Appendix 208

THE COLORADO RIVER COMPACT:

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Much of the unfavorable criticism against the Colorado river compact is directed not to what it contains but to what it does not contain. This is founded upon a misunderstanding of the powers of the Colorado river commission as set forth in the various acts of the legislatures of the seven states signatory to the compact and the act of congress which created the commission. Under these various acts it was made the sole business of the commission to adjust and settle equitably between the seven basin states conflicting differences with respect to the use of the waters of the Colorado river that may hereafter in the absence of such adjustment and settlement give rise to sectional strife and litigation. Its purpose was not to lay out any plan of development of the river, but to clear the way for that development by removing obstacles that the interstate character of the river presented to any program looking to the storage of the waters of the river on a scale commensurate with the present needs for protection of life and property from floods and with the future demands of agriculture and power throughout the entire basin.

It was not the business of the commission to determine any engineering question involved in this development. The question whether one or more great storage dams should be built at Boulder canyon, at Glen canyon, or at some other place was wholly apart from the work of the commission and such questions are left to be determined by the federal government or by whatever agency they are to be built.

Only such matters as pertain to the interests of all the contracting states are attempted to be adjusted by the pact. Questions that apply to only two of the states or less than all of the states are left to be settled by separate agreement, provision for which is made in Article VI of the compact.

The compact deals primarily with two major subjects of mutual interest to all the signatory states. These are, first, the preferential uses of water, and, second, an allocation of the rights to the beneficial

[1] Apparently no formal report was submitted to the Arizona Legislature.

consumptive use of water with the view of permitting the largest development throughout the basin without creating cause for interstate strife and litigation.

The preferential uses recognized by the pact are agriculture, domestic (which is defined to include farming, stock growing, municipal, mining, industrial and other like purposes), power and navigation. Agriculture and domestic uses are placed on a parity and given the first place in the order of preferential right of use. This is in harmony with the law of our own state and also with the law of every state in the basin. It is in harmony with the prevailing sentiment of the people of this country. The commission, therefore in giving preference to agriculture and domestic uses over power merely recognized existing law and the overwhelming public opinion on the subject that lies back of that law. Power, therefore, is given second place in the order of preferential right of use. The compact also makes navigation subordinate to agriculture, domestic, and power uses. The purpose of this is to prevent serious embarrassment to the development of the river for agriculture, domestic and power uses should the Colorado river continue to be regarded in theory, although it is not in fact, a navigable river. This provision requires the consent of congress before it may become effective. It is expressly provided, however, that the disapproval of congress of this provision will not affect the other provisions of the compact.

The Colorado river basin within the United States embraces an area of 244,000 square miles. It includes portions of the states of Wyoming, Colorado, Utah, New Mexico, Nevada, California, and nearly the whole of Arizona. The compact divides this basin into an upper and lower basin. The upper basin comprises that portion of the watershed within and from which water naturally drains into the Colorado river above Lee's Ferry, which is located south of the Arizona-Utah line and below the mouth of the Paria river. The lower basin comprises that part of the watershed within and from which water naturally drains into the Colorado river below Lee's Ferry, together with the Imperial and Coachella valleys in California. While there is no great disparity in the sizes of the two divisions of the basin, there are certain marked differences in other respects.

Ninety-one percent of the water of the entire watershed has its origin in the mountains of Colorado, Wyoming, and Utah and not more than six percent comes from Nevada, Arizona, and California. Ninety-four percent, therefore, of the water that passes Yuma originates above the Arizona-Utah line. Again, nearly 1,000 miles of canyon separate the lands upon which water may be beneficially applied in the upper basin from the lands upon which water may be beneficially used in the lower basin. It is a physical fact that water may not be diverted for agricultural uses in Arizona by means of

works situated wholly within this state, for the river runs for its entire distance through the state in the Grand Canyon of Arizona. Again, there are marked differences between the conditions governing the use of the water of the river in the upper and lower basins. Climate and the physical conformation of the lands that may be irrigated limit and restrict such uses in the upper states. The lands there are all situated at high elevations, and the products, therefore, are such as may be grown only in a temperate climate. These lands for the most part are situated in narrow valleys and, while there are few comparatively large projects, the majority are relatively small. Of the water actually diverted a very considerable portion, varying, of course, as the conformation of the country varies, returns to the streams as return water. The duty of water in the upper basin averages about one and five-tenths acre-feet per acre per annum.

In the lower basin the lands that may be irrigated from the Colorado river are for the most part situated in large individual units or areas requiring diversion dams and other works of great magnitude and of great cost. The consumption of water per acre is high, due to an extreme aridity of climate and the long growing season. The duty of water in the lower basin is in the neighborhood of four acre-feet per acre per annum.

In view of this physical separation and diversity of conditions between the upper and lower basins the question naturally arises, Why should any controversy between the states of the two divisions ever arise? The answer to that question is important because it involves a consideration of the reasons for the creation of the Colorado river commission and for the compact. In general, the answer to the question is that while it is not certain that conflict may arise, there is, nevertheless, in the states of the upper basin, the fear that it will arise should there be any large works constructed on the lower river that shall have either as an incident or as a major purpose the development of power. The compact was not occasioned by the belief that there is an insufficient supply of water in the river if properly conserved for the reasonable needs of the entire basin for agriculture and domestic uses. The compact had its inception in the apprehension of the people of the upper states that great dams and storage works for river control, agriculture, and power might be built somewhere below the Utah line and that thereby priority of right may grow out of these works which will embarrass and curtail their own agricultural development. This fear is based upon the law of prior appropriation in its application to an interstate stream, a doctrine which has recently been recognized and applied by the supreme court of the United States in the case of *Wyoming* v. *Colorado*. It is their claim that this law of priority as applied to the water of the Colorado river basin will not only work

to their disadvantage, but is unjust and inequitable when it is considered that for the most part the water that constitutes the stream originates in the upper states; that it comes from precipitation that falls in the form of rain and snow upon their own mountains and adjacent to the lands within these states which may be irrigated therefrom. That because the development for agriculture in the upper states, due to the conditions prevailing there, will in the future be relatively slower than the development in the lower states, and, therefore, unless they are protected one of two things will happen—irrigation in the upper states will in the future be subordinate to power rights on the lower river, or the upper states must enter into a feverish and unnatural race for development with the lower states to preserve their rights of priority—and neither of these courses appeals to them. This attitude can be appreciated by us when we reflect upon the jealous regard and feeling of exclusive ownership held by the people of Arizona with respect to the use of the waters of the Verde, the Salt, and the Gila rivers. The people of the upper states, therefore, very naturally are opposed to any program of large development on the lower river until they can be assured of reasonable protection against the establishment of priority of right as against them through the proposed works on the river at Boulder canyon, at Glen canyon, and other storage sites where power development may be expected. They are prepared, in the absence of such assurance to violently oppose any appropriation by Congress or the giving of any other aid or assistance by the Federal Government for such purposes. The united opposition of four states within the basin, added to the indifference and possibly active opposition of the east and the middle west toward any large agricultural or industrial development in the mountain states through federal aid, is not to be despised, but on the contrary to be feared and removed if possible. The Colorado river compact is, therefore, an effort to remove any cause for this purely sectional feeling and opposition to the proposed development of the river at Boulder canyon, at Glen canyon, at Diamond creek, at Black canyon, and indeed at every point south of the Utah line.

The compact is based upon two major assumptions. The first is that the waters of the river now running to waste are to be conserved by adequate storage reservoirs, and, second, that there is sufficient water in the river if conserved to meet all the demands for agricultural and domestic uses, both in the upper and lower basins, and in addition to meet all the probable demands of the southwest. That there is sufficient water for such purposes is no mere assumption, as may be shown upon a study of the river and of various estimates made by the reclamation service and by state engineers in the various states of lands capable of being irrigated within the basin. Let us consider

some of the facts bearing upon this assumption. Taking the average flow of the Colorado river at Yuma for a period of twenty years and adding thereto the amounts known to be diverted and consumed in irrigation in Colorado, Wyoming, Utah, New Mexico, Arizona, and California, the run-off from the entire watershed will be found to be approximately 21,000,000 acre-feet per annum. Dr. Hoyt, of the geological survey, estimates that not less than 15,000,000 acre-feet annually flows to waste in the Colorado river after all the lands now under irrigation are supplied. Excluding the Gila river and its tributaries, it is estimated that the mean annual flow at Lee's Ferry, the point of division between the two divisions, is 16,400,000 acre-feet. The consumption of water above Lee's Ferry is estimated at 2,400,000 acre-feet annually. Therefore, the mean average run-off of the watershed above Lee's Ferry approximates 18,800,000 acre-feet. There is irrigated in the upper basin at present something in excess of 1,500,000 acres. From the estimates made by the state engineers in the upper states the maximum number of acres that are possible of irrigation in these states is 5,000,000. If the duty of water shall remain as at present, although after the lands become saturated the consumption will necessarily decrease, the maximum needs of the upper basin for agriculture and domestic uses approximate 6,000,000 acre-feet. Certain intermountain diversions are proposed—one for Denver and its vicinity amounting to about 300,000 acre-feet, and certain diversions in Utah amounting in the aggregate to 200,000 acre-feet. The total consumptive use in the Upper Basin will be approximately 6,500,000 acre-feet. This maximum, according to the present rate of increase, will not be reached short of 75 years. Taking, therefore, the mean annual run-off of the river above Lee's Ferry as the basis for calculation and deducting the maximum consumption for agricultural and domestic uses, including intermountain diversion, we have left for the lower basin and its uses 12,300,000 acre-feet per annum.

Now what are the probable needs of the states of the lower basin? None of the water that flows in the main stream may be used for agriculture and domestic purposes in Nevada. At present there is irrigated in California a total of 450,000 acres with a water consumption of 2,250,000 acre-feet. This area may not be increased until what is known as the All-American canal is built, which will cost at least $30,000,000; but, when built, there is a possible increase to the present acreage of 490,000 acres, making in all 940,000 acres, with a total water consumption of 3,790,000 acre-feet. This acreage includes lands that are of extremely doubtful feasibility and lands that may only be irrigated by pumping. Deducting this maximum consumptive use in California, we have left of the water flowing at Lee's Ferry 8,510,000 acre-feet. The number of acres now being irrigated in Arizona from the waters of the Colorado river proper are 58,000 with

water consumption of 290,000 acre-feet. According to the estimate made by the reclamation service, this acreage may be increased to 285,000 with a consumptive use of 1,150,000 acre-feet. The estimate, therefore, of future consumption of water in the lower basin from the Colorado river proper is approximately 5,000,000 acre-feet. Deducting this from the flow at Lee's Ferry available after the maximum use in the upper states is attained, we have a surplus of something more than 6,000,000 acre-feet.

It is also estimated that when the waters of the river are conserved by storage dams so that the flow may be stabilized, a maximum of 4,000,000 horsepower may be developed between the Utah line and the mouth of the Grand canyon; this, too, without interfering with the proper and full use of the water for agriculture and domestic uses below. It is in view of the facts above stated that the compact provides for another apportionment after forty years from its ratification. This provision is especially advantageous to Arizona because of the limited number of acres the estimates now give us and the possibility that the engineering commission now in the field may report that a very considerable additional acreage is possible of reclamation within a cost that shall not be prohibitive, and if this proves to be the case Arizona undoubtedly will become the beneficiary of this surplus, for there is no other part of the basin in which it can possibly be used.

Bearing these facts in mind, let us briefly examine the provisions of the compact with respect to the allocation of uses. It will be observed that the compact does not divide the waters of the river. What is apportioned is the right to the beneficial consumptive use of the water for agriculture and domestic uses. In other words, it gives to each basin the right to acquire title as against the other basin to rights of appropriation up to a maximum sufficiently large to cover all known probable uses, leaving the disposition of title to the remainder to be made after a period of forty years.

In paragraphs "A" and "B" of Article III there is apportioned to the upper basin the exclusive consumptive use of 7,500,000 acre-feet of water per annum and to the lower basin the exclusive beneficial consumptive use of 8,500,000 acre-feet per annum. The legal effect of this apportionment is that the lower basin may not complain of the diversion and use of water in the upper basin for agriculture and domestic uses provided the annual limit of 7,500,000 acre-feet is not exceeded, but may complain if that limitation is exceeded so as to prevent the full use of 8,500,000 acre-feet annually in the lower basin. There is nowhere in the compact any limitation upon the use of water anywhere for power except that such use in the upper basin may not limit or restrict the use of the water for agriculture and domestic uses in the lower basin. There is nothing in the compact that restricts or limits the use of water in the lower basin, and the full flow of the

stream may be diverted and used without any interference from the upper basin, or without any limitation created by the compact. The effect of the compact is merely to place the two basins of use within the limitations upon a parity of right of 7,500,000 acre-feet for the upper basin and 8,500,000 acre-feet for the lower basin. Any use in either basin above these limits will acquire merely a secondary right of appropriation with respect to appropriations made within the definite allotments and title to which is deferred to a later date.

It may be of interest to know why the figures of 7,500,000 acre-feet for the upper basin and 8,500,000 acre-feet for the lower basin were reached. It grew out of the proposition made by the upper basin that there should be a fifty-fifty division of rights to the use of the water of the river between the upper and lower basins which should include the flow of the Gila, and the insistence of Mr. Norviel, commissioner from Arizona, that no fifty-fifty basis of division would be equitable unless the measurement should be at Lee's Ferry. As a compromise the known requirements of the two basins were to be taken as the basis of allotment with a definite quantity added as a margin of safety. The known requirements of the upper basin being placed at 6,500,000 acre-feet, a million acre-feet of margin gave the upper basin an allotment of 7,500,000 acre-feet. The known future requirements of the lower basin from the Colorado river proper were estimated at 5,100,000 acre-feet. To this, when the total possible consumptive use of 2,350,000 acre-feet from the Gila and its tributaries are added, gives a total of 7,450,000 acre-feet. In addition to this, upon the insistence of Mr. Norviel, 1,000,000 acre-feet was added as a margin of safety, bringing the total allotment for the lower basin up to 8,500,000 acre-feet. This compromise agreement is justified when we consider that the flow of the river will not be affected by any artificial division, but will continue uninterrupted, to be used for any beneficial purpose recognized, including power, as freely as though no such apportionment had been attempted.

In clause "D" of Article III of the compact there is a provision which in effect guarantees that the states of the upper division will not cause the flow of the river at Lee's 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. Manifestly, the only purpose of this provision is to safeguard the lower basin during periods of prolonged drought. The period of ten years is not one definite block of ten years, but is a continuing progressive series, so that it is impossible to group any definite number of wet years in any one series, and the upper basin must each year guard against the possibility of future shortage and against having to make up an unknown deficit in the future.

The compact has been attacked because of its recognition of Mexican rights in the river. It is difficult to reconcile good faith with such attacks. What are the facts and what does the pact provide with respect to the rights of Mexico? There are now being served with water from the Colorado river through the canal that supplies the Imperial valley about 190,000 acres in Lower California. These lands are receiving approximately 900,000 acre-feet per annum. The canal that supplies these lands as well as the Imperial valley runs for the most part through Mexican territory. To obtain a right of way the promoters of the Imperial valley and the builders of this canal were compelled to agree that one-half of the water diverted might be used upon Mexican lands. Under this contract these Mexican lands may use as much as 5,000 second-feet or enough to supply 255,000 acres, which is the maximum that may be supplied by gravity from the canal. A total of 500,000 acres in Lower California is possible of irrigation by gravity supplemented by pumping with a consumption of approximately 2,250,000 acre-feet. In addition to the lands in Lower California there are approximately 250,000 acres lying east of the Colorado river in Sonora, but in order that these lands may be irrigated the diversion point must be in or about Yuma. No appropriation has yet been made of any water for these lands. The only provision in the compact with regard to Mexico is found in paragraph "C" of Article III, which in effect is that if the government of the United States shall by treaty with Mexico allot any water to these Mexican lands, the burden of supplying such water shall fall equally upon the states of the upper and lower basins. This provision was necessary in order to safeguard the lower basin. More than that, however, this provision is of distinct advantage to the lower basin in that it united the seven states in opposition to any demand that Mexico may make that if granted may adversely affect their interests. With the seven states united in this way there is little or no probability that the United States will allot to Mexico in excess of 2,000,000 acre-feet. At any rate, water in excess of this amount ought never to be allotted as against any use that the States or any of them may possibly make. It must be remembered that Mexico is not a party to the compact and therefore can claim no right under it nor any benefit from any of its provisions. The critic who seeks to read anything of this sort into the pact either wilfully misrepresents it or is ignorant of the rules applicable to the construction of contracts.

There has been some opposition to the compact on the ground that it does not attempt to allot water particularly as between California and Arizona. Had such an attempt been made it would undoubtedly have proven disadvantageous to Arizona for the reason that the ultimate development possible in California is definitely well known and

the amount of water ultimately needed to fully supply its needs is also approximately well known; while in Arizona we are hoping that the reclamation service estimate as to the acreage in this state is altogether too small and that a very much larger acreage is possible of irrigation, for otherwise there will be a very large surplus of unused water in the river.

The amount available to Arizona after deducting all the possible requirements of the other states and any just allotment the United States by treaty may accord to Mexico, will be sufficient to take care of more than 1,000,000 acres of land in this state, for the amount will not be less than 6,000,000 acre-feet per annum.

Considering the pact, therefore, from the standpoint of its essential purposes, the physical facts constituting its subject matter, its effect upon the development in our own State, its advantages as well as its disadvantages, the probability or improbability that in the future any more favorable agreement may be secured, and I submit in all candor that no opposition or criticism can fairly be advanced sufficient in importance to warrant its rejection by the people of this state.