national forest? If operated purely as a forest, the amount is very little. If operated as a sylvan playground, with golf courses, swimming pools, and lakes for fishing and boating, the amount begins to increase significantly. And perhaps the most unsettling thing to western water users is the uncertainty about what the Government will claim when today's simple forest might be tomorrow's North Shore of Lake Tahoe.²⁸⁶

282. 207 U.S. at 576.

283. *Master's Report* 295.

284. A number of western Senators have supported Senator Kuchel's legislative efforts to confine the reserved rights doctrine. In the 88th Congress, the bill was S. 1275; in the 89th Congress, S. 1636. The American Bar Association is on record in support of such a bill.

285. The 1865 priority covers 75,000 acres which were awarded a consumptive use rate of approximately 6.5 acre-feet per acre.

286. Part of the North Shore of Lake Tahoe is within the boundaries of Toiyabe National Forest.

The Court having ignored these problems, Congress or the Secretary should quantify the federal claims so that proper planning can proceed. And to protect the legitimate expectations of users whose rights postdate the withdrawals, the quantities established should be narrowly confined to the purpose to be served by the withdrawal. Thus, for example, water for a national forest should properly include a domestic supply for the rangers but not a municipal supply for a resort area.

D. *The Central Arizona Project*

The Central Arizona Project has been Arizona's prime objective at least from the time she ratified the Colorado River Compact in 1944 and thereby obtained a contract for 2.8 million acre-feet of water. The day after the Supreme Court announced its decision in *Arizona v. California*, Senators Hayden and Goldwater filed a bill to authorize the project. In one form or another, the proposal has been before Congress ever since.

A full history of the postdecision congressional proceedings has been well told elsewhere and need not be repeated here. In a few sentences, the story is one of an ever-widening coalition of interests, with something in it for everyone.²⁸⁷ First, Arizona and California settled their differences over the shortage question, with California receiving protection of her 4.4 million acre-feet of main-stream water. Under the compromise, California is to support the Central Arizona Project, but is to have an absolute priority of 4.4 million acre-feet of main-stream water until 2.5 million acre-feet are imported into the main stream in the Lower Basin. The figure 2.5 million is supposed to represent the Mexican treaty burden of 1.5 million and losses of 1 million. Thus, when 2.5 million acre-feet or more are imported into the Lower Basin, there should be a dependable annual supply every year—not just on the average—of 4.4 million acre-feet for California, 2.8 million acre-feet for Arizona, and 0.3 million acre-feet for Nevada. In other words, in return for California's support for the project, Arizona has agreed to a permanent California priority for 4.4 million acre-feet, something California might or might not have obtained from the Secretary of the Interior.

Satisfying California was probably Arizona's major political problem, but certainly not her only problem. Most of the other states in the basin had pet projects that had heretofore failed of adoption for one reason or another (doubtful economic feasibility being not the least of these reasons). Here was a golden opportunity to get authorization of these projects, and perhaps it was the last chance; for, once the gigantic Central Arizona Project was

287. See Clark, *Northwest-Southwest Water Diversion—Plans and Issues*, 3 WILLAMETTE L.J. 215 (1965). For an account ending with the 88th Congress, see Engelbert, *The Origins of the Pacific Southwest Water Plan*, in NEW HORIZONS FOR RESOURCES RESEARCH: ISSUES AND METHODOLOGY 125 (Western Research Conference 1965). The same author discusses the policy issues of the plan, as it then stood. *Id.* at 157.

authorized and construction begun, neither Arizona nor California, much less representatives of states outside the basin, would have much interest in additional Colorado Basin development. Thus, the pie was enlarged in the proposed bill to include at least one new project for every other basin state except Wyoming. For example, Colorado—whose Western Slope representative, Wayne Aspinall, is chairman of the House Interior Committee—received five projects at an authorized cost of 360 million dollars. This may seem like a great deal of money, but it shrinks in size compared to the 1.395 billion dollars authorized for the Central Arizona Project.²⁸⁸

At present, the pending bill (H.R. 4671) has been favorably reported to the House of Representatives by the Interior Committee by a vote of 22-10-10.²⁸⁹ Other than the features already noted, it provides for a dam just above and another just below the Grand Canyon, a feature that has aroused extremely vigorous opposition from conservation groups, especially the Sierra Club.²⁹⁰ The bill also provides for a study of sources for water importation by a national commission rather than by the Secretary of the Interior. This change from an earlier version of the bill was accomplished by representatives of the Pacific Northwest, whose Columbia River has come under the gaze of the Reclamation Bureau (and therefore the Secretary) as a likely water hole for the Colorado Basin. In addition, Kansas and Texas were added to the "Southwest" as potential service areas.

In both houses the bill faces the opposition of "conservationists," who object to the "cash register" dams as a desecration of the Grand Canyon, and of "fiscal conservatives" who object that the cash register does not ring loudly or often enough. As of early fall, it appeared that the chances for passing H.R. 4671 this year were negligible. The Arizona House delegation, in a press statement, announced that action this session was "extremely unlikely," attributing the stalemate to lack of enough solid votes in the House to secure passage of the bill in the form in which it emerged from Committee.²⁹¹ With this uncertainty present, the California delegation was loath to risk a vote, for fear of losing protection of California's 4.4 million acre-feet.

288. The \$1.395-billion figure gives some indication of the value of longevity in the Senate. Senator Hayden of Arizona has been a Senator since 1927, and for some years he has been chairman of the Appropriations Committee.

289. A full account of the congressional proceedings on H.R. 4671 is given in 24 CONG. Q. WEEKLY REP. 1697 (1966) and 24 CONG. Q. WEEKLY REP. 1787 (1966). Background material may be found in 23 CONG. Q. WEEKLY REP. 1791 (1965).

290. The Sierra Club ran two different advertisements in a number of newspapers protesting the dams. Shortly after the first advertisement appeared, the Internal Revenue Service called the club's attention to the nondeductibility of contributions to organizations which make substantial efforts to influence legislation. This action produced a reaction in Congress, where a number of Representatives issued statements condemning the Service's position. The Sierra Club was not deterred; thereafter, it ran an even bigger advertisement in more papers, headlined, "Should We Also Flood the Sistine Chapel So the Tourists Can Get Nearer the Ceiling?"—a satirical reference to the claim that the lower dam would afford better views of the Grand Canyon. This advertisement carried a note on the controversy with the Revenue Service.

291. Los Angeles Times, Sept. 8, 1966, § 1, at 3, col. 3.

The softening of House support was attributed to opposition from the conservationists, the Pacific Northwest, and economy-minded voters and Congressmen.

If a bill on the order of H.R. 4671 should be enacted in this or some future Congress, one of the last chapters of the legal history of the Colorado will have been written, for its full resources—and then some—will have been committed. The remainder of the story is likely to be one of unity in the struggle with another basin for a supplemental supply. But if the basin-wide compromise comes unstuck we can anticipate the resumption of internal warfare,²⁹² with the Secretary of the Interior being a prime target for every combatant.

292. A straw in the wind is an October 16, 1966, news story headlined, "Arizona, New Mexico Set To Sell Calif. Down River," the gist of which is that Arizona and New Mexico Congressmen were preparing a bill eliminating California's priority to 4.4 million acre-feet, surrendering to the conservationists on "cash register" dams, and abandoning importation studies. San Jose Mercury-News, Oct. 16, 1966, § 1, at 6, col. 1. *Quaere* whether eliminating one set of foes will offset acquisition of an opponent in the California congressional delegation.