

# AUSTRALIAN AND AMERICAN WATER ALLOCATION SYSTEMS COMPARED

PETER N. DAVIS\*

Amid general plenty, local and regional shortages of water have appeared in the eastern United States.<sup>1</sup> These shortages are largely the result of intense concentrations of water demand on the more important rivers—rivers which, for the most part, are heavily polluted.<sup>2</sup> This problem is heightened by the fact that the location of major population and industrial centers has only partially depended on availability of water supplies. In many areas, local surface and ground water supplies are inadequate and water must be imported to make up the deficit.<sup>3</sup> Moreover, demands on water supplies for supplementary irrigation, for hydro-electric power, and for recreational and conservation purposes are expected to become increasingly more acute.<sup>4</sup> These shortages raise the question whether the existing riparian law<sup>5</sup> in the East is adequate to the task of water allocation which lies ahead, or whether some other water right system should be substituted for riparianism.<sup>6</sup>

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\* B.A., Haverford College, 1959; LL.B., University of Wisconsin, 1963; Member, U.S. Supreme Court, Wisconsin, District of Columbia, and U.S. Patent Office Bars; General Attorney, U.S. Department of Agriculture; Lecturer, University of Wisconsin Law School; Formerly associated with Ely & Duncan, Washington D.C.

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<sup>1</sup> The eastern United States, for purposes of this article, consists of the 31 states extending eastwardly from and including the tier of states along the west bank of the Mississippi River. These are generally regarded as riparian doctrine states. The remaining 17 western states on the mainland are generally regarded as prior appropriation doctrine states. A few western states are dual doctrine states, following both riparianism and prior appropriation.

<sup>2</sup> See Hines, *Controlling Industrial Water Pollution: Color the Problem Green*, 9 B.C. Ind. & Com. L. Rev. 553 (1968).

<sup>3</sup> See Aulenbach, *Water—Our Second Most Important Natural Resource*, 9 B.C. Ind. & Com. L. Rev. 535, 549-50 (1968).

<sup>4</sup> See generally H. Landsberg, L. Fischman & J. Fisher, *Resources in America's Future* (1963).

<sup>5</sup> Riparianism gives the owner of land abutting a stream a right to a reasonable use of the stream's water. This right is correlative with the rights of other riparian owners. See pp. 676-88 *infra*.

<sup>6</sup> Cf. Trelease, *Policies for Water Law: Property Rights, Economic Forces, and Public Regulation*, 5 *Natural Resources J.* 1, 48 (1965); Trelease, *A Model State Water Code for River Basin Development*, 22 *Law & Contemp. Prob.* 301 (1957). Riparianism has been discussed critically. Ellis, *Some Current and Proposed Water-Rights Legislation in the*

This article will examine in its latter section four water use doctrines: (1) riparianism, (2) prior appropriation, (3) temporal non-priority permit systems and (4) marketplace concepts. The major strengths and weaknesses of each will be compared in the light of five criteria: (1) security of water right for investment purposes, (2) efficiency of water use, (3) flexibility in the allocative process to allow for economic growth, changing technology and changing demands, (4) protection of the public interest and the preservation of watercourse amenities, and (5) the allowance of scope for private initiative.

In the first section of this article, the Australian system for licensing private diversions will be examined in detail as an example of a temporal nonpriority permit system that has been in effect for a length of time unparalleled in this country.<sup>7</sup> The Australian concepts as enacted in the three states within the River Murray basin (Victoria, New South Wales and South Australia) are presented both for comparisons with American systems and as a fund of experience for use by commentators in the future.<sup>8</sup>

#### I. THE AUSTRALIAN WATER ALLOCATION EXPERIENCE

The water law of Australia has generated two main allocative systems: extensive, government-run irrigation areas, and licenses or permits for private diversions. A brief summary of the historical development of irrigation areas in the River Murray basin states will be presented first. Then the legal questions raised by abolishing common law riparian rights and substituting a system of individual licenses will be discussed. Finally, the licensing statutes of the Australian states will be examined in detail.

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Eastern States, 41 Iowa L. Rev. 237, 254-58 (1956); C. Fisher, *Western Experience and Eastern Appropriation Proposals*, in *The Law of Water Allocation* 75 (D. Haber & S. Bergen ed. 1958). C. Haar & B. Gordon, *Legislative Change of Water Law in Massachusetts*, in *The Law of Water Allocation* 1 (D. Haber & S. Bergen ed. 1958), also published as *Riparian Water Rights v. A Prior Appropriation System: A Comparison*, 38 B.U.L. Rev. 207 (1958).

Reliance on market forces for the allocation of water rights is promoted by several economists. See, e.g., M. Gaffney, *Comparison of Market Pricing, and Other Means of Allocating Water Resources*, in *Water Law and Policy in the Southeast* 195, 215 (Instit. of Law & Gov't, School of Law, Univ. of Ga., 1962); J. Hirschleifer, J. De Haven & J. Milliman, *Water Supply: Economics, Technology, and Policy*, chs. III, IV, IX, XII (1960); Milliman, *Water Law and Private Decision-Making: A Critique*, 2 J. Law & Econ. 41 (1959).

<sup>7</sup> In a temporal nonpriority system, a government agency issues water use rights, contracts, licenses, permits, etc., and revokes them, without regard to time of issuance. The oldest such system in America was adopted in Minnesota in 1937. Minn. Stat. Ann. §§ 105.41-47 (1964).

<sup>8</sup> There is no extensive discussion in Australian or American literature of Australian allocative systems. But see Beise, *Consider Victoria*, 21 Dicta 95 (1944).

Note that the Murray River system, in the southeastern part of the continent, is the only sizable system that has received extensive economic development.

### A. *Historical Development of Irrigation in Australia*

The problems of regulating irrigation in an environment of scarcity are not unique to the United States. Australia faced this problem very early.<sup>9</sup> The country is largely arid<sup>10</sup> with erratic stream-flows. Water has been exploited principally for irrigation; at first as a supplement to dryland agriculture, but later as a distinct form of agriculture. Surface water supplies have been stored in huge reservoirs and conveyed through hundreds of miles of main distribution canals. Irrigation areas have been developed as a means of populating the land and as a basis of extensive land reform schemes. Most of this development has taken place in the basin of the River Murray system.

1. *Physical Environment of the River Murray Basin.*—The basin of the River Murray, as delimited by contour lines, has a catchment of 414,000 square miles, or about one-seventh of the whole of the Australian continent.<sup>11</sup> The Murray system has an average annual flow of about 10 million acre-feet, derived from only 39 percent of its catchment.<sup>12</sup> The river flows northwest from the Snowy Mountains area across the very flat riverine plains, characterized by an array of anastomosing channels, anabranches and billabongs, to the mallee sand plains.<sup>13</sup> There, near Mildura, Victoria, it is joined by two of its major tributaries: the Murrumbidgee, paralleling it from the east, and the Darling from the northeast. It then flows west into

<sup>9</sup> Australia is a federal parliamentary nation containing six states and two federal territories: New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia, and the Northern Territory and the Australian Capital Territory. The six states were self-governing British colonies prior to federation in 1901. The Parliaments of each state have all legislative powers not specifically granted to the Federal Parliament by the Australian Constitution. Among the state powers are control and disposition of Crown lands (the public domain) and waters of the state. The federal government is specifically granted power over navigation, but it may not "abridge the right of a State or of the residents therein to the reasonable use of the waters of rivers for conservation or irrigation." Commonwealth of Australia Constitution §§ 98, 100. This means that the federal government may not enact laws affecting irrigation systems. 1 C. King, *An Outline of Closer Settlement in New South Wales* 224 (1957). See G. Sawyer, *Australian Government Today* (7th ed. 1961).

<sup>10</sup> Article "Australia" in 2 *Encyclopedia Americana* 564, 565 (1958 ed.).

<sup>11</sup> River Murray Comm'n, *Development of Control of the Waters of the River Murray under the River Murray Agreement*, in *Proceedings of the Regional Technical Conference on Water Resources Development in Asia and the Far East* 422, U.N. Doc. ST/ECAFE/SER.F/9 (1956); Lang, *Australian Water Resources, with Particular Reference to Water Supplies in Central Australia*, 18 *J. Instit. Eng'rs Austl.* 51, 55 (1946).

<sup>12</sup> Lang, *supra* note 11, at 56. The Columbia River has a catchment slightly smaller than the River Murray's, but its flow is over 16 times larger. Tisdall, *Australian Water Policy*, 12 *Aqua* (Vict.) 227, 228 (1961). (*Aqua* is the house journal of the State River & Water Supply Comm'n, Vict.).

<sup>13</sup> That is, the river system is characterized by an array of interjoining channels, diverging branches, and blind channels leading out from rivers. The mallee sand plains consist of dense thickets formed by the mallee, a kind of low-growing eucalyptus.

South Australia through a 6-mile-wide valley to Overland Corner where it turns south through a limestone gorge to Lakes Alexandrina and Albert and the sea at Goolwa, about 1600 miles from its source.

Irrigation has been fostered on the riverine plains of Victoria and New South Wales and in the wide valley in South Australia. Major headworks have been constructed on the River Murray and all of its significant tributaries. Additional water is being added to the Murray and Murrumbidgee through the transmountain diversion tunnels of the Snowy Mountains Hydro-electric Authority.<sup>14</sup>

Agriculture in the interior of Australia has long suffered from a skimpy and erratic rainfall and a high evaporation rate, particularly during the growing season. Rainfall in the Murray-Murrumbidgee basin in southeastern Australia, where the major irrigation schemes are located, averages 17 inches annually. It has a striking variation, ranging from 60 inches in the highlands of Victoria above Albury to less than 12 inches in the Murray district of South Australia.<sup>15</sup> In the western reaches of the basin the chance of receiving the one and one-half inches of rainfall each month necessary for maintaining wheat growth during the growing season is 25 percent.<sup>16</sup> Because of a very high evaporation rate during the summer, sufficient rainfall to promote the growth of natural pasture in the same region occurs on an average of one year in seven.<sup>17</sup> Complicating the problem of securing water are long cycles of drought and plentiful rainfall. Droughts have lasted for as long as seven years. While they last, major rivers commonly dry up.<sup>18</sup>

2. *Early Response to Climatic Variations.*—The area drained by the River Murray was settled as a result of the explorations of John Oxley, Hamilton Hume and Charles Sturt between 1817 and 1830. It was a harsh, arid area populated only by scattered aboriginal tribes. During the 40 years after 1830 the area filled with huge grazing "stations" raising sheep for the wool market. After 1870 some of the area was converted to large dryland wheat farms.<sup>19</sup>

Because of the violent fluctuations in rainfall, graziers and wheat farmers in the Murray basin early turned to rivers for their water

<sup>14</sup> When fully developed, over 1,920,000 acre-feet of water will be diverted annually to the Murray basin. Snowy Mountains Authority, *The Snowy Mountains Scheme: History of the Scheme, Irrigation Aspects, Electricity Generation* 10, June 1963 (pamphlet).

<sup>15</sup> Lang, *supra* note 11, at 55; see generally W.H.R. Nimm, *World's Water Supply and Australia's Portion of It*, 21 J. Instit. Eng'rs Austl. 29 (1949).

<sup>16</sup> Lang, *supra* note 11, at 59.

<sup>17</sup> *Id.* at 62.

<sup>18</sup> The River Murray itself dried up three times; in 1830, 1912 and 1922. Article "Australia" in 2 *Encyclopedia Britannica* 702, 704 (1958 ed.).

<sup>19</sup> For a history of early settlement of the interior, see M. Clark, *A Short History of Australia* 55-96 (1963); 1 C. King, *supra* note 9.

supply for domestic and stock water purposes. In spite of government programs to drill artesian wells, and to provide public watering places along stock routes,<sup>20</sup> pressure developed for canal-fed domestic and stock water supply systems and for supplementary irrigation systems. Legislative relief in Victoria<sup>21</sup> in the early 1800's proved inadequate.

3. *Irrigation Act 1886 (Victoria)*.—A Royal Commission on Water Supply was appointed in Victoria in 1884 to search for more effective relief, and to investigate the possibilities for full-blown irrigation schemes. Alfred Deakin, later Prime Minister of Australia and a strong advocate of irrigation, was appointed chairman. Many of the basic elements of Australian water allocation law stem from his assessment of irrigation systems and law in the western United States, particularly California and Colorado, and in India, Egypt and Italy.<sup>22</sup> Deakin viewed the confused state of water rights in California prior to *Lux v. Haggin*<sup>23</sup> with horror, and decided that the system of riparian rights then in force in Victoria should be abolished. The resulting Irrigation Act 1886<sup>24</sup> was a comprehensive codification of old and new provisions whose total effect was revolutionary in impact. It contained six major ideas:

*First*, riparian rights were abolished and the waters of the state were "nationalized." "The right to the use and flow and to the control of the water at any time in any . . . water-course shall . . . vest in the Crown."<sup>25</sup> By force of this provision, riparian owners could not, by insisting on a right to a "natural flow," prevent upstream riparians from irrigating.<sup>26</sup> "Nationalization" of the waters of the state gave the Crown power to allocate water freely, tended to diminish litigation in irrigation areas and avoided monopolization of water rights by land speculators after canals were constructed.<sup>27</sup>

<sup>20</sup> In New South Wales, many public artesian wells were drilled under the program authorized by Public Watering-Places Act 1884, 48 Vict. No. 16 (N.S.W.).

<sup>21</sup> E.g., Water Conservation Act 1881, Act No. 716 (Vict.), and Water Conservation Act 1883, Act No. 778 (Vict.).

<sup>22</sup> See A. Deakin, *First Progress Report of Royal Comm'n on Water Supply, Irrigation in Western America*, 2 Vict. Parl. Papers 731 (1885).

<sup>23</sup> 69 Cal. 255, 10 P. 674 (1886).

<sup>24</sup> Act No. 898 (Vict.).

<sup>25</sup> Irrigation Act 1886, Act No. 898, § 4 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 4(1) (Vict.).

<sup>26</sup> Speech by A. Deakin, Minister of Water Supply, in support of Water Supply and Irrigation Bill, Legislative Assembly, June 24, 1886, 51 Vict. Parl. Deb. 415, 440-41 (1886).

<sup>27</sup> *Id.* at 441. The Act has virtually eliminated water rights litigation in Victoria.

Deakin cited in this context the Colorado Constitution of 1876, art. XVI, § 5, which declared all streams within the state to be "the property of the public, . . . dedicated to the use of the people . . ." From a quick view of his language, it would seem he thought the Colorado Constitution created a state proprietorship in water. But close examination shows he recognized it is probably only declaratory of the common law *publici juris* concept as a prelude to the prior appropriation doctrine. See Colo. Const. art. XVI, §§ 5,

*Second*, all riparians were given a statutory license to divert water for domestic and stock watering purposes.<sup>28</sup> Owners of land alienated by the Crown and conveyed to private ownership prior to the date of the Act were also permitted to divert water for irrigating small gardens.<sup>29</sup> This right, which the Australians call the statutory riparian right, is similar to the "natural" use allowed to riparians, without formal governmental authorization, by the common law.

*Third*, all other diversions were prohibited except as authorized by the Act.<sup>30</sup> This provision had the effect of requiring licenses for all diversions classed as "extraordinary" or "artificial" at common law. These uses include dams for mill ponds, and diversions for manufacturing and irrigation.<sup>31</sup>

This provision raised the question whether the Act destroyed water rights which had vested in the riparian proprietors. Deakin addressed himself to this question during the debates on the bill.

[T]he riparian law of England places riparian rights even above those of the Crown. The Crown has only the same rights as private landowners in so far as it possesses land along the banks of any stream. The question, of course, is—Does this law obtain in Victoria? It is understood that [one authority] was of opinion that there was no such thing as riparian law in Victoria....[B]ut there is no clear and

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6 (1876); A. Deakin, *supra* note 22, at 742. See also Lasky, *From Prior Appropriation to Economic Distribution of Water by the State—Via Irrigation Administration*, 1 Rocky Mt. L. Rev. 161, 174-87 (1929); Trelease, *Government Ownership and Trusteeship of Water*, 45 Calif. L. Rev. 638, 642-43 (1957).

<sup>28</sup> Irrigation Act 1886, Act No. 898, § 4 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 14 (Vict.). Domestic use was defined in the Act as:

[U]se for household purposes or for watering animals kept for domestic purposes, but does not include use for watering any other animals or any trees shrubs plants grass lawns or courts or flower garden kitchen garden or other garden whatsoever or any part of the curtilage of a house or for the provision of power or for fountains ponds or ornamental purposes or for any trade or business or for any other purpose whatsoever.

Water Act 1958, Act No. 6413, § 3 (Vict.). [Ed. note: lack of commas in original.]

<sup>29</sup> Irrigation Act 1886, Act No. 898, § 4 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 14 (Vict.).

Domestic uses at common law usually are not described in the cases as including irrigation of small gardens. But one English case does suggest that watering a small garden with buckets would be reasonable under any circumstances. *Embrey v. Owen*, 155 Eng. Rep. 579, 587 (Ex. 1851). This is, of course, the definition of an "ordinary" use.

<sup>30</sup> Irrigation Act 1886, Act No. 898, § 4 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 6 (Vict.).

<sup>31</sup> Irrigation of any kind has not been regarded as an "ordinary" use at common law. It is an "extraordinary" use. At common law, irrigation may be pursued if there is no sensible diminution of the stream. *Embrey v. Owen*, 155 Eng. Rep. 579 (Ex. 1851); *Nagle v. Miller*, 29 Vict. L.R. 765, 780-81, 10 Argus L.R. 119, 121 (1904).

absolute legal enactment to that effect, and other eminent lawyers hold a contrary opinion.<sup>32</sup>

Whether or not riparian rights had vested, several factors made it improbable that riparian proprietors would raise any serious objection to the Act. The statutory riparian right preserved diversions for domestic and other "ordinary" uses known at common law. Since "extraordinary" uses like irrigation and manufacturing were largely underdeveloped in 1886, especially on the interior plains of Victoria, the statutory riparian right presumably allowed most of the existing diversions to continue unaffected by regulation.

Very few riparian rights of any description had, in fact, been acquired in Victoria. There are three reasons for this. (A) After May 23, 1881, all river frontages on lands then owned by the Crown were reserved to the Crown by statute.<sup>33</sup> In practice, when the lands were sold, the Crown retained strips of land on both banks of a watercourse. These reservations prevented private acquisition of riparian rights after that date. Acquisitions before that date were also precluded unless the land grant described the stream as a boundary.<sup>34</sup> Further, because so few Crown grants abutted on watercourses, very few riparian rights had been acquired from the Crown before 1886. The Commissioner of Titles once asserted that he knew of only two Crown grants to which riparian rights were appurtenant.<sup>35</sup> (B) Although by statute private parties were entitled to claim a prescriptive right to divert water for "extraordinary" uses on the basis of 20 years use,<sup>36</sup> no claims for prescriptive rights were ever filed.<sup>37</sup> (C) To clear up any question about ownership of the bed, the 1905 Water Act included a provision clearly stating that such ownership had been retained by the Crown upon alienation of the abutting Crown lands.<sup>38</sup> In short, it has been accepted that riparian rights in Victoria have been abolished and no longer exist.<sup>39</sup>

<sup>32</sup> Speech by A. Deakin, *supra* note 26, at 440-41.

<sup>33</sup> River frontages were reserved under authority of the Crown Lands Act 1869, Act No. 360, §§ 6, 7 (Vict.): Victorian Year Book 1963, Rivers and Water Resources 8 (reprint). The provision empowering the Crown to reserve river frontages had been on the books since 1861. See Crown Lands Act 1861, Act No. 117 (Vict.); Crown Lands Act 1862, Act No. 145 (Vict.).

<sup>34</sup> Crown Lands Act 1869, Act No. 360, §§ 6-7 (Vict.); L. East, *Victorian Water Law—Riparian Rights* 5, 6 (c. 1949).

<sup>35</sup> Decision of Commissioner of Titles (Vict.), 1905, re: Allotments Abutting Salt Creek, 110 Vict. Parl. Deb. 364 (1905); speech by George Swinburne, Minister of Water Supply, in support of Water Acts Consolidation and Amendment Bill, Legislative Council, Aug. 30, 1905, 110 Vict. Parl. Deb. 1232, 1237 (1905).

<sup>36</sup> Water Act 1905, Act No. 2016, § 15 (Vict.).

<sup>37</sup> L. East, *supra* note 34, at 15-16.

<sup>38</sup> Water Act 1905, Act No. 2016, § 5 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 5 (Vict.).

<sup>39</sup> The situation is not so clear in New South Wales under a similar group of pro-

Two recent High Court of Australia dicta seem to agree, suggesting that the state "nationalization" statutes abolished all common law riparian rights.<sup>40</sup> Unhappily the high court, in another case, chose to muddy the waters somewhat. The case involved the redirection of flood waters by a levee to lands which would otherwise remain dry. The court held that the common law rights of nuisance and negligence had not been abolished by the Water Rights Act 1896 (New South Wales) or its successors.<sup>41</sup> Mr. Justice Fullagar added in unfortunate dictum:

I should have thought . . . that the real object of the *Water Rights Act* 1896 . . . was to enable the Crown, in a country in which water is a comparatively scarce and important commodity, to exercise full dominion over the water of rivers and lakes and to undertake generally the conservation and distribution of water. For the attainment of that object it was not necessary to destroy anybody's rights, but it was necessary to give to the Crown . . . overriding rights to which private rights must, if need arise, give way.

The effect given to the statute . . . means that a riparian proprietor has no remedy as of right if a river is dammed by an upper owner so that no water reaches him, or if it is polluted and poisoned by the refuse of a factory. . . . The view which I am disposed to take is that the Act does not directly affect any private rights, but gives to the Crown new rights—not riparian rights—which are superior to, and may be exercised in derogation of, private riparian rights, but that, until those new and superior rights are exercised, private rights can and do co-exist with them.<sup>42</sup>

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visions currently enacted in Water Act 1912-1915, § 4A(1) (N.S.W.), which "nationalized" the flow, use and control of waters in rivers and lakes and established a licensing system very similar to Victoria's. The act establishes licensing provisions for diversions, Water Act 1912-1966, § 10(1) (N.S.W.), except for diversions under the statutory riparian right, *id.* § 7(1). Since some Crown grants in New South Wales have included the beds of streams, and since river frontages were not reserved, *L. East*, *supra* note 34, at 9, the question whether riparian rights attached to lands abutting streams became significant. It was tested in 1900, when an upstream riparian's land was inundated by backup from a downstream riparian's dam and the upstream owner brought suit, alleging his common law riparian rights had been violated. The New South Wales Supreme Court, in *Hanson v. Grassy Gully Gold Mining Co.*, 21 N.S.W.L.R. (L.) 271, 275 (1900), held that the Water Rights Act 1896, 60 Vict. No. 20 (N.S.W.), had taken away the old common law rights. See also *Dougherty v. Ah Lee*, 19 N.S.W. Weekly N. 8 (1902); *Attorney General (N.S.W.) v. Bradney*, 20 N.S.W. Weekly N. 247 (1903).

<sup>40</sup> See dicta and implications in *H. Jones & Co. v. Municipality of Kingborough*, 82 Commw. L.R. 282, 342 (Austl. 1950) (Fullagar, J.); *Gartner v. Kidman*, 108 Commw. L.R. 12, 23 (Austl. 1962) (Windeyer, J.).

<sup>41</sup> *Thorpe's Ltd. v. Grant Pastoral Co.*, 92 Commw. L.R. 317 (Austl. 1954-55), construing Water Rights Act 1896, 60 Vict. No. 20 (N.S.W.).

<sup>42</sup> *Id.* at 331.



Just what Mr. Justice Fullagar meant is not clear. If he meant that riparian rights exist only where the Crown has not occupied the field by legislation, and that the court should construe the licensing statutes as such comprehensive occupying legislation, then these statutes and the whole administrative structure built upon them have not been weakened. His dictum, however, may suggest that he would take a much more restrictive view of the scope of the licensing statutes. Such an interpretation throws the meaning of the "nationalization" provisions into doubt.

*Fourth*, the Irrigation Act 1886 established in Victoria a diversion licensing system, by the terms of which a license had to be obtained from a state agency for a diversion for any nondomestic purpose from any watercourse, reservoir, channel or drain.<sup>43</sup> All uses classed as "extraordinary" or "artificial" at common law, for example, manufacturing or irrigation, had to be licensed.<sup>44</sup>

Licensing of diversions was not new. After 1861, certain diversions had been required to be licensed by the Board of Land and Works.<sup>45</sup> What was new was licensing by a single state agency with special competence in water supplies. This idea was borrowed from Colorado but without the prior appropriation features.<sup>46</sup> Licensing under the Irrigation Act 1886 was first administered by the Victorian Water Supply Department, and, after 1905, by the State Rivers and Water Supply Commission. Detailed aspects of licensing are discussed later.<sup>47</sup>

*Fifth*, the government was given power to license nonriparian owners to condemn rights-of-way to surface water sources.<sup>48</sup> The concept is well known in the civil law as an "easement of aqueduct." Although Deakin borrowed it from Europe and Colorado,<sup>49</sup> the concept was not unknown in Australia, the Victoria Water Conservation Act 1883 having authorized Waterworks and Irrigation Trusts, as well as private persons to acquire "easements of aqueduct" for purposes of that Act.<sup>50</sup>

<sup>43</sup> Irrigation Act 1886, Act No. 898, § 4 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 6 (Vict.). Irrigation Act 1886, Act No. 898, § 122 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 204 (Vict.).

<sup>44</sup> See note 31 *supra*.

<sup>45</sup> See Crown Lands Act 1861, Act No. 117, § 59 (Vict.); Crown Lands Act 1862, Act No. 145, §§ 56-57 (Vict.); Crown Lands Act 1869, Act No. 360, §§ 46, 54-56 (Vict.); Crown Lands Act 1884, Act No. 812, §§ 96-97, 124 (Vict.); Victorian Water Conservation Act 1881, Act No. 716, §§ 38, 41-42, 46, 48, 78.

<sup>46</sup> A. Deakin, *supra* note 22, at 742.

<sup>47</sup> See pp. 664-74 *infra*.

<sup>48</sup> Irrigation Act 1886, Act No. 898, § 121 (Vict.), as reenacted, Water Act 1958, Act No. 6413, § 203 (Vict.).

<sup>49</sup> Spanish Law of Waters 1879, art. 77; Colo. Const. art. XVI, § 7 (1876).

<sup>50</sup> Water Conservation Act 1883, Act No. 778, § 105 (Vict.). In 1946, New South Wales empowered the Water Conservation & Irrigation Commission to issue "easement of aqueduct" licenses to enable nonriparians to gain access to water. Irrigation and

*Sixth*, private irrigators were empowered to organize Irrigation Trusts. The government was authorized to make loans to these Trusts for construction of distribution canals within the Trust districts. In addition, the government was authorized to construct major reservoirs and main canals to supply water to the Trust systems. Largely as a result of the loan provisions, rapid development of irrigation began almost at once. By 1896, over 118,000 acres had been put under irrigation.<sup>51</sup>

Taken together these provisions of the Victorian Irrigation Act 1886 were designed to replace riparianism with a new water allocation mechanism controlled by the state for the public benefit. The pastoral and wheat-growing industries on the interior plains were to be fostered by bringing to them a supplementary water supply by which small, intensely watered fodder plots could be established: a kind of drought insurance.<sup>52</sup> No substantial intensification of existing land uses by conversion to water-intensive crops, was contemplated by Deakin or the 1886 Act's supporters. Proof of this lies in the fact that organization of Irrigation Trusts was to be left to local initiative, and in the fact that the government intended to supply the vast Trust districts from the relatively small and erratic water resources of the unregulated Goulburn and Loddon Rivers.<sup>53</sup> The irrigation schemes built under the Act were, in fact, for supplementary irrigation.<sup>54</sup>

The Irrigation Act 1886 represented a breakthrough in thinking in Australia, its ideas molding the thinking of irrigators and legislators for the next 20 years. New South Wales enacted similar licensing legislation in 1896.<sup>55</sup> South Australia followed suit in 1919 with legislation regulating diversions in the Murray irrigation districts.<sup>56</sup>

4. *Water Act 1905 (Victoria)*.—The Irrigation Trusts organized under the Irrigation Act 1886 consisted of vast earthen canal systems

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Water (Amendment) Act 1946, Act No. 35, § 2(1)(e) (N.S.W.), reenacted as Water Act 1912-1966, § 13A(1) (N.S.W.).

<sup>51</sup> Royal Comm'n on Water Supply, Report, 3 Vict. Parl. Papers 441, 555-620 (1886).

<sup>52</sup> Rutherford, *Integration of Irrigation and Dryland Farming in the Southern Murray Basin*—Part III, 28 Rev. Marketing & Agric. Econ. (N.S.W.) 97, 98, 112 (1960).

<sup>53</sup> The Act's chief objective "was to assist production stability in a newly established dry-land economy . . . for wheat-sheep production . . ." *Id.* at 98. The acts listed note 21 *supra* had much the same purpose.

<sup>54</sup> *Id.* at 111.

<sup>55</sup> *Id.* at 112; see E. Mead, *Helping Men to Own Farms* 30 (1920).

<sup>56</sup> Water Rights Act 1896, 60 Vict. No. 20 (N.S.W.), as currently enacted, Water Act 1912-1966 (N.S.W.). That Act did not provide for construction of headworks by the government.

<sup>57</sup> Control of Waters Act 1919, Act No. 1359 (So. Austl.), as reenacted, Control of Waters Act, 1919-1925 (So. Austl.). The Act applies only to the lands bordering the River Murray above Mannum to the eastern border with Victoria and New South Wales. It "nationalizes" water rights, abolishes riparian rights, and provides for diversion licenses.

supplying small quantities of water to scattered locations. They were often over-capitalized and under-utilized and their reservoirs were inadequate during extended droughts. Wheat farmers and graziers took water only during droughts and thus reduced Trust revenues during wetter seasons. Local managements could not or would not levy charges large enough to defray operating and capital expenses. By 1905 the Irrigation Trusts were insolvent.<sup>57</sup> To protect its investment of £6 million in irrigation headwork and loans, Victoria abolished all Irrigation Trusts by enacting the Water Act 1905; the State took over all operation and management of the irrigation systems and placed them in the control of the newly formed State Rivers and Water Supply Commission.<sup>58</sup>

Two other major policy changes were made by this Act. First, the government decided to effect a substantial intensification of land and water use, converting certain wheat-farming areas to vineyards and fruit orchards. Additional storages and distribution canals would be constructed to provide an enlarged and more stable water supply. Second, to achieve a more intensive use of water on existing irrigated farms and to bring unirrigated areas served by channels into the system, a "compulsory water right" was introduced. Each farm was assigned a certain volume of water per acre for which a charge was levied whether or not the water was used.<sup>59</sup>

The Water Act 1905 clearly contemplated substantial resettlement as a result of the government's new policy to intensify land and water use. It was conceived as the "handmaiden" to Victoria's Closer Settlement Act 1904,<sup>60</sup> which had been introduced into Parliament at the same time.<sup>61</sup> The latter act provided for condemnation of large estates, subdivisions into family-sized farms, and sale to selected applicants.

<sup>57</sup> See Rutherford, *supra* note 52, at 111-12; Royal Comm'n on Water Supply, Report, 3 Vict. Parl. Papers 441, 626 (1896).

<sup>58</sup> Water Act 1905, Act No. 2016 (Vict.).

<sup>59</sup> *Id.* § 56 (Vict.). This idea was proposed by George Swinburne, Minister of Water Supply, after his tour of irrigation areas in 1904. Churchyard, *Pioneers of Irrigation in Victoria*—George Swinburne, 8 *Aqua* (Vict.) 123, 124 (1957).

The compulsory water right is not unknown in the United States. Under legislation enacted in 1914, compulsory payment for one acre-foot of water per acre of land irrigated was required in all irrigation areas under the jurisdiction of the Bureau of Reclamation. Reclamation Act of 1914, § 5, 38 Stat. 686, 43 U.S.C. § 492 (1964).

Elwood Mead, soon to administer the new Water Act, had advocated the compulsory water charge in 1903. E. Mead, *Irrigation Institutions* 25-26 (1903). He based his ideas on the Carey Act, 28 Stat. 422 (1894), as amended, 43 U.S.C. § 641 (1964); and the reclamation of Carey Act lands statutes of Idaho and Wyoming. Idaho Code §§ 42-2009, -2011, -2026, -2028 (1948); Wyo. Stat. §§ 36-115 to -121 (1959).

<sup>60</sup> Closer Settlement Act 1904, Act No. 1962 (Vict.).

<sup>61</sup> Speech by George Swinburne, Minister of Water Supply, in support of Water Acts Consolidation and Amendment Bill, Legislative Assembly, Oct. 4, 1904, 108 Vict. Parl. Deb. 1937, 1954 (1904).

Taken together, the two acts made possible the tripartite policy advocated by George Swinburne, Minister of Water Supply:

- (1) Water should be used in compact areas.
- (2) As landowners were not prepared to subdivide land so that water could be used in compact areas, the Government should purchase land and subdivide and dispose of it under the Closer Settlement Act.
- (3) The compulsory charge should be based on the delivery of a certain quantity of water, the quantity to each farm to be determined from the area of commanded land not unsuitable for irrigation.<sup>62</sup>

Elwood Mead, an irrigation expert and later Commissioner of the U.S. Bureau of Reclamation,<sup>63</sup> was hired in 1907 as Chairman of the State Rivers and Water Supply Commission of Victoria to implement these policies. He, too, had advocated intensive land and water use and irrigation of compact areas.<sup>64</sup> Very quickly he initiated a large-scale program of closer settlement based on irrigation<sup>65</sup> which has been continued to this day. These vast areas stand as a monument to Mead's development of pragmatic methods to implement the policies embodied in the Water Act 1905 and the Closer Settlement Act 1904.<sup>66</sup>

5. *Murrumbidgee Irrigation Areas 1912 (New South Wales).*—In New South Wales, "nationalization" of water and licensing of diversions had occurred under the Water Rights Act 1896.<sup>67</sup> These provisions had eliminated the armed conflicts over water which had occurred in the Riverina pastoral district before that time, but did nothing to foster large-scale irrigation.<sup>68</sup> After several years of investigation and thought, the government decided to embark on a large-scale irrigation project utilizing the waters of the Murrumbidgee River and regulated by a large storage reservoir upstream. Construction began in 1906, land for the irrigated blocks was acquired between

<sup>62</sup> Aird, *Water Rights*, 8 *Aqua (Vict.)* 99, 101 (1957).

<sup>63</sup> From 1924 to 1936. Mead had previously been Chief Engineer of Wyoming Territory and a professor of irrigation engineering at Stanford University.

<sup>64</sup> See, e.g., E. Mead, *supra* note 59.

<sup>65</sup> The area irrigated rose from 86,192 acres in 1909-10 to 151,232 acres in 1912-13. *State Rivers & Water Supply Comm'n (Vict.)*, Annual Report 1912-13, 3 *Vict. Parl. Papers* 288 (1913-14).

<sup>66</sup> Mead left the Commission in 1915. He brought the Victorian formula back to the United States where he was influential in securing land use legislation.

<sup>67</sup> 60 *Vict. No. 20 (N.S.W.)*.

<sup>68</sup> 5 *U.S. Dep't of State, Special Consular Reports—Canals and Irrigation in Foreign Countries* 382 (1891).

1910 and 1912,<sup>69</sup> and the first 300 settlers took possession of their blocks in the Murrumbidgee Irrigation Areas in 1912.<sup>70</sup>

This New South Wales project differed from the Victoria irrigation systems in several important respects. It was a new irrigation system located on virgin pastureland, not a rehabilitation of an existing system. It was a large, planned, integrated system, composed of storage works, large distribution canals and various sized blocks for alfalfa, dairying, fruit trees and market gardens.<sup>71</sup> Towns, railway lines, roads, electricity and a canning factory were provided. The existing large sheep stations were condemned, and the irrigation system substituted.<sup>72</sup> Irrigation blocks were leased, not sold.<sup>73</sup> Land use, tenure and transfer were tightly controlled. All the planning, purchasing, construction, distribution, operation, financing and closer settlement functions were centralized in a special state agency, which was later replaced by the present Water Conservation and Irrigation Commission.<sup>74</sup> It was, in fact, a gigantic land reform and colonization scheme to populate empty land and to make it intensely productive.<sup>75</sup>

The scheme sought to avoid the two major shortcomings of the

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<sup>69</sup> By the summer of 1912, the state had compulsorily acquired, in Australian parlance "resumed," about 229,659 acres in the Yanco and Mirrool areas of the Riverina north of the Murrumbidgee River and about 100 miles below Wagga Wagga. 1 C. King, *An Outline of Closer Settlement in New South Wales* 232 (1957). Today the Murrumbidgee Irrigation Areas are focused on the towns of Griffith and Leeton.

<sup>70</sup> *Id.*

<sup>71</sup> Construction of works was authorized by the Barren Jack Dam and Murrumbidgee Canals Construction Act 1906, Act No. 46 (N.S.W.).

<sup>72</sup> Condemnation of land was authorized by the Murrumbidgee Irrigation Area Resumption Act 1910, Act No. 13 (N.S.W.).

<sup>73</sup> Labour Governments in New South Wales traditionally have been attracted by the ideas of Henry George. See M. Clark, *A Short History of Australia* 164 (1963). Cf. H. George, *Progress and Poverty* 442 (Schalkenbach Foundation ed. 1956). As a result they have preferred to lease rather than sell Crown lands in order to retain the unearned increment of value for the state. A Labour Government came into power in 1913 and adopted a general policy to lease all Crown lands thereafter. The Conservative Government elected in 1924 reversed this policy, and permitted conversion of lease to land sale contracts. Subsequent changes of governments have resulted in giving blockholders the right to convert from land contracts to leases or the reverse. Today there are 88 different types of Crown Lands Act tenures in New South Wales, variously under control of the Department of Lands, the Water Conservation & Irrigation Commission, and the Western Lands Commissioner. 1 C. King, *supra* note 69, at 260.

<sup>74</sup> Administration of the Areas was established under the Murrumbidgee Irrigation Act 1910, Act No. 42 (N.S.W.). The areas initially were administered by a tripartite Trust representing the Departments of Public Works, Lands, and Agriculture. It was replaced by the present Commission in 1912. Irrigation Act 1912, Act No. 73 (N.S.W.). Provisions relating to New South Wales irrigation systems are found in the Irrigation Act 1912-1959 (N.S.W.), and Crown Lands Consolidation Act 1913-1967, §§ 137-147N (N.S.W.).

<sup>75</sup> In 1967 the Murrumbidgee Irrigation Areas encompassed 451,263 acres containing 2163 blocks, 326,390 acres of which are irrigated. Water Conservation & Irrigation Comm'n (N.S.W.), *Annual Report for the year ended 30th June, 1967*, at 80.

Victorian experience, local control and inadequate storages. It did, however, borrow several features of that experience—closer settlement methods to populate the land, intensive use of water on areas irrigated, and the compulsory charge for water whether used or not.

6. *Later Developments.*—The Victorian and New South Wales experiences of the early decades of the 20th Century set the pattern which has been followed in Australia ever since. Only minor alterations have been introduced in later years.

a. *Soldier Settlement 1920-1930.* After World War I the irrigation authorities continued the closer settlement activities which had been begun in several locations in Victoria and South Australia, and in the Murrumbidgee Irrigation Areas of New South Wales. These post-war activities differed from the earlier efforts in two respects. First, the bulk of the settlers were returned soldiers with no experience in irrigated farming and no capital to contribute to the development of their farms. Second, all three states followed the recommendations of Elwood Mead, irrigating nearly all of the agricultural blocks (and these were small: often not larger than 50 acres). These settlements accounted for a doubling of the irrigated area in these states in the 1920's, and created a large volume of fruit and dairy produce for export, so that Australia shifted from a net importer to a net exporter of these products. The settlements supported the growth of a host of small country towns and created a relatively dense rural population on family farms.

Unhappily, this growth and development was achieved at great financial cost to the irrigators and to the states. The heavy debt commitment of state loans borrowed by the irrigators at high interest rates just after World War I could not be repaid after the collapse of market prices in 1923. The new irrigators were inexperienced and could not make the best of the conditions under which they operated. The settlements proved to be inadequately planned. Many blocks had been located on poor soils, crops were often unsuited to the soils, natural drainage proved inadequate and no provision had been made for artificial drainage. As a result blocks were ruined by salting of the soils or waterlogging. Most blocks were too small to provide sufficient income to support a family.<sup>76</sup>

The states eventually accepted the principle of the "home maintenance area," which requires that blocks be large enough to earn an income sufficient to support a family, and began a process of consolidating blocks into larger units. In the 1930's, the Depression greatly accelerated the accumulation of arrearages in payments by

<sup>76</sup> On the problems of the 1920's, see generally 1 C. King, *supra* note 69, at 236-39, 254-55; Rutherford, *supra* note 52, at 122-24, 131-32, 141-45.

settlers, and the process of cancelling the major portion of settlers' debts began. Very little development of these intensely irrigated areas continued after 1930, since the period was devoted to readjustment of existing settlements.

b. *Supplementary Irrigation in New South Wales 1930-1940.* Also in the 1930's, New South Wales, deviating from its policy of developing small irrigated blocks, brought water supplies as a form of drought protection to a large area along the River Murray. Only one acre in ten was to be watered, as a form of supplementary irrigation.<sup>77</sup> This region was divided into several sparsely irrigated Irrigation Districts, which are distinguished from the intensely irrigated Irrigation Areas.

c. *Prior Appropriation in New South Wales 1930-1946.* Prior appropriation was adopted in New South Wales in 1930<sup>78</sup> in order to create a more secure water right in times of shortage. It was adopted at the recommendation of Elwood Mead,<sup>79</sup> on the basis of his long experience with irrigation in the western United States.

Prior appropriation followed the maxim "first in time, first in right," by which licenses are given priority of right on the basis of date of application. During shortages, licensees would be cut off in inverse order of date of application, the holder of the most recent license being cut off first.<sup>80</sup> The new doctrine replaced the old procedure whereby during shortages the state would proportionately reduce allotments to all licensees.<sup>81</sup> The New South Wales prior appropriation system adopted use preferences similar to those in some jurisdictions of the United States.<sup>82</sup> All licenses in a superior class would be given priority, regardless of date, over all licenses in an inferior class.<sup>83</sup> The order of preference classes was:

Class I: domestic, municipal, and railway water supplies and water supplies needed for hydropower stations;

Class II: all other purposes, including manufacturing and many forms of irrigation, except those in Class III; and

Class III: irrigating pastureland.<sup>84</sup>

<sup>77</sup> Rutherford, *supra* note 52, at 145-47.

<sup>78</sup> Water (Amendment) Act 1930, Act No. 15, § 2(n) (N.S.W.).

<sup>79</sup> See E. Mead, Memorandum respecting Allocation of Murray Waters, and Amendments to Laws Governing Water Rights, 3 N.S.W. Parl. Papers 1115, 1117 (1923).

<sup>80</sup> For a discussion of prior appropriation as it is practiced in the western United States, see pp. 688-97 *infra*.

<sup>81</sup> Water Act 1912-1924, §§ 6-18 (N.S.W.).

<sup>82</sup> See discussion at pp. 673-74 *infra*.

<sup>83</sup> Water Act 1912-1930, §§ 18B(1), (2), (3) (N.S.W.).

<sup>84</sup> *Id.* § 18B(2).

Holders of existing licenses were given 12 months to apply for new appropriation licenses which would be of equal preference and senior to all subsequent license applications.<sup>85</sup> Licenses applied for later, however, would be subject within each class to an order of preferences based upon date of application.<sup>86</sup>

The Commission eventually found that so many of these early equal-priority licenses had been secured that it was unable to administer the prior appropriation system effectively. Also, irrigators had a tendency to seek licenses for larger volumes of water than they could use.

In 1946 New South Wales abandoned prior appropriation because it had proved to be unworkable.<sup>87</sup> It returned to a nonpriority permit system and adopted "beneficial use" classifications for various irrigation diversion licenses.<sup>88</sup> Beneficial use was defined as irrigation of improved pasture or higher-value crops. Three classes of beneficial use were created: (in order of priority) (1) diversions at least five years old, (2) diversions at least three years old, and (3) new diversions. These classifications were to be used for cutting off various licensees in time of shortage. They are, in effect, use preference classifications for irrigation, giving greater security to well-established irrigators growing high-value crops.<sup>89</sup>

d. *Closer Settlement Since 1945.* After World War II, the states again engaged in rapid development of irrigated closer settlements, drawing upon returned soldiers as settlers. The errors of earlier closer and soldier settlements were avoided as much as possible. Planning was advanced. Blocks were designed to be sufficiently large to provide an adequate income, and were located on suitable soils. Drainage systems were installed. Markets for products were analyzed. Most of the capital costs of the water distribution systems were assumed by the states. Adequate training was given to the new settlers. Because market prices have held up since 1945, these post-war settlements promise to be financial successes.

At the present time New South Wales is vigorously pursuing a course of enlarging its intensively irrigated settlements, especially in the new Coleambally Irrigation Area. Victoria is making larger amounts of water available to existing areas, and is developing the Murray Valley Irrigation Area, but is planning no new expansion at

<sup>85</sup> Id. § 18B(5).

<sup>86</sup> Id.

<sup>87</sup> Second Reading Motion Speech by Cap't W.F. Dunn, Minister for Conservation, in support of Irrigation and Water (Amendment) Bill, Legislative Assembly, Mar. 21, 1946, 180 N.S.W. Parl. Deb. 2d 2839, 2842-43 (1945-46).

<sup>88</sup> Irrigation and Water (Amendment) Act 1946, Act No. 35, § 2(1)(k) (N.S.W.), reenacted as Water Act 1912-1960, §§ 18A-E (N.S.W.).

<sup>89</sup> See the discussion of this classification system at p. 674 *infra*.



present. No state development is underway in South Australia, but several large private spray irrigation projects have been developed there in the past decade.<sup>90</sup> Private diversions are expanding rapidly in Victoria and New South Wales as well.<sup>91</sup>

7. *Conclusion.*—In two major steps in 1886 and 1905 and legal embellishments at other times, Victoria and New South Wales have set the pattern for water use development in Australia. This pattern has six major elements:

- (1) Abolition of common law riparian rights;
- (2) substitution of a licensing procedure for all diversions except those for domestic, stock water, and small garden uses;<sup>92</sup>
- (3) adequate provision of regulated water supplies by construction of large storage reservoirs;
- (4) conversion of areas from dryland farming or supplementary irrigation to intensive irrigation by one or more of the following methods:
  - (a) compulsory water charge for a minimum quantity of water whether used or not,
  - (b) land redistribution for the purpose of closer settlement;
- (5) control of water diversions, land use and irrigation systems by a central state agency; and
- (6) financing of capital costs of headworks and distribution canals for soldier settlements out of the state general revenue.

As a result, in 1966 in southeastern Australia nearly 2,700,000 acres were under irrigation.<sup>93</sup> Australian irrigation policy seems to be based on three assumptions:

- (1) Water should be used to support the most productive agriculture per unit of land;
- (2) cheap water will promote high usage of water, per acre; and

<sup>90</sup> On post-war development, see 1 C. King, *supra* note 69, at 256-59; Rutherford, *supra* note 52, at 126, 148-50.

<sup>91</sup> In Victoria, private diversions have grown from 36,700 to 150,000 acres since 1945. Venables, *Private Irrigation Schemes*, 18 *Aqua* (Vict.) 192, 197 (1967).

<sup>92</sup> For a discussion of aspects of licensing, see pp. 664-74 *infra*.

<sup>93</sup> For information on irrigated areas in Australia, see generally Commonwealth Bureau of Census & Statistics, *Official Year Book of the Commonwealth of Australia*, No. 53, at 1007, 1011, 1014 (1967); State Rivers & Water Supply Comm'n (Vict.), *Fifty-Seventh Annual Report 1961-62*, at 99; Lyrup Village Ass'n, *Brief History of the Lyrup Village Settlement under the Village Settlement Act 1903*, at 4 (typescript reprint, undated).

- (3) such intensive use of water is its most efficient and beneficial use.

While these assumptions are open to challenge, there is no doubt that they are regarded as being responsible for Australia's flourishing irrigation areas today.<sup>94</sup>

*B. Licenses and Permits for Private Diversions Outside  
Organized Irrigation Areas*

About 22½ percent of the irrigated acreage in Victoria, South Australia and New South Wales is located outside organized government or private irrigation areas<sup>95</sup> and is watered under licenses issued to individual diverters. These licenses are obtained from the respective state agencies: in Victoria, from the State Rivers and Water Supply Commission (Melbourne); in New South Wales, from the Water Conservation and Irrigation Commission (Sydney); and in South Australia, from the Engineering and Water Supply Department (Adelaide).

The following discussion concerns the licensing systems established in those Australian states. The concepts developed to underpin this system have relevance to the water allocation issues emerging in the eastern United States today—a licensing system being a feasible alternative to the general American system of allocation by vested private rights. The law of these license areas is distinct from that of irrigation areas and is a subject suitable for another study.<sup>96</sup>

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<sup>94</sup> See E. Mead, *supra* note 59; E. Mead, *supra* note 54. Maximum productivity per acre has been accepted unreservedly by engineers and agronomists as the best goal in agricultural production, and politicians have seen no reason to question this approach, according to Rutherford. Interview with J. Rutherford, Dep't of Geography, Univ. of Sydney, Sydney, N.S.W., Aug. 1, 1963.

The validity of these assumptions has been challenged by economists. See T. Langford-Smith & J. Rutherford, *Water and Land: Two Case Studies in Irrigation* 125-254 (1966); Rutherford, *Integration of Irrigation and Dryland Farming in the Southern Murray Basin—Part I: Need for Reappraising the Concept*, 26 *Rev. Marketing & Agric. Econ.* (N.S.W.) 227 (1958), Part II: *Results of Research in a "Field Study Area"* 1956-58, 27 *id.* 146 (1959), Part III: *Evolution of Integration and Some Lessons for the Future*, 28 *id.* 97 (1960).

<sup>95</sup> Out of the 2,699,935 acres irrigated in these states, 608,300 acres are supplied under diversion licenses. See authorities cited note 93 *supra*.

<sup>96</sup> Inside organized government irrigation areas, a sizable portion of the water is supplied under a "compulsory water right." This is the quantity of water assigned to the irrigation block. In Victoria it is one acre-foot for each three acres. It must be paid for whether used or not. Rarely does the "compulsory water right" provide enough water, and more may be purchased at cost. Land transfer, subdivision and consolidation are strictly controlled to maintain the existence of family-sized irrigation blocks. In Victoria this is done by controlling the disposition of the "water right." In South Australia and New South Wales, the agency leases the irrigation blocks and can control their disposition as well. Forfeiture of water rights or leases may result from wasteful use of the land or excessive defaulting on payments for water, rent, land contract installments, or installments on Crown development loans. Irrigation inside organized irrigation areas is controlled respectively by the State Rivers and Water Supply Commission (Vict.), the Water

Discussion of licensing procedures in Victoria, South Australia, and New South Wales will first deal with the more formalized matters, such as the types of diversions which must be licensed, conditions attached to licenses, fees and the term of the license. Then matters involving administrative discretion will be discussed: criteria for granting or denying license applications, protection of existing uses, restrictions in times of shortage and termination of licenses.

1. *General Provisions.*—The licensing provisions of the Australian water acts not only “nationalize” the waters of the respective states,<sup>97</sup> they prohibit the acquisition of rights to water by prescription<sup>98</sup> and suits for injury to riparian rights between licensed diverters.<sup>99</sup> Licensing of all diversions is required<sup>100</sup> with the following exceptions:

- (1) diversions for domestic and stock water supplies;<sup>101</sup>
- (2) diversions for irrigating small gardens;<sup>102</sup>
- (3) storage at dams and tanks designed to retain surface runoff, provided the flow of water in any watercourse is not sensibly diminished;<sup>103</sup>
- (4) taking water for domestic purposes (e.g., by bucket) and watering stock at watercourses where there is access by public road or public frontage reserve;<sup>104</sup> and

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Conservation and Irrigation Commission (N.S.W.), and the Department of Lands, Irrigation Branch (So. Austl.). See generally Water Act 1958, Act No. 6413 (Vict.); Irrigation Act 1930-1946 (So. Austl.); Irrigation Act 1912-1959 (N.S.W.).

<sup>97</sup> Water Act 1912-1966, § 4A(1) (N.S.W.); Water Act 1958, Act No. 6413, § 4(1) (Vict.); Control of Waters Act 1919-1925, § 4(1) (So. Austl.), which applies only to the River Murray from Mannum to the eastern border. *Id.* § 3(1). No other watercourses have been proclaimed as coming under the Act. Letter from J.R. Dridan, Director & Engineer in Chief, Engineering & Water Supply Dep't (So. Austl.) to author, Aug. 4, 1965.

<sup>98</sup> Water Act 1958, Act No. 6413, § 8 (Vict.); Control of Waters Act 1919-1925, § 9 (So. Austl.).

<sup>99</sup> E.g., Water Rights Act 1896, 60 Vict. No. 20 (N.S.W.); *Hanson v. Grassy Gully Gold Mining Co.*, 21 N.S.W.L.R. (L.) 271 (1900).

<sup>100</sup> Water Act 1958, Act No. 6413, §§ 6, 204 (Vict.); Control of Waters Act 1919-1925, §§ 8, 15(1) (So. Austl.); Water Act 1912-1966, § 10 (N.S.W.).

<sup>101</sup> Water Act 1958, Act No. 6413, § 14 (Vict.) (only by owners of land alienated from the Crown before Dec. 15, 1886); Control of Waters Act 1919-1925, § 7 (So. Austl.); Water Act 1912-1966, § 7(1) (N.S.W.).

<sup>102</sup> Water Act 1958, Act No. 6413, § 14 (Vict.) (5 acres); Control of Waters Act 1919-1925, § 8(3)(b) (So. Austl.) (1 acre); Water Act 1912-1966, § 7(1) (N.S.W.) (5 acres).

<sup>103</sup> Water Act 1958, Act No. 6413, § 4(2), as amended by Water Act 1964, Act No. 7198, § 2(a) (Vict.); Control of Waters Act 1919-1925, § 4(2) (So. Austl.); Water Act 1912-1966, § 5 (N.S.W.) (dams and tanks on watercourses only).

These provisions probably are the result of several cases which allow the capture of diffused surface water before it reaches a watercourse. E.g., *Taylor v. St. Helens Corp.*, 6 Ch. D. 264 (1877).

<sup>104</sup> Water Act 1958, Act No. 6413, § 6 (Vict.); Control of Waters Act 1919-1925, § 8(1) (So. Austl.). This type of provision is not unknown in the United States. See *Kan. Stat. Ann.* § 42-311 (1964); *N.M. Stat. Ann.* § 75-1-4 (1968).

- (5) diversions for mining purposes made under authority of a miner's right.<sup>105</sup>

The administering agency is not required to grant an application for a license.<sup>106</sup> The statutes do not provide any criteria for the granting or denial of a license.

A license gives the licensee a right to divert water and to construct ditches on any Crown land as specified in the license.<sup>107</sup> A special easement license is available to enable nonriparian licensees to construct diversion ditches across property owned by others to obtain access to the water.<sup>108</sup> The diversion license is not personal to the licensee, but inures to the benefit of the lawful owner or occupier of the land where the water is licensed to be used.<sup>109</sup> As a result, the water must be used on the designated land, and a transfer of the right to divert to another location can be accomplished only by obtaining a new license.

2. *Conditions of License.*—Typically a license has a number of conditions regulating how it is to be used. Generally the state agencies may impose any conditions they see fit.<sup>110</sup> Conditions frequently imposed control the location and size of the land to be irrigated, the purpose to which the water will be put, and the size and location of the diversion.<sup>111</sup> For example, in New South Wales, new licenses for pumping from the River Murray are restricted to a maximum of 400 acres. Licenses for irrigating vines or citrus trees are for a maximum of 50 acres. But older licenses for larger areas customarily are renewed.<sup>112</sup>

<sup>105</sup> Water Act 1958, Act No. 6413, § 6 (Vict.); Mines Act 1958, Act No. 6320, § 15(2) (Vict.); Control of Waters Act 1919-1925, § 8(1) (So. Austl.); Mining Act 1930-1957, §§ 30(a), 96-108 (So. Austl.). The New South Wales Act does not require licenses for diversions for mining purposes. Water Act 1912-1966, § 10(1) (N.S.W.); Mining Act 1906-1967, § 15(1)(f) (N.S.W.).

<sup>106</sup> Water Act 1958, Act No. 6413, § 204 (Vict.); Control of Waters Act 1919-1925, § 16(1) (So. Austl.); Water Act 1912-1966, §§ 11(3)(a), 12(1)(a) (N.S.W.).

<sup>107</sup> Water Act 1958, Act No. 6413, § 204 (Vict.); Control of Waters Act 1919-1925, § 17(1) (So. Austl.); Water Act 1912-1966, § 17 (N.S.W.).

<sup>108</sup> Water Act 1958, Act No. 6413, § 203 (Vict.); Water Act 1912-1966, § 13A(1) (N.S.W.). This is the civil law "easement of aqueduct." See p. 655 *supra*.

<sup>109</sup> This doctrine applies only in New South Wales. Water Act 1912-1966, §§ 16, 18Q (N.S.W.). In Victoria the license, which generally empowers the licensee to use water on particular land, is a transferable chattel interest. Water Act 1958, Act No. 6413, § 204 (Vict.).

<sup>110</sup> Water Act 1958, Act No. 6413, §§ 204, 206 (Vict.); Control of Waters Act 1919-1925, § 16 (So. Austl.); Water Act 1912-1966, § 12(1)(a) (N.S.W.).

<sup>111</sup> Water Act 1912-1966, § 13B(1) (N.S.W.); Regulations under Control of Waters Acts 1919-1925, Sch. B, license, conditions 1-3 (So. Austl. Gaz., Oct. 25, 1934); Victoria License to Divert Water and Cut Race, conditions 1-3, 6 (Form W.D.L. 7). See Venables, *supra* note 91, at 193.

<sup>112</sup> Interview with A. Jensen, Dist. Eng'r, Berriquin Irrigation Dist., Water Conservation & Irrigation Comm'n, Finley, N.S.W., Oct. 30, 1963.

Beneficial application of water is required and waste is prohibited.<sup>113</sup> In order to cope with a water shortage or other emergency, the state agencies are given authority to revoke, modify or suspend licenses.<sup>114</sup> These license conditions give the state agencies great power to direct land and water development according to their desires.

3. *Fees for Licenses.*—In Victoria and New South Wales, a relatively low charge is levied for the volume of water actually diverted under a license or annual permit.<sup>115</sup> In Victoria, meters often are installed to measure this volume,<sup>116</sup> but the charge for the volume of the licensed diversion is paid whether or not the diversion is actually made.<sup>117</sup> This charge is similar in principle to the "compulsory water charge" levied inside irrigation areas.

4. *Term of License.*—The mainland Australian states have uniformly adopted a policy of issuing licenses for relatively short terms of years. In Victoria, the term of a diversion license may not exceed 15 years.<sup>118</sup> In practice, the initial term of a new license is four years, and subsequent renewal terms will be for the full 15 years.<sup>119</sup> Renewal is not automatic.<sup>120</sup> Application for renewal would be denied if the licensee were not taking the water licensed.<sup>121</sup> Since 1909 an annual permit has also been available.<sup>122</sup>

Licenses in Victoria are normally issued for diversions from streams in which the summer flow is maintained by releases from storage reservoirs or from streams where there is an assured natural summer flow, and only to the extent diversions can safely be made in a season of below-average stream flows. Permits (permissions for diversion for one year or less) are issued for all other diversions, such as diversions drawing on nonassured streamflows, off-season diversions, or diversions for limited periods.<sup>123</sup> While annual permits are not auto-

<sup>113</sup> Water Act 1912-1966, § 17A(1)(c) (N.S.W.); Control of Waters Act 1912-1925, § 18(1)(b) (So. Austl.); Victoria License to Divert Water and Cut Race, conditions 2, 6 (Form W.D.L. 7).

<sup>114</sup> Water Act 1912-1966, § 17A(2) (N.S.W.); Control of Waters Act 1919-1925, § 18(1)(c) (So. Austl.); Victoria License to Divert Water and Cut Race, condition 8 (Form W.D.L. 7). See discussion of restrictions in times of shortage at pp. 673-74 *infra*.

<sup>115</sup> Water Act 1958, Act No. 6413, §§ 204, 206 (Vict.); Control of Waters Act 1919-1925, § 16(2) (So. Austl.); Water Act 1912-1966, §§ 14A, 14B (N.S.W.).

<sup>116</sup> Supply of water by measure is authorized by Water Act 1958, Act No. 6413, § 186 (Vict.).

<sup>117</sup> Water Act 1912-1966, § 14B(2)(c) (N.S.W.); Interview with J.R.C. Venables, Superintendent of Water Distribution, State Rivers & Water Supply Comm'n Melbourne, Vict., June 21, 1963.

<sup>118</sup> Water Act 1958, Act No. 6413, § 204 (Vict.).

<sup>119</sup> Venables, *supra* note 91, at 193-94.

<sup>120</sup> *Id.*

<sup>121</sup> Aird, *Water Rights*, 8 *Aqua* (Vict.) 99, 104 (1957).

<sup>122</sup> Water Act 1958, Act No. 6413, § 204 (Vict.).

<sup>123</sup> Venables, *supra* note 91, at 194.

matically renewable, many people have come to feel that holding a permit for an unbroken succession of years confers some sort of right to continued renewal.<sup>124</sup> The Commission feels some sort of informal obligation to renew licenses and permits unless special circumstances exist, but it denies a duty to do so.

South Australian licenses for diversions from the River Murray are issued by the Engineering and Water Supply Department. The term of the license is one year.<sup>125</sup> Licenses and annual permits in New South Wales are issued by the Water Conservation and Irrigation Commission. The term of a license may not exceed 10 years,<sup>126</sup> and in practice the Commission usually grants licenses for periods not exceeding five years.<sup>127</sup> Short term permits are available for irrigation of areas not exceeding 10 acres.<sup>128</sup> Such permits may have a maximum period of two years,<sup>129</sup> but, in practice, the Commission issues annual permits.<sup>130</sup> While licenses and annual permits may not be renewed of right,<sup>131</sup> the Commission generally renews them unless circumstances and conditions have changed.<sup>132</sup>

5. *Criteria for Granting or Denying Applications for Licenses and Renewals.*—The state agencies, then, are under no duty to renew licenses or to grant them.<sup>133</sup> Since the statutes provide no standards for the granting or denying of applications for licenses and renewals, the state irrigation agencies have been given great administrative discretion in making such determinations.

Several basic questions of policy exist within the scope of this discretion. These include the problems of determining when there is water available for new uses, by whom and where it should be used, the type of agriculture or other economic activity to be promoted, which of conflicting applications for licenses to grant, and when to refuse applications for license renewals either because water is needed for new uses or because the licensee is using water improperly. Very little has appeared in the literature, been decided by the courts, or

<sup>124</sup> Aird, *supra* note 121, at 104-05. One olive orchard on the River Murray has diverted water under annual permits since 1911. Interview with J.R.C. Venables, *supra* note 117.

<sup>125</sup> The term is set under authority of Control of Waters Act 1919-1925, § 16(2) (So. Austl.).

<sup>126</sup> Water Act 1912-1966, § 12(3) (N.S.W.).

<sup>127</sup> Interview with A.J. Muir, Engineer, Water Rights Section, Water Conservation & Irrigation Comm'n, Sidney, N.S.W., July 24, 1963.

<sup>128</sup> Water Act 1912-1966, § 18F (N.S.W.).

<sup>129</sup> *Id.* § 18J.

<sup>130</sup> Interview with A.J. Muir, *supra* note 127.

<sup>131</sup> See Water Act 1912-1966, § 14(1) (N.S.W.).

<sup>132</sup> Interview with A.J. Muir, *supra* note 127.

<sup>133</sup> Water Act 1958, Act No. 6413, § 204 (Vict.); Control of Waters Act 1919-1925, § 17(1) (So. Austl.); Water Act 1912-1966, § 17 (N.S.W.).

been defined by regulations on these matters. Hence, the following discussion on aspects of these problems must, of necessity, be spotty.<sup>134</sup>

Licenses are granted only when water is available for diversion. Such water exists if the flow in a stream has not been fully allocated, if improved regulation has increased the minimum flow in a stream, or if additional supplies have been created from new storage reservoirs. Generally, the last technique has caused substantial increases in private diversions since World War II. In Victoria between 10 and 20 percent of the new supplies made available from the Big Eildon Reservoir, the Snowy River diversion, and smaller reservoirs have been allocated to private diversions.<sup>135</sup> Substantial increases in private diversions have occurred in South Australia as a result of surplus water in and improved regulation of the River Murray. This growth may be expected to continue as the increased supplies from Chowilla Reservoir, now under construction, becomes available. Private irrigation in New South Wales can be expected to increase as supplies from several new reservoirs and from the Snowy River diversion are allocated. As a result of this growth, private irrigation has become relatively more important than in the past, especially in South Australia. It constitutes 22½ percent of all irrigated acreage in the three states combined,<sup>136</sup> 15 percent in Victoria,<sup>137</sup> 26 percent in New South Wales<sup>138</sup> and 63 percent in South Australia.<sup>139</sup> While the state irrigation agencies do promote private irrigation, nowhere have they indicated the basis on which they decide how much will be allocated to each applicant. In general, along what reaches of streams private diversions will be allowed and what types of agriculture will be promoted are political determinations within the range of choices imposed by physical conditions.

What information does exist on administrative discretion comes, not from the statutes,<sup>140</sup> but from court appeals from administrative decisions. Appeals from license and renewal conditions and denials have been published only in New South Wales.<sup>141</sup>

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<sup>134</sup> On the scope of administrative discretion generally in Australia, see D. Benjafield & H. Whitmore, *Principles of Australian Administrative Law* (3d ed. 1966).

<sup>135</sup> Venables, *supra* note 91, at 200.

<sup>136</sup> See note 95 *supra*.

<sup>137</sup> 188,267 acres out of 1,262,661 acres in 1965-66. See authorities cited note 93 *supra*.

<sup>138</sup> 338,427 acres out of 1,308,439 acres in 1965-66. See authorities cited note 93 *supra*.

<sup>139</sup> 81,606 acres out of 128,835 acres in 1965-66. See authorities cited note 93 *supra*.

<sup>140</sup> *Robson v. Water Conservation & Irrigation Comm'n*, 36 Land & Val. Ct. 57, 60 (N.S.W. 1955); *Gibraltar Pty. Ltd. v. Fairymead Sugar Co.*, 36 Land & Val. Ct. 32, 38 (N.S.W. 1957).

<sup>141</sup> Appeals from decisions of the Water Conservation & Irrigation Commission may be made to the Local Land Board or a police magistrate, and then to the Land and Valuation Court. Water Act 1912-1966, §§ 11(4)-(6) (N.S.W.). There are no statutory pro-

The decision whether to grant or deny an application for, or to place conditions on, a license or renewal in New South Wales is based on the "public interest."<sup>142</sup> What constitutes "public interest" has never been defined in the cases, although a reading of them discloses these components:

- (1) A known advantage or benefit to one or more riparian landholders must be balanced against an apprehended or possible disadvantage or prejudice to other riparian landholders<sup>143</sup> or to the public.<sup>144</sup>
- (2) A more equitable distribution and beneficial use of water should be promoted.<sup>145</sup>
- (3) The Commission's ability to control its own flow-regulation works should not be affected prejudicially.<sup>146</sup>
- (4) Landholders should be encouraged to conserve water.<sup>147</sup>
- (5) The greater public interest or public benefit should be served.<sup>148</sup>

There are two cases which illustrate this last component. In one case, an irrigation scheme for growing fodder crops for commercial sale was held to be in the public interest because it benefited the rural economy. The diversion was approved even though the applicant would get more than his equitable share of a limited water

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visions concerning appeals from administrative decisions by the state irrigation agencies in Victoria and South Australia, but under the common law such decisions are reviewable. See *D. Benjafield & H. Whitmore*, *supra* note 134, at 171-97. Judicial review is impliedly recognized by Water Act 1958, Act No. 6413, § 330(2) (Vict.), which states that by-laws made by the Commission or other statutory authority may not be impeached in any court of petty sessions or before justices.

<sup>142</sup> *Braithwaite v. Shoalhaven Shire Council*, 44 Land & Val. Ct. 5, 8 (N.S.W. 1965); *Water Conservation & Irrigation Comm'n v. New South Wales Pastoral Co.*, 24 Land & Val. Ct. 54, 57 (N.S.W. 1945); *F.W. Hughes Pty. Ltd. v. Water Conservation & Irrigation Comm'n*, 16 Land & Val. Ct. 11, 16-18 (N.S.W. 1937).

<sup>143</sup> *Farrant v. Water Conservation & Irrigation Comm'n*, 37 Land & Val. Ct. 30, 34-35 (N.S.W. 1958); *Gibraltar Pty. Ltd. v. Fairymead Sugar Co.*, 36 Land & Val. Ct. 32, 38 (N.S.W. 1957); *Robson v. Water Conservation & Irrigation Comm'n*, 36 Land & Val. Ct. 57, 60 (N.S.W. 1955); *Thorpes Ltd. v. Water Conservation & Irrigation Comm'n*, 36 Land & Val. Ct. 62, 66 (N.S.W. 1951-52); *Bathurst Pastures Protection Bd. v. Kyalla Inv. Co.*, 21 Land & Val. Ct. 8, 12 (N.S.W. 1942); *Estate of Smith Pollock v. Considine*, 20 Land & Val. Ct. 8, 22-23 (N.S.W. 1941).

<sup>144</sup> *Thorpes Ltd. v. Water Conservation & Irrigation Comm'n*, 36 Land & Val. Ct. 62, 66 (N.S.W. 1951-52); *F.W. Hughes Pty. Ltd. v. Water Conservation & Irrigation Comm'n*, 16 Land & Val. Ct. 11, 16-17 (N.S.W. 1937).

<sup>145</sup> *B.W. Rofe Partnership v. Water Conservation & Irrigation Comm'n*, [1964-65] N.S.W.R. 1848, 82 N.S.W. Weekly N. 577, 588 (Land & Val. Ct. 1964); Water Act 1912-1966, § 4A(1) (N.S.W.).

<sup>146</sup> *Bathurst Pastures Protection Bd. v. Kyalla Inv. Co.*, 21 Land & Val. Ct. 8, 12 (N.S.W. 1942).

<sup>147</sup> *Id.* at 12.

<sup>148</sup> See *Water Conservation & Irrigation Comm'n v. New South Wales Pastoral Co.*, 24 Land & Val. Ct. 54, 56-57 (N.S.W. 1945).



supply. The license contained conditions which would protect downstream riparian landholders.<sup>149</sup> In the other case, a dam for an urgently needed public water supply was preferred to preserving an unused alluvial goldfield for possible resumption of mining in the future.<sup>150</sup>

It is clear that an application for a license for a use no greater than an alternative means which does not require licensing should be granted.<sup>151</sup> But in most cases, the discretion of the Commission in determining whether a license or renewal should be granted, with or without conditions, is wide. In a New South Wales case, *Thorpes Ltd. v. Water Conservation & Irrigation Comm'n*,<sup>152</sup> the court said:

The discretion entrusted to the Commission by the Statute is so wide, and the considerations which may arise are so various, that any suggestion of the fettering of that discretion by rules should be avoided. The Commission's functions are not confined to the administration of the licensing provisions of the *Water Act*. Under that and other legislation they extend over a wide field of inter-related subject matters, and the Commission is thus peculiarly well situated, by experience and responsibility, for the appreciation of the matters which may have a bearing on the decision of a licensing application. Public interest and the interests of individuals which may be affected by the granting of an application are, no doubt, the main considerations. It is not always possible to draw a hard and fast line between what falls under one of these heads and what under the other, since the risk of injury to the public interest may depend upon, or be evidenced by, the risk of injury to individual interests. Within this extensive field of public and individual interest, a wide discretion is entrusted to the Commission.

. . . .

. . . The granting or refusal of the application is made by the legislation a matter of discretion—a discretion to be exercised not arbitrarily or capriciously but upon a consideration of the matters of public or individual interest which are relevant in the particular case.<sup>153</sup>

<sup>149</sup> *Id.*

<sup>150</sup> *Braithwaite v. Shoalhaven Shire Council*, 44 Land & Val. Ct. 5, 8 (N.S.W. 1965).

<sup>151</sup> *Macquarie Alluvials No Liability v. Municipality of Wellington*, 20 Land & Val. Ct. 25, 34-35 (N.S.W. 1941).

<sup>152</sup> 36 Land & Val. Ct. 62 (N.S.W. 1951-52).

<sup>153</sup> *Id.* at 66, 68.

Thus the burden is on the applicant to establish that the license ought to be granted,<sup>154</sup> or renewed.<sup>155</sup>

6. *Termination of Licenses and Permits.*—Generally, licenses and permits may be terminated by the state if the licensee or permittee violates the conditions of the license or permit.<sup>156</sup> The state agencies may impose any conditions on licenses or permits that they see fit,<sup>157</sup> although frequently the statutes require certain conditions.<sup>158</sup> Typically, licenses and permits may be terminated if water is taken in a quantity in excess of what is expressly authorized,<sup>159</sup> if the water is not being beneficially used,<sup>160</sup> if it is being wasted,<sup>161</sup> if the diversion work is not being beneficially used,<sup>162</sup> if the water is being used at an unauthorized location,<sup>163</sup> if excess land is irrigated,<sup>164</sup> if water is used for an unauthorized purpose,<sup>165</sup> or if the required charge is in arrears.<sup>166</sup>

7. *Protection of Existing Uses.*—The administering agencies of the Australian states consider themselves at liberty to license new diversions even if they will interfere with existing diversions,<sup>167</sup> so that older licenses generally have no priority over newer licenses. To date very few licensees have been cut off to give way to new uses. Generally

<sup>154</sup> Id. at 68-69, 74.

<sup>155</sup> B.W. Rofe Partnership v. Water Conservation & Irrigation Comm'n, [1964-65] N.S.W.R. 1848, 82 N.S.W. Weekly N. 577 (Land & Val. Ct. 1964).

<sup>156</sup> Water Act 1958, Act No. 6413, § 204 (Vict.) (by implication); Control of Waters Act 1919-1925, § 18(1)(a) (So. Austl.); Water Act 1912-1966, § 17A(1)(b) (N.S.W.).

<sup>157</sup> Water Act 1958, Act No. 6413, §§ 204, 206 (Vict.); Control of Waters Act 1919-1925, § 16 (So. Austl.); Water Act 1912-1966, § 12(1)(a) (N.S.W.).

<sup>158</sup> See discussion of typical conditions imposed in licenses, pp. 666-67 *supra*.

<sup>159</sup> Water Act 1912-1966, § 17A(1)(a) (N.S.W.); Victoria License to Divert Water and Cut Race, conditions 3, 12(b) (Form W.D.L. 7).

<sup>160</sup> Water Act 1912-1966, § 17A(1)(c) (N.S.W.); Victoria License to Divert Water and Cut Race, condition 2 (Form W.D.L. 7).

<sup>161</sup> Water Act 1912-1966, § 17A(1)(c) (N.S.W.); Control of Waters Act 1919-1925, § 18(1)(b) (So. Austl.); Victoria License to Divert Water and Cut Race, condition 6 (Form W.D.L. 7).

<sup>162</sup> Water Act 1912-1966, §§ 13F, 17A(1)(d) (N.S.W.).

<sup>163</sup> Regulations under Control of Waters Acts 1919-1925, Sch. B, license, condition 3 (So. Austl. Gaz., Oct. 25, 1934); Victoria License to Divert Water and Cut Race, condition 1 (Form W.D.L. 7).

<sup>164</sup> Water Act 1912-1966, § 17A(1)(a) (N.S.W.); Regulations under Control of Waters Acts 1919-1925, Sch. B, license, condition 2 (So. Austl. Gaz., Oct. 25, 1934); Victoria License to Divert Water and Cut Race, condition 1 (Form W.D.L. 7).

<sup>165</sup> Victoria License to Divert Water and Cut Race, condition 6 (Form W.D.L. 7).

<sup>166</sup> Id. condition 12(a).

<sup>167</sup> McCutchan & Hocking, Administrative and Legal Framework in Australia, 18 Aqua (Vict.) 219 (1967) (Victorian practice); L. East, Victorian Water Law—Riparian Rights 16 (c. 1949). In Victoria the Commission is not compelled to supply waters to any person regardless of any other provisions in the Water Act or in any agreement. In addition, it is not liable for any accidental failure of a water supply. Water Act 1958, Act No. 6413, § 199(1) (Vict.).

the agencies have protected the supply of water to licensees, permittees, and persons exercising the statutory riparian right (exempted diverters). Where water has proven insufficient, the supply has been increased by constructing storages. This is a process which cannot be continued for much longer because rivers in the River Murray basin, especially in Victoria, are almost completely regulated.<sup>168</sup> In the future a very real question will arise whether the agencies have any duty to continue providing water to licensees, annual permittees, and exempted diverters.

Regulations in Victoria and cases in New South Wales shed light on this question. In Victoria, regulations controlling the exercise of statutory riparian rights must be framed to protect the statutory riparian rights of unlicensed intermediate landholders.<sup>169</sup> Moreover, when planning state works, the State Rivers and Water Supply Commission must determine to what extent the supply of water to property not benefitted by the works would be injuriously affected and whether further works should be constructed to provide a compensation water supply.<sup>170</sup> While these provisions may not create a legal obligation on the Commission to guarantee a supply of water to licensees, annual permittees, and exempted diverters, they do create a policy framework by which the Commission will attempt to provide such water.

In New South Wales, appeals from diversion license application decisions are interpretive of the Water Conservation and Irrigation Commission's obligation. It has been held that the Commission must not grant licenses which will deprive lower "riparians" of their reasonable share of available water for purposes exempt from licensing under the Water Act; under the state's equitable distribution concept, such a result would be prejudicial to the public interest.<sup>171</sup> The Commission must balance the known advantage of benefit to the applicant against the apprehended or possible disadvantage or prejudice to other riparians.<sup>172</sup> These cases appear to create a duty in the Commission to protect the supply of water to licensees, annual permittees and exempted diverters.

#### 8. *Restrictions in Time of Shortage.*—Statutes of the Australian states

<sup>168</sup> Green, *Measurement and Evaluation of the Water Resources of Victoria*, 30 J. Instit. Eng'rs Austl. 43, 50 (1958); Haigh, *Irrigation, Potential and Problems*, in *Waters Resources Use and Management* 21, 22, 29 (1964) (Proceedings of National Symposium on Water Resources Use and Management, Australian Academy of Science, Canberra, Sept. 9-13, 1963).

<sup>169</sup> Water Act 1958, Act No. 6413, § 15 (Vict.).

<sup>170</sup> Water Act 1958, Act No. 6413, § 33, as amended by Water (Irrigation) Act 1959, Act No. 6582, § 5(2), and Water Act 1964, Act No. 7198, § 3(a) (Vict.).

<sup>171</sup> *B.W. Rofe Partnership v. Water Conservation & Irrigation Comm'n*, [1964-65] N.S.W.R. 1848, 82 N.S.W. Weekly N. 577, 588 (Land & Val. Ct. 1964); Water Act 1912-1966, § 4A(1) (N.S.W.).

<sup>172</sup> See cases cited note 144 *supra*.

provide that during times of actual or threatened water shortage a license may be revoked, suspended or modified.<sup>173</sup> In Victoria, the Commission may reduce the quantities of water delivered to all users proportionately, or it may assign greater proportionate quantities to land planted with fruit trees, vines and other plants which are more difficult to restore to production than to lands sown with annual plants.<sup>174</sup> Generally, in Victoria, annual permittees will be cut off before licensees.<sup>175</sup> In South Australia reductions are proportionate.<sup>176</sup>

A statutory classification system was adopted in New South Wales in 1946 to affect the pattern of restrictions during shortages. Three classes of licenses have been established (in order of superiority):<sup>177</sup>

Class A—crops which have been irrigated for at least 5 years and are improved pastures or a high-value plant (e.g., fruit trees, vines, market vegetables, cereals);

Class B—crops which have been irrigated for at least 3 years and land at least 75 percent of which contains improved pastures or a high-value plant; and

Class C—all other licenses.

During shortages water is cut off to each class in inverse order of superiority and reduced proportionately within each class. The conflicts between various uses during times of shortage have been confined largely to agricultural uses. Very little industry is located in the interior—mostly food processing plants and abattoirs. Consequently the administering agencies have to worry very little about providing industrial water supplies or about pollution of the rivers of the interior.

### C. *Comment on the Australian Experience*

Australian law in practice calls upon the political and administrative process to preserve the individual's right to a stable use of the resource. Through its promotion of public works, it has mitigated the disadvantage of climatic instability of supply. Efficiency of use has been favored by administrative control of irrigation areas and private diversions, by encouragement of intensive farming, high-value plants, and large-scale close settlements and by the levy of fees for use. The states have acquired ample authority (rarely exercised) to shift water flexibly to new uses. Yet there is little apparent scope for private initiative in innovating uses or trading rights, decisions on such mat-

<sup>173</sup> Water Act 1958, Act No. 6413, § 197(1) (Vict.); Control of Waters Act 1919-1925, § 18(1)(c) (So. Austl.); Water Act 1912-1966, § 18E (N.S.W.).

<sup>174</sup> Water Act 1958, Act No. 6413, § 197(1) (Vict.). See Venables, *Private Irrigation Schemes*, 18 *Aqua* (Vict.) 192, 198 (1967).

<sup>175</sup> Horsfall & Gillard, *Goulburn Irrigation System in Northern Victoria and Associated Works*, 33 *J. Instit. Eng'rs Austl.* 285, 288 (1961).

<sup>176</sup> Control of Waters Act 1919-1925, § 18(3)(b) (So. Austl.).

<sup>177</sup> Water Act 1912-1966, § 18B (N.S.W.).

ters being made collectively and politically. In the future the Australian states may face harder problems as industries, restricted by near total apportionment of ready water in southeastern Australia and relative congestion in the capital cities, seek to move inland to predominately agricultural areas.

## II. ANALYSIS OF AMERICAN DOCTRINE

### A. *Scope of Analysis*

Commentators have suggested five characteristics which should be incorporated into any good system of water allocation.<sup>178</sup>

- (1) The water right should be secure and definite in amount to promote investment in water development.<sup>179</sup>
- (2) The water allocation system should promote locational and applicational efficiencies of use to maximize development.
- (3) The water allocation system should be flexible to allow for the introduction of new uses.
- (4) Public rights and the public interest in water should be protected by the system.
- (5) Scope should be left for satisfaction of a variety of private interests.<sup>180</sup>

A reassessment in the light of these criteria of the alternative doctrines for water allocation in the United States, existing and proposed, is in order. While the literature discussing the various doctrines is quite large, no one seems to have attempted to compare the strengths and weaknesses of all of the doctrines. This section will examine four major concepts, riparianism, prior appropriation, temporal nonprior-

<sup>178</sup> See, e.g., Fisher, *Western Experience and Eastern Appropriation Proposals*, in *Law of Water Allocation* 75 (D. Haber & S. Bergen ed. 1958); Trelease, *A Model State Water Code for River Basin Development*, 22 *Law & Contemp. Prob.* 301 (1957) [hereinafter cited as *Trelease, Model Code*]; Trelease, *Policies for Water Law: Property Rights, Economic Forces, and Public Regulation*, 5 *Natural Resources J.* 1 (1965) [hereinafter cited as *Trelease, Policies*].

<sup>179</sup> Trelease describes Ciriacy-Wantrup's three conceptual elements composing security as:

- (1) legal certainty, the protection against unlawful acts, subject to the "rule uncertainty" and "fact uncertainty" inevitably involved in legal conflicts;
- (2) physical certainty, the protection against variation in the quantity of water available for the use; and
- (3) tenure certainty, protection against loss of the water right by the exercise of lawful acts of others.

*Trelease, Model Code*, supra note 178, at 307, discussing Ciriacy-Wantrup, *Concepts Used as Economic Criteria for a System of Water Rights*, 32 *J. Land Econ.* 295 (1956).

<sup>180</sup> "An ideal water law should give a water right those characteristics that will encourage and enable people to make the best decisions as to water use in their own interests and hence ultimately in the public interest." *Trelease, Policies*, supra note 178, at 8.

ity permit systems and marketplace concepts, with a view to selecting one as being most suitable for allocating water in the eastern United States. The Australian experience under a temporal nonpriority permit system, described in the first section, will be drawn upon where relevant.

### B. *Riparian Rights*

1. *Description.*—The riparian system of water rights is in force in most of the Eastern states: the 31 states extending eastwardly from and including the tier of states along the west bank of the Mississippi River. These states are usually classified as "humid" for water law purposes; and the systems that prevail in them are considered to presuppose an abundant supply. Riparianism provides that each proprietor of land abutting on a watercourse has a coequal right to use its water on his own riparian land to a reasonable extent. The reasonableness of the use is measured by its relation to uses made by others on the same watercourse. With some exceptions, the water must be used within the watershed of the watercourse. The right is an incident inherent to the land abutting on a stream; no action by the landowner or by a state administrative agency is necessary to perfect it.<sup>181</sup> The amount of water which may be taken by each proprietor is not fixed in volume and may vary with time. If there is not enough water for all demands, all uses are reduced until each is reasonable with respect to others. Litigation may be necessary to accomplish this redistribution. The riparian right may be exercised at any time and is not lost by nonuse. Riparian rules of allocation have been modified by special legislation and by contractual arrangements between users.

2. *The Problem of Security.*—The riparian right may be criticized as insecure, because any use sanctioned by it must be reasonable with respect to other rightholders' uses, and those uses are constantly changing and growing.<sup>182</sup> In any given situation, litigation may be the only way to determine a riparian right. Apportionment decrees stemming from such litigation may be rendered obsolete by changing circumstances, including new or enlarged uses by nonparty users. As a result, riparians in a water-shortage environment may tend to avoid investing in works to utilize the water in surface streams,<sup>183</sup> and to prefer to develop alternative supplies, such as ground water.<sup>184</sup>

<sup>181</sup> A good, brief comparison of the basic differences between riparianism and prior appropriation is found in Reuscher, *Appropriation Water Law Elements in Riparian Doctrine States*, 10 Buffalo L. Rev. 448, 449 (1961).

<sup>182</sup> The only use of which a riparian can be sure is domestic use. He may take as much water as he needs for domestic use regardless of the effect of such a diversion on downstream riparians, even if he takes all the water in the stream. See 56 Am. Jur. Waters § 345 (1947). Of course, on most streams the amount of flow depletion from domestic use diversions would be very small.

<sup>183</sup> Certainly this was the experience in New South Wales in the Riverina pastoral

Riparianism's prime advantage lies in its flexibility. It allows new uses to be created with a minimum of difficulty and gives new uses the same rights as the old. Technological and economic growth is not inhibited by the existence of water rights serving uses developed in an earlier age. But that growth can be inhibited by the fear that water demands will outstrip supply in a situation where all users have correlative and equal rights.

Riparian law seems to be based upon an unspoken premise that if rights to use are restricted to those persons who have access to the water through the ownership of the banks, and if those persons restrict their demands on the water to reasonable uses, there is enough for all.<sup>185</sup>

Unfortunately, the method by which flexibility is achieved—the doctrine of reasonable sharing—is not workable when the water surplus vanishes; all uses are then constricted, and the system's vaunted flexibility exists only at the price of insecurity of the right and consequent deterrence to resource development.

The riparian right, being legally insecure under certain circumstances, can, however, be bolstered by various legal devices, of which the chief are special legislation, contracts or grants among users, and outright purchase of riparian rights or of lands to which such rights are annexed.

Legislation has been enacted to augment the riparian rights of special interests. Among the oldest examples are the milldam acts, which, in effect, augment the rights annexed to existing mills by prohibiting the construction of milldams which would affect the head or flow of water to the existing mills.<sup>186</sup> The constancy of flow that these acts guarantee is more secure than that afforded by the common

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districts in the 1880's and 90's before the Water Rights Act 1896, 60 Vict. No. 20 (N.S. W.), abolished riparian rights and established the diversion licensing system. See Lyne, Third Report of Royal Commission—Conservation of Water, 5 N.S.W. Votes & Proc. 715, 724-25 (2d Sess. 1887).

<sup>184</sup> In North Carolina and Wisconsin, irrigators have been turning away from watercourses to ground water for sources of water. Part of the reason may be the riparian land limitation imposed by the Wisconsin permit system or the vagaries of riparianism in North Carolina. Evidence suggests, however, that in many cases a well in a field proves to be physically more convenient to operate than a pump located at streamside. F. Osterhoudt, *An Economic Analysis of Wisconsin's Diversion Permit System for Agricultural Irrigation* 220-29 (Ph.D. thesis, Univ. of Wis. Water Resources Center 1967); Heath, *Alternative Water Demands and the Adequacy of Present Arrangements*, in *Water Resources and Economic Development in the South* 53, 62 (Agricultural Policy Institute, N.C. State Univ. 1965).

<sup>185</sup> Trelease, *Policies*, supra note 178, at 7.

<sup>186</sup> Acts may give mill owners power to flow (flood) lands. Mass. Gen. Laws Ann. ch. 253, §§ 1-38. (1959), and may prohibit flowing of previously erected mills. Del. Code Ann. tit. 23, § 1901 (1953); Mass. Gen. Laws Ann. ch. 253, § 2 (1959); Va. Code Ann. §§ 62-95, -101, -103 (1950); Wis. Stat. Ann. § 31.32 (1965).

law riparian right; the latter being merely a right that is reasonable as compared to the rights of other users. The principle of the milldam acts is so old that it has been incorporated into the common law in some states.<sup>187</sup> Moreover, similar statutes have been passed to protect analogous interests. The log boom and dam acts<sup>188</sup> aided the lumber industry. Large-scale diversions to cranberry bogs<sup>189</sup> and for taconite mining<sup>190</sup> have been protected. Power companies may apply for the condemnation of riparian rights for power reservoirs and power generation.<sup>191</sup> All of these economic interests have acquired by legislation water rights which are sufficient modifications of riparianism to be secure for their purposes. In fact, most legal conflicts involving water rights are adjudicated on the basis of this special legislation rather than on the basis of the common law of riparian rights.<sup>192</sup>

In areas of intense water use, demands can outstrip local supplies. This has happened on a few industrial rivers in the East. In such situations, the users often will divide the available water among themselves by contract or grant.<sup>193</sup> They may prorate the available flow

<sup>187</sup> For cases giving priority to existing mills, see, e.g., *Harp v. Iowa Falls Elec. Co.*, 196 Iowa 317, 191 N.W. 520 (1923); *Wentworth v. Poor*, 38 Me. 243 (1854); *Mowry v. Sheldon*, 2 R.I. 369 (1852). For cases giving a prescriptive right to mills after use for a term of years, see, e.g., *Buddington v. Bradley*, 10 Conn. 213 (1834); *Strickler v. Todd*, 10 S. & R. 63 (Pa. 1823) (later abandoned in favor of riparian rights, *M'Calmont v. Whitaker*, 3 Rawle 84 (Pa. 1831)); *Saunders v. Newman*, 106 Eng. Rep. 95 (K.B. 1818); 2 Blackstone, Commentaries \*403.

<sup>188</sup> There were 802 special legislative franchises in Wisconsin for dams, log booms, and channel and flow improvements. J. Hurst, *Law and Economic Growth* 540-41 (1964). The granting of the franchise was held to be a valid exercise of the paramount public right over navigation in *Cohn v. Wausau Boom Co.*, 47 Wis. 314, 2 N.W. 546 (1879); cf. Mich. Stat. Ann. §§ 22.1511-1573 (1937) (enabling acts and powers of river improvement companies).

<sup>189</sup> E.g., Mass. Gen. Laws Ann. ch. 253, §§ 39-40 (1956); Wis. Stat. Ann. § 94.26 (1965). The Wisconsin Supreme Court has avoided addressing itself to the constitutionality of the Wisconsin cranberry statute. *Cranberry Creek Drainage Dist. v. Elm Lake Cranberry Co.*, 170 Wis. 362, 367, 174 N.W. 554, 556 (1920).

<sup>190</sup> Minn. Stat. Ann. §§ 105.46, .64 (Supp. 1967); Wis. Stat. Ann. § 107.05 (Supp. 1968).

<sup>191</sup> See, e.g., Mich. Stat. Ann. § 22.1688 (1937); Wis. Stat. Ann. § 31.15 (1965).

<sup>192</sup> The Wisconsin Reports bear witness that common law doctrine alone governed only a minor proportion of the problems of stream-use regulation. Of 158 cases brought to the Wisconsin Supreme Court over forest-area uses of inland streams of navigation or power [from 1841 to publication], only 23 (about 15 per cent) turned on rights or duties defined simply by common law; in 85 per cent of these lawsuits the parties' positions were established within a framework of statute law. Though (as was characteristic of nineteenth-century legislation) the statutes regulating stream use fell far short of constituting a comprehensive code, they were nonetheless the principal body of public policy.

J. Hurst, *supra* note 188, at 540-41.

<sup>193</sup> See, e.g., *Batavia Mfg. Co. v. Newton Wagon Co.*, 91 Ill. 230 (1878); *Powers v. Perkins*, 132 Mich. 33, 92 N.W. 790 (1902); *Fickler v. Fredricksburg Power Co.*, 133 Va. 571, 112 S.E. 775 (1922); *Kimberly-Clark Co. v. Patten Paper Co.*, 153 Wis. 69,



or create an internal system of priorities.<sup>194</sup> Their little private water allocation systems created by contract will remain viable as long as the consumptive uses or flow patterns are not altered drastically. Allocation by contract or grant appears to be a useful tool for localized situations.

Outright purchase of riparian rights occurs when large-volume users of water have located on relatively small streams where little competition for water exists. These users may find it advisable to take steps to prevent such competition from arising in the future. A supply of water from upstream can be made more secure either by purchasing the riparian rights of upstream riparians or by purchasing the frontages and cutting off riparian rights from the severed backlands. Both techniques have been employed by the pulp and paper, and textile industries in North Carolina.<sup>195</sup>

This potential insecurity of the riparian right does not yet seem to have hampered development of the resource to any great extent. Most industrial users, for example, appear satisfied with their riparian rights and little concerned to take steps to bolster them. In the East, where most withdrawals are industrial and municipal,<sup>196</sup> agricultural and conservation interests seem to have been more active than industrial interests in promoting permit-system statutes that would replace the riparian right.<sup>197</sup> On the other hand, research in North Carolina indicates that high water usage industries are concerned with the legal insecurity of their water rights and take steps to firm them up.<sup>198</sup> Yet, smaller users of industrial water in that state, and elsewhere, have shown less concern about the security of their riparian rights.<sup>199</sup> There may be several reasons for this. Their water demands may be small

140 N.W. 1066 (1913). See Note, Are Water Rights Marketable in Wisconsin? 1966 Wis. L. Rev. 942.

A striking number of the private power dam law suits grow out of consensual relationships, turning on matters of contract or title affecting the ownership or style of use of water-power sites and water-power rights, or labor performed in developing such sites. The number of suits of this character symbolized the extent to which men depended on contract and property arrangements to provide frameworks of working relationships.

J. Hurst, *supra* note 188, at 155.

<sup>194</sup> An internal priority system was established by the grantor of canal water rights in *Kimberly-Clark Co. v. Patten Paper Co.*, 153 Wis. 69, 140 N.W. 1066 (1913).

<sup>195</sup> Walker, *Industrial Water Use in North Carolina* 23, 30 (Univ. of N.C. Instit. of Gov't, U.N.C. Water Resources Paper No. 13, Sept. 1964); see also *Johnson v. Armour & Co.*, 69 N.D. 769, 291 N.W. 113 (1940); *Case v. Hoffman*, 100 Wis. 314, 75 N.W. 945 (1898); cf. Annot., 127 A.L.R. 835 (1940).

<sup>196</sup> U.S. Geological Survey, Circ. No. 456, *Estimated Use of Water in the U.S. 1960* at 13-26 (1961).

<sup>197</sup> Cf. Hines, *A Decade of Experience Under the Iowa Water Permit System—Part One*, 7 *Natural Resources J.* 499, 505 n.15 (1967).

<sup>198</sup> Walker, *supra* note 195, at 30, 44.

<sup>199</sup> *Id.* at 21, 44-45.

compared to the unused dependable water supply. Alternative water supplies may be available which are cheaper than purchase of riparian rights would be. The economic climate of the area may not be conducive to any general industrial development, so that purchase of riparian rights may appear to constitute superfluous insurance.<sup>200</sup> In short, though research has not determined whether the uncertainties of riparianism have hindered development of capital-intensive projects,<sup>201</sup> the system has not substantially hampered industrial development along eastern rivers.

### 3. *Locational Efficiency.*

a. *Place-of-Use Restrictions.* Another major criticism of riparianism is that it tends to foster locational inefficiencies. There are two basic place-of-use restrictions in most systems of riparianism: (1) water must be used only on property contiguous to the watercourse, and (2) water may not be used outside the watershed of the stream from which it is taken. Together, these restrictions operate to define the extent of riparian land. These restrictions create inefficiencies of use when the best opportunities for use exist on nonriparian land or outside the watershed. The extensive use of water for irrigation on nonriparian land in the West is one use which, for example, would be prevented by riparian law.<sup>202</sup>

Two major doctrines have emerged defining just which land that abuts a stream is to be considered riparian land. The "source of title" test<sup>203</sup> states that water may be used only on land which has been

<sup>200</sup> Id. at 44-45.

<sup>201</sup> See Fisher, *supra* note 178, at 80-81 n.13; O'Connell, *Iowa's New Water Statute—The Constitutionality of Regulating Existing Uses of Water*, 47 Iowa L. Rev. 549, 577-78 (1962). Consider, however, the special legislation giving certain public utilities the power to condemn riparian rights and to operate storage reservoirs. See statutes cited note 191 *supra*.

<sup>202</sup> It has been argued that locations for efficient use of water can always be found on riparian land. J. Cribbet, *Illinois Water Rights Law and What Should Be Done About It* 28 (Ill. St. Chamber of Comm. 1958). *Contra*, Ziegler, *Water Use Under Common Law Doctrines, in Water Resources and the Law* 49, 70-73 (Univ. of Mich. Law School 1958). See F. Osterhoudt, *supra* note 184, at 287-322.

<sup>203</sup> See 56 Am. Jur. Waters § 277 (1947). Severe "source of title" restrictions in many western states may be the result of a conscious or unconscious policy of the western courts to cut off unexercised riparian rights as much as possible to make more water available to appropriators. Such a rule coupled with a very short period to mature prescriptive rights could cause a very rapid reduction in the demands for water under riparian rights. See T. Lauer, *Riparian Rights as Property, in Water Resources and the Law* 131, 167-69 (Univ. of Mich. Law School 1958). This policy would not be a useful tool in the East if riparianism is retained as the only water allocation system. For this reason, the western "source of title" cases should be looked at dubiously as precedent for adopting "source of title" in the East.

The only eastern states to define riparian land have followed "unity of title." See cases cited note 205 *infra*. The courts in England and the commonwealth countries have not defined riparian land at all.

Although the definition of the extent of riparian land is not at all clear in the eastern

held as a single tract throughout its chain of title. This means that any nonabutting portions of the original tract which have been severed forever lose their riparian character unless a contrary intention is manifested. Reuniting such severed tracts with the abutting tract will not reestablish their riparian status.<sup>204</sup> The total amount of riparian land under this rule cannot be enlarged by the purchase of contiguous back tracts.

Another rule followed in some states, the "unity of title" rule, provides that any tracts contiguous to the abutting tract are riparian if all of them are held under single ownership regardless of the times when the various tracts were acquired. This means that a riparian proprietor may enlarge the amount of his riparian land by purchasing contiguous back tracts within the watershed.<sup>205</sup> The general rule that water may not be diverted to lands outside the watershed of the originating stream<sup>206</sup> follows from the rule that water diverted for any extraordinary purpose must be returned to the stream above the next lower riparian's land.<sup>207</sup>

The difference in the amount of land available for riparian water use under these two rules can be considerable. A recent study in northwestern Wisconsin indicates that the "unity of title" test would encompass 64 percent more land than the "source of title" test.<sup>208</sup> This substantial increase results from the fact that most farms today have different boundaries than the original farms and that many back tracts have changed hands.

Although riparianism generally restricts use of water to riparian

states, administrators of diversion permit systems in some of these states have relied on the commentators and have established "source of title" restrictions. See Comment, Wisconsin's Water Diversion Law: A Study of Administrative Case Law, 1959 Wis. L. Rev. 279, 293.

<sup>204</sup> See, e.g., *Lux v. Haggis*, 69 Cal. 255, 424-25, 10 P. 674, 773-74 (1886); *Boehmer v. Big Rock Irrigation Dist.*, 117 Cal. 19, 27, 48 P. 908, 910-11 (1897); *Watkins Land Co. v. Clements*, 98 Tex. 578, 585, 86 S.W. 733, 735 (1905); *Yearsley v. Cater*, 149 Wash. 285, 287-89, 270 P. 804, 805 (1928).

<sup>205</sup> See, e.g., *Jones v. Conn.*, 39 Ore. 30, 39, 64 P. 855, 858, (1901); *Slack v. Marsh*, 11 Phila. 543, 545 (Pa. C.P. 1875).

<sup>206</sup> See, e.g., *Harrell v. City of Conway*, 271 S.W.2d 924, 927 (Ark. 1954); *Anaheim Union Water Co. v. Fuller*, 150 Cal. 327, 330, 88 P. 978, 980 (1907); *Stratton v. Mt. Hermon Boys' School*, 216 Mass. 83, 86-89, 103 N.E. 87, 88-90 (1913); *McCarter v. Hudson County Water Co.*, 70 N.J. Eq. 695, 708, 65 A. 489, 494-95 (1906), *aff'd*, 209 U.S. 349 (1908); *Sayles v. City of Mitchell*, 60 S.D. 592, 594-95, 245 N.W. 390, 391 (1932); *Watkins Land Co. v. Clements*, 98 Tex. 578, 585, 86 S.W. 733, 735 (1905); *Town of Gordonsville v. Zinn*, 129 Va. 542, 551-562, 106 S.E. 508, 511-515 (1921); *Miller v. Baker*, 68 Wash. 19, 20, 23, 122 P. 604-05 (1912).

There is weak authority in England that the watershed limitation is not recognized. See *Norbury (Lord) v. Kitchin*, 176 Eng. Rep. 132 (N.P. 1862).

<sup>207</sup> 56 Am. Jur. Waters § 344 (1947).

<sup>208</sup> *F. Osterhoudt*, *supra* note 184, at 266-73. The Wisconsin court has not decided which rule will be followed. The Public Service Commission is of the opinion that the "source of title" test controls. See note 203 *supra*.

land, there is considerable authority for the proposition that in many instances water may be used by riparians on nonriparian land. These cases, admittedly the minority rule, state that water may be diverted to and used on nonriparian land provided that lower riparians are not damaged.<sup>209</sup> Two states in this group allow use on nonriparian land even though riparians are damaged if the use is reasonable.<sup>210</sup> To the contrary is the majority rule that riparian rights may not be exercised on nonriparian land.<sup>211</sup> Many eastern states have not decided which rule to follow.

Place-of-use restrictions have not yet raised any obvious problems in the East, where development of industry has been concentrated at streamside. The problem of locational restrictions probably will be more relevant for the East if irrigation becomes prevalent, or if severe water shortages should occur.

b. *Use of Water by Nonriparians.* One advantage propounded for prior appropriation is that nonriparians can gain access to surface watercourses. Contrarily, it is suggested that nonriparians may only with difficulty do so under riparianism.<sup>212</sup> This is not a universal rule.

Riparian rights may be severed from the lands to which they are attached and conveyed separately.<sup>213</sup> Severance may be accomplished by several methods. Riparian rights may be conveyed by grant, or reserved in the grantor in a grant to another of the land to which they

<sup>209</sup> See, e.g., *Stratton v. Mt. Hermon Boys' School*, 216 Mass. 83, 86-89, 103 N.E. 87, 88-90 (1913); *Gillis v. Chase*, 67 N.H. 161, 31 A. 18 (1891); *Smith v. Stanolind Oil & Gas Co.*, 197 Okla. 499, 501-02, 172 P.2d 1002, 1005 (1946); *Texas Co. v. Burkett*, 117 Tex. 16, 25, 296 S.W. 273, 276 (1927); *Lawrie v. Silsby*, 82 Vt. 505, 512, 74 A. 94, 96 (1909).

While the English cases seem to prohibit nonriparian use altogether, *Attwood v. Llay Main Collieries, Ltd.*, [1926] 1 Ch. 444, 458, relief will be granted only if there is sensible diminution of flow or material damage. See *Norbury (Lord) v. Kitchin*, 176 Eng. Rep. 132 (N.P. 1862).

<sup>210</sup> *Gillis v. Chase*, 67 N.H. 161, 31 A. 18 (1891); *Lawrie v. Silsby*, 82 Vt. 505, 74 A. 94 (1909).

<sup>211</sup> See, e.g., *Anaheim Union Water Co. v. Fuller*, 150 Cal. 327, 330, 88 P. 978, 980 (1907); *Williams v. Wadsworth*, 51 Conn. 277, 304 (1884); *Hendrix v. Roberts Marble Co.*, 174 Ga. 389, 394, 165 S.E. 223, 226 (1932); *Mettler v. Ames Realty Co.*, 61 Mont. 152, 159, 201 P. 702, 703 (1921); *Crawford Co. v. Hathaway*, 67 Neb. 325, 353, 93 N.W. 781, 790 (1903); *McCarter v. Hudson County Water Co.*, 70 N.J. Eq. 695, 708-10, 65 A. 489, 494-95 (1905), *aff'd*, 209 U.S. 349 (1908); *Scranton Gas & Water Co. v. Delaware, L. & W.R.R.*, 240 Pa. 604, 610, 88 A. 24, 25 (1913); *Town of Gordonsville v. Zinn*, 129 Va. 542, 558-60, 106 S.E. 508, 514 (1921); *Roberts v. Martin*, 72 W. Va. 92, 97, 77 S.E. 535, 537 (1913).

<sup>212</sup> Trelease suggests that obtaining a right to use water on nonriparian land may be very difficult, although not entirely proscribed. Trelease, *Model Code*, *supra* note 178, at 303-04.

<sup>213</sup> *Winchell v. Clark*, 68 Mich. 64, 73, 35 N.W. 907, 913 (1888); *Texas Co. v. Burkett*, 117 Tex. 16, 25, 296 S.W. 273, 276 (1927); *Hite v. Town of Luray*, 175 Va. 218, 224, 8 S.E.2d 369, 371 (1940).

were attached.<sup>214</sup> They may be leased<sup>215</sup> or licensed.<sup>216</sup> The right of the grantee is derivative; his right is measured by the right the grantor had.<sup>217</sup>

The question of particular concern here is whether a nonriparian may enforce his acquired rights against third party nonconsenting riparians as if he were a riparian. Several courts refuse to enforce the rights of nonriparians against nonconsenting riparians,<sup>218</sup> although there are a few courts which do.<sup>219</sup> A nonriparian may acquire riparian rights against third party riparians by grant,<sup>220</sup> lease,<sup>221</sup> prescription,<sup>222</sup> condemnation<sup>223</sup> and special legislation.<sup>224</sup> Admittedly the rights of nonriparians to acquire riparian rights in these cases must be placed against the cases holding that even riparians may not use water on nonriparian land.

Certainly the ability of nonriparians to gain access to water by grant from or contract with a riparian broadens the scope of usefulness of water. At the same time, however, to the extent courts will enforce these rights acquired by nonriparians against other riparians, to that degree will the certainty of the latter's water rights be lessened.

c. *Methods to Bypass Locational Restrictions.* Rights to water may be acquired under the common law of prescription. By this doc-

<sup>214</sup> *Miller & Lux Inc. v. J.G. James Co.*, 179 Cal. 689, 178 P. 716 (1919); *Batavia Mfg. Co. v. Newton Wagon Co.*, 91 Ill. 230, 239 (1878); *Mandeville v. Comstock*, 9 Mich. 536 (1862); *Lawrie v. Silsby* 82 Vt. 505, 511, 74 A. 94, 96 (1909); *Hite v. Town of Luray*, 175 Va. 218, 224-25, 8 S.E.2d 369, 371-72 (1940).

<sup>215</sup> See *Smith v. Stanolind Oil & Gas Co.*, 197 Okla. 499, 501, 172 P.2d 1002, 1005 (1946); *Texas Co. v. Burkett*, 117 Tex. 16, 25, 296 S.W. 273, 276 (1927); *Bergeron v. Forger*, 125 Vt. 207, 210, 214 A.2d 85, 88 (1965).

<sup>216</sup> See *Goodrich v. Burbank*, 94 Mass. (12 Allen) 459 (1855); *Reick v. Kern*, 14 S. & R. 267 (Pa. 1826).

<sup>217</sup> See *Spring Valley Water Co. v. County of Alameda*, 88 Cal. App. 157, 164, 263 P. 318, 321 (1927); *Smith v. Stanolind Oil & Gas Co.*, 197 Okla. 499, 506, 172 P.2d 1002, 1005 (1946); *Lawrie v. Silsby*, 82 Vt. 505, 511, 74 A. 94, 96 (1909).

<sup>218</sup> See *Heilbron v. Fowler Switch Canal Co.*, 75 Cal. 426, 432, 17 P. 535, 538 (1888); *Stockport Waterworks Co. v. Potter*, 159 Eng. Rep. 545 (Ex. 1864).

<sup>219</sup> See, e.g., *Gillis v. Chase*, 67 N.H. 161, 31 A. 18 (1891); *Lawrie v. Silsby*, 82 Vt. 505, 512, 74 A. 94, 96 (1909).

<sup>220</sup> *Spring Valley Water Co. v. County of Alameda*, 88 Cal. App. 157, 263 P. 318 (1927); *Gillis v. Chase*, 67 N.H. 161, 31 A. 18 (1891); *Lawrie v. Silsby*, 76 Vt. 240, 56 A. 1106 (1904). The appurtenant water right may be conveyed by grant simultaneously with the severed back tract and enforced against nonconsenting riparians. *Miller & Lux Inc. v. J.G. James Co.*, 179 Cal. 689, 178 P. 716 (1919); *Frazee v. Railroad Comm'n*, 185 Cal. 690, 201 P. 921 (1921) (partition); *St. Anthony Falls Water Power Co. v. Minneapolis*, 41 Minn. 270, 43 N.W. 56 (1889).

<sup>221</sup> *Smith v. Stanolind Oil & Gas Co.*, 197 Okla. 499, 172 P.2d 1002 (1946).

<sup>222</sup> See *Pabst v. Finmand*, 190 Cal. 124, 211 P. 11 (1922); *Kennedy v. Niles Water Supply Co.*, 173 Mich. 474, 139 N.W. 241 (1913); *Mally v. Weidensteiner*, 88 Wash. 398, 153 P. 342 (1915); *Holker v. Poritt*, L.R. 10 Ex. 59 (1875).

<sup>223</sup> *Jeter v. Vinton-Roanoke Water Co.*, 114 Va. 769, 775, 76 S.E. 921, 925 (1913).

<sup>224</sup> See, e.g., *Swindon Waterworks Co. v. Wilts & Berks Canal Co.*, 33 L.T.R. (n.s.) 513 (H.L. 1875).

trine either a riparian or a nonriparian may obtain a right to use water on nonriparian land which is otherwise prohibited. A prescriptive right may be acquired only when the use which generates it is "adverse" to the rights of downstream riparians:<sup>225</sup> *i.e.*, the use must be open, notorious, hostile and under claim of right. Adversity has come to have two distinct meanings which are adhered to in different states. One meaning defines adversity as the bare invasion of a legal right.<sup>226</sup> The other meaning requires that the invasion of right cause injury sufficient to justify an award of damages. Hence, adversity will not exist in the absence of material damage or sensible diminution as a measure of presumed damage.<sup>227</sup> Under such a rule it may be very difficult to acquire a prescriptive right to a nonriparian use.

Under a rule followed in a few states,<sup>228</sup> the need to acquire a prescriptive right for a nonriparian use does not exist unless the use or amount of water taken is unreasonable. Such a use may be adjudged reasonable, however, even if it causes some damage or diminution. Whether courts would apply the same test of reasonableness to riparian and nonriparian uses alike cannot be predicted.

Municipalities have power to acquire water rights by eminent domain.<sup>229</sup> Municipal water utilities thus have power to condemn the rights of nonmunicipal riparians and to divert water to all lands within the municipalities, including nonriparian land. They may sell water to nonriparians for all uses. Industries may purchase water from a municipal water utility to avoid the locational restrictions of riparianism.<sup>230</sup> These industrial users purchased municipal water equalling about five percent of the total water withdrawn for industrial purposes in the East in 1960.<sup>231</sup> The types of industries which purchase water from municipal water supplies are not indicated in the statistics. Pre-

<sup>225</sup> See *Hargrave v. Cook*, 108 Cal. 72, 79, 41 P. 18, 20 (1895); *Clark v. Allaman*, 71 Kan. 206, 245-46, 80 P. 571, 585 (1905); *Kennedy v. Niles Water Supply Co.*, 173 Mich. 474, 475, 139 N.W. 241 (1913); *Lawrie v. Silsby*, 76 Vt. 240, 245, 56 A. 1106 (1904); *Coalter v. Hunter*, 25 Va. 58, 65 (1826); *Mason v. Yearwood*, 58 Wash. 276, 280-82, 108 P. 608, 609-10 (1910).

<sup>226</sup> See, e.g., *Ingraham v. Hutchinson*, 2 Conn. 584, 592 (1818); *Bolivar Mfg. Co. v. Neponsett Mfg. Co.*, 33 Mass. (16 Pick.) 241, 247 (1834).

<sup>227</sup> *Kennedy v. Niles Water Supply Co.*, 173 Mich. 474, 475, 139 N.W. 241 (1913). See recent legislation requiring actual damage before suit can be brought for interference with the natural condition of the watercourse. N.Y. Conserv. Law § 429j (McKinney 1967).

<sup>228</sup> See cases cited note 209 *supra*.

<sup>229</sup> See note 237 *infra* for cases holding that municipalities may not divert water to nonriparian land without purchasing water rights, and cases to the contrary holding that municipal diversions to all lands within a municipality are a reasonable exercise of its riparian right.

<sup>230</sup> Industries use a large portion of all water withdrawn by public agencies in the East: 37% in 1960. See U.S. Geological Survey, *supra* note 196, at 14.

<sup>231</sup> See *id.* at 14, 20.

sumably they are the smaller volume users for whom self-supply will not achieve significant savings.

Ground water is readily available in many parts of the East, and will be the cheapest source of supply for many nonriparian users. Ground water constitutes about four percent of total water withdrawn for industrial purposes in the East in 1960.<sup>232</sup>

Both municipal water supplies and ground water constitute practical alternatives to surface water as sources of supply, and may be utilized to avoid locational restrictions limiting diversions of water for streams under riparianism. Each has restrictions of its own which limit their usefulness. Some states restrict the use of ground water to the tract from which the water is withdrawn.<sup>233</sup> Municipal water may not be available outside the limits of the municipality.

d. *Comment on Locational Restrictions.* Two rules discussed above—that which would permit riparians to make nonriparian uses, and the “unity of title” doctrine—manifest a liberal rather than a universal way of looking at the riparian right. Opinion that would allow nonriparians to acquire riparian rights is less frequently encountered,<sup>234</sup> since such a use is even further than the two examples above from the elements of the traditional riparian right. All such uses are predicated on the court’s conception of the reasonableness of the use applied for. As the relationship between the prospective user and the source of supply becomes more remote, courts tend to resist allowance of use. Decision on such matters may, accordingly, be merely a function of “reasonableness” as an abstract concept.

Two problems are evident here: enlargement of riparian land and consequent increases in water use; and use of water on nonriparian land. The concerns of the courts probably are similar in both situations. In “unity of title” states, riparian land may be increased by “tacking,” that is, by purchasing nonriparian land contiguous to riparian land. A nonriparian may become a riparian by purchasing a contiguous riparian tract. There is no theoretical limit to such a

<sup>232</sup> See *id.*

<sup>233</sup> The “reasonable use” or “correlative rights” doctrine restricts use of ground water to overlying land. See, e.g., *Jones v. Oz-Ark-Val Poultry Co.*, 228 Ark. 76, 306 S.W.2d 111 (1957); *Koch v. Wick*, 87 So. 2d 47, 48 (Fla. 1956); *Schenk v. City of Ann Arbor*, 196 Mich. 75, 163 N.W. 109 (1917); *Meeker v. City of East Orange*, 77 N.J.L. 623, 74 A. 379 (1909); *Rouse v. City of Kinston*, 188 N.C. 1, 16, 123 S.E. 482, 489 (1924); *Rothrauff v. Sinking Spring Water Co.*, 339 Pa. 129, 132-34, 14 A.2d 87, 90-91 (1940); *Nashville, C. & St. L. Ry. v. Rickert*, 19 Tenn. App. 446, 89 S.W.2d 889 (1936).

The contrary “absolute ownership” rule allows diversion from a well to nonoverlying land. See, e.g., *Hartford Rayon Corp. v. Cromwell Water Co.*, 126 Conn. 194, 197-98, 10 A.2d 587, 588 (1940); *Hougan v. Milwaukee & St. P.R.R.*, 35 Iowa 558 (1872); *Heninger v. McGinnis*, 131 Va. 70, 76, 108 S.E. 671, 673 (1921); *Menne v. City of Fond du Lac*, 273 Wis. 341, 345, 77 N.W.2d 703, 705 (1956).

<sup>234</sup> See cases cited note 219 *supra*.

process; in practice it is limited only by the amount of land available for purchase. This tacking process may be carried out no matter how small the original riparian tract may be, since the measure of the right to divert water is not the length of the riparian shoreline or the size of the original riparian tract. Few American decisions have discussed the question whether there is or ought to be a limit to tacking under the "unity of title" doctrine.<sup>235</sup>

Perhaps this problem is more hypothetical than real. The rule of "reasonable use" would still apply to protect lower riparians from excessive diversions. Water remaining after use must still be returned to the stream before it leaves the property of the diverter. These rules ought to give as much protection under "unity of title" as they do under "source of title." If they do not, there may be help in a British case which ruled that a railroad may not divert water along its 20-foot right-of-way from a small stream to a water tank at its station one-half mile away, even though the station site is riparian so far as land title is concerned. The tank was reasoned to be too far away from the stream to be riparian for diversion purposes, and the water was to be used in locomotives up to 40 miles away.<sup>236</sup> This "riparian for diversion purposes" principle might be applied to "tacking" to prevent too distant lands from becoming riparian. The problem of use of water by riparians on noncontiguous land may be elaborated along similar lines. The use would be permitted according to a standard of "reasonableness."

Enlargement of water use by transfer to nonriparians presents another problem. A nonriparian's right to use water is derivative of his grantor riparian's right to use the water. Accordingly, the nonriparian's use is reasonable if the riparian's would be. But reasonableness is based on the use's intrinsic and comparative values to the riparian, the relationship of his demand to the demands of other riparians, the nature of the stream, and matters of public policy. If it should be held that tract size is not an element of "reasonableness," then a nonriparian will be allowed to use water that the grantor riparian physically could not have used. For example, a riparian may sell water to a nonriparian papermill even if the riparian's land may be too small to contain a papermill. If diverting water to a papermill is otherwise reasonable, the nonriparian has then obtained a right to divert more water than the grantor riparian was *capable* of using. This result is undesirable, and the riparian's and nonriparian's tract sizes should be considered an element of "reasonableness" in this situation.

<sup>235</sup> This assumes that the watershed limitation does not apply. But see *Wasserburger v. Coffee*, 180 Neb. 149, 157-58, 141 N.W.2d 738, 744-45 (1966).

<sup>236</sup> *McCartney v. Londonderry & L.S. Ry.*, [1904] A.C. 501 (Ir.).



In the instances of use of water by nonriparians and "tacking," the amount of land where water can be used is enlarged. Yet use by nonriparians is a distinct problem in that an indefinable and indefinitely expandable class of landowners may acquire through it rights to water which would not be available otherwise.<sup>237</sup> Therefore, the courts have, for the most part, restricted uses to riparians to prevent the indefinitely expandable class of potential nonriparian users from gaining access to the streams.

The best rule in riparian states is probably (a) adoption of the "unity of title" test, as more flexible than "source of title," (b) allowing riparians to use water on nonriparian land according to a standard of reasonableness, and (c) allowing nonriparians to purchase water for use to the same extent that the grantor riparian physically could have used water for the same purpose on his own land.<sup>238</sup>

4. *Protection of the Public Interest.*—The common law recognizes certain water use rights of the public that are paramount to riparian rights.<sup>239</sup> For example, as successors to the Crown, the states have authority to protect rivers and streams for navigation.<sup>240</sup> This public right is superior to any private rights to water in streams to which these public rights attach.

The riparian doctrine seems well adapted to the recognition, regulation and development of public uses of the water of navigable streams. Public uses are recognized by the grafting on to riparian rights of a paramount servitude or easement over a navigable stream in favor of the public and its trustee, the state.<sup>241</sup> Since the state servitude is paramount, no compensation is paid for private water use

<sup>237</sup> Probably for this reason alone most courts have not permitted municipalities to divert water to their nonriparian residents without purchasing water rights from riparians who would be affected by their diversions. E.g., *Wallace v. City of Winfield*, 96 Kan. 35, 38-39, 149 P. 693, 694-95 (1915); *Sparks-Mfg. Co. v. Town of Newton*, 60 N.J. Eq. 399, 45 A. 596 (1900); *Smith v. City of Brooklyn*, 160 N.Y. 357, 54 N.E. 787 (1899); *Pernell v. City of Henderson*, 220 N.C. 79, 16 S.E.2d 449 (1941). *Contra*, *City of Canton v. Shock*, 66 Ohio St. 19, 63 N.E. 600 (1902); *Barre Water Co. v. Carnes*, 65 Vt. 626, 27 A. 609 (1893).

<sup>238</sup> In New York a statutory revision has been recommended to allow a riparian to use water on his nonriparian land in lieu of use on his riparian land if lower riparians would be damaged no more than if the water had been used on the diverter's riparian land. Temporary State Comm'n on Water Resources Planning, State of New York, Progress Report: Formula for Water Resources Management in New York State 219 (Legis. Doc. 45, 1967).

<sup>239</sup> This section is not concerned with the question of bed ownership by the state.

<sup>240</sup> See *Commonwealth v. Alger*, 61 Mass. 53 (1851).

<sup>241</sup> The federal navigation servitude is also paramount to private rights on navigable waters of the United States. *United States v. Kansas City Life Ins. Co.*, 339 U.S. 799, 808 (1950). It empowers the federal government to protect, regulate, and make improvements for navigation. The power to promote certain ancillary functions has been grafted on to this primary function. Morreale, *Federal-State Rights and Relations* § 101.2(A), in 2 *Waters and Water Rights* (R. Clark ed. 1967). No compensation need be paid for private rights which are injured or destroyed by such federal activities. Cf. *id.* § 101.2(B).

rights injured or destroyed by the exercise of the servitude. This right of the state to regulate navigable streams for the benefit of the public has been termed a public trust.<sup>242</sup> Enhancement of public rights to water is, of course, made at the cost of reducing the certainty of private rights.

### C. *Prior Appropriation*

1. *Description*.—For creating a secure and well defined water right, one that is attractive to water users, the doctrine of prior appropriation has been extolled. Prior appropriation was born and developed in the arid western United States in response to a need for certainty in obtaining water for mining and irrigation purposes. The doctrine provides that in time of shortage individual appropriations are cut off entirely, the earliest appropriation being the last to be cut off. Conversely, in times of abundance individual appropriations are restored to use in toto, the senior appropriation first. The operation is commonly expressed by the maxim "first in time, first in right." An appropriation is made for a definite volume per time unit for a stated use at a particular place. The place of use may be on nonriparian land. Although the date of priority is generally established by the date of public notice or by the date of application for a permit, the appropriation is effectively secured merely by applying the water to the stated use. The use must be a beneficial one, made within a reasonable time as a result of a diligent effort. The right continues as long as the water continues to be applied to the beneficial use. It is lost by abandonment or by statutory forfeiture after a period of nonuse. In some states the ownership of the right, nature of use, place of use, or place of diversion may be transferred or sold without loss of priority.<sup>243</sup>

The prior appropriation right today is evidenced by a document; usually referred to as a permit.<sup>244</sup> It is usually issued by a state

<sup>242</sup> The public trust is used to regulate obstructions to navigation, *Hixon v. Public Serv. Comm'n*, 32 Wis. 2d 608, 146 N.W.2d 577 (1966), the construction of dams, *Muench v. Public Serv. Comm'n*, 261 Wis. 492, 53 N.W.2d 514, 55 N.W.2d 40 (1952), the operation of dams, *Wisconsin Power & Light Co. v. Public Serv. Comm'n*, 5 Wis. 2d 167, 8 N.W.2d 350 (1958), their preservation after their economic use has terminated, *Minn. Stat. Ann.* §§ 105.42, 110.31 (1964), *N.J. Stat. Ann.* § 58:4-9 (1966), *Wis. Stat. Ann.* § 31.185 (1965), scenic values, *Muench v. Public Serv. Comm'n*, *supra*, *Scenic Hudson Preservation Conf. v. FPC*, 354 F.2d 608 (2d Cir. 1965), *Udall v. FPC*, 387 U.S. 428 (1967), general economic activity, *Frost v. Washington County R.R.*, 96 Me. 76, 51 A. 806 (1901), *State v. Sunapee Dam Co.*, 70 N.H. 458, 50 A. 108 (1900), *St. Regis Paper Co. v. Water Resources Bd.*, 92 N.H. 164, 26 A.2d 832 (1942), *Illinois Steel Co. v. Bilot*, 109 Wis. 418, 84 N.W. 855, 85 N.W. 402 (1901), or recreational opportunities, *State v. Public Serv. Comm'n*, 275 Wis. 112, 81 N.W.2d 71 (1956).

<sup>243</sup> See note 181 *supra*.

<sup>244</sup> Actually a permit is issued to enable an applicant to begin constructing his diversion works. A water right license is issued when water is actually applied to bene-

administrative agency, after an application or adjudication procedure which varies from state to state.<sup>245</sup> The state administering agency often is given power to deny applications for permits or modifications of permits to protect senior appropriators or the public interest.<sup>246</sup> For allocating water during times of shortages, or for choosing between simultaneous applications for permits, several states have enacted statutes giving certain uses preferred status.<sup>247</sup> Some states also give these preferred users condemnation power.<sup>248</sup> Prior appropriation is complicated in some western states, notably California, by the co-existence of riparian rights which govern the allocation of a significant portion of their waters.

2. *Advantages Propounded.*—Proponents of prior appropriation argue that it offers advantages over riparianism.<sup>249</sup> Its most attractive characteristic is security of right. An appropriation permit creates a perpetual right to use a defined volume of water from a particular source to be used on designated land subject to identified senior rights of the same nature. The permittee knows exactly what his water right is. The very defined nature of the right makes it transferable and subject to sale. While the structure of rights may appear to be very rigid and inflexible, persons wishing to introduce new uses in situations where all available water has been appropriated may purchase the rights they need. Rights to use are not subject to the hazard of unused senior rights being exercised at a later time, because rights are lost by nonuse.

3. *Security of the Prior Appropriation Right.*—The primary attribute of appropriation is security of right. Of course, the rights of senior appropriators on highly variable rivers are much more secure than those of junior appropriators. But the latter can be sure that any investment by them to improve regulation of flow by construction of storage reservoirs or augmentation of supply by transbasin diversion canals will be protected. Such increased flows, though subject to temporary stoppage in times of scarcity, will not be subject to use by others, as may happen under riparianism.<sup>250</sup> This type of security

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ficial use. Because the document evidencing the water right is so often referred to as a permit, that terminology has been used in this article.

<sup>245</sup> In Wyoming, the State Engineer, appointed by authority of Wyo. Const. art. 8, § 5, has authority to approve or reject applications, Wyo. Stat. Ann. § 41-203 (1957), which must be made by all who wish to use the state's water. Id. § 41-201. Similar application must be made in Arizona by any person "intending to acquire the right to the beneficial use of water." Ariz. Rev. Stat. Ann. § 45-142 (1956). Application is made to the state land department. Id. § 45-301.2.

<sup>246</sup> Wyo. Stat. Ann. § 41-203 (1957); Ariz. Rev. Stat. Ann. § 45-143A (1956).

<sup>247</sup> See statutes cited note 277 *infra*.

<sup>248</sup> See statutes cited note 276 *infra*.

<sup>249</sup> See generally Trelease, Model Code, *supra* note 178.

<sup>250</sup> See *id.* at 308-09.

should create an atmosphere encouraging to capital-intensive water resource development.

The security achieved under prior appropriation systems in the West has been eroded by two problems: overappropriation, with concomitant unused rights, and residual riparian rights. The first can be avoided in a new system if politics will allow the agency to avoid it. The second raises serious constitutional questions, especially in the East with its heavily utilized streams spawning complex riparian rights relationships.

It often happens that more water has been claimed for appropriation than exists in the stream.<sup>251</sup> Junior appropriators, in this case, will often find themselves using water claimed, but not used, by senior appropriators. The junior appropriators are generally permitted to make this use when the seniors have no need of the appropriated water.<sup>252</sup> But when a senior appropriator desires to use water under a claim of right that has not lapsed, the junior's right is by definition foreclosed.<sup>253</sup> This situation developed before the days of administrative control of appropriation claims through issuance of permits. It should be easier for an agency administering a new eastern appropriation system to avoid overappropriation by appropriators because acquisition of "paper rights" can be prevented.

A serious problem in some western states, and one bound to be troublesome in the East, is residual riparian rights.<sup>254</sup> If a riparian right is deemed vested (either on the theory that the right was being exercised at the time prior appropriation was adopted, or on the theory that the lands to which they were appurtenant had been conveyed to private owners before the ability to acquire riparian rights had been cut off), it will, of course, be treated as a property right, one that may not be taken without compensation. It will then have priority over all appropriative rights. This has been a problem where the one system has succeeded the other.<sup>255</sup>

Yet, agricultural irrigation has developed in most of the East only since the 1950's. Hence, outside heavily developed industrial and

<sup>251</sup> This is a very serious problem in some areas in the West settled early. See Fisher, *Western Experience and Eastern Appropriation Proposals*, in *Law of Water Allocation* 75, 95-98 (D. Haber & S. Bergen ed. 1958). Some of the early claims for appropriation were ridiculous. See, e.g., *Pabst v. Finmand*, 190 Cal. 124, 211 P. 11 (1922).

<sup>252</sup> 36 Am. Jur. Waters § 303 (1947).

<sup>253</sup> One of the purposes of stream adjudications by state agencies is to eliminate such unused appropriations by forfeiture so as to make appropriations put to beneficial use more secure.

<sup>254</sup> See W. Hutchins, *Selected Problems in the Law of Water in the West* 30-34 (1942).

<sup>255</sup> W. Champion, *Transition From Riparian Doctrine*, in *Proceedings of the Water Resources Law Colloquium* 46, 54 (Instit. Research Land & Water Resources, Pa. St. Univ. 1967); Champion, *Prior Appropriation in Mississippi—A Statutory Analysis*, 39 Miss. L.J. 1, 16 (1967).

metropolitan areas, the problem of residual riparian rights may not yet have reached serious proportions since not many riparian rights will have vested there. But if many rights are vested before prior appropriation is adopted, there will be too little unallocated water to make the appropriative system worthwhile. The old system may then still be needed to settle disputes between and allocate water to users in the vast majority of cases. Where water is already being substantially or fully utilized, as in many industrial areas of the East, substitution of prior appropriation for the older system may be pointless.

Prior appropriation probably makes no sense even if all riparian rights were abolished and the administrators started afresh. One of two policies could be followed to establish temporal priorities. One is recognition of priorities on the basis of historical use—a hopeless task, since some claims would go back three and one-half centuries. The other policy would be to allow all users to make new claims and to grant temporal priorities on the basis of time of application. Besides creating a new Oklahoma land rush, such a procedure would be unjust because the priority of a claim and, therefore, its security would be based on the accident of how fast the user or his attorney could run to the registration office. The chief reason why prior appropriation is not suited to most eastern situations is that the doctrine is designed to promote rapid development of a largely unused resource.<sup>256</sup> This development has already occurred in the East.

4. *Efficiency of Water Use.*—Prior appropriation has two features which promote efficiency of use of water. One is the absence of a place-of-use limitation. Since water may be used anywhere, diverters will be more likely to use it wherever on their own lands it can be used best. The other is the rule of reasonable beneficial use. Appropriators may obtain rights only to water which they actually put to use.<sup>257</sup> This use must be one which is beneficial, that is, some form of use which has economic advantage. Water rights which are not exercised beneficially will be lost by nonuse under abandonment or forfeiture concepts.<sup>258</sup>

In the administration of western prior appropriation statutes certain problems related to efficiency of use have arisen and must be guarded against if the system is instituted in the East. Downstream sites tended to be developed first because they were easier to develop. Unfortunately water sent down a stream to those sites to satisfy senior

<sup>256</sup> Cf. Trelease, *Policies*, supra note 178, at 7.

<sup>257</sup> For an extensive discussion of beneficial uses, see W. Hutchins, supra note 254, at 314-16.

<sup>258</sup> Abandonment and forfeiture are distinguished in *In re Waters of Manse Spring*, 60 Nev. 280, 287-88, 108 P.2d 311, 315 (1940).

rights may be subject to serious transmission losses<sup>259</sup>—a result of high evaporation rates and stream beds composed of porous soils.<sup>260</sup> To reduce the extent of this problem the system should allow for changes in location of use. To cope with the more extreme situations, the administering agency should perhaps be given power to apply incentive or coercive measures to cause such shifts in location.

Overappropriation can be an even more serious problem. Water which is appropriated beyond the needs of the users, then drawn and applied merely to avoid forfeiture, is water wasted. Use of such water can seriously limit the overall degree of efficiency of use of water. In the West this situation was especially serious in the early days of appropriation, and has plagued the prior appropriation systems there ever since.<sup>261</sup> It has been suggested that new appropriators even today are rather generous in their estimates of the amounts of water they need.<sup>262</sup> Eastern systems which may be established should incorporate sufficient supervision over appropriations to avoid overappropriation.

#### 5. *Flexibility of Prior Appropriation to Accommodate New Uses.*

a. *Locational Rigidities.* Prior appropriation grew of age in a pioneering economy. This means the original appropriations, which were acquired in perpetuity, are the most secure. They may or may not be flexible enough for adaptation to the modern economy or needs for water. Fisher describes the rigidity which may encrust the system.

An appropriation right allows water to be applied to the same purpose forever, but temporary or permanent changes in the conditions of water use and supply in a region may mean that the purposes for which water was originally appropriated are not among the more important purposes for which water is needed at a later time. Unfortunately, the need for applying water to changed purposes may well emerge after full over-all use has been achieved. The interdependencies among users already established are likely to

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<sup>259</sup> See, e.g., *State ex rel. Cary v. Cochrane*, 138 Neb. 163, 292 N.W. 234 (1940) (senior downstream use held to be reasonable even though a 77% channel transmission loss was sustained).

<sup>260</sup> Williams has commented:

Because losses by evaporation and percolation are great in arid regions, it is in the interests of economy that the water should be diverted for irrigation as far upstream as it can be properly used for that purpose; yet, an appropriator may be legally bound not to divert the water if his senior, perhaps many miles downstream, is unable to obtain his full amount, to the last drop.

Williams, *Irrigation Law in Colorado* (pts. 1 & 2), 10 *Rocky Mt. L. Rev.* 87, 178, 190 (1937) (footnotes omitted).

<sup>261</sup> See notes 252-53 *supra* and note 274 *infra*.

<sup>262</sup> See Williams, *supra* note 260.

block changes to different purposes if existing conditions of supply are to be strictly preserved for the benefit of the established users.<sup>263</sup>

A small portion of a river will, of course, be affected more by a diversion of a given size than a large portion of the same river. The physical setting of a river thus fixes the interrelationships between diversions at various points and the flows remaining below these points. On a fully utilized river, rights of others could be affected adversely by even relatively small changes in volume or location of diversion by one diverter upstream. As interrelationships between rights on a river grow more complex, the room for adjustment becomes less because too many senior rights would be involved.<sup>264</sup>

Under prior appropriation in some western states, any change of the location of diversion or place of use may require making a new appropriation.<sup>265</sup> Such a rule creates rigidity because no appropriator is likely to give up his senior right to effect changes in location of diversion or place of use. Several states have sought to alleviate this problem by allowing approval of such changes without loss of priority, so long as existing rights are not adversely affected.<sup>266</sup> The difficulty in securing approval is especially acute when the applicant contemplates a change from a nonconsumptive to a consumptive use,<sup>267</sup>

<sup>263</sup> Fisher, *supra* note 251, at 102.

<sup>264</sup> An extreme example of what the fixity of these flow interrelationships can produce is cited by Trelease. A ground water diversion of 100,000 acre-feet in the upper portion of Frenchman Creek area in Colorado reduces flow at the lower end by only 15,000 acre-feet. In Beaver Creek, a cessation of a ground water diversion of 20,000 acre-feet enlarges streamflow by only 1000 acre-feet. Trelease, *Model Code*, *supra* note 178, at 311 n.63, citing *Denver Post*, Nov. 18, 1956, Roundup Sect. at 9, col. 2. Similarly, high channel transmission losses in western streams require large flows at the headwaters to produce a small flow far downstream to protect senior appropriative rights. By contrast, the flow in an eastern stream below a diversion will be replenished within a relatively short distance from tributary and ground water recharge.

<sup>265</sup> See *Tattersfield v. Putnam*, 45 Ariz. 156, 171, 41 P.2d 228, 234 (1935); Neb. Rev. Stat. § 46-122 (1960); Wyo. Stat. Ann. § 41-2 (1957). Several statutes virtually freeze the appropriation right to the land unless, because of a natural cause beyond the control of the diverter, it is impracticable to use the water on the assigned land beneficially or economically. See Nev. Rev. Stat. § 533.040 (1967); Okla. Stat. Ann. tit. 82, § 34 (1952); S.D. Code § 61.0128 (Supp. 1960). Most western states, however, allow transfers without loss of priority if other rights are not affected. Colorado is especially liberal in this respect. See, e.g., *Hassler v. Fountain Mut. Irrigation Co.*, 93 Colo. 246, 249, 26 P.2d 102, 103 (1933). This problem is discussed in W. Hutchins, *supra* note 254, at 378-84.

<sup>266</sup> See Ariz. Rev. Stat. Ann. § 45-172 (Supp. 1967); Calif. Water Code §§ 1700-06 (West 1956), as amended, §§ 1701-05.5 (West Supp. 1967); Colo. Rev. Stat. Ann. § 148-9-22 (1963); Idaho Code Ann. § 42-222 (1948); Kan. Stat. Ann. § 82a-708(b) (1964); N.M. Stat. Ann. § 75-5-23 (1968); N.D. Cent. Code § 61-04-15 (Supp. 1967); Ore. Rev. Stat. § 540.510 (1963); Utah Code Ann. § 73-3-3 (Supp. 1967); Wash. Rev. Code Ann. § 90.03.380 (1962). See J. Hirshleifer, J. De Haven & J. Milliman, *Water Supply: Economics, Technology, and Policy* 239-42 (1960).

<sup>267</sup> See W. Hutchins, *supra* note 254, at 382-84; Trelease, *Policies*, *supra* note 178,

thereby diminishing the rate of return flow to the stream and devaluating the rights of downstream junior appropriators. Similar difficulties may occur when a significant change in point of diversion is contemplated.

The seriousness of this problem throughout the West is only now under investigation.<sup>268</sup> Recent studies have found that locational rigidities presented great difficulties in effecting water transfers. In Colorado, the City of Denver discovered it had to construct a dam in, and a pipeline from, a distant unpopulated mountain area rather than to purchase water rights nearby because of the difficulties inherent in securing transfers of water rights by the judicial procedure followed in that state.<sup>269</sup> In California, locational rigidities were found to inhibit water transfers greatly.<sup>270</sup> In Wyoming, a statute forbidding the severance of a water right from the land on which it is used has severely restricted transfers of water between agricultural users. However, a number of exceptions has arisen in favor of certain preferred users.<sup>271</sup> Perhaps it is too soon to generalize from these studies, since the law in each prior appropriation state is different.

Proponents of prior appropriation suggest that changes of use can be effected by making the right freely transferable,<sup>272</sup> so that the new user can purchase the rights he needs from older users who are willing to sell. Yet even if the right is made legally transferable, the transfer rigidity problem just discussed will continue to keep it economically nontransferable. How this problem would be overcome is not explained. Presumably both the transferred right and all affected rights would have to be purchased provided, of course, that they are available for sale.<sup>273</sup>

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at 32. See, e.g., *Featherman v. Hennessy*, 43 Mont. 310, 115 P. 983 (1911); *Broughton v. Stricklin*, 146 Ore. 259, 269-70, 28 P.2d 219, 222 (1933).

<sup>268</sup> A number of preliminary and exploratory reports on research currently underway are located in *Water Resources and Economic Development of the West* series, Conference Proceedings of Committee on Economics of Water-Resources Development of Western Agricultural Economics Research Council.

<sup>269</sup> Seastone & Hartman, *Alternative Institutions for Water Transfers: The Experience in Colorado and New Mexico*, 39 Land Econ. 31 (1963).

<sup>270</sup> Gaffney, *Diseconomies Inherent in Western Water Laws: A California Case Study*, in *Economic Analysis of Multiple Use* 55 (Proceedings of Western Agricultural Economics Research Council, Tucson, Ariz., Jan. 23-24, 1961, *Water and Range Resources and Economic Development of the West* series, Report No. 9).

<sup>271</sup> Trelease & Lee, *Priority and Progress—Case Studies of the Transfer of Water Rights*, 1 Land & Water L. Rev. 1, 67-73 (1966). The Wyoming experience is the result of the "no change" statute enacted in 1909 which ties water rights to the land. *Wyo. Laws* 1909, ch. 68, § 1, as amended, *Wyo. Stat.* § 41-2 (1957).

<sup>272</sup> Milliman, *Water Law and Private Decision-Making: A Critique*, 2 J. Law & Econ. 41, 56 (1959); Trelease, *Policies*, supra note 178, at 30.

<sup>273</sup> See Gaffney, *Comparison of Market Pricing and Other Means of Allocating Water Resources*, in *Water Law and Policy in the Southeast* 195, 221 (Inst. of Law and Gov't, Univ. of Ga., 1962).



b. *Rationality of Human Behavior.* This proposed solution is grounded on the assumption that human beings act rationally and will sell their water rights to a person who offers an attractive price. The assumption is unfounded. Especially in arid western areas water has acquired a *mystique*—it is regarded as something much different than a valuable mineral to be exploited. Water is essential to life and to productive land, and people often may decline to give up their rights to it even if it demonstrably is profitable for them to do so.<sup>274</sup>

c. *Use Preferences.* Creation of preferences among uses is another way to achieve flexibility. None of the western states have adopted a true preference: a right of preferred users to take water while inferior users have no privilege to do so in time of shortage regardless of temporal priority. Preferences adopted in prior appropriation states take three forms: (1) giving the preferred user the power to condemn and pay for nonpreferred water rights, (2) giving the state the power to withdraw water from general appropriation and reserve it for preferred uses to be developed in the future, or (3) creating a rule for choosing between substantially simultaneous applications for water rights.<sup>275</sup> Three western states have granted condemnation powers to preferred users by constitutional provision.<sup>276</sup> Five others have created statutory preferences controlling simultaneous applications and three have granted condemnation powers.<sup>277</sup>

None of these states agree on the content of the list of preferred uses or their order of preference. Generally, however, the preference

<sup>274</sup> Trelease, *Policies*, supra note 178, at 39-42; Trelease & Lee, supra note 271, at 73; Williams, supra note 260, at 178, 190-91.

<sup>275</sup> See Trelease, *Preferences to the Use of Water*, 27 *Rocky Mt. L. Rev.* 133, 134-43 (1955).

<sup>276</sup> See Colo. Const. art. XVI, § 6 (domestic, agricultural and manufacturing uses); Idaho Const. art. XV, § 3 (domestic uses, mining and milling uses in organized mining districts, agricultural uses, and manufacturing uses); Neb. Const. art. XV, § 6 (domestic, agricultural, and manufacturing uses).

<sup>277</sup> The following statutes establish the orders of preference listed. *Ariz. Rev. Stat. Ann.* § 45-147 (Supp. 1967) ((1) domestic and municipal uses, (2) irrigation and stock watering, (3) water power and mining, and (4) recreation and wildlife, including fish—regulates pending applications); *Calif. Water Code* §§ 106, 1254, 1460 (West 1956) ((1) domestic and municipal uses, and (2) irrigation—regulates pending applications); *Kan. Stat. Ann.* § 82a-707(b) (1967) ((1) domestic, (2) municipal, (3) irrigation, (4) industrial, (5) recreational, and (6) waterpower uses—condemnation of inferior uses); *Ore. Rev. Stat.* § 540.140 (1963) ((1) domestic, (2) agricultural, and (3) manufacturing uses—preference in time of shortage); *Tex. Civ. Stat. Ann.* art. 7471 (1954) ((1) domestic and municipal uses, (2) water used in manufacturing processes and steam generation of power, (3) irrigation, (4) mining and mineral recovery, (5) hydroelectric power, (6) navigation, and (7) recreation and pleasure—regulates pending applications); *Utah Code Ann.* § 73-3-21 (1953) ((1) domestic, (2) agricultural, and (3) other uses—preference in time of shortage); *Wash. Rev. Code Ann.* § 90.03.040 (1962) (condemnation of inferior uses for "beneficial" uses); *Wyo. Stat. Ann.* § 41-3 (1957) ((1) drinking water for man and beast, (2) municipal uses, (3) railroad, household and certain commercial uses, and (4) industrial uses—right to condemn inferior uses).

order is: (1) domestic and municipal uses, (2) agricultural uses, and (3) manufacturing uses.<sup>278</sup> This order of preference reflects the bias of economic thinking at the times the statutes were enacted. They may be out of step with current thought.<sup>279</sup> Only an Oklahoma order of the 1920's, since repealed, seemed to be relatively modern, reflecting the need for cooling water and waste dilution flows.<sup>280</sup>

6. *Protecting the Public Interest.*—Prior appropriation has been considered not very effective in its protection of water supply for public uses.<sup>281</sup> The common law rights of navigation, fishing and the like may still be recognized, but very rarely has water been reserved to make such uses possible. Prior appropriation has traditionally promoted rapid development of water resources by private entrepreneurs. The judiciary of prior appropriation states has frequently declined to construe public uses of water flows in streams for recreational purposes as constituting appropriations for a beneficial use, and has subordinated such uses to the appropriative rights of private entrepreneurs.<sup>282</sup> To overcome this interpretation of beneficial use, several western states have enacted legislation allowing the states to make appropriations of unappropriated water for various public uses.<sup>283</sup> Even then the administering agency may rule that a particular in-place public use does not constitute an appropriation.<sup>284</sup>

Recreational public uses are becoming more and more important throughout the United States. The fact that, for historical reasons, the western states have not adequately provided for public uses of water in their prior appropriation statutes is no reason why the eastern states adopting prior appropriation need make the same mistake. Minimum streamflows for protection of public uses and for waste dilution purposes ought to be relatively easy to establish whenever a new system is introduced into a state. Mississippi, the only eastern state to adopt prior appropriation, has provided for establish-

<sup>278</sup> For a list of the order of preferences in particular states, see note 277 *supra*.

<sup>279</sup> Trelease, *supra* note 275, at 159; Trelease, Model Code, *supra* note 178, at 315.

<sup>280</sup> This order controlled waters in Conservancy Districts only. Okla. Laws 1923-24, ch. 139, § 25 ((1) domestic and municipal uses, (2) manufacturing, steam production, cooling, and waste dilution, and (3) irrigation, power, recreation, fisheries and other uses—regulated pending application). It was ultimately replaced by Okla. Laws 1967, ch. 382, § 5, Okla. Stat. Ann. tit. 82, § 577 (Supp. 1967), which states that water rights are governed by the laws of the state.

<sup>281</sup> See Trelease, Preferences, *supra* note 178; Comment, Water Appropriation For Recreation, 1 Land & Water L. Rev. 209 (1966).

<sup>282</sup> See Comment, *supra* note 281, at 210-14. But see, e.g., *Empire Water & Power Co. v. Cascade Town Co.*, 205 F. 123 (8th Cir. 1913).

<sup>283</sup> Special legislative appropriations were made by Idaho Code Ann. §§ 67-4301, -4304 (1949); Ore. Rev. Stat. §§ 538.110-300 (1965). No general authorization for recreation appropriations appears to have been enacted by any state.

<sup>284</sup> *In re Applications 12919A et al.*, Calif. St. Water Rights Bd., Dec. D-1030 (1961).

ment of minimum streamflows which no appropriation may invade.<sup>285</sup> Iowa, adopting a nonpriority permit system, has done so as well.<sup>286</sup>

*7. Prior Appropriation—Conclusion.*—The appropriative right's security has been eroded to some extent by overappropriation and by the presence of residual riparian rights. The system is generally efficient because of the requirement of beneficial use and the absence of place-of-use limitations; but less than efficient in allowing streams to sustain high losses along their course toward downstream senior appropriations. It has not favored the recognition of public interests.

#### D. Permit Systems Without Temporal Priorities

Believing riparianism to be inadequate for coping with the water problems lying ahead, several eastern states have enacted permit statutes replacing or supplementing the riparian doctrine.<sup>287</sup> In 1957, Iowa substituted a temporal nonpriority permit system for its previous riparian system.<sup>288</sup> Temporal nonpriority permits for diversions for most purposes are now required in Minnesota<sup>289</sup> and in certain areas of Florida<sup>290</sup> and of New Jersey.<sup>291</sup> Wisconsin requires such permits for irrigation diversion<sup>292</sup> and Kentucky and Maryland for some industrial and other purposes.<sup>293</sup> These legislative responses to the growing demand for water for conflicting uses are bound to multiply in the years to come.

<sup>285</sup> Miss. Code Ann. §§ 5956-04(c), (d) (Supp. 1966) (exceptions for domestic and municipal uses, or where the exception will not affect "proper utilization of water resources").

<sup>286</sup> Iowa Code Ann. §§ 455A.1, .22 (Supp. 1968). Hines, *A Decade of Experience Under the Iowa Water Permit System—Part One*, 7 *Natural Resources J.* 499, 537-44 (1967).

<sup>287</sup> For discussions of eastern water permit legislation, see Ellis, *Developing Trends in Water Law in the Eastern States*, in *Proceedings of the Water Resources Colloquium* 24 (Instit. Research Land & Water Resources, Pa. St. Univ., 1967); Heath, *Water Management Legislation in the Eastern States*, 2 *Land & Water L. Rev.* 99 (1967); Plager & Maloney, *Emerging Patterns for Regulation of Consumptive Use of Water in the Eastern United States*, 43 *Ind. L.J.* 383 (1968).

<sup>288</sup> Iowa Code Ann. ch. 455A (Supp. 1968).

<sup>289</sup> Minn. Stat. Ann. §§ 105.41-.47 (1964), as amended, §§ 105.41, .46 (Supp. 1967). For a discussion of the experience under this act, see Nohre & Raup, *Regulation of Water Use in Minnesota Agriculture* (Minn. Agric. Exp. Sta. Bull. 453 (1961)).

<sup>290</sup> Fla. Stat. Ann. § 373.144 (Supp. 1968) (in designated areas or in water regulatory districts). To date, the act has not been applied to any part of Florida. For an extensive discussion of the experience under this act, see Plager & Maloney, *supra* note 287, at 392-94.

<sup>291</sup> N.J. Stat. Ann. §§ 58:1-35 to -50 (1966) (in designated watersheds).

<sup>292</sup> Wis. Stat. Ann. §§ 30.18(1)-(3) (1964), as amended, (Supp. 1967). For a discussion of the experience under this statute, see F.H. Osterhoudt, *An Economic Analysis of Wisconsin's Diversion Permit System for Agricultural Irrigation* 40-173 (Ph.D. thesis, Univ. of Wis., 1967); Comment, *Wisconsin's Water Diversion Law: A Study of Administrative Case Law*, 1959 *Wis. L. Rev.* 279.

<sup>293</sup> Ky. Rev. Stat. Ann. § 151.150 (Supp. 1967); Md. Code Ann., art. 96A, § 13 (Supp. 1967).

Governments have evolved two basic types of permit system which do not create priorities with respect to time of first beneficial use. One emphasizes regulation of private activity to prevent overdraft of water supplies and to protect public uses. The Iowa permit system and the Model Water Use Act are examples.<sup>294</sup> The other emphasizes state control of water resource development to promote government enterprise in irrigation development. The Australian systems are of this type. The following discussion must be based almost entirely on existing statutes and administrative practices because very little literature of advocacy has appeared in support of nonpriority permit systems.

1. *Description of Concepts.*—Most of the temporal nonpriority systems that have been adopted to American use have not been in existence long enough to have taken on any homogeneous form. Among the features that do run through the various statutes is the equality of right of all permits regardless of when they were granted. This is the paramount difference between temporal nonpriority and prior appropriation permit systems. Another feature is that the temporal nonpriority permit statutes require application of water to a beneficial use in order that the right be acquired and maintained.<sup>295</sup> Permits are issued only for amounts of water actually being put to use. The concept allows for the creation of preferred uses, as under some prior appropriation statutes. The right may be lost by nonuse of the water after a period of years. The more recent statutes establish permits whose life is for a term of years rather than in perpetuity.<sup>296</sup>

## 2. *Efficiency: Beneficial Use, Loss by Nonuse, Fees.*

a. *Application.* Temporal nonpriority permit systems borrow from prior appropriation several concepts that promote efficiency of use. Two of the most important to temporal nonpriority systems are beneficial use and loss by nonuse. The beneficial use concept requires that the user put the water to an economic use to acquire a right to the water. In prior appropriation states a beneficial use is often confined to uses requiring actual application of water to the land for economic benefit to the private diverter or to hydro-power flow uses.<sup>297</sup> The temporal nonpriority permit systems often have expanded the defini-

<sup>294</sup> Iowa Code Ann. ch. 455A (Supp. 1968); Model Water Use Act, Prefatory Note (Handbook of Nat'l Conf. of Uniform Laws Comm'rs, Proceedings 174-77 (1958)) [hereinafter cited as Model Water Use Act].

<sup>295</sup> This requirement is also found in the prior appropriation system.

<sup>296</sup> E.g., N.J. Stat. Ann. § 58:1-44 (1966) (not over 25 years).

<sup>297</sup> See *Lake Shore Duck Club v. Lake View Duck Club*, 50 Utah 76, 80-82, 166 P. 309, 310-11 (1917). See also discussion of changing location of use in western prior appropriation states pp. 692-94 *supra*.

tion to include various public or quasi-public uses,<sup>298</sup> such as water for minimum flows to maintain fish populations or for recreational purposes. This expanded definition is in keeping with today's concepts of proper uses for water. Essential to the concept of beneficial use in both systems is the notion that water should not be wasted or be allowed to go unused if other demands for water go unsatisfied.<sup>299</sup>

The nonpriority permit system has also adopted the concept of loss of rights by nonuse or waste of water or failure to use it beneficially for a certain period of time. Rights under nonpriority permit systems exist only as long as they continue to be exercised by the user. If a holder of a water right fails to exercise his right for the requisite number of years, that failure is deemed to constitute abandonment of the right (unless he can show circumstances which rebut that presumption), or the failure may bring a statutory forfeiture of the right regardless of circumstances.<sup>300</sup> Unused rights are thereby eliminated and the water under them may be reallocated to other uses. The forfeiture procedure will operate effectively only if uses are closely policed.

Fees are imposed on the acquisition of water rights in various jurisdictions. At this time, for example, fees are charged for permits in Mississippi<sup>301</sup> and in a few western states to defray the cost of operating the permit system.<sup>302</sup> These are, hopefully, large enough to give users incentive to use all the water taken by or assigned to them, or to relinquish the right of use. New Jersey charges fees for amounts of water diverted for consumptive use or flow utilized for power.<sup>303</sup>

<sup>298</sup> Iowa Code Ann. § 455A.1 (Supp. 1968) and Miss. Code Ann. § 5956-02(e) (Supp. 1966) define "beneficial use" as the application of water to a useful purpose that inures to the benefit of the water user, but does not include waste or pollution of water. Model Water Use Act § 102 defines it as "a use of water, including the method of diversion, storage, transportation, and application, that is reasonable and consistent with the public interest in the proper utilization of water resources, including, but not limited to, domestic, agricultural, industrial, power, municipal, navigational, fish and wildlife, and recreational uses." Fla. Stat. Ann. § 373.081(6) (Supp. 1968) has a nearly identical definition.

<sup>299</sup> 56 Am. Jur. Waters § 302 (1947).

<sup>300</sup> Iowa Code Ann. § 455A.29 (Supp. 1968) (forfeiture after 3 years' nonuse); Miss. Code Ann. §§ 5956-05 to -06 (Supp. 1966) (forfeiture after 3 years' nonuse); Model Water Use Act § 412(a)(4) (forfeiture—no period stated). Waste is defined in the Iowa statute as, *inter alia*, the use of water "so that it is not put to its full beneficial use," and the transportation of water so "that there is an excessive loss in transit." Iowa Code Ann. § 455A.1 (Supp. 1968). A license to divert in Australia is lost if the water is not beneficially used. No period of nonuse is prescribed. See note 160 *supra*.

<sup>301</sup> Miss. Code Ann. § 5956-16 (Supp. 1966).

<sup>302</sup> Model Water Use Act § 415, and statutes cited in the Comment appended thereto. Fisher, *Western Experience and Eastern Appropriation Proposals*, in *Law of Water Allocation* 75, 134 (D. Haber & S. Bergen ed. 1958).

<sup>303</sup> N.J. Stat. Ann. § 58:1-46 (1966). Power users in Nebraska and Oregon pay fees proportional to the amount of water used. Neb. Rev. Stat. § 46-236 (1960); Ore. Rev. Stat. § 543.710 (1965).

Certainly annual fees would help reduce the problem of "paper rights" and overappropriation.<sup>304</sup>

b. *Locational Efficiency—Use on Nonriparian Land.* If a system of water law is to be efficient, it must allow use of water on nonriparian land. A temporal nonpriority permit system could be set up to allow such use if water is available. Most of the existing eastern permit statutes are silent on this point so that it is not certain whether the common law place-of-use restrictions remain in force. Only the Florida permit statute specifically allows diversions to nonriparian land.<sup>305</sup> An Illinois statute allows nonriparian use under permit for industrial, manufacturing or public utility purposes.<sup>306</sup> The Wisconsin irrigation permit statute allows irrigators to use water on contiguous nonriparian land provided the total irrigated acreage does not exceed that which is irrigable on the riparian tract alone.<sup>307</sup> There seems no reason not to permit use on nonriparian land, whether by riparians or nonriparians. Permission for such use should be refused only in those particular instances that would cause hardships to other diverters.

Where nonriparian use is allowed, the problem of nonriparian users' lack of access to water can arise. Adoption of the "easement of aqueduct" concept would alleviate that problem. The concept empowers a water user to condemn a right-of-way for a ditch across a third person's land to gain access to water.<sup>308</sup> Payment of compensation is required by those jurisdictions in the western United States<sup>309</sup> and Australia<sup>310</sup> which have adopted the device. The granting of the power to condemn a right of way and the determination of where it is to run should be controlled by the administering agency through the issuance of permits.

<sup>304</sup> Whether such fees may be charged for permits authorizing continuation of uses existing prior to enactment of the permit statute is not clear, but little doubt exists that fees could be charged for new uses. See *City of Trenton v. New Jersey*, 262 U.S. 182 (1923); *City of Newark v. New Jersey*, 262 U.S. 192 (1923).

<sup>305</sup> Fla. Stat. Ann. § 373.141(1) (Supp. 1968). See also Model Water Use Act § 407(c). An earlier Florida statute, Fla. Stat. Ann. § 271.09(1) (1962), appears to restrict use to riparian land.

<sup>306</sup> Ill. Ann. Stat. ch. 19, § 65 (Smith-Hurd Supp. 1967).

<sup>307</sup> Wis. Stat. Ann. § 30.18(5) (Supp. 1968).

<sup>308</sup> See C. Scott-Moncrieff, *Irrigation in Southern Europe* 171 (1868). In the 19th century, probably in recognition of customary practice, the concept was incorporated into European water codes. Spanish Law of Waters 1879, art. 77.

<sup>309</sup> Colo. Const. art. XVI, § 7; Colo. Rev. Stat. Ann. §§ 31-14-3, 50-2-1 (1963); Mont. Const. art. III, § 15; Mont. Rev. Codes Ann. § 89-820 (1964); Neb. Rev. Stat. §§ 46-246 to -247 (1960); Nev. Rev. Stat. § 533.050 (1967); N.M. Stat. Ann. § 75-1-3 (1968); Okla. Stat. Ann. tit. 82, § 2 (1952); Ore. Rev. Stat. § 772.305(1) (1963); Tex. Rev. Civ. Stat. Ann. art. 7583 (1954); Utah Code Ann. § 73-1-6 (1961); Wash. Rev. Code Ann. §§ 90.03.040, .36.010 (1962); Wyo. Stat. Ann. § 1-794 (Supp. 1967).

<sup>310</sup> Water Act 1958, Act No. 6413, § 203 (Vict.); Water Act 1912-1966, § 13A(1) (N.S.W.).

3. *Flexibility*.—An obvious way to make a permit system flexible is to keep the term of the permit short. The question is, of course, by how much. Economists usually have argued that the period should be long enough to allow users to recover their investments in water resources works.<sup>311</sup> This idea was accepted by the drafters of the Model Water Use Act who inserted a permit term of up to 50 years.<sup>312</sup> The New Jersey statute requires a term long enough to allow amortization of capital investments, but not over 25 years.<sup>313</sup> If a shorter period is selected, investors will probably worry about loss of "sunk" costs if their permits are not renewed, and will be reluctant to invest. The Kentucky statute seems especially deficient in this regard, since the term of the permit is determined by the administrative agency.<sup>314</sup>

In several permit system states, holders of permits have tended to let them lapse rather than invest in surface water resources. In Mississippi, for example, industrial users have been shifting to ground water because of its higher quality in spite of the perpetuity of the Mississippi permit.<sup>315</sup> In Iowa, farmers have been letting irrigation permits lapse because of an ample supply of water, inability of farmers to accumulate sufficient funds to invest in irrigation, and inability to hire labor to operate irrigation systems.<sup>316</sup> In Wisconsin, irrigators have been abandoning their perpetual permits and shifting from streams to wells as sources of supply either because of the latter's greater physical convenience of operation and in spite of the well's greater capital and operating costs or because of riparian land limitations imposed by the permits.<sup>317</sup> The significance of these trends is evidently that at least when ground water is plentiful the term of the permit plays a very minor role in the decision of farmers whether or not to invest in irrigation supplied by streams.

The nonpriority permit system is flexible in that it provides for transferability of the right to successors in title to the land where the water is used.<sup>318</sup> The flexibility of the system can be increased by making the right transferable regardless of place of use.

#### 4. *Protection of the Public Interest—Concept of Minimum Protected*

<sup>311</sup> The economists' argument is recognized in O'Connell, *Iowa's New Water Statute—The Constitutionality of Regulating Existing Uses of Water*, 47 *Iowa L. Rev.* 549, 579-80 (1962); Trelease, *Policies*, supra note 178, at 25-26.

<sup>312</sup> Model Water Use Act § 406.

<sup>313</sup> N.J. Stat. Ann. § 58:1-44 (1966).

<sup>314</sup> Ky. Rev. Stat. Ann. §§ 151.140, .170(1) (Supp. 1967). Another way to insure flexibility is to provide for condemnation by preferred classes of users, with compensation for termination of a permit before its renewal date.

<sup>315</sup> W.H. Champion, *Transition from Riparian Doctrine*, in *Proceedings of the Water Resources Colloquium 46* (Instit. Research Land & Water Resources, Pa. St. Univ. 1967).

<sup>316</sup> O'Connell, supra note 311, at 579-80.

<sup>317</sup> F. Osterhoudt, supra note 292, at 220-29.

<sup>318</sup> See p. 666 & note 109 supra.

*Flows.*—The public interest requires that any system of water allocation should establish a net minimum flow for public purposes, and should protect it from invasion by private diverters. Commercial navigation, recreational boating, fishing, hunting and swimming are some of the public purposes that should thus be furthered. As the population of the East grows, the significance of these public uses and the political importance of preserving and enhancing them will increase.

Under riparianism, private rights have always been subjected to the superior public rights. All that is necessary, if a permit system should be adopted in a previously riparian state, is to quantify those public rights. Thus nothing will be taken from existing users, and they will benefit by having the extent of public rights defined.

The Florida, Iowa and New Jersey nonpriority permit systems and the Mississippi prior appropriation system provide for establishment of minimum streamflows.<sup>319</sup> A rather large base minimum protected flow is established in Iowa, being "the flow equalled or exceeded by the stream involved 84 percent of the time between April and September" in normal past years, as determined by the U.S. Geological Survey streamflow records.<sup>320</sup> Adjustments are made up or down to reflect the demand of the public interest.

The Kentucky statute gives the administrative agency more discretion. It may refuse a permit application if the quality, time, place or rate of withdrawal will be detrimental to the public interests of rights of other public water users.<sup>321</sup> Otherwise, it cannot deny a permit to a responsible applicant.<sup>322</sup>

5. *Substitution of Permit Systems for Riparianism.*—If riparianism should be replaced by any other system of allocation, one must consider how to treat vested riparian rights.<sup>323</sup> Riparian states which have substituted permit systems for riparianism since 1945 and have pre-

<sup>319</sup> Fla. Stat. Ann. § 373.141(1) (Supp. 1968) (defined by id. §§ 373.081(8), (9)); Iowa Code Ann. § 455A.22 (Supp. 1968) (defined by id. § 455A.1); Miss. Code Ann. § 5956-04(c), (d) (Supp. 1966) (defined by id. § 5956-02(i)); N.J. Stat. Ann. § 58:1-40 (1966) (defined by id. § 58:1-35). Florida prohibits diversions which would materially interfere with water developed and operated for recreational purposes or as tourist attractions. Fla. Stat. Ann. § 373.101 (1960).

<sup>320</sup> Hines, *supra* note 286, at 540-41.

<sup>321</sup> Ky. Rev. Stat. Ann. § 151.170(1) (Supp. 1967).

<sup>322</sup> Id. § 151.170(2).

<sup>323</sup> Fisher, Due Process and Effect of Eastern Appropriation Proposals on Existing Rights, with Special Emphasis on the Michigan Proposal, in *Law of Water Allocation* 441 (Haber & Bergen ed. 1958); O'Connell, *supra* note 311; King, Regulation of Water Rights under the Police Power, in *Water Resources and the Law* 269 (Univ. of Mich. Law School, 1958). See Lauer, The Riparian Right as Property, in *Water Resources and the Law* 131 (Univ. of Mich. Law School, 1958).



served or protected exercised riparian rights are Florida, Kansas, Mississippi and New Jersey.<sup>324</sup>

The administering agency in Iowa has refused to recognize the vestedness of any riparian rights, exercised or dormant. It has subjected all applications for permits for irrigation withdrawals to the same review whether or not the withdrawals antedated the act.<sup>325</sup> This view has not led to the cutting off of water to former riparians. In its first 10 years of operation the Iowa agency has not denied any permit because it has found all uses to be beneficial.<sup>326</sup> In frequent cases, however, the amount, rate and duration of withdrawal requested have been reduced.<sup>327</sup> Clearly, Iowa has not yet faced anything approaching a critical water shortage.

Further, the Iowa statute provides that a permit shall be granted unless public interests or the interests of property owners "with prior or superior rights" are adversely affected.<sup>328</sup> This means that most, if not all, riparians can expect to obtain a permit as long as water surplus to the minimum protected flow and existing diversions is available. The real test of the constitutionality of this provision will come when no water is available and a riparian is denied a permit for that reason. Prior appropriation statutes in Oregon and Kansas which cut off unused riparian rights and which recognized only those which were being exercised were held constitutional as reasonable regulations for the general welfare.<sup>329</sup>

6. *Analogous Rights Created Through Army Corps of Engineers.*— Besides the nonpriority permit, which is created by state statute, there is a kind of water right that is created by federal statute. If the Army Corps of Engineers is involved in regulating a river by operating reservoirs, it has a paramount right to preempt waterflow to protect the navigable capacity of waters of the United States.<sup>330</sup> If any of the

<sup>324</sup> Fla. Stat. Ann. § 373.101 (1960); Kan. Stat. Ann. §§ 82a-701(d), -703 (Supp. 1964); Miss. Code Ann. § 5956-04(a) (Supp. 1966); N.J. Stat. Ann. § 58:1-49 (1966). See Model Water Use Act § 303.

<sup>325</sup> Cf. Hines, *supra* note 286, at 523-24.

<sup>326</sup> *Id.* at 532-33.

<sup>327</sup> *Id.* at 534.

<sup>328</sup> Iowa Code Ann. § 455A.20 (Supp. 1968). Mississippi has a similar provision. Miss. Code Ann. § 5956-07 (Supp. 1966). These provisions are in contrast to the Australian doctrine that the agency has absolute discretion whether or not to issue a diversion license. Water Act 1958, Act No. 6413, § 204 (Vict.); Control of Waters Act 1919-1925, § 15 (So. Austl.); Water Act 1912-1966, § 10 (N.S.W.).

<sup>329</sup> See *Pacific Live Stock Co. v. Lewis*, 241 U.S. 440 (1916); *Baumann v. Smrha* 145 F. Supp. 617 (D. Kan.), *aff'd per curiam*, 352 U.S. 863 (1956).

<sup>330</sup> The United States may take state-created water rights on navigable streams without compensation. *United States v. Chandler-Dunbar Water Power Co.*, 229 U.S. 53 (1913). On the scope and effect of the navigation servitude, see Morreale, *Federal Power in Western Waters: The Navigation Power and the Rule of No Compensation*, 3 *Natural Resources J.* 1 (1963); Morreale, *Federal-State Rights and Relations* §§ 101.3-5, in 2 *Waters and Water Rights* (R. Clark ed. 1967).

water thus appropriated from common law riparians is found to be surplus, the federal government may either allow the surplus water to be used by riparians or may sell or assign it.<sup>331</sup> Surplus water sold or assigned by the federal government retains its superior federal status and may be used in derogation of all common law or state-created rights held by riparians. Right to such water is thus secure.

Federal legislation authorizes the Corps of Engineers to provide additional storage capacity in reservoirs for nonfederal purposes if the local governing bodies contribute to the cost of the enlargement.<sup>332</sup> That additional water may prove to be subject to condemnation under the federal navigation servitude.<sup>333</sup> If it is, then the water rights to that additional water, whether allocated to private users by the federal government or the local governing body, may retain its federal status. Those derivative rights would be superior to any common law riparian rights or any rights created by state permit.

*7. Nonpriority Permit Systems—Conclusion.*—A temporal nonpriority permit system is well adapted to the state function of planning the development of water resources. The state agency's authority under the system to grant or deny permits or renewals empowers the agency to favor productive development of the resource. The same is true of the authority to permit nonriparian use. Further, the power (inherent in some prior appropriation systems) of preferred classes of users to condemn inferior rights could be incorporated in a nonpriority permit system; it would tend to promote higher uses. The authority to establish minimum protected streamflows can be used to enhance recreational uses, if set at a high level, or industrial and agricultural uses, if set at a low level. The power to reserve water for future development and for various public purposes can be used to implement various long-range plans.

Permit systems, especially permit systems which do not vest rights, have the advantage of allowing a state agency to promote its plans for development of water resources in whatever manner seems best in the interests of the public and of economic development of the state. The nature and degree of state intervention contemplated at any time will be determined by the accepted concepts of private-public

<sup>331</sup> The Corps of Engineers has statutory authority to sell surplus waters for domestic and industrial uses, provided the contracts of sale do not adversely affect then existing lawful uses of such waters. Act of Dec. 22, 1944, § 6, 58 Stat. 890, as amended, 33 U.S.C. § 708 (1964).

<sup>332</sup> Flood Control Act of 1936, § 5, 49 Stat. 1572, as added by War Department Civil Appropriation Act of 1937, § 1, 50 Stat. 515, 33 U.S.C. § 701h (1964). Corps reservoirs enlarged under this legislation are under construction on the Kaskaskia River at Carlyle and Shelbyville, Illinois. Water rights from these reservoirs are being allocated by the Illinois Department of Public Works and Buildings, Division of Waterways.

<sup>333</sup> Morreale, *supra* note 330, §§ 101.3-5.

interaction. The degree of direct state enterprise accepted in Australia is not likely to be accepted in this country; neither are our governmental units likely to abdicate all responsibility for resource development. The temporal nonpriority permit system, more than any other, leaves the door open for the state at some future time to alter its intervention policy, while protecting actual uses for reasonable periods of time. As in Iowa, the primary impetus for development may be left to the private entrepreneur, subject to regulation in the public interest. If, at a later time, as in the western United States or Australia, a state decides it must play a more active role, that change of policy may be made without scrapping the permit system.

### E. *Market Place for Water Rights*

Several economists feel that riparian rights in the East are too insecure to give incentive for private investment in water resource development. They find, on the other hand, that the prior appropriation system as it is practiced in the West is too rigid to allow shifts of water rights to new uses. They believe that a well-defined water right which is freely salable would provide the most satisfactory method of creating security for capital investment in ascertained supplies, while retaining flexibility to accommodate new uses.<sup>334</sup> Such systems are framed with the end of allowing rights to shift to the most beneficial uses, that is, to those for which water is most valuable.

#### 1. *Concepts.*

a. *The Hirshleifer-De Haven-Milliman Proposal.* The predominant thinking by economists in this field is probably represented by Jack Hirshleifer, James C. De Haven and Jerome W. Milliman.<sup>335</sup> They present a generalized four-part program for reform of state water laws: First, any trend towards centralized state administrative control by issuance of permits should be abandoned. It is argued that state agencies tend to be arbitrary and cannot hope to acquire a water user's detailed knowledge or experience as to what constitutes a most effective use. Second, clearly defined water property rights based on the appropriative rights doctrine should be created so that users will have an unambiguous property right in water, certain in tenure. Third, water rights should be freely transferable by sale among users, and should not be acquired gratis by the state under navigation servitude or preemptory public rights concepts. Fourth, water law should recognize

<sup>334</sup> See, e.g., J. Hirshleifer, J. De Haven & J. Milliman, *Water Supply: Economics, Technology, and Policy*, chs. III, IV, IX, XII (1960); Gaffney, *Comparison of Market Pricing and Other Means of Allocating Water Resources*, in *Water Law and Policy in the Southeast* 195, 200 (Instit. of Law & Gov't, Univ. of Ga., 1962); Milliman, *Water Law and Private Decision Making: A Critique*, 2 J. Law & Econ. 41 (1959).

<sup>335</sup> J. Hirshleifer, J. De Haven & J. Milliman, *supra* note 334, at 254.

communality of water supply and interdependencies of use. Free market transactions should be regulated where necessary to protect third parties from spill-over costs resulting from transfers of water rights or changes in use patterns. Protective devices to this end would include zoning restrictions, common pooling as in the oil and gas industry, use taxes to finance reimbursement schemes and compensation for damages. These devices are designed to create a decentralized market where water allocation decisions are determined by economic forces primarily by the price system while third parties are protected from the consequences of the operations of traders and users.

b. *Gaffney Proposal*. M. Mason Gaffney has made a unique proposal with three components: a bid price, a transportation charge, and a land tax.<sup>336</sup> Under this scheme, defined water rights would be sold by a watermaster at scheduled frequent intervals at a special water right exchange. A user who has purchased a right would own it only until the time of the next sale, when it would again be available for purchase. Sale would be made according to a flexible price schedule based on marginal utility and designed to sell all available water. At the time of each sale each user would submit a schedule indicating how much water he would take at various prices. For example, a buyer might bid for 1000 gallons at \$1 and for another 1000 gallons at \$.75. The watermaster would sell the available quantity at the highest bid prices successively until the supply was exhausted. It would sometimes happen, then, that a previous user would be outbid, and would acquire no water at a given sale. Prices would be free on board and would not reflect transportation costs from the central distribution point. Transportation costs would be an additional charge. Finally, a fixed land tax would be levied against all lands served by the system. This tax would be highest near the source of supply and would be lower farther away. It would reflect the reliability of service (highest near the source of supply), and the cost of transport, which would be higher farther away.

Gaffney expects the total inclusive cost of water to be relatively uniform, or to rise only slowly with distance from the source of supply; for such a result would satisfy the ethical and political demands of distributive equity.<sup>337</sup> While bid pricing will allow new users to purchase the water rights they need if water is sufficiently valuable to them, Gaffney believes existing users need not fear about losing their water supply because "they can rationally pay generously, to maintain the value of their sunk investments, while the newcomers must net out the cost of their as-yet-unsunk investments to find the residual they can afford to pay for water."<sup>338</sup>

<sup>336</sup> Id. at 59-73, 252.

<sup>337</sup> Gaffney, *supra* note 334, at 203-07.

<sup>338</sup> Id. at 224.

Gaffney's proposal probably stems from his research on transfers of water rights in several irrigation districts of California. He found that water rights frequently were not transferred because of the great difficulties of overcoming obstacles to transfers under the prior appropriation permit statute.<sup>339</sup> He must have been impressed also by the proliferation of independent parallel irrigation water distribution systems in California.<sup>340</sup>

## 2. *Security of the Market Place Right.*

a. *Hirshleifer-De Haven-Milliman Proposal.* The marketplace right under the Hirshleifer-De Haven-Milliman concept ought to be quite secure. It would be definite in volume, rate of withdrawal and priority of right, and would thus be reliable for investment purposes.

b. *Gaffney Proposal.* Under the Gaffney proposal, a water user could lose his water right at any time to a higher bidder. Shifts of water to municipal or industrial uses are inevitable under such a system where such demands exist, because agricultural users cannot compete with them in a bidding situation. Hence, the Gaffney proposal enhances the influence of market forces at the cost of creating a highly insecure water right. If it is in the public interest to promote or preserve irrigated agriculture in areas where heavy demands on water by municipalities and industries are likely, the water allocation system must reflect that policy decision. The Gaffney proposal does not do so.

## 3. *Applicational Efficiency of Use.*

a. *Hirshleifer-De Haven-Milliman Proposal.* The Hirshleifer-De Haven-Milliman proposal would, in operation, favor the transferral of water to higher value users, and thus seems to treat water merely as another resource input in the economic process. The proponents espouse maximization of output per unit volume of water as the best measure of the social value of the use. The goal of maximization is to be achieved by encouraging shifts of water to those users who can afford to pay the most. Owners of rights and bidders would make the choice as to whether a shift should take place—not any representative

<sup>339</sup> M. Gaffney, *Diseconomies Inherent in Western Water Laws: A California Case Study*, in *Economic Analysis of Multiple-Use* 55, 70-74 (Proceedings of Western Agricultural Economics Research Council, Tucson, Ariz., Jan. 23-24, 1961, Water and Range Resources and Economic Development of the West series, Report No. 9).

Gaffney and Trelease had a lively exchange on the water transfer issue in response to this study. See Trelease, *Water Law and Economic Transfers of Water*, 43 *J. Farm Econ.* 1147 (1961); Gaffney, *Water Law and Economic Transfers of Water: A reply*, 44 *J. Farm Econ.* 427 (1962); Trelease, *Water Law and Economic Transfers of Water: A Rejoinder*, 44 *J. Farm Econ.* 435 (1962).

<sup>340</sup> On this point, see also Bain, *Water Resource Development in California: The Comparative Efficiency of Local, State and Federal Agencies*, in *Water Research* 51, 58-59 (A. Kneese & S. Smith ed. 1966).

of the overall public interest. If maximization of output reflects the goal of society, perhaps high-value municipal and industrial uses ought to be preferred to lower value agricultural and recreational uses. Also, if the decisions of private entrepreneurs do represent the public interest, the general market place system would be socially beneficial. There is very real question, however, whether the proposal of the three economists adequately reflects the public interest in lower-value uses such as irrigated agriculture and recreational facilities.

b. *Gaffney Proposal*. The Gaffney bid price proposal is subject to these strictures to an even greater degree. In operation it would place a special premium on use of water for municipalities and industry, since these interests can generally pay a higher price than agriculture can,<sup>341</sup> even in the instances when agricultural uses would be in the better interests of the public. Of course, the watermaster could allocate only a portion of the water to higher value uses, but that would defeat the primary purpose of the concept that the market place should determine the decision about the type of use.

#### 4. *Flexibility to Accommodate New Uses.*

a. *Hirshleifer-De Haven-Milliman Proposal*. The Hirshleifer-De Haven-Milliman proposal is supposed to allow transfer of water to higher value uses. This will occur to the extent owners of water rights are willing to sell their rights to new users. This human factor should not be ignored because right holders may not be willing to sell water even if it demonstrably is profitable for them to do so. By refusal they can raise an effective barrier against encroachment on water supplies by new users. If they price their rights consistently on a very high level, they may effectively prevent transfers to many desirable uses and encourage speculation in water rights. If offers are set high enough to meet the rightholders' demands, however, the owners will probably venture to sell in enough cases to make the system worthwhile.

One problem affecting the proposal is interdependency of water uses.<sup>342</sup> The system does not seem to deal with the possibility that interdependencies may be so interlocked that shifting the location of diversion to place of use would be impractical. The requirement of compensation for affected third parties for damages sustained as a result of changes in use patterns would raise so many claims on a

<sup>341</sup> Often it is difficult to assign definite or definable monetary values to recreational use benefits. Outdoor Recreation Resources Review Comm'n, *Economic Evaluation of Outdoor Recreation Benefits*, in *Economic Studies of Outdoor Recreation* 45, 49 (Study Report No. 24, 1962); C. Loomer, *Recreation as a Field for Economic Analysis*, in *Recreation Research in the Great Plains Resource Economic Comm. of the Great Plains Area 1*, 13-19 (proceedings of a seminar sponsored by Great Plains Resource Economic Comm. of the Great Plains Agric. Council at N.E. St. Univ., Sept. 27, 1961).

<sup>342</sup> See discussion at pp. 692-74 *supra*.

highly developed river system as to make any shifts in use there uneconomic. The system would thus tend to freeze historic use patterns on highly developed rivers.

b. *Gaffney Proposal*. The Gaffney proposal achieves the ultimate in accommodation of new uses. Shifts of water to high value uses (which in practice can best afford to bid high) will occur automatically at each sale by the watermaster.

5. *Protection of Public Uses*.—As proposed, both market place concepts do not protect flows of water for public recreational uses, waste dilution, fish habitat, or scenic amenities. The concept of the minimum protected flow, discussed in relation to temporal nonpriority permit systems,<sup>343</sup> might be incorporated. Establishment of such flows, however, would require state regulation which may violate the principle of decentralized decision-making which the market place concept is designed to promote.

6. *Comment*.—Economic market place systems seem to assume that the greatest social benefit is achieved when a resource is put to a use which gives it the highest dollars-and-cents value. The Hirshleifer-De Haven-Milliman proposals seek to achieve security of the water right and flexibility to accommodate new uses by relying completely on a system that maximizes economic efficiency. It totally ignores social needs for recreational facilities, scenic amenities, and preservation of socially desirable but less economically efficient activities. True, economic efficiency is a goal that should be promoted to a large degree. It is submitted, however, that noneconomic values are becoming ever more important, and that a system relying completely on economic efficiency alone is archaic. Nonetheless, we should not ignore problems of security, efficiency, and flexibility in designing legal systems to supplement or replace the existing riparian or prior appropriation systems.

### III. CONCLUSION

The Australian water allocation statutory permit systems were developed in a semi-arid environment where the predominant use has been irrigation. Australia regulates water allocation thoroughly as part of a national policy of intensive land development. The laws of that country give administrative agencies wide discretionary powers to allocate water to diverters inside and outside irrigation areas. To enable the states to exercise these broad powers, common law riparian rights have been abolished and replaced with diversion licensing systems. The degree of governmental regulation required to manage the scarce water resources of Australia would probably be politically unacceptable.

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<sup>343</sup> See discussion at pp. 697-98 *supra*.

able in the United States today, but may be proved necessary in the future.

The American systems (riparianism in the East, prior appropriation in the West) show signs of becoming outmoded as the extent and multiplicity of water demands increase. Riparianism seems to create insufficiently secure rights in areas of heavy water demand. Ad hoc methods to firm up riparian rights may prove to be too limited in scope as water demands multiply in eastern urban and industrial areas. On the other hand, a consideration of prior appropriation suggests that historical use patterns are congealing into a rigid system. The scheme seems prone to locational rigidities and interdependencies among uses. Furthermore, the western interpretation of the "beneficial use" has failed to preserve quantities of water for recreational uses and retention of scenic amenities.

In consideration of these problems, several states in the East have experimented with temporal nonpriority permit systems. These systems are capable of preventing overappropriation of water. They provide for preservation of minimum streamflows for recreational uses and allow for private arrangements for proration of local scarcities. The state is able to regulate use under this system to the extent that particular circumstances require. Rights are sufficiently secure to encourage private development of water resources in water-scarce locations, and at the same time retain a degree of flexibility for the accommodation of new uses. A temporal nonpriority permit system, like those in Iowa, Minnesota and Australia is a good solution to the water problems of today and tomorrow.



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