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BACKGROUND AND MODERN DEVELOPMENTS IN WATER LAW IN THE UNITED STATES

WELLS A. HUTCHINS*

I. The Early Period of American Water Law

A. Early developments chiefly in the West: In the early period of American water law, developments were concerned with the West and with semi-arid conditions almost exclusively. Some early cases were decided in the East relating to water rights in watercourses and in ground waters, but by contrast with the west, these legal problems were not then significant in the overall economy of this area.

The "West", as used in this article and in publications on water law generally, includes in the first instance the compact group of seventeen mainland states comprising the six extending from North Dakota to Texas on the 100th meridian, the three bordering the Pacific Ocean, and the eight between these outlying tiers. In recent years the West has come to include in addition the two newest states Alaska on the mainland but not adjacent to the group of seventeen and Hawaii surrounded by Pacific Ocean waters. These two outlying states have water law problems, but neither has an administrative system for control of acquisition and exercise of water rights, although Alaska has a water code under consideration. The discussion herein relates in most instances to the original seventeen mainland western states. When particular items bear significantly on either Alaska or Hawaii, the relationship is indicated.

Water law problems first attained regional prominence in the west. Part of the territory ceded to the United States in 1848 by the Treaty of Guadalupe Hidalgo comprised what is now the State of New Mexico where a large number of community acequias (ditches), constructed by Indians and by Spanish explorers after 1598, had for generations served in the aggregate a considerable acreage. Another part of this territory comprised Utah, where the first group of Mormon colonists entered in 1847 and immediately began planting and irrigating land in order to produce food to keep alive. California was another area in which use of water had been practiced for years at some of the missions, and the use of water for mining purposes, a major use—both geographically and


economically—followed the discovery of gold in 1848. With the westward expansion from the mid-nineteenth century on, uses of water for irrigation and other purposes spread from these active, developing nuclei throughout the west, and water management problems, court decisions, and statutes kept pace with them.

B. Westward expansion and water rights doctrines: The national policy of westward expansion having been initiated and implemented with the establishment of state and territorial governments, encouraged land settlement, population movement, and the development and utilization of natural resources. Title to most western land at mid-century was in the federal government, which at that time was not concerned with public development of land, minerals or water, but for many years left these entirely to private initiative. In fact, a movement in the Cabinet and in Congress to take over the gold mines on the public domain to help defray the Civil War debt was defeated. Not only that, but legislation was enacted in 1866 and 1872 confirming water rights and rights of way for mining, agriculture, manufacturing, and other purposes that had vested in individuals on the public domain under local customs, laws, and court decisions. In 1877, further desert land legislation followed repeating the policy of “free development” of waters while on public land.2

Thus by the end of the third quarter of the nineteenth century, the national policy of transferring public lands of the West into private productive uses was well underway. Also underway was the beginning of more than a century of conflict between riparian and appropriative adherents. The national policy was to obtain the largest practicable use from public lands, for which available water supplies were obviously required. To this accomplishment the riparian doctrine, with its emphasis on benefits to lands contiguous to streams (land location rather than productive capacity) was not so well adapted as were the systems of prior appropriation which emerged in New Mexico, Utah, and California. Although the details of these developing appropriation systems differed in various respects, they all accorded priority to the earliest water user. His water right, on the public land entry of his choice, continued regardless of its location with respect to the stream. Thereafter each subsequent appropriator had a priority over all those who followed him. Opinions differ as to the evolution in the history of the world of prior appropriation doctrine. There may have been parallel and unconnected developments centuries earlier in the Middle East, and comparable developments on the part of Germanic miners in the Middle Ages have been suggested. However, it was indeed new to lawyers who brought from the east their riparian traditions, as it was to judges, legislators and probably most water users. The appropriation doctrine was eventually ex-

tended into all mainland western states and became therein the subject of a large body of legislative and case law.

As a reminder to non-lawyers, it is appropriate to introduce here at the beginning, as is done at the end of this article, a few terms explaining the property nature of a right to the use of water. Each valid appropriative and riparian right to the use of stream water, and each appropriative, correlative, and absolute ownership right in percolating ground water, is a real property right. As such, it is under the protective aegis of federal and state constitutional guarantees which prohibit the deprivation of private property without due process of law. In discussing rigidities of the appropriation doctrine and its restraints upon free transfers of water rights, therefore, it is well to remember that the Fifth Amendment was added to the United States Constitution at the beginning of our national history and the Fourteenth Amendment was added in 1868, and that every subsequent statute, court decision, or acquired right of appropriation carried with it this fundamental constitutional inhibition regarding due process which applies to rights in land and other property as well as in water.

C. Concepts of beneficial use: An essential principle of the doctrine of prior appropriation was and still is application of the water to beneficial use. Not only is the purpose of use (irrigation, mining, manufacturing, etc.) to be a beneficial one but methods of diverting water, conveying it to the place of use, and applying it to the land or machinery for which appropriated are to be as efficient as is reasonable under the circumstances, recognizing necessarily that in the nature of things absolute one hundred per cent efficiency is seldom attainable. The greatest possible benefit from an appropriated water supply is the goal; therefore, waste of water—at least unnecessary waste—is prohibited. Many western courts over the years reiterated this theme. Some water-masters had statutory authority to shut off an irrigator's water supply if his use was patently and unnecessarily wasteful.

A few western state appropriation statutes list purposes of use for which water may be appropriated. The courts have held many different uses to be beneficial. Of course the fact that a particular use is not termed beneficial by statute or court decision does not necessarily stigmatize it as non-beneficial. But several instances are known in which courts have held certain purposes of use to be non-beneficial in the sense that they cannot support valid appropriations of water: e.g., diversion of water for the sole purpose of drainage; a bare claim to water for no object other than speculation; inadequate casting of water over

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sagebrush land to increase growth of native grass;\textsuperscript{6} winter flooding to produce an ice cap to promote moisture retention;\textsuperscript{7} carrying off debris in months in which the water is needed for irrigation;\textsuperscript{8} extermination of gophers and squirrels in an area of great need of water.\textsuperscript{9} The definition of beneficial use remains an operational one. In recent years the importance of recreational uses of water as a beneficial use has been recognized.

Despite the wealth of authoritative expressions on the need for conserving and making beneficial use of water, wasteful practices were tolerated by the courts in many areas. There are multiple causes, among them fixation in the particular area, mounting costs of making substantial improvements, and efforts of water users to hold title to maximum quantities of water to which their rights related even though this resulted in excessive and therefore wasteful use.\textsuperscript{10} With respect to material and expensive changes in practice, "Decrees fixing the extent of rights follow rather than lead in such improvements in practice."\textsuperscript{11} Appropriators were generally held entitled to protection, not only in quantities of water appropriated, but in their means of diversion if reasonable. This applied in some instances to diversion by means of natural overflow.\textsuperscript{12} It is said that the practice of "padding" and "pyramiding" water rights—creating records of rights in excess of actual beneficial use and filing and maintaining in good standing more applications to appropriate water than were required for a given purpose—proved to be one of the most serious problems encountered in developing western water resources. "The seriousness increases as the water available for appropriation diminishes."\textsuperscript{13}

D. Adjudication procedures: Before the era of special statutory procedures, controversies over rights to the use of water were litigated only in suits between water rights claimants prosecuted under jurisdiction and rules governing actions to try title to real property. In a particular suit there may have been one plaintiff and one defendant or many parties. Participation by the state was generally limited to cases in which the state was a party because its proprietary interests were involved. On a particular stream, many decrees may have been rendered,

\textsuperscript{6} Vineyard Land \& Stock Co. v. Twin Falls Salmon River Land \& Water Co., 245 Fed. 9, 12-13, 21-22, 25 (9th Cir. 1917).
\textsuperscript{7} Blaine County Inv. Co. v. Mays, 49 Idaho 766, 773, 291 Pac. 1055 (1930).
\textsuperscript{8} In re water rights of Deschutes River and Tributaries, 134 Ore. 623, 665-68, 286 Pac. 563, 294 Pac. 1049 (1930) (supplemental opinion).
\textsuperscript{9} Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist., 3 Cal. 2d 489, 567-68, 45 P.2d 972 (1935).
\textsuperscript{10} Compare Allen v. Petrick, 69 Mont. 373, 377-80, 222 Pac. 451 (1924).
\textsuperscript{11} Harding, Water Rights for Irrigation 38 (1936).
\textsuperscript{12} It was recently held in Oregon that such a wasteful method had never been a right and was no longer even a privilege but must be replaced by a pumping system. Warner Valley Stock Co. v. Lynch, 215 Ore. 523, 533-44, 336 P.2d 884 (1959).
\textsuperscript{13} Larson, Planning of Water Use Projects Under Federal and State Law, 22 Proceedings Nat'l Reclamation Ass'n 100-08 (1953).
each of which necessarily bound only the litigants named therein. One's claim
to a single water right may have had to be asserted or defended against different
adversaries in several unrelated lawsuits.

Scientific knowledge, hydrologic techniques, and economic theory respecting
the handling and the use and usefulness of water were not sufficiently advanced
or disseminated to be of much help in the early adjudications. Furthermore, in
certain cases expert testimony as to water requirements was at variance with
opinions of local farmers and courts declined to give controlling weight to the
expert. Even in quite recent times the Montana Supreme Court observed
frankly that, in determining the weight of conflicting evidence as to the duty of
water, it should consider, not only the interest of the parties, but also the fact
that engineer witnesses "in their testimony would likely favor the parties by
whom they were employed." 14

Some water rights adjudications resulted in decrees in which enforcement was
given to water-masters or commissioners whose continuing responsibility was to
the courts that appointed them. Otherwise (in the absence of police supervision
over distribution of water to those entitled to receive it) the remedy of a holder
of a decreed right for violation of the decree resulting in his injury was a
judgment of injunction and/or damages rendered upon his complaint and
hearing by the court.

II. The West's Unique Contribution to Legal Institutions

The relevant period of this areawide contribution may be taken to extend
from about 1890 to 1920, within which most of the significant innovations
occurred.

A. Origin of the system of water administration: The administrative system
pertaining to water rights in the west, like the appropriation doctrine with which
it is intimately associated, originated in the need for legal procedures for control-
ling the use of water resources. After experimental beginnings, it developed
by trial and error into a well-rounded group of legal functions which in the state
"water codes" comprise (a) procedure for appropriation of water, (b) deter-
mination or adjudication of water rights, and (c) administration of water
rights and distribution of water.

Colorado pioneered in developing a combined system of administration and
distribution of water pursuant to priorities of right decreed in special judicial
proceedings. 15 Two systems—one strictly judicial and the other strictly adminis-
trative—were created to supplement each other and to bring order out of pre-
ceding difficulties and uncertainties that had long been plaguing water users

15. Colo. Laws 1879, p. 94; Colo. Laws 1881, pp. 119, 142. See Lasky, From Prior
Appropriation to Economic Distribution of Water by the State—Via Irrigation Admin-
istration, 1 Rocky Mt. L. Rev. 161, 248 (1929), 2 Rocky Mt. L. Rev. 35 (1929).
and prospective appropriators. The Colorado administrative system for distribution of water has served as a model for most other western states. But the purely judicial special procedure for determining water rights without administrative participation or guidance on technical questions of water supply and use has not been copied elsewhere. In practice Colorado has been restricted because of its emphasis on the judicial process which fixes the priority and the amount of water appropriated.

A decade later Wyoming established a complete system of state supervision and control over all three water rights functions: appropriation, determination, and distribution. The state constitution provided for a Board of Control composed of the state engineer and four division superintendents, with the state engineer, as president, vested with supervision over the waters of the state with its decisions to be subject to review by the courts. The first state legislature made provisions for the necessary organization, jurisdiction, and procedure. Elwood Mead, then territorial engineer of Wyoming (later he became a California professor of irrigation and practice, advisor to the government of Victoria, Australia, and in the last twelve years of his life United States Commissioner of Reclamation) was the first state engineer. The Wyoming statute of 1890, which embodied the principles that Dr. Mead so vigorously advocated, set the pattern for western state administrative statutes, often termed “water codes” adopted in most western states during the period under discussion.

Originally, the chief state water administrative official was designated the state engineer. This occurred first in Colorado, followed by Wyoming, in which the first administrative systems were established. In most other western states, for part or all of the time up to the present the water control functions have been vested in a state engineer. However, several states have had reorganizations of boards, commissions and departments of state government and have substantially altered the traditional one-man arrangement.

B. Appropriation of water: A new feature of the Wyoming plan, which was widely accepted was the procedure for initiating acquirement of appropriative rights by applying to the State Engineer for a permit. If granted, the permit authorized the holder to construct works, divert water, and apply it to the intended use, and entitled him on completion of the appropriation to a certificate or license evidencing the State’s approval of his acquired right. If statutory requirements were not met, the application was rejected or the final certificate or license refused; or appropriations were allowed for less water than applied for. Previously, in all western states and territories, appropriations of water were made by diversion and use. In some jurisdictions this was either pursuant to statutes which required posting of notice at the point of diversion and filing of

a copy in county records, or informally without regard to even these optional statutory procedures. As adopted in most of the original seventeen mainland western states, this administrative appropriation procedure reflects a public policy of fundamental importance, and, in addition, it introduces efficiency into the appropriation process. Thus:

(1) In the exercise of its police power, the legislative declaration asserts the state's authority over appropriation of unappropriated stream waters. It prescribes conditions under which such appropriations will be allowed, including in various instances preferences as between conflicting pending applications, rejection of applications if it appears that proposed projects will be inimical to the public interest, and withdrawal of waters from general appropriation to preserve scenic and recreational values or to reserve the water for future uses having public significance. Some of the "water codes" prescribed maximum quantities of water that might be appropriated for irrigation purposes, expressed in cubic feet per second for immediate use or in acre-feet for storage and subsequent use. This was not always effective in implementing the goal of best utilization of water. Some appropriators who did not need the maximum quantity strove to have it awarded and often succeeded. This tended toward wasteful results. Others who actually required more than the maximum because of their soil and crop conditions may have been precluded from making optimum use. The Nevada statute eventually made a wise and wholesome departure from an attempted statewide duty of water by leaving the appropriable quantity to be determined by the State Engineer who, in reaching his conclusions, must consider certain prescribed factors including experimental work in or near the area, growing season, and type of culture.

With the basic authority to control appropriation and utilization of stream waters having been asserted, and well established by decades of experience, statutory amendment, and litigation, the State Engineers in various jurisdictions became vested with broad discretion, in acting upon applications to appropriate water pursuant to statutory guides and directions. Official acts that were not unreasonable or discriminatory were seldom overturned in the course of judicial review. Expressive of this is a recent reminder by the Supreme Court of Oregon (where a complete system of water administration has been in effect and actively exercised for a half-century) to the effect that judges are not super-engineers, and that seldom if ever will a reviewing court interfere with discretionary action of the State Engineer relative to matters involving administration of state water

18. The procedure is not in effect in Colorado or Montana. It is optional in Idaho. Elsewhere in 14 States it is mandatory.

laws, and substitute its judgment for his in those areas in which the administra-
tive agency is expert.\textsuperscript{20}

The authority of the chief water management official has not been prescribed
and litigated with equal thoroughness in all appropriation permit states. But in
the states that exercise it fully, an important result is that no longer has any
citizen the unqualified right to appropriate unappropriated water of a stream. It
is his privilege to apply to the state for permission to acquire such right. This per-
mission will and must be granted if all statutory conditions are fulfilled. But one
such condition is that the administrative branch of the state government has the
decision, subject to judicial review, as to any question that arises concerning the
probably effect of the proposed project on the public welfare. This agency must
be satisfied that the public interest will not be better served by some alternative
proposal, present or foreseeable. And if the administrative branch decides on
plausible grounds, that the alternative proposal will better suit the public wel-
fare, and that the applicant's privilege shall not be granted even though unappro-
priated water is available, the judicial branch will be loath to disturb it. By con-
trast, the constitution of Colorado declares flatly that the right to divert the
unappropriated waters of any natural stream to beneficial uses shall never be
denied.\textsuperscript{21} In that state an intending appropriator commences work and within
sixty days files a claim with the State Engineer; if in proper form the claim is
accepted. Priority and amount of the appropriation are fixed by court decree.
There are not administrative determinations as in other states.

(2) As a matter of efficiency, the administrative procedure for appropriating
water performs the increasingly valuable and practical service of keeping com-
plete, up-to-date records of appropriations in one central state office instead of
leaving them to be filed in the neighborhood county offices—or not recorded at
all. In Colorado, which has no permit system, the law requires the filing of com-
plete statements of appropriations in the State Engineer's office but validity of an
appropriation does not depend upon its recordation there. In Montana, also
without a permit system, the recognized value of complete records has led to
a compilation (now in progress by the Montana Water Resources Survey) of
complete appropriation data by counties for recordation in the office of the State
Engineer.\textsuperscript{22}

C. Adjudication of water rights: (1) The Colorado system. Colorado made
the first departure from the practice of adjudicating rights to the use of water


\textsuperscript{21} Colo. Const. art. XVI, § 6.

\textsuperscript{22} Dunbar, The Search for a Stable Water Right in Montana, 28 Agricultural
solely under general procedures applicable to contests over title to real property. This was done by statute in 1879 and 1881.23 In 1900 a writer said that: "The Colorado system for the adjudication of water rights . . . is noteworthy as the first important attempt made by any state legislature to provide a special proceeding for the determination of controversies over water rights."24

Under the Colorado system, jurisdiction of all questions concerning adjudication of water rights is vested in the district court of the proper county. One who claims a water right in a water district, where rights have not been adjudicated, may petition the court to make an original adjudication. All claimants are given notice to appear. Based on the evidence, a decree is issued by the court determining and establishing the several priorities of right, from which appeal may be taken to the state supreme court.25

The Colorado system of adjudication embraces a special statutory proceeding aside from general equity procedure. It is, however, a court proceeding exclusively. In an original adjudication suit, the court is required by statute to command the State Engineer to certify to the court a complete list of water filings in his office that are in good standing; to call upon the water commissioner or irrigation division engineer for a list of owners or claimants of diversion and storage structures; and to send to all persons on each list a copy of notice of the pending proceeding. Thus the only connection the Colorado State administrative organization has with the adjudicatory procedure is to furnish names of interested parties and their water control structures so far as officially known. It has no further duties to perform in the cause. The district court has complete jurisdiction.

(2) The Wyoming system. The advent in 1890 of Wyoming as a State introduced administrative functioning into the adjudication26 of water rights. The Board of Control (State Engineer and superintendents of the four water divisions) created by the constitution at the time of statehood is an administrative agency of the state with quasi-judicial powers.27 The State Engineer's function in the original adjudication of a stream is to make a hydrographic survey, after which the division superintendent then takes testimony as to rights of claimants. Hearing is held on contests and the record is submitted to the Board of Control

25. An authoritative description of this judicial system, with an appraisal of its effectiveness, is given by Chilson, Adjudication and Administration of Water Rights in the State of Colorado, Proceedings of 1956 Water Law Conference 80 (Published by Univ. Tex. Press).
27. Farm Inv. Co. v. Carpenter, 9 Wyo. 110, 61 Pac. 258 (1900).
for consideration and action. The Board enters an order determining and establishing the several priorities. From this order any aggrieved party may appeal to the district court and thence to the Supreme Court. The proceeding then ceases to be administrative and becomes conventionally judicial. But subject to the right of rehearing and appeal, the Board's administrative determination is conclusive as to prior appropriations and rights of existing claimants lawfully embraced in the adjudication. However, the Wyoming Supreme Court held that the jurisdiction of the Board of Control to adjudicate water rights under the special statutory procedure is not exclusive of the jurisdiction of courts to quiet title to water rights nor to determine priorities, nor to redress grievances or afford equitable or legal relief.

The dual relationship of the Wyoming State Engineer to the four water division superintendents, all of whom are constitutional officers, is unique. In administering rights and distributing water, the State Engineer is chief. But in adjudicating water rights, these five officials are co-equal members of the Board of Control, except that the State Engineer is ex-officio president with one vote. He can be and sometimes is outvoted by the superintendents.

(3) The Oregon system. The Oregon "water code" of 1909 created a third major system of adjudication, which comprises features of both Colorado and Wyoming procedures. In Oregon an order of determination by the administrator results from proceedings similar to the fore part of the Wyoming system. But the Oregon State Engineer's determination is not final in any respect. It is filed with the clerk of the appropriate circuit court and the proceedings are in general like those of a suit in equity, with appeal to the Supreme Court. After final hearing, the circuit court enters a decree affirming or modifying the order and adjudicating the several water rights. Here is an administrative determination which must pass the test of a judicial trial before it is made final in a court decree. Both the administrative and judicial components of the procedure are necessary to the statutory adjudication.

(4) Other western systems. The so-called "Bien Code" was prepared as a model by Morris Bien, of the United States Reclamation Service (now the Bureau of Reclamation), at the direct solicitation of commissioners appointed in 1903 by the governors of Oregon and Washington. It was based on some appropriation administration statutes already existing in the West. Included were provisions that upon completion of a hydrographic survey of a stream system, the State Engineer would deliver a copy to the Attorney General, who would enter suit for determination of all water rights.

Several other administrative-judicial systems vary from those mentioned above. They feature the connection of the State Engineer with the judicial proceedings variously as a party to the suit, as an officer of the court, and as an expert in hydrography.

(5) Some general observations. An outstanding feature of this period of western contribution to legal institutions is refinement of the adjudication process into a combined proceeding consisting of an administrative determination and a judicial adjudication. Throughout most of the West, administrative and judicial functions are integral parts of one continuing statutory proceeding. In nine states the administrative part precedes the judicial. Other states combine the two components in various ways. The basic factor is their complete integration.

The Wyoming system was adopted in Nebraska and was held constitutional in both States. It was also copied in Texas, but was there held invalid31 and was deleted from the administrative statute. The basic Oregon procedure was adopted by Nevada, California, and Arizona, and was held unobjectionable constitutionally on various questions raised in the State courts, as well as in the United States Supreme Court. In regard to the Oregon statute the United States Supreme Court said: “That the State, consistently with due process of law, may thus commit the preliminary proceedings to the board and the final hearing and adjudication to the court, is not debatable.”32 The “Bien Code” procedure was adopted in New Mexico, North Dakota, Oklahoma, and South Dakota. Other forms of procedure were legislated in the other original seventeen Western states. Those of Idaho and South Dakota encountered constitutional difficulties, as did also the original Nevada statute.33

Colorado is the outstanding exception. The basic principles of statutory adjudication as worked out in that state, which pioneered in this field, are the same today as at the time of their creation—a judicial procedure exclusively. Furthermore, no disposition to make a material change is evident.34

The time and the costs involved in making a complete adjudication of water rights on a large stream system are considerable. A large amount of technical litigation resulted.35 Various extensive adjudications have taken years; in some

31. Board of Water Engineers v. McKnight, 111 Tex. 82, 92-97, 229 S.W. 301 (1921).
34. Chilson, supra note 25, at 88. Judge Chilson expressed his opinion that the water users of Colorado would most strenuously oppose any attempt to change the essence of the present administrative system, especially the adjudication procedure.
35. For conclusions in early years, see Wiel, supra note 30, §§ 1234-35.
areas their institution has been discouraged chiefly because of the unavoidable delay required in collecting necessary data and conducting administrative hearings upon which the order of determination is based. But it is equally true that private litigation involving many parties and interests has also involved much time and expense.

Aside from up-to-date completeness and the beneficial showing of public interest, these administrative-judicial procedures have the advantage of participation of well-trained and experienced public administrators who have access to masses of original material, cooperation of state and federal agencies, and scientific as well as legal techniques for evaluating testimony presented to them. It is true that the South Dakota Supreme Court took a dim view of the statutory provision for assessing costs against private parties in a proceeding to determine all water rights on a stream. The court held that to require a proper user of water to bear any part of such cost would deprive him of property without due process of law, and remarked that: "Such a procedure could only result in a fat benefit to some civil engineer." But other state supreme courts have commended special statutory procedures and the ability and usefulness of administrators. For example, a judgment confined to issues presented by a few parties to an individual suit exemplifies a method of resolving water rights controversies that is "necessarily piecemeal, unduly expensive and obviously unsatisfactory;" a reference by the trial court to the state agency created for the purpose would have been preferable. And in an Oregon case, " . . . we have recognized the truth . . . that 'Judges are not super engineers' and we have, therefore, treated with great respect the State Engineer's appraisal of the evidence of the proceedings which were before him."

The typical procedures that have not included features found objectionable constitutionally have weathered more than a half-century of experience. They have been refined from time to time in order to correct deficiencies and meet changing conditions. These procedures are a well-established part of western water law.

D. Administration of water rights and distribution of water: Colorado's pioneer contribution to stream administration—supervision of diversion and distribution of water—also appears in the "water codes" of most Western states. The state patterns differ. A characteristic plan includes administrative areas created by statute, headed by water superintendents under general control of the State Engineer, and sub-areas wherein local water-masters operate under direction of the major water area superintendent. In the younger States in point

of experience in this field, at least the minor distribution areas are generally left by statute to creation by the State Engineer as the need arises.

These water distribution plans were not put into actual operation in all jurisdictions in which they were authorized. For example, North Dakota and South Dakota, with small aggregate areas under irrigation in 1909, began their statewide water administration programs with elaborate authorized organizations comparable to those of Wyoming and Colorado. In that year, the irrigated acreages of the latter states were 1.1 and 2.8 millions, respectively. Although in each of the Dakotas the office of State Engineer for many years was retained as the chief water administrative agency (and was encumbered with additional public duties not connected with water control, such as highway matters which were becoming increasingly important) the statutory provisions for water divisions, districts and water commissioners were never put into effect completely in either state and eventually were discarded as obsolete.

The duty of water administrative agents is primarily to distribute water of streams and other sources pursuant (a) to court decrees of adjudication, and (b) to permits and final certificates of appropriation issued by the State Engineer after rendition of decrees. In several states with early "water code" legislation, substantial portions of the irrigated areas have been covered by decrees and are included in water districts patrolled and supervised by water-masters in the hierarchy headed by the State Engineer. These stream patrolmen manage the flow of the river. They open and close ditch headgates releasing proper quantities of water at proper times from the stream to serve the rights of priority attaching to the several ditches. They have power to make arrests for tampering with controlled headgates or otherwise violating laws or rules having the effect of law. In some instances, their services are also made available in settling disputes between water users served by a canal or reservoir, or between users and owners of the facility. Persons dissatisfied with an act of the water-master in the performance of his duties may complain to his superiors and ask for corrective action.

The water administrator can be a force in the community. Many years ago it was remarked to the present writer with respect to such an agent on the Cache la Poudre in Colorado that his value as an honest and impartial public

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40. The North Dakota State Engineer still supervises appropriations of water, but since the late 1930's he is also secretary and chief engineer of the State Water Conservation Commission, is appointed by the Commission, and grants water rights subject to the Commission's approval. N.D. Cent. Code §§ 61-02-30, 61-03-01 (1960). The functions of the South Dakota Chief Engineer relating to control of water and supervision of water rights were transferred to the State Water Resources Commission in 1955. S.D. Code § 61.0104 (Supp. 1960).
official lay, not only in possession of these virtues, but in his reputation for possessing and exercising them.

E. Water enterprise agencies: Development of administrative law and procedure in the West during the major intermediate period under consideration was accompanied by expansions of irrigated areas for which water was diverted by individuals and water enterprises of several different kinds. Two types of private enterprises were: (a) commercial irrigation companies, operated by the owners for sale of water or water service to farmers for profit, and (b) mutual irrigation companies, owned and operated on a nonprofit community basis by the farmers themselves. The irrigation district was the major public enterprise.

Commercial irrigation companies were identified with advances in large irrigation construction in the 1870's and 1880's. Private capital invested in their projects contributed materially to agricultural development in the West, but proved so generally unprofitable to investors that most sources of new capital vanished. Commercial enterprises comprised two types—private contract companies and public utilities—the rates and services of the latter being subject to public regulation in various states. By the end of our intermediate period, many of these commercial enterprises had changed to other forms of organization, and there were few new ones in the West. Except in a few local areas, the commercial irrigation company is no longer important.

Mutual irrigation companies developed independently in many western jurisdictions. They came into being naturally as diversions of water by individual farmers became increasingly difficult both physically and financially and neighborhood cooperation was indicated. In the usual case the agreement at first was written or verbal; it was made formal by incorporation if and when circumstances made this desirable. This type of organization attained considerable importance in much of the West, chiefly southern California, eastern Colorado, and most of Utah.

The irrigation district became important by reason of the manner of its creation by majority will of the community and its power to issue bonds secured by levies of assessments against all benefited lands within its borders, despite opposition of minority landowners who did not want water service or taxation of their lands to pay for it. Much district financing was unwise and many bond issues were defaulted. To correct this, various measures of public supervision and control were imposed. Notwithstanding its serious vicissitudes, the irrigation district movement was a major factor in attracting private financing to irrigation development in the West; and the district was eventually chosen as the preferred type of water users' organization with which the Federal Government dealt in administering the Reclamation Act of 1902. Many kinds of public districts with functions pertaining to water are now authorized by various state laws.
F. Little application of statutory law to ground waters: The West contributed little during the intermediate period to the present considerable statutory law of ground water. However, many States have long had statutes relating to installation and operation of artesian wells, or declaring waste of artesian water to be a misdemeanor. Likewise, in the last half of the nineteenth century, there were a few laws relating to rights of use of ground water. Of these last named laws, some that purported to depart from the common law rule of percolating waters had little or no effect on the development of ground water law in the West. Others—including an 1866 enactment of the Dakota Territorial legislature—purported to perpetuate the common law rule. And around the turn of the century there were a few statutes, that undertook to apply the appropriation doctrine to rights of use. But it was not until 1927—after the close of the intermediate period—that there began the long, impressive succession of currently effective ground water enactments which prevail in most Western States.41

III. Modern National Concern with Both Surface and Ground Water Supply and Allocation

Concern over handling the nation’s water resources in order to meet the demands of its exploding population is deep and widespread. It is evidenced repeatedly at meetings, in periodicals and other publications, and in legislation proposed or accomplished in many states. In this summary of the general situation sight must not be lost of the fact that the examples mentioned herein are few and selected. In no facet of any particular topic do they purport to be exhaustive.

A. Concern in both West and East: “The protection, conservation and development of the nation’s water resources is rapidly becoming, if it is not already, the nation’s number one problem.”42 So said the committee chairman in opening the National Water Resources Institute held at Lincoln, Nebraska, in 1958. He went on to emphasize the necessity for ample supplies of good water for domestic use of our rapidly growing population, for irrigation of lands, industry, development of power, and for sanitation and recreational purposes. In recent years other groups have also studied aspects of water resource problems at a national level.

That the pressure of increasing population upon the nation’s water supplies is posing and will continue to pose serious problems in engineering and other natural sciences, economics, finance, and law is widely recognized and studied,

42. Lambert, Opening Address, Proceedings of Nat’l Water Resources Institute 1 (1958). The proceedings include technical papers by speakers from many states and one from Canada.
not only at the national level, but at state and local levels as well. To cite a few examples:

The Report of the Senate Select Committee on National Water Resources,\textsuperscript{43} published in 1961, opened with the statement that an ample supply of good quality water is essential to modern civilization, and that the growth and prosperity of the United States economy depends upon it. This committee held open public hearings in twenty-one States and the District of Columbia. Testimony or statements were presented by 972 witnesses and the material was published in a series of twenty-three volumes totaling 3,920 pages. The above cited report includes a summarized appraisal of water supply in relation to demand, problems that are involved, summaries of the many committee reprints on substantiating material, and recommendations.

In 1961 the National Reclamation Association and National Association of Soil Conservation Districts sponsored a National Water Research Symposium in Washington, D. C. Topics discussed at this meeting included water demand, future modification of supplies including weather modification and saline water conversion, efficient use of water in both non-irrigation and irrigation agriculture, and multiple use of water resources.\textsuperscript{44}

Ten years earlier there was published "The Report of the President's Water Resources Policy Commission," an appraisal of the Nation's water resources policy. This was issued in 1950 in three volumes: vol. 1, General Report; vol. 2, Ten Rivers in America's Future; vol. 3, Water Resources Law. The third legal volume contains 777 pages.

The National Reclamation Association, held its thirty-first annual convention at Portland, Oregon in 1962 and now has members engaged in all phases of water production, control and use in the West. To quote its own official statement, this association "is a private, nonprofit, voluntary organization, entirely independent of federal and state governments, which represents the irrigation and water resources development interests of the seventeen Western states—the western half of the United States. It is truly a 'grass roots' organization."\textsuperscript{45} Several Western states have related reclamation or water users associations which meet locally and hold caucuses at the annual association conventions to determine policy actions. Speakers at these annual meetings regularly include high level federal and state officials, as well as representatives of public and private organizations and individuals interested in the solution of national, State, and local water problems. Resolutions are passed at the conclusion of annual meetings. The monthly publication of the NRA is "Reclamation News."

The Association of Western State Engineers holds annual meetings in the

\textsuperscript{44} S. Doc. No. 35, 87th Cong., 1st Sess. (1961).
\textsuperscript{45} S. Doc. No. 35 supra note 44, at III.
Western states. Its programs likewise attract federal, state, and other speakers on current and prospective water problems. The presidency is rotated annually among the States.

Widely distributed periodicals of Western state associations and agencies include "Western Water News," published by the Irrigation Districts Association of California; "Texas Water," by the Texas Water Conservation Association; and "Kansas Water News," by the Kansas Water Resources Board. The California and Texas issues are published monthly and that of Kansas, bi-monthly.

In the last decade, many water resources meetings sponsored by various institutions and organizations have been held in both West and East. Some that featured legal problems include: Water Law Conferences, University of Texas, Austin, 1952, 1954, 1955, 1956, 1959; Water Law Conference, University of Kansas, Lawrence, 1957; Conference on Legal Problems in Water Resources, University of California, Berkeley, 1957;46 Conference on Water and Water Law, New Mexico State University, University Park, 1959; Institute on Water Law, Utah State Bar, Salt Lake County Bar, and University of Utah Law School, Salt Lake City, 1960; Water Rights Conference, Michigan State University, East Lansing, 1960; Southern Water Resources Conference, Richmond, Virginia, 1961; Southeastern Water Law Conference, University of Georgia, Athens, 1961.

B. Growing interest in the East: The East was formerly viewed as a solid riparian area with scattered court decisions, little legislation relating to diversion and use of water for beneficial purposes, and little general interest therein. Certainly, eastern interest at the turn of the century and for some time thereafter was not great when contrasted with contemporaneous activities of the West in obtaining and controlling water for its great areas of semiarid land.

The eastern situation is now radically different. Interest in water resources and their allocation in many Eastern states is considerable and is growing. With concurrence of increasingly heavy demands for water and certain seasons of drought, reappraisal of physical and legal factors became inevitable.

In 1956 a Symposium on the Law of Water Allocation in the Eastern United States, sponsored by the Conservation Foundation, was held at Washington, D. C. Although directed chiefly at the eastern situation, it was attended by many westerners and the published papers include many references to western

46. Proceedings of the Texas Water Law Conferences are published by the University of Texas School of Law. For papers presented at the Kansas and California conferences see 5 Kan. L. Rev. 491 (1957); 45 Calif. L. Rev. 584 (1957). For some other symposium issues see 41 Iowa L. Rev. 157 (1956); 22 Law & Contemp. Prob. 155 (1957); 30 Rocky Mt. L. Rev. 381 (1958).

laws of water rights. In the following year a conference on Water Resources and the Law was held at the University of Michigan Law School in Ann Arbor "in response to the need for a re-examination of the rules of law governing water utilization in the eastern United States." The participants included engineers, economists, and lawyers from both East and West. This conference resulted in the publication of a book and the drafting of a Model Water Use Act at the law school's Legislative Research Center.

During the last decade eastern literature dealing with water rights problems is voluminous compared with that of previous years. In addition to the collection of papers by various authors in the two books cited in notes 47 and 48 above, discussions appear in law review articles and other outlets. For the present purpose, reference is confined (a) to a few comprehensive studies of general application, in which numerous other writings are cited; and (b) to some studies of water rights laws of single states.

Studies are now underway of the legal and economic aspects of water rights in Minnesota, Wisconsin, Indiana, and Ohio and are conducted under a contract between the University of Wisconsin and the United States Department of Agriculture. Around twenty preliminary reports have been prepared. A study is also being made and a review draft completed on Illinois Water Use Law under a cooperative arrangement between the University of Illinois and the Department. A study of Arkansas Water Use Laws has been initiated pursuant to a cooperative agreement between the Department and the University

52. Under the contract, research work is being supervised by Professor Jacob H. Beuscher, University of Wisconsin School of Law, and the Department of Agriculture Contracting Officer's Designated Representative is Harold H. Ellis, Resource Development Economics Division, Economic Research Service.
of Arkansas. A comprehensive bibliography of publications on water rights laws and related subjects in the United States has been scheduled for publication by the Department of Agriculture.

Statutes in five traditionally riparian rights jurisdictions (Maryland, Minnesota, Mississippi, Iowa, and Florida) which have adopted comprehensive legislation regulating the use of water or determining new water rights are discussed in one of the articles published in *Water Resources and the Law.* Also considered in this article are more limited statutes passed in several other jurisdictions to solve particular problems of water management as well as ground water legislations in both Western and Eastern states.

C. The West's re-examination of doctrine and institutions: (1) The break away from riparian tradition in these Western states that had not abrogated this doctrine in the early stages of their water rights jurisprudence really began early in the present century. It grew far more pronounced after the close of the intermediate period from about 1890 to 1920.

Thus, around the turn of the century, the Oregon Supreme Court expressed consciousness of progressive modifications of the common law doctrine of continuous flow on public lands and embarked upon a series of opinions critical of that doctrine when it conflicted with the principle of prior appropriation. Later the Washington Supreme Court took note of prevailing restrictions on the common law doctrine. In Nebraska in 1903 and 1905 the supreme court rendered two decisions concerning remedial right of riparian owners, rather than their substantive rights, but these decisions had the effect of materially deflating the importance of unused riparian rights as against appropriators. However the


most potent reexamination of riparianism in this period was a legislative mandate— the Oregon “water code” of 1909—which both the state supreme court and the United States Court of Appeals for the Ninth Circuit approved and accepted. This statute not only established a complete administrative water system for Oregon, but contained provisions defining and limiting vested riparian rights to the extent of actual application of water to beneficial use prior to the passage of the act or within a reasonable time thereafter with works then under construction.

In the “modern” period (from about 1920) the California Supreme Court continued its long series of decisions recognizing and applying the principle that as against an appropriator the riparian was entitled to the full flow of a stream without limitation to reasonableness of use if it was beneficial to his land. However, the implications finally became such that in 1928 the voters were constrained, by means of a state constitutional amendment, to forbid waste of water and to limit riparian as well as other rights in watercourses to quantities of water required for reasonable and beneficial use under reasonable methods of diversion and use. The California Supreme Court accepted the mandate and held that thenceforth the water law must be caused to conform to the new state policy so commanded.

Important recent developments in this facet of western water law include enactments in Kansas, North Dakota, and South Dakota. While recognizing and protecting vested rights of use, the purpose of these enactments is to release unused waters for development and use under the doctrine of prior appropriation exclusively. Past experience in Oregon and Nebraska was drawn upon in the framing of these statutes. Constitutionality of the Kansas law has been sustained on points raised in high court decisions, but that of the Dakota enactments has not yet been tested.

The riparian question was in litigation in our two new states long before their admission to the Union. Riparian rights were recognized in Hawaii to a limited extent; that is, they were adjudicated as applicable to surplus freshet waters of a stream but not to normal flow. There is no controversy over riparian-appropriation relationships in Hawaii, as the doctrine of prior appropriation has never been recognized in the jurisdiction.\footnote{56} Alaska, however, judicially recognized and applied the principle of priority of appropriation as early as 1890\footnote{57} and has continued it in numerous court decisions, although there is a paucity of legislative authority on the subject. In this overwhelmingly mining water rights jurisdiction, riparianism has had a checkered career. After conflicting decisions by local courts, the United States Court of Appeals in 1910 repudiated the riparian principle completely with respect to rights of use and this

\footnote{56} W. A. Hutchins, The Hawaiian System of Water Rights 83-98 (1946).
\footnote{57} Noland v. Coon, 1 Alaska 36 (1890).
had the effect of placing Alaska on an exclusive appropriation basis. Only seven years later, however, the Territorial legislature entered the field with a statute that, to a limited extent, enacted the law of riparian rights.

Following a long period of uncertainty and controversy in Texas over the question of riparian irrigation water rights, the Texas Supreme Court, in 1962, after granting writ of error, adopted the opinion of the San Antonio Court of Civil Appeals holding that lands in Spanish and Mexican grants on the Lower Rio Grande do not have an appurtenant right to irrigate with the river waters. There was no issue of common law riparian rights in this cause; hence nothing previously decided by the courts of Texas with respect thereto was affected by the Valmont Plantations decision.

(2) Development of the statutory law of ground waters has taken place almost entirely within the "modern" period which in this paper is taken as beginning about 1920. Starting with New Mexico and Oregon in 1927, eleven of the original seventeen mainland Western States enacted statutes authorizing appropriation of percolating ground water. Of the six remaining States, Arizona, Colorado and Texas have statutory restrictions that are not based on priority of appropriation; and California, Montana and Nebraska have advanced slowly and in limited fashion in ground water legislation. The New Mexico ground water legislation of 1927 was held unconstitutional because of violation of a provision of the constitution prohibiting legislation by reference. However, the New Mexico Supreme Court expressly approved the purposes of the legislation which was properly re-enacted in 1931 and it has since been upheld against constitutional attack.

(3) Re-examination of western water doctrine is significantly illustrated by expressions in the opinion of the Kansas Supreme Court on the 1945 statute. This statute was passed to fortify the appropriation doctrine against the demands of common law claimants of rights in both surface and ground waters. Quoting with approval the legislature's declaration of state policy respecting dedication and control of all water in the jurisdiction, the Supreme Court held that a new approach to the problem of use of the state's water resources must now be taken. The Court said, the beneficial use which the individual is making (or has the right to make) of the water is now the important phase of his water

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58. Van Dyke v. Midnight Sun Mining & Ditch Co., 177 Fed. 85, 88, 91 (9th Cir. 1910).
right. "Unused or unusable rights predicated alone upon theory become of little if any importance." 61

The "new look" at old institutions pertaining to water in the light of widely changing environment is also taken by some other contemporary courts. This is true especially in states where the land-owner is held to have rights to the use of waters in his land solely because of the physical juxtaposition of land and water. The Arizona Supreme Court declared, that where the public interest is significantly involved, preferment thereof over the property interest of an individual is a distinguishing characteristic of the exercise of the police power. 62 A California appellate court (hearing denied by supreme court) upheld the validity of a "replenishment assessment" against pumpers of ground water out of their lands. 63 The Wyoming Supreme Court referred to a statement in one of its much earlier opinions—that percolating water developed artificially belongs to the owner of the land on which it developed—64 as susceptible to being taken as authorizing a view far broader than that intended by the court; that in the present view, it basically stands for a single principle, i.e. that one who, by excavation and effort brings to the surface water which would not otherwise be available, will not be deprived of it by one who contributed nothing to its production. 65

Thus the re-examination of doctrine is made in the public interest. But unless sharply focused, it can lead to strained interpretations of that worthy but indefinite and sometimes elusive concept. An anomaly is found in a recent New Mexico case. The New Mexico Supreme Court has adopted the Pueblo Water Rights Doctrine, which accords to certain current American municipalities that can trace their ancestry to primitive Spanish or Mexican pueblos the present right to take for their own unlimited use all waters of a river that ran through or by the ancient pueblo settlement, regardless of individual water rights that may have been exercised beneficially for more than a century without compensation to the owners. In this doctrine, the court observed, there is present in the police power the "answer to claims of confiscation," and thus "the elevation of the public good over the claim of a private right." 66

D. Public control methods: The legislative trend toward use of public control devices is exemplified by more exclusive use of the water appropriation principle

65 Bower v. Big Horn Canal Ass'n, 77 Wyo. 80, 94-95, 307 P.2d 593-98 (1957).
in preference to riparianism, superimposition of administrative discretion upon, the appropriative process, and programs of water resources control by public agencies with broad powers of acquiring and exercising water rights.

In all Western states except Hawaii the appropriation doctrine is in operation. In some of these states there is also the riparian doctrine, its relation to appropriation varying from active and important in California to a mere vestige in Oregon. Achievement of appropriative superiority generally required legislative policy declaration and implementation followed by judicial approval. For example, the California constitution forbids waste of water and limits riparian and all other water rights to reasonable beneficial use. The Kansas statute dedicates all water in the state to use of the people, subject to prescribed state control, and several other state statutes are of like purport. Oregon presently declares that all water in the State from all sources of supply belongs to the public and is subject to appropriation under prescribed procedure; and it also makes provision for "a coordinated, integrated state water resources policy" implemented and administered by a State Water Resources Board which, among its many broad powers, may order unappropriated waters withdrawn from appropriation, and may determine whether an application to appropriate water shall be denied because the proposed project appears prejudicial to the public interest.

Policy declarations in establishing public control invoke the police power in aiming at conservation and wiser uses of water and management of the total supply. Some presently observable trends are: (a) bringing riparian uses of water under the standards long applicable to appropriative uses, thus reducing or eliminating obstructive aspects of riparianism; (b) in granting water appropriations, superimposing upon the strict priority principle administration discretion to prefer better uses and, particularly, to give overriding consideration to the public interest; (c) withholding water from appropriation pending public development; (d) integrating uses of common water supplies, surface and subterranean, with respect to both physical control and rights of use; (e) using large-scale public entities to obtain water rights from the state and to serve local agencies or individuals through contractual or other legal relationships. The West is dotted with public entities dealing with water—irrigation districts, (operating independently or in cooperation with other state agencies or with the United States on reclamation projects), great conservancy districts, municipal utility districts, metropolitan water districts, and water authorities; and (f) at the State level is the far-flung California State Water Plan, with the State authorized by the voters to spend 1.75 billions of dollars in consummating its program.

The era of individual development of surface water supplies in the West passed long ago. Use of stream waters is now highly organized. However, it is true that most ground water development is still in the hands of individual
irrigators, manufacturing establishments, and municipalities, although district management of ground waters and of coordinated surface and ground water supplies has begun.67

E. Federal-state conflicts: Differences between federal and state agencies over western water questions have occurred on many occasions in the last century.

(1) In 1931, it was pointed out that some federal-state water differences were in matters of conflict of jurisdiction, whereas others were issues that might arise between different projects on a stream regardless of their public or private character.68 The chief controversial subjects discussed in this paper are (a) rights of way over public lands for use of water, (b) acquirement of water for federal reclamation projects, (c) water rights for Indian lands, and (d) rights of navigation.

At about the same time, an attorney of the Department of Justice was developing his controversial thesis that "the United States is the owner of the unappropriated waters in the nonnavigable streams in the public land States of the arid West."69 This concept was presented to the United States Supreme Court in one form or another on several occasions.70

Shortly after World War II, a speaker before the Idaho State Bar reviewed several United States Supreme Court decisions, each of which he termed "a milestone along the road of federal encroachment in the field of local water law."71 Then, less than a decade later, the Supreme Court rendered its decision in the Pelton Dam case, holding that the Federal Power Commission might license a hydroelectric power project over the objections of Oregon that the project violated her state laws.72

(2) The Pelton Dam decision intensified a controversy between Federal and State jurisdiction in the field of water rights which had begun long before and (particularly in the light of growing pressures on the Nation's water resources) was becoming increasingly serious. Much debate followed. Bills were introduced

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70. In Nebraska v. Wyoming, 325 U.S. 589, 611-15 (1945), the Supreme Court said that even assuming arguendo that the United States did own all the unappropriated water, the government in the instant case had appropriated the water under state law pursuant to the Reclamation Act. Id. at 615.
71. Inman, Federal Encroachment Upon Local Control of Water Rights, Address by A. C. Inman before Idaho State Bar Ass'n (1947).
in Congress in vain attempts to resolve the difficulty; and literature on the subject accumulated.

For the present purpose, four additional references will suffice: (a) objectives of the 1955 Barrett Bill and its 1957 version introduced in Congress and an analysis of provisions and possible efficacy in subjuging western waters to appropriation and control under state laws;\(^73\) (b) concise, objective analysis of Congressional powers to regulate interstate commerce and to regulate and dispose of property of the United States;\(^74\) (c) recognition by the Senate Select Committee that Federal-State conflicts over water control and use present a serious problem, with urgent need for clear-cut, definite action by Congress and the states acting in concert;\(^75\) (d) Congressional hearings on "Problems Arising from Relationships between the States and the Federal Government with Respect to the Development and Control of Water Resources."\(^76\)

At present proponents of the conflicting viewpoints appear to be as far apart as ever.

(3) The tidelands controversy was a different type of federal-state conflict over water and land problems important phases of which, however, have been legislated and adjudicated.

After the United States Supreme Court had settled (in favor of the United States) conflicting claims of California, Louisiana, and Texas to oil and other products in the offshore tidelands below low watermark, Congress in 1953 relinquished certain federal rights to the several states.\(^77\) Litigation in the Supreme Court to interpret the boundary question resulted in establishing boundaries extending into the Gulf of Mexico 3 leagues from the coastlines of Texas and Florida, and 3 miles from those of Louisiana, Mississippi, and Alabama. Beyond these limits, title to the lands, minerals, and other natural resources remained in the United States.\(^78\)

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\(^77\) Submerged Lands Act, 67 Stat. 29 (1953), 43 U.S.C. §§ 1301-15 (1958). Subject to the rights and powers of the federal government with respect to national defense, commerce, navigation, flood control, and production of power, the United States relinquished to the states and their grantees its rights in lands beneath navigable waters within the boundaries of the states, together with improvements and natural resources including oil, other minerals, fish, and other marine, animal, and plant life. State boundaries for such purpose were not to be interpreted to extend from the coastline more than three geographical miles into either ocean or more than three marine leagues into the Gulf of Mexico.

\(^78\) United States v. Louisiana, 363 U.S. 1, 121 (1960).
F. Institutional relationships: Increasing attention is being given to the physical, economic, and legal interrelationships of control and use of water resources, their "three intertwined dimensions—the physical, the economic and the institutional—forming a unified framework within which water resources are developed."  

There is nothing new in the concept that planning a water project involves considerations of, first, the nature and extent of land and water resources and means of developing them; second, the economic feasibility of the undertaking; and third, the laws, customs, and other institutional factors that influence its practicability and promise of success. Throughout the history of water resources development in the West the rudimentary elements have been generally known, although in many quarters poorly understood and too often disregarded, whether intentionally or otherwise, to the sorrow of investors of capital and labor and many others. But recent years have brought interrelationships of law, economics, science, and policymaking to the fore. Able minds in the several fields of learning have been engaged in concerted efforts to understand the relationship problems and to devise means of attacking and solving them. It is appreciated that not only in major water project development, but also in resolving small water users' problems much could be gained by achieving a common framework of interest among different intellectual approaches.

Cooperative legal-economic research on agricultural problems is being conducted at the Agricultural Law Center, College of Law, State University of Iowa, with the cooperation of the Division of Agriculture, Iowa State University, and the Economic Research Service of the United States Department of Agriculture. This research was established in 1953. Its objectives are to provide original research in water, irrigation, watershed development, conservation, and land use; to bring to farm people an understanding of law and the importance of avoiding legal problems; and to provide information for farmers' lawyers.

A symposium in 1958 included as one of its four main topics "Legal-Economic Aspects of Water Use and Control in the Midwest." A 1959 publication contains articles by three economists and one lawyer. Among questions discussed by the economists are interdependency of law and economics; subject matter and

80. "Interdisciplinary research in law and economics is not new. As early as 1927, economist Nourse wrote a book on The Legal Status of Agricultural Co-operation. But much of the experience with legal-economic research has been confined to the last two decades." Agricultural Law Center State Univ. Iowa, Legal-Economic Research, at 5 (Monograph No. 1, 1959).
81. Ladd, Iowa's Water Resources, Agricultural Law Center, at 142 (State Univ. Iowa, 1956). Dean Ladd said that water had been a major concern of the college of law and the law center for several years.
82. Agricultural Law Center, Legal-Economic Research (Monograph No. 1, 1959). The economists are Walter E. Chryst, John F. Timmons, and Philip M. Raup; the lawyer J. H. Beuscher.
future of legal-economic research; emerging problems; contrasting methods of approach of lawyers and economists; obstacles to be overcome in reconciling differences inherent in dissimilar training grounds and experience in the practice of the two professions. The law professor stressed the points that law is not an end in itself, but a means to policy goals. He also discussed practical observations and advice in furthering legal-economic research; specific research recommendations and tools to implement them; means of communicating research to lawmakers.

Legal, economic, and legal-economic discussions have been held at other conferences. Examples are those discussions sponsored by the Western Agricultural Economics Research Council and Western Regional Research Committee W-42 in the general field of "Water Resources and Economic Development of the West," with one devoted to "Ground Water Economics and the Law." At a conference on California ground water problems sponsored by the University of California with scientists, engineers, geologists, agriculturalists, economists, and lawyers participating, one session was given to "Legal, Economic, and Administrative Aspects of Ground Water." At another conference sponsored by this University, a prominent engineer spoke on economic issues and a well known economist spoke on water planning. Two complementary papers on legal aspects and economic issues, respectively, in water rights were presented to the American Farm Economics Association at its 1955 convention in East Lansing, Michigan.

Some other recent literature in the general area is cited in the accompanying footnote. In addition, broad but pithy observations by two eminent researchers

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83. Comm. on the Economics of Water Resources Dev., Rep't No. 5 (Berkeley, California, 1956).
—one in law, the other in economics—have been selected to emphasize the past
and present dynamic state of American property law:

(1) The lawyer stresses the fallacy of asserting that in the 19th century
period of laissez faire the role of law was solely static, intended only to keep
order among rugged individualists. On the contrary, it was a dynamic force
in furthering rapid exploitation of natural resources. Since the industrial revolu-
tion, Professor Beuscher says the American law of property had its major role,
not in protecting the status quo, "but in being constantly reshaped and adapted
by both judge and legislator to the needs of a dynamically changing economy."
It should be viewed as a means to policy goals, rather than obstruction to their
achievement. As Professor Beuscher states well, "Ours is not, and for the foresee-
able future will not be, a static society."

(2) The economist points out that water allocation among uses and users
under arid and semiarid conditions is always a vital problem to society, regard-
less of quantity used. This was the case in California in the Gold Rush days,
and it is equally true in the vastly different present environment. This vital need
for water allocation in arid and semiarid regions led to the creation of effective
institutional tools to govern it and developing these institutional tools is a con-
tinuing process. Dr. Wantrup's valid conclusion is that "The result is a body of
water law [legislative, judicial, administrative] which cannot be understood by
taking its provisions one by one. It is a true system which functions as a whole.
Each state is a laboratory in which this system has developed and is still
developing."

The development of American water jurisprudence through the last three-
quarters of a century has had far reaching effects and implications. In general-
izing as to its good features and its frustrations, an essential consideration is
that the right to the use of stream water is a right of property and protection of
this right is afforded by provisions of the federal and state constitutions. Inter-
pretations and applications of the rule of stare decisis may vary from time to time
and from one jurisdiction to another, but the rule itself (and its constitutional
foundation) does not. Let us consider some changes that have taken place within
the operation of this fundamental law: From original do-it-yourself practices
in acquiring and exercising water rights to the present highly organized systems
resulting from the injection of administrative law and procedure and the exer-
cise of quasi-judicial powers into western water law; from obstructive aspects
of riparianism in states that recognized such rights to use of devices for sub-

88. Beuscher, Changing Law To Make the Results of Legal-Economic Research
Effective, Agricultural Law Center, College of Law, State Univ. Iowa at 41 (Monograph
No. 1, 1959).
89. Ciriacy-Wantrup, Conceptual Problems in Projecting the Demand for Land and
Water, at 14 (Univ. Cal. Div. of Agricultural Sciences, Giannini Foundation Paper
No. 176, 1959).
ordinating or at least imposing upon them standards of beneficial use; from originally prevailing concepts of unsupervised landowner rights in ground water to methods of statutory control; from the strict principle of priority in time of applying for permits to vesting in the administrators broad discretion in choosing between claims and in safeguarding the public welfare. Consider further the considerable (but by no means exclusive) use of interstate compacts in adjusting water conflicts between states in the last few decades and international treaties with Canada and Mexico, and development of legal principles involved therein. Consider also the necessary use of organizations (federal, state, municipal, and corporate) in developing water supplies and distributing water, the vast volume of laws, administrative regulations, rules, and court decisions promulgated over the years. The pressure of political, social, and economic forces upon water law change and growth appears in a veritable forest of policy declarations. To say that our water law is static disregards the biennial (or annual) accretions of statutory enactments and recurring court decisions in many western states, and the proposals for new laws in the East. Important unresolved conflicts exist within states, between states, and between the federal and state governments, which may bring a substantial volume of new law. Thus, within the organic framework of a federal and state constitutional system, American water law remains vigorous and dynamic.