THE COMMON LAW OF WATERPOWER IN NEW ENGLAND

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INTRODUCTION

The price for energy has responded, predictably and substantially upward, to the expectation that the earth's oil resources will be depleted in the foreseeable future. One interesting effect of this upward price shift is that renewable and reusuable sources of energy, long considered to be relatively expensive and technologically inferior, have become attractive. Wood stoves, solar energy, and windmills are coming into common use. New applications are being found for the waterpower that drove the rustic gristmill of the Currier & Ives prints. During most of this century, waterpower has usually been exploited only at large facilities to produce hydroelectricity for remote use. Now its use onsite by small manufacturing facilities and single farms is increasing.

The common law doctrines of riparian law which govern the development by a private individual of the power potential of a natural watercourse will be discussed in this article. These doctrines evolved during the nineteenth century heyday of waterpower before the growth of the administrative state in this century. Federal and state statutes and regulations now define a relationship between the waterpower developer and government.[1] Riparian law, however, continues to define the relationship between the waterpower developer and other holders of water use rights. Riparian law is still relevant to the limitations imposed on the exercise of private water rights by the public's interest in and prerogatives

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1. The Federal Energy Regulatory Commission and individual state water resources and public utility commissions extensively regulate the exploitation of waterpower. For a full discussion, see Debevoise, *The Role of the Federal Energy Regulatory Commission in Licensing Small Hydroelectric Projects*, 5 VT. L. REV. 279 (1980); Scotch, *Small Hydropower Development and the Environment: A Survey of State and Federal Law*, 5 VT. L. REV. 251 (1980).

over natural waters.

The following discussion consists of two parts. First, an overview of common law riparian doctrine will provide a context for a discussion of the more specific waterpower rules.[2] The second part is a detailed treatment of riparian law as it applies to the private development of the waterpower potential of watercourses. Since this symposium focuses on the New England region, the discussion of specific waterpower rules will give substantial attention to the development of those rules by the New England courts during the nineteenth century.[3]

I. Common Law Riparian Doctrine

A. *Sources of Riparian Doctrine*

At English common law the right to use the water in a natural watercourse, other than for navigation, was accorded only to those individuals who owned land abutting (or riparian to) the watercourse.[4] The water use right was thus treated as one component of the rights associated with the ownership of a particular kind of real property.[5] This idea of the riparian right was generally followed in the courts of the American colonies[6] and continued in application in the state courts after independence.[7]

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2. It is not the purpose of this article to present a comprehensive "hornbook" statement of the rules of riparian law. A full discussion can be found in the leading treatise, Water and Water Rights (R. Clark ed. 1967) [hereinafter cited as Water Rights].

3. Many of the leading waterpower cases were decided by the New England courts. These are discussed at notes 117-145, 168-183 *infra* and accompanying text.

4. 1 Water Rights, *supra* note 2, at §§ 4.3, 15.2(A), 16.

5. The courts generally describe the riparian right as an incident of the ownership of riparian land. *E.g.*, Hendricks v. Johnson, 6 Port. 472 (Ala. 1838); Buddington v. Bradley, 10 Conn. 213 (1834); Blanchard v. Baker, 8 Me. 253 (1832); City of Baltimore v. Appold, 42 Md. 442 (1875); Johnson v. Jordan, 43 Mass. (2 Met.) 234 (1841). An unusually rigorous application of this concept is contained in Corning v. Troy Iron & Nail Factory, 40 N.Y. 191 (1869), in which an owner of two riparian tracts was held to be estopped from complaining about the use of another riparian owner in his role as owner of one tract but not as owner of the other.

6. 1 Water Rights, *supra* note 2, at §§ 16-17.

7. The riparian right was recognized in such early cases as Jones v. Waples, 2 Del. Cas. 159 (C.P. 1802); Hughes v. Mung, 3 H. & McH. 441 (Md. 1796); King v. Tarlton, 2 H. & McH. 473 (Md. 1790); Merritt v. Parker, 1 N.J.L. 460 (1795); Palmer v. Mulligan, 3 Cai. R. 307 (N.Y. Sup. Ct. 1805); Carruthers v. Tillman, 2 N.C. (1 Hayw.) 501 (1797); _ v. Deberry,

As the frontier advanced, most of the new states in the water-abundant East and Middle West adopted the riparian doctrine. In the more arid parts of the West, the greatest demand for water was for mining—a use for which the water sometimes had to be transported for considerable distances. Under these circumstances the prevailing rule for the allocation of water use rights came to be a first appropriation rule rather than a riparian land rule.[8] The result was a distinct regional pattern of water rights law. All of the Eastern states and a few Western states originally followed riparian doctrine.[9] Most of the Western states followed prior appropriation doctrine.[10]

Under the Western doctrine, a person who appropriates water for a beneficial use has a protected claim as against all later appropriators to the specific quantity of water that he has taken. This claim is protected so long as the water is put to a beneficial use.[11] This doctrine quite clearly is consistent with the general tendency for property rights to be defined by hierarchic and determinate rules.

The nature of riparian doctrine, however, is different. Under riparian doctrine the water right holder is accorded a correlative use right in common with the other riparian owners on his stream. He thus cannot point to a specific amount of water to which he has a superior claim. An attempt to explain what the riparian right holder has instead will be made in the following paragraphs.

B. *The General Concepts of Riparian Doctrine*

The decisional rules which determine how a riparian owner may exercise his use right were developed within the framework of three concepts. The first is the dichotomy between the ownership of water and the right to use the water. The second is the status of the use right as a property right. The third is the relationship be-

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2 N.C. (1 Hayw.) 248 (1795); Beissell v. Sholl, 4 Dall. 211 (Pa. 1800); Wright v. Cooper, 1 Tyl. 425 (Vt. 1802).

8. *See* 1 WATER RIGHTS, *supra* note 2, at §§ 51.5-.9.

9. *Id.* § 51.

10. *Id.*

11. *Id.* § 19.2; 5 WATER RIGHTS, *supra* note 2, at § 408.1.

tween the natural physical system and the common law constraints imposed on the exercise of the use right.

Under riparian doctrine the ownership of the water is, with certain exceptions, conceptually separated from the right to use the water. The water of a natural watercourse is owned by the state. This ownership is usually described as being vested in the state on behalf of the people in common or on behalf of the public.[12] The right to use the water is vested primarily in the individual owners, whether private or public, of the riparian land.[13] Although the riparian use right has the status of a vested property right, certain public rights in water are superior under the common law.[14] As a result of these concurrent ideas riparian law has developed with explicit reference to the often conflicting private and social aspects of the use of an important natural resource.

The common law of water use is a part of the law of property, and its doctrinal development took place in a context of judicial dispute resolution. Therefore, riparian law does not provide general rules that accord a complete set of rights or an absolute dominion to any one person. Rather, like all property law, riparian doctrine is relative in nature. It is relative, however, not in the hierarchic sense that "A's right is superior to B's but inferior to C's." Rather, it is relative in the sense that the practical extent of A's right cannot be defined unless the claims, or absence of claims, of B and C are known. The relative nature of the riparian use right in

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12. *See, e.g.*, Ex parte Powell, 70 Fla. 363, 70 So. 392 (1915); Wilson v. East Jersey Water Co., 78 N.J. Eq. 329, 79 A. 440 (1911); Commonwealth v. City of Newport News, 158 Va. 521, 164 S.E. 689 (1923). More frequently, courts state the proposition in the negative, that is, that the riparian owner does not own the water, but instead has a usufructuary right. *E.g.*, Clark v. Lindsay Light & Chem. Co., 405 Ill. 139, 141-42, 89 N.E.2d 900, 902 (1950); Druley v. Adam, 102 Ill. 177, 193 (1882); Taylor v. Fickas, 64 Ind. 167, 174 (1878); Davis v. Getchell, 50 Me. 602, 604 (1862); Amory v. Commonwealth, 321 Mass. 240, 246, 72 N.E.2d 549, 554 (1947); Johnson v. Jordan, 43 Mass. (2 Met.) 234, 239 (1840); People v. Hulbert, 131 Mich. 156, 91 N.W. 211, 213 (1902); Barkley v. Wilcox, 86 N.Y. 140, 146-47 (1881).

13. *E.g.*, City of Logansport v. Uhl, 99 Ind. 531, 537 (1885); Davis v. Getchell, 50 Me. 602, 604-05 (1862); Hall v. City of Iona, 38 Mich. 493, 498-99 (1878); Crawford v. Rambo, 44 Ohio St. 279, 7 N.E. 429, 431 (1886); Chatfield v. Wilson, 31 Vt. 358, 361 (1858).

14. See notes 69-83 *infra* and accompanying text.

this peculiar sense constitutes the fundamental difference between riparian doctrine and Western prior appropriation doctrine.

Another curious aspect of riparian doctrine is its limited functional scope. Strictly speaking, the rules of riparian law apply only to water flowing in watercourses[15] and not to the use of water under the ground or to the diffused runoff from rain or snow melt.[16] This legal pigeonholing of water thus ignores the hydrologic cycle through which water continually passes from one physical form to another.[17]

Within this artificial legal category of watercourses, the effect of the decisional rules is to maintain the natural integrity of the watershed by confining the use of water from a particular watercourse to riparian land within the watershed of that watercourse.[18] There is no reason to believe that the rationale for, as opposed to the effect of, these rules was to preserve the natural ecology. Rather, the rationale appears to be that any one water use ought to be carried out in a manner which protects as much as possible the use rights of all potential downstream users.[19] This objective tends to be achieved by the requirement that the water be used only on riparian land and within the watershed.[20] In theory, after the water

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15. Hendricks v. Johnson, 6 Port. 472 (Ala. 1838); Buddington v. Bradley, 10 Conn. 213 (1834); Blanchard v. Baker, 8 Me. 253 (1832); City of Baltimore v. Appold, 42 Md. 442 (1875); Johnson v. Jordan, 43 Mass (2 Met.) 234 (1841). A watercourse is typically defined as water regularly, but not necessarily continually, flowing in a certain direction above ground and in a well-defined channel. Chamberlain v. Hemingway, 63 Conn. 1, 27 A. 239 (1893).

16. The use and disposal of water in these latter forms are governed by different legal doctrines. For a discussion of groundwater, see 1 WATER RIGHTS, *supra* note 2, at §§ 50, 52.2; 3 WATER RIGHTS, *supra* note 2, at § 214.1; 7 WATER RIGHTS, *supra* note 2, at § 601. For a discussion of diffused surface water, see 1 WATER RIGHTS, *supra* note 2, at §§ 3.1, 52.1; 3 WATER RIGHTS, *supra* note 2, at § 210.2; 7 WATER RIGHTS, *supra* note 2, at § 600.

17. For a further discussion, see 7 WATER RIGHTS, *supra* note 2, at § 601.

18. *See id.* § 614.1. Even the definition of riparian land involves a whole host of complexities. A detailed discussion of these complexities is contained in Farnham, *The Permissible Extent of Riparian Land*, 7 LAND & WATER L. REV. 31 (1972). Normally, the term means all land in a contiguous tract which abuts the watercourse. It also includes only that part of the riparian tract which is within the watershed of the stream which it abuts. It has not been settled, however, whether a nonriparian parcel which has been severed from a riparian parcel and is later reattached again becomes riparian.

19. *See* 7 WATER RIGHTS, *supra* note 2, at § 614.1.

20. More specifically, a riaprian owner must return the excess so that it is available to

is used, any excess will return to the stream from which it was withdrawn.

C. *The Historical Development of Riparian Doctrine*

The common law constraints on the exercise of the individual use right underwent substantial development in the late eighteenth and early nineteenth centuries. During that period, the more intensive settlement of land led to the more intensive use of watercourses for mills, manufacturing, and public water supply. The result, quite naturally, was an increasing amount of litigation as individual water uses came into conflict. In *The Transformation of American Law*,[21] Morton J. Horwitz has identified three distinct doctrinal approaches which were applied during this developmental period. Jurisdictions varied, at different times, in their use of these three approaches. If all of the early water rights cases are taken together, however, they appear to have followed these approaches in a rough chronological sequence.[22]

The earliest approach, one with strong roots in the old English common law, was the natural flow doctrine.[23] Under this approach the natural flow of the watercourse was treated, in Horwitz's words, as "the natural order of things" with which interference was impermissible.[24] Thus, any disruption of that flow, whether caused by a comsumptive withdrawal or by an obstruction, was actionable if it caused injury to another riparian owner. The problem with this approach is that quite commonly the injury suffered by complainant was to his own disruptive (as to possible third parties) water use. When the dispute involved two such "unnatural" water

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the next riparian owner downstream from the withdrawal point. *E.g.*, Wright & Rice v. Moore, 38 Ala. 593 (1863); Parker v. Griswold, 17 Conn. 288 (1845); Blanchard v. Baker, 8 Me. 253 (1832); Kelly v. Nagle, 150 Md. 125, 132 A. 587 (1926); Town of Gordonsville v. Zinn, 129 Va. 542, 106 S.E. 508 (1921).

21. M. Horwitz, The Transformation of American Law, 1780-1860, at 32-47 (1977) [hereinafter cited as M. Horwitz].

22. As the discussion of the text accompanying notes 114-202 *infra* shows, this pattern seems to have emerged in the cases involving disputes between millowners over rights to share in the streamflow.

23. M. Horwitz, *supra* note 21, at 32.

24. *Id.* at 35.

uses, the injury-causing use and the injured use, the natural flow doctrine did not reveal why one "unnatural" use should be favored over the other in granting relief to complainant.[25] The logical extension of this rule, furthermore, would seem to limit uses to the farthest point downstream.[26]

The second approach was based on the idea, closer to the mainstream of the common law of property, that first in time is first in right.[27] This approach gave priority to the water use that was initiated earlier in time. The problem with this approach is that it tended to give something quite close to an exclusive ownership right in a resource that is conceptually owned by the citizenry in common. In addition, the priority approach tended to foster the monopolization of use rights.[28] During the nineteenth century, however, the courts were favorably responding to arguments that conflicts between property owners ought not to be resolved in such a way that prevented the exploitation of the great, underdeveloped natural resources of the nation.[29] A prior use rule only accidentally allocates use rights to the efficient user. Once the right is allocated, there is no flexibility to reapportion it as potentially more efficient users appear on the scene.

Given these conceptual problems with the natural flow and first appropriation approaches, it is not surprising that the courts in the Eastern states eventually rejected them. Eventually each of these jurisdictions adopted a third approach—the reasonable use doctrine—as its formal decisional rule for legal disputes over water use.[30] This doctrine extended the idea of common public owner-

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25. In Kennebunk, K. & W. Water Dist. v. Turnpike Auth., 145 Me. 35, 71 A.2d 520 (1950), the court denied relief to a riparian owner complaining about pollution caused by an upper owner because the complainant's use was itself impermissible, even though only as to third parties. The New York court, however, has treated this fact as irrelevant. *See, e.g.*, Stiles v. Hooker, 7 Cow. 266 (N.Y. Sup. Ct. 1827); Palmer v. Mulligan, 3 Cai. R. 307 (N.Y. Sup. Ct. 1805).

26. This theory does not seem to be the result in practice. As discussed at note 40 *infra*, Pennsylvania follows the natural flow rule without apparent problem.

27. M. Horwitz, *supra* note 21, at 32.

28. *Id.* at 33-34.

29. *Id.* at 32-34.

30. *Id.* at 37-40. *See, e.g.*, Parker v. Griswold, 17 Conn. 288 (1845); Heath v. Williams, 25 Me. 209 (1845); Pratt v. Lamson, 84 Mass. (2 Allen) 275 (1861); Hayes v. Waldron, 44

ship of the resource to the private exercise of the individual use rights. The root concept of the reasonable use doctrine is the protection of at least some access by each riparian owner to a beneficial use of the water. This access is protected through the idea that a riparian right is not lost by disuse, even when the stream is being put to use by other riparian owners. Under this doctrine no priority is given to a water use simply because it was initiated at a time earlier than the uses of competing claimants.

According to Horwitz, the rationale underlying the judicial adoption of the reasonable use doctrine was classic nineteenth century utilitarianism.[31] Under this concept, the public interest is best served by maximizing economic development which in turn maximizes the material product of society. Applied consistently to water use disputes, this rationale would give preference to the riparian owner making the most productive use of the stream.[32] Certainly many of the leading riparian law decisions of the nineteenth century contained the language of utilitarianism.[33]

N.H. 580 (1863); Farrell v. Richards, 30 N.J. Eq. 511 (1879); Palmer v. Mulligan, 3 Cai. R. 307 (N.Y. Sup. Ct. 1805); Howell v. McCoy, 3 Rawle 256 (Pa. 1832); Richmond Mfg. Co. v. Atlantic DeLaine Co., 10 R.I. 106 (1871); Lawrie v. Silsby, 82 Vt. 505, 74 A. 94 (1909).

31. M. Horwitz, *supra* note 21, at 40. In turn, this doctrinal development "enabled emergent entrepreneurial and commercial groups to win a disproportionate share of wealth and power." *Id.* at xvi.

32. It would not, however, give the riparian owner much security. As discussed in the text accompany notes 41-59, 187-202 *infra*, the various state courts have generally tended to apply the reasonable use doctrine in such a way that decisional rules usually emerged, sooner or later, which provided a great deal of predictability to the riparian owner. The purpose of this article is meant to be descriptive of what waterpower rules emerged. It would go far beyond this intended scope to attempt to analyze the underlying rationale for the emergence of decisional rules with high predictive value from the highly indeterminant reasonable use doctrine. It might, however, be appropriate to note here the interesting possible parallels between this development and the trends described in such estimable analyses as T. Bender, Toward an Urban Vision: Ideas and Institutions in Nineteenth Century America (1975); G. Fredrickson, The Inner Civil War: Northern Intellectuals and the Crisis of the Union (1965); J. Higham, From Boundlessness to Consolidation: The Transformation of American Culture 1848-1860 (1969); Nelson, *The Impact of the Anti-slavery Movement upon Styles of Judicial Reasoning in Nineteenth Century America*, 87 Harv. L. Rev. 513 (1974).

33. M. Horwitz, *supra* note 21, at 40-42. This recounting of Horwitz's thesis is not meant to indicate agreement that a policy in favor of economic development dominated. As the text accompanying notes 56-59 *infra* explains, other nonutilitarian policies had a strong presence in the decisions as well. Even if the utilitarian policy were dominant, this domi-

The New York Supreme Court formulated the reasonable use doctrine as its decisional rule for water use disputes in its 1805 decision in *Palmer v. Mulligan*.[34] The *Palmer* court applied the doctrine to distinguish clearly between a physical interference with a water use and a legal injury to a water use. The court's rationale for reasonable use was clearly the utilitarian idea of maximum economic development. In rejecting the prior appropriation doctrine the court stated that, under that doctrine, "the public, whose advantage is always to be regarded, would be deprived of the benefit which always attends competition and rivalry."[35] In its 1844 decision in *Cary v. Daniels*,[36] the Massachusetts Supreme Judicial Court appealed directly to the promotion of economic development.[37] Perhaps the most consistent explicitly articulated appeal to utilitarianism in riparian law decisions, however, is not contained in disputes over the allocation of water to industrial production. Rather, it is contained in decisions resolving complaints about pollution from coal mine waste raised by manufacturing, agricultural, and domestic users. In the coal mining jurisdictions the courts relaxed the usual pollution rules in order to favor explicitly the economically important mining industry.[38]

Nevertheless, the substance of riparian law cannot be understood simply in terms of the formal concept of reasonable use nor even in terms of an express appeal to the policy of economic development. A consideration of the cases reveals that the courts have often emphasized other policy considerations as well. They have

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nance would not necessarily mean an overwhelming bias toward the commercial class. *See* W. SCOTT, IN PURSUIT OF HAPPINESS: AMERICAN CONCEPTIONS OF PROPERTY FROM THE SEVENTEENTH TO THE TWENTIETH CENTURY 71-93 (1977). *See also* McClain, *Legal Change and Class Interests: A Review Essay on Morton Horwitz's The Transformation of American Law*, 68 CAL. L. REV. 382 (1980); Tushnet, *A Marxist Analysis of American Law*, MARXIST PERSPECTIVES, Spring 1978, at 96.

34. 3 Cai. R. 307 (N.Y. Sup. Ct. 1805).

35. *Id.* at 314.

36. 49 Mass. (8 Met.) 466 (1844).

37. *Id.* at 476.

38. *E.g.*, Clifton Iron Co. v. Dye, 87 Ala. 468, 6 So. 192 (1888); Norton Coal Mining Co. v. Wilkie, 224 Ky. 192, 5 S.W.2d 1058 (1928); Pennsylvania Coal Co. v. Sanderson, 113 Pa. 126, 6 A. 453 (1886); Pulaski Anthracite Coal Co. v. Gibboney Sand Bar Co., 110 Va. 444, 66 S.E. 73 (1909); Farley v. Crystal Coal & Coke Co., 85 W. Va. 595, 102 S.E. 265 (1920).

also tried to channel the indeterminate concepts of reasonable use into more concrete decisional rules. In so doing, the courts have achieved a sophisticated accommodation of concept, policy, and physical reality.

D. *Judicial Resolution of Water Use Conflicts*

The usual format of a judicial decision involving a water use conflict begins with a statement of the reasonable use doctrine as the binding rule. A typical formulation of the doctrine was made by Justice Cooley of the Michigan Supreme Court in 1874:

> It is therefore not a diminution in the quantity of the water alone, or an alteration in its flow, or either or both of these circumstances combined with injury, that will give a right of action, if in view of all the circumstances, and having regard to *equality of right* in others, that which has been done and which causes injury is not unreasonable. In other words, the injury that is incidental to a reasonable enjoyment of the common right can demand no redress.[39]

The Pennsylvania Supreme Court put it even more succinctly in 1855: "The necessities of one man's business cannot be the standard of another's rights in a thing which belongs to both."[40]

If these formal statements of the reasonable use doctrine are taken at face value the central notion appears to be the "equality of right" principle expressed by Justice Cooley. This principle would, at the minimum, preserve the access to the watercourse of every riparian owner. Further, it would allow a riparian owner to initiate, whenever his need arises, a use that is "reasonable" as against all other riparian owners. This principle effectively insulates him from legal detriment for not exercising his right. Conceptually, when the streamflow is inadequate to meet all demands the doctrine would allow each riparian owner to satisfy the same proportion of his demand as that of each of the other riparian owners with whom his use is in conflict. On the other hand, no riparian owner could ever be sure of his prior claim to a specific "reasona-

39. Dumont v. Kellogg, 29 Mich. 420, 425 (1874) (emphasis added).
40. Wheatley v. Chrisman, 24 Pa. 298, 302 (1855).

ble" use because other riparian owners may rightfully initiate or expand a use at any time.

Stated in conceptual terms, the reasonable use doctrine would appear to establish a decisional rule which is specific and unvarying in form but which in application accords to individuals a use right which is highly indeterminate and insecure. The manner in which these concepts have been applied by the courts to real life disputes, however, has provided substantially more certainty and predictability to the riparian owner than might be expected. A consideration of the common law decisions of the courts of the states east of the Mississippi River reveals that the reasonable use doctrine is honored more in the breach than in the application. With few exceptions,[41] these courts tend to resolve a water use conflict by favoring one party to the dispute over the other instead of requiring the parties mutually to adjust their water uses. Rather than questioning what the "reasonable" share of the limited water for each disputant is, the courts appear instead to be questioning whether it is "reasonable" for defendant's use to interfere with the use of plaintiff.

Since the latter question also contains that most plastic of words, "reasonable," one might expect the judicial answers also to preclude, like the answers to the former question, any reliable set

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41. In two mid-nineteenth century cases involving consumptive withdrawals from a small stream by adjacent operators of steam mills, the Illinois court ruled that the disputants should share the streamflow proportionately during the dry months when the flow was inadequate to supply both mills. Bliss v. Kennedy, 43 Ill. 67 (1867); Evans v. Merriweather, 4 Ill. (3 Scam.) 492 (1842). In all other types of disputes, however, the Illinois courts apply what appears to be a "one-winner" rule. In City of Canton v. Shock, 66 Ohio St. 19, 63 N.E. 600 (1902), the court held that when the streamflow is inadequate to serve two nondomestic private uses, each use is to be allowed a reasonable portion. The only jurisdiction to apply a decisional rule not based on reasonable use is Pennsylvania. The courts in that state consistently affirm the reasonable use doctrine as the starting point in their reasoning. *E.g.*, Howell v. McCoy, 3 Rawle 256 (Pa. 1832). In practice, however, the Pennsylvania courts consistently apply, with two principal exceptions, a relatively strict and supposedly archaic "natural flow" rule. In effect, an upstream owner may not use the stream in such a way as to disrupt the productive use of a downstream owner. The first exception is that no liability attaches to an injurious upstream use for domestic purposes. Hopper v. Hopper, 146 Pa. 365, 23 A. 321 (1892). The second exception protects from liability disruptive uses necessary for the operations of a mill. Morris v. McNamee, 17 Pa. 173 (1851); Whaler v. Ahl, 29 Pa. 98 (1857).

of expectations on the part of the riparian exploiter. Worse, one might also expect those answers to yield an amorphous body of decisions so situation oriented that no useful pattern of decisional rules could be derived from them. In practice, however, this is not the case. If riparian disputes are considered in terms of the kinds of uses involved, it becomes apparent that the kinds of disputes that actually arise are limited by the uses that can be made of a stream. A stream can be used in one of three ways: as a consumptive water source (irrigation, manufacturing, or municipal water supply); as a waterpower source, by which the quantity of streamflow is unchanged, but the time pattern of flow can be significantly altered; and as a receptacle for manufacturing wastes or municipal sewage which significantly reduces the potential for use of the stream by other riparian owners. The judicial resolution of these kinds of water use disputes tends to follow identifiable patterns. The decisional patterns for consumptive uses and pollution will be considered summarily at this point as part of the context for the later analytical discussion of the decisional patterns for waterpower uses.

A frequent source of water rights disputes is a consumptive use on riparian land that substantially diminishes the streamflow thereby disrupting a downstream riparian use. If the upstream withdrawal is for domestic purposes the courts will accord that use an absolute priority no matter how much any downstream use is disrupted, even if the entire flow of the stream is consumed.[42] If the withdrawal is for a nondomestic use different courts reach different but unvarying outcomes. Some courts will allow that use to continue as long as it is not wasteful.[43] Others will allow it to continue as long as the complaining lower owner is left with some access to the streamflow.[44] In all cases, the water must be returned to

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42. *E.g.*, Stein v. Burden, 29 Ala. 127 (1856); Mastenbrook v. Alger, 110 Mich. 414, 68 N.W. 213 (1896); City of Canton v. Shock, 66 Ohio St. 19, 63 N.E. 600 (1902); Hopper v. Hopper, 146 Pa. 365, 23 A. 321 (1892); Barre Water Co. v. Carnes, 65 Vt. 626, 27 A. 609 (1893).

43. Anthony v. Lapham, 22 Mass. (5 Pick.) 175 (1827); Kistler v. Watson, 79 Ohio Law Abst. 552, 156 N.E.2d 833 (Ct. App. 1957).

44. Taylor v. Tampa Coal Co., 46 So. 2d 392 (Fla. 1950); Valparaiso City Water Co. v. Dickover, 17 Ind. App. 233, 46 N.E. 591 (1897); Hoover v. Crane, 362 Mich. 36, 106 N.W.2d

the stream after use so as to be available to the next riparian owner below the point of withdrawal.[45]

If water is withdrawn from a stream for use on nonriparian land, a complaining riparian landowner can invariably obtain damages if there is a resulting injury to his use.[46] The complaining riparian owner can also obtain an injunction against the injurious withdrawal.[47] There is one major exception to this rule. If the withdrawal is for municipal water supply and if the municipality itself is located on the watercourse, some jurisdictions treat the entire municipality as if it were on riparian land, even though only those lots that abut the stream are actually riparian.[48]

If the complaint concerns pollution of a watercourse, the courts generally will allow damages[49] and in most cases will enjoin the pollution.[50] The courts in some jurisdictions, however, limit the remedy to damages if the pollution is incident to activities deemed to be in the public interest. For example, in the coal-rich states the courts tended either to insulate the defendant from liability[51] or to limit the remedy to damages if the pollution was caused by the economically-important coal mining industry.[52] The courts also tended to shape the liability rules further to insulate this indus-

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563 (1960).

45. See note 20 *supra*.

46. *E.g.*, Parker v. Griswold, 17 Conn. 288 (1845); Canal Trustees v. Haven, 10 Ill. 548 (1849); Munroe v. Stickney, 48 Me. 462 (1860); Stratton v. Mt. Hermon Boys' School, 216 Mass. 83, 103 N.E. 87 (1913).

47. *E.g.*, Sturtevant v. Ford, 280 Mass. 303, 182 N.E. 360 (1932); Virginia Hot Springs Co. v. Hoover, 143 Va. 46, 130 S.E. 408 (1925); Roberts v. Martin, 72 W. Va. 92, 77 S.E. 535 (1913).

48. *E.g.*, Nolan v. City of New Britain, 69 Conn. 668, 38 A. 703 (1897); Kellogg v. City of New Britain, 62 Conn. 232, 24 A. 996 (1892); Tetherington v. Donk Bros. Coal & Coke Co., 232 Ill. 522, 83 N.E. 1048 (1908). *See* McGenness v. Adriatic Mills, 116 Mass. 177 (1874).

49. *See, e.g.*, cases cited note 48 *supra*.

50. *E.g.*, Lawton v. Herrick, 83 Conn. 417, 76 A. 986 (1910); Barrett v. Mount Greenwood Cemetery Ass'n, 159 Ill. 385, 42 N.E. 891 (1896); Neubauer v. Overlea Realty Co., 142 Md. 87, 120 A. 69 (1923); MacNamara v. Taft, 196 Mass. 597, 83 N.E. 310 (1907).

51. Pennsylvania Coal Co. v. Sanderson, 113 Pa. 126, 6 A. 453 (1886).

52. *E.g.*, Clifton Iron Co. v. Dye, 87 Ala. 468, 6 So. 192 (1889); Norton Coal Mining Co. v. Wilkie, 224 Ky. 192, 5 S.W.2d 1058 (1928).

try.[53] As another example, several courts in the late nineteenth century relaxed the pollution rules for the explicit purpose of facilitating the establishment of municipal sewage systems.[54] These systems made possible an enormous advance in the public health in urban areas. The utility-based mining pollution cases, however, did not represent an invariable policy choice. In two jurisdictions, Alabama and Pennsylvania, these exceptions were ultimately eroded to the vanishing point by successive judicial decisions.[55]

Although many water use decisions can be interpreted as having a utility-seeking rationale,[56] the great bulk of riparian decisions seems to be based instead on such noneconomic concepts as the protection of the single family land unit,[57] the advancement of the public health,[58] and the exaltation of common law notions of trespass.[59] A detailed consideration of the resolution of waterpower disputes within the framework of riparian law will shed further light on the interplay of property concepts, policy considerations, and physical realities during this process of development.

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53. For instance, in Pulaski Anthracite Coal Co. v. Gibboney Sand Bar Co., 110 Va. 444, 66 S.E. 73 (1909), and Farley v. Crystal Coal & Coke Co., 85 W. Va. 595, 102 S.E. 265 (1920), the courts held that when the pollution is caused by several mines not acting in concert each is liable only for the share of the pollution that the plaintiff can show that mine has caused. This placed an almost insurmountable evidentiary burden on the plaintiff.

54. City of Valparaiso v. Hagen, 153 Ind. 337, 54 N.E. 1062 (1899); Morse v. City of Worcester, 139 Mass. 389, 2 N.E. 694 (1885); Grey *ex rel.* Simmons v. Mayor of Paterson, 60 N.J. Eq. 385, 45 A. 995 (1900).

55. For Alabama, *compare* Clifton Iron Co. v. Dye, 87 Ala. 468, 6 So. 192 (1888), *with* Elmore v. Ingalls, 245 Ala. 481, 17 So. 2d 674 (1944); Drake v. Lady Ensley Coal, Iron & R.R. Co., 102 Ala. 501, 14 So. 749 (1894); Tennessee Coal, Iron & R.R. Co. v. Hamilton, 100 Ala. 252, 14 So. 167 (1893); Jones v. Tennessee Coal, Iron & R.R. Co., 202 Ala. 381, 80 So. 463 (1818). For Pennsylvania, *compare* Pennsylvania Coal Co. v. Sanderson, 113 Pa. 126, 6 A. 453 (1886), *with* Pennsylvania R.R. v. Sagamore Coal Co., 281 Pa. 233, 126 A. 386 (1924); McCune v. Pittsburgh & Baltimore Coal Co., 238 Pa. 83, 85 A. 1102 (1913); Commonwealth v. Emmers, 221 Pa. 298, 70 A. 762 (1908); Bachert v. Lehigh Coal & Navigation Co., 208 Pa. 362, 57 A. 765 (1904); Elder v. Lykens Valley Coal Co., 157 Pa. 490, 27 A. 545 (1893).

56. *E.g.*, M. Horwitz, *supra* note 21, at 40.

57. *See* note 42 *supra* and accompanying text.

58. *See* note 56 *supra* and accompanying text.

59. *See* notes 90 and 93 *infra* and accompanying text.

III. Riparian Law and Waterpower

A. *Background*

Due to the geography and hydrology of the New England area an abundance of sites existed along its many watercourses which were usable for waterpower. Much of this potential was intensively developed and there were frequent conflicts among waterpower users. Under these circumstances, the New England courts generated a substantial proportion of the judicial decisions dealing with the right of a riparian owner to develop the waterpower of a stream.

Riparian law, and particularly the law of waterpower, developed in approximately the same period in which the Industrial Revolution took place. One might expect that waterpower disputes would not have been important enough to warrant the expense of litigation because steampower was a technologically superior alternative. Nevertheless, during this period waterpower was the most common source of power.[60] Waterpower predominated as the means for driving the numerous gristmills and sawmills in rural areas simply because the hardware and expertise required to exploit steampower were available only in relatively large urban areas. Even in urban areas waterpower predominated simply because steampower was more expensive for a prolonged period.[61]

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60. A general discussion of the development of waterpower in the United States is contained in L. Hunter, Waterpower in the Century of the Steam Engine (1979) [hereinafter cited as Waterpower].

61. This fact was especially true at several New England locations where substantial waterfalls occurred over relatively short stream stretches, thereby affording an unusually extensive waterpower potential. So advantageous were these sites that, beginning in the 1820's, industrial "new towns" were established at Lowell, Holyoke, and Lawrence, Massachusetts and at Manchester, New Hampshire. These towns were developed as a result of the establishment of the facilities necessary to capture the power potential of the stream and then deliver it through systems of canals. Sites along the canals and specified shares of the waterpower were then sold or rented to individual mill owners. *Id.* at 204-50. The courts generally upheld these complex arrangements for "contracting out" riparian rights. *E.g.*, Holyoke Water Power Co. v. Whiting & Co., 276 Mass. 528, 177 N.E. 568 (1931); Essex Co. v. City of Lawrence, 214 Mass. 79, 100 N.E. 1016 (1913). As an example of the economic potential of these sites, the extensive system of locks and canals at the Lowell falls produced waterpower in the 1850's at about one-third the cost of steampower. Waterpower, note 60 *supra*, at 274. Well into the twentieth century there was still a small cost advantage in favor

The principal way in which falling water was used to derive power in the early nineteenth century was to drive a vertical mill wheel mounted on a horizontal shaft. This shaft was connected to the machinery to be driven—whether a simple mill stone or saw or a bank of complex textile looms—using gears and secondary shafts as needed. Only two major technological refinements of this direct drive use were made as the nineteenth century progressed.[62] The first was the development of extensive systems of reservoirs, canals, and gates for delivering and regulating the fully exploited power potential to a variety of manufacturing uses established along the canals.[63] The second was the gradual replacement of the traditional vertical mill wheels with substantially more efficient turbines.[64]

Despite the sophisticated exploitation of these falls and the continued cost advantage of the delivered waterpower over steampower, waterpower presented serious limitations. First, the enterprise had to come to the power. The power could not be delivered with a direct drive installation beyond the immediate vicinity of the canals. A steampowered factory, on the other hand, could be located as the advantages of raw material sources, labor supply, and transportation systems might determine. As American enterprises grew in order to capture economies of scale, the character of the markets inevitably changed from local and regional to national. As this occurred the locational limitation of waterpower became

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of waterpower over steampower at Lowell. *Id.* at 217, n.25.

62. "Direct drive" is used in the sense that the manufacturing equipment being powered is driven, directly or through gears and subsidiary shafts, by the shaft on which the mill wheel is mounted. This system is to be contrasted with "indirect drive" which is typically used in the sense that the mill wheel turns an electric generator. In a simple indirect installation, such as small hydroelectric facility serving an onsite manufacturing facility, the electricity thereby generated is connected to the manufacturing equipment through a system of distribution lines and transformers. In a complex system, such as a large hydroelectric facility, the electricity is fed into a large regional distribution grid serving a variety of domestic and industrial uses.

63. A detailed description of the development and operation of one such system, the waterpower works on the Merrimack River at Lowell, Massachusetts, is contained in WATERPOWER, note 60 *supra*, at 251-91.

64. *Id.* at 292-342; Smith, *The Origins of the Water Turbine*, SCIENTIFIC AM., Jan. 1980, at 138.

more salient.

The second limitation was technological. There was a point beyond which engineering artifice could not go in improving the regulation of the delivered waterpower. Waterpower delivered to a gristmill need only be crudely regulated. As manufacturing machinery became more efficient, however, it also required more finely regulated power. The unavoidable natural fluctuations in streamflows and the inherent difficulty in controlling the canal flows could not be completely overcome. Steampower technology, on the other hand, was developing rapidly in terms of reliability and control against limitations of a far smaller nature than those of waterpower.

The third limitation was physical. There was an upper natural limit, determined by the vertical drop at the falls, on the amount of power that could be developed at any one site. Steampower could always be expanded simply by increasing the amount and size of the power generating facilities installed at a particular location.

Thus, as the sophistication of steampower technology increased throughout the century, and as fossil fuel sources were more efficiently developed the cost gap between steampower and waterpower began to narrow, and the other advantages of steampower began to predominate.[65] By the beginning of the twentieth century direct drive waterpower was obsolete.[66] The remaining role of waterpower was to drive hydroelectric turbines—at smaller installations to serve small manufacturing facilities and local municipal power requirements and at larger installations to generate electricity to be delivered for regional demands.[67] As a re-

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65. By the 1860's, 25% of the power used in the Lowell mills was supplied by steam; by the 1870's, this share exceeded 50%. WATERPOWER, note 60 *supra*, at 274.

66. *Id.* at 343.

67. The pattern of water law disputes brought before the courts reflects this technological development. At the beginning of the nineteenth century disputes usually involved rural gristmills and sawmills. As time went on, manufacturing facilities increasingly appeared in and then dominated waterpower litigation. By the end of the century, waterpower cases typically involved manufacturing facilities and hydroelectric installations. The frequency with which waterpower disputes were litigated showed a distinct pattern as well. The num-

sult of this technological development the common law of waterpower is uniquely a product of nineteenth century jurisprudence.

The resolution of private waterpower conflicts within the framework of riparian law can best be illustrated in terms of the kinds of disputes that have arisen. There are three kinds of conflict which repeatedly occur. The first is the conflict between the development of waterpower pursuant to a riparian right and the exercise of the superior rights based on public ownership of the water. The second conflict concerns disputes between waterpower uses and other riparian uses. The third involves disputes among conflicting waterpower uses.

B. *Public Constraints on the Exercise of the Riparian Right*

In all jurisdictions the use right of a riparian owner is constrained by superior public rights. The source of these public rights is the public ownership of the water.[68] Since these public rights include rights to public use as well as regulatory powers over private use, the dichotomy between the ownership of the water and the right to use the water is not complete. Public rights are exercised in three ways. First, private individuals may exercise limited water use rights in their capacity as members of the public. Second, government in its regulatory role has the power to constrain the exercise of riparian use rights in order to protect the public interest in the water that it owns. Third, government in its public enterprise role may preclude the exercise of private riparian rights if that would be inconsistent with its own exercise of public use rights.

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ber of reported decisions is not insignificant in the early years of the nineteenth century. It increased in the second quarter of the century and then began to decline in the last quarter. Waterpower disputes appear quite infrequently in the twentieth century reports. Part of this decline can be attributed to the decline in importance of waterpower. Part can be attributed to the fact that the common law jurisdiction over the now predominant hydroelectric facilities was narrowed as the various states, and finally Congress with the Federal Power Act of 1920, enacted statutes establishing comprehensive administrative control of these facilities. 16 U.S.C. §§ 791a-828c (1976). Part must be attributed to the success with which the courts developed workable decisional rules.

68. See note 12 *supra* and accompanying text. As a property right the riparian right is, of course, also subject to the police power.

The principal public use right is the right of navigation. This use right accrues in all riparian law jurisdictions. It may be exercised by all individual citizens, in their role as members of the public of that state, on all waters which are navigable as a matter of state law.[69] The navigational use is paramount in the sense that no riparian right may be exercised in a way that interferes with navigation. Some jurisdictions, in addition, have recognized the public use rights of fishing and recreation. These additional rights, in all of the jurisdictions which recognize them, may also be exercised on all navigable waters.[70] Whether these public use rights may also be exercised on nonnavigable waters is a matter of some disagreement among the jurisdictions.[71]

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69. *E.g.*, Adams v. Pease, 2 Conn. 481 (1818); DuPont v. Miller, 310 Ill. 140, 141 N.E. 423 (1923); Neaderhouser v. State, 28 Ind. 257 (1867); Mayor of Baltimore v. Baltimore & P. Steamboat Co., 104 Md. 485, 65 A. 353 (1906); Commonwealth v. Charlestown, 18 Mass. (1 Pick.) 180 (1822); Borough of Neptune City v. Borough of Avon-by-the-Sea, 61 N.J. 296, 294 A.2d 47 (1972). The definition of when a stream is navigable is a matter of some complexity. The basic concept had its source in old English law which treated private rights in watercourses as being subordinate to public rights if the stream were tidal in nature. The purpose of this subordination was to protect navigation, and the geographical circumstances of England are such that the only navigable streams are also tidal. *See generally* WATER RIGHTS, *supra* note 2, at §§ 35-36. Therefore, as a starting point in American law tidal waters are usually treated as navigable as a matter of law. *See, e.g.*, Brosnan v. Gage, 240 Mass. 113, 133 N.E. 622 (1921). In addition, the state courts have developed a variety of definitions of which waters, other than tidal waters, are to be considered navigable. *E.g.*, Dupont v. Miller, 310 Ill. 140, 141 N.E. 423 (1923) (usable for customary modes of commerce); Neaderhouser v. State, 28 Ind. 257 (1967) (navigable in fact); Broadnax v. Baker, 94 N.C. 675 (1886) (floatable). *See also*, S.C. CODE § 49-1-10 (1970) (capable of being made navigable).

70. *E.g.*, Adams v. Pease, 2 Conn. 481 (1818); Borough of Neptune City v. Borough of Avon-by-the-Sea, 61 N.J. 296, 294 A.2d 47 (1972); Commonwealth v. City of Newport News, 158 Va. 521, 164 S.E. 589 (1932).

71. *Compare* Day v. Armstrong, 362 P.2d 137 (Wyo. 1961), *with* People v. Emmert, 597 P.2d 1025 (Colo. 1979). The different outcomes have been reached despite an important distinction between navigable and nonnavigable waters regarding the property rights of the riparian owner. If a stream is navigable, the riparian owner owns down to the high water mark, and the state owns the stream bed below the high water mark. WATER RIGHTS, *supra* note 2, at § 36.4(A). If a stream is nonnavigable, the riparian owner owns to the thread of the stream if he owns land only on one side of a stream. If he owns land on both sides of a nonnavigable stream, he owns the entire bed of the stream. *Id.* § 37.3. The courts that allow the public to float for recreational purposes on nonnavigable streams as well as on navigable streams emphasize the public ownership of the water. *See, e.g.*, Day v. Armstrong, 362 P.2d 137 (Wyo. 1961). The courts which do not recognize these rights emphasize the private ownership of the bed and conclude that any public right beyond the flowage of water is inconsistent with the private nature of the bed. *See, e.g.*, People v. Emmert, 597 P.2d 1025 (Colo.

The substance of the regulatory powers which government exercises over natural waters is dealt with in detail in other articles in this symposium.[72] The regulatory powers of state government are based on the state's ownership of the water and extend to all waters of the state, both navigable and nonnavigable. The scope of state regulatory authority over its nonnavigable waters is conceptually more limited. The exercise of that authority is more likely to conflict with the exercise by the riparian owner of his use rights in the water and his ownership rights in the bed. One of the more intensive ways in which a riparian owner can exercise these rights is by building a dam on the bed which he owns and using the power potential of the water which he has impounded for his domestic or commercial needs. The exercise of the state regulatory power is ultimately limited because of the protection accorded by the federal[73] and state[74] constitutions to owners of property rights against undue government interference—beyond some perhaps indefinable line a regulatory action of government can become an impermissible taking of a property right.[75]

The regulatory powers of the federal government are based on the paramount authority of Congress to regulate interstate commerce under the Commerce Clause of the United States Constitution.[76] The United States Supreme Court has interpreted the reach of this authority in an expansive manner. It has held that the navigable waters of the United States are "in" interstate commerce[77] as much as the activity of navigation itself is.[78] It has also accepted a highly inclusive definition of what constitutes navigable waters for

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1979).

72. See Debevoise, *The Role of the Federal Regulatory Energy Commission in Licensing Small Hydroelectric Projects*, 5 VT. L. REV. 279 (1980); Scotch, *Small Hydropower Development and the Environment: A Survey of State and Federal Law*, 5 VT. L. REV. 251 (1980).

73. U.S. CONST. amend. V.

74. *E.g.*, CONN. CONST., art. I, § 11; ILL. CONST., art. I, § 2; MASS. CONST., pt. I, art. 10; VA. CONST., art. I, § 11.

75. *See* Pennsylvania Coal Co. v. Mahon, 260 U.S. 393 (1922).

76. U.S. CONST. art. I, § 8.

77. United States v. Appalachian Elec. Power Co., 311 U.S. 377 (1940).

78. Gibbons v. Ogden, 22 U.S. (9 Wheat.) 1 (1824).

purposes of federal law.[79]

When government is acting as an entrepreneur it also has substantial power to affect the private exercise of riparian rights. Under the liberally interpreted federal commerce power the federal government may engage in the navigational improvement of a watercourse without liability for any interference with or destruction of private riparian rights which arise under state law.[80] The potential impact of this power is quite broad because the Supreme Court has also accepted a very broad definition of what constitutes a navigational project. The Court, in a classic decision, held that a private owner of valuable waterpower potential could obtain no compensation for its destruction by a federal project which had only a limited connection with navigational improvement.[81]

State government is also insulated from liability for the exercise of its enterprise powers. The state courts consistently hold that state government may, without liability, substantially interfere with the exercise of private riparian rights if it is engaged in the enterprise of navigational improvement.[82] The instances in which such state interference occurs, however, are less frequent than the instances of federal interference primarily because the activity of the federal government preempts state activity affecting commerce.[83]

C. *Waterpower Conflicts With Other Riparian Uses*

As might be expected, litigation frequently arose between waterpower developers and other riparian owners using the stream for purposes other than waterpower. Due to the nature of riparian uses in the East, there have been few reported cases involving the disruption of a lower riparian owner's use of the stream caused by

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79. This definition includes even watercourses capable of being made navigable. Utah v. United States, 403 U.S. 9 (1971); United States v. Oregon, 295 U.S. 1, 14 (1934); The Daniel Ball, 77 U.S. (10 Wall) 557, 563 (1870).

80. *E.g.*, United States v. Commodore Park, Inc., 324 U.S. 386 (1945).

81. United States v. Chandler-Dunbar Water Power Co., 229 U.S. 53 (1913).

82. *E.g.*, Rice Hope Plantation v. Public Serv. Auth., 216 S.C. 500, 59 S.E.2d 132 (1950).

83. Gibbons v. Ogden, 22 U.S. (9 Wheat.) 1 (1824).

the operation of a waterpower facility of an upper owner.[84] Instead, most of the litigated conflicts between waterpower uses and other riparian uses involved three other issues: 1) the interference with the operation of a waterpower facility by pollution or consumption incident to an upstream use, 2) the flooding of upstream land with water backed by a dam and 3) the flooding of downstream land by releases from a dam which exceeded the capacity of the stream bed.

The courts have been solicitous of the interests of waterpower developers in circumstances in which upstream uses disrupt the waterpower use. Millowners have obtained injunctions against upstream pollution which fouls the millpond or the head race and wheel.[85] The decisions are mixed, however, when the upstream use is consumptive. All the reported decisions involved irrigation which diminished the streamflow to the disruption of the lower mill and were decided before the reasonable use doctrine had supplanted the natural flow and first appropriation doctrines.[86]

An issue that was frequently litigated in almost every jurisdiction was the liability of the dam owner for backing water upstream onto the land of another. The issue was important because many millsites, which were highly advantageous because of a substantial amount of fall over a relatively short stretch of stream, were at the

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84. There may be several reasons for this lack of cases. For instance, a downstream consumptive use would usually be more sensitive to a reduction in the quantity of flow than to a disruption in the time pattern of flow, a disruption which followed cycles seldom more than one day in duration. In addition, few consumptive uses in the East were large. A domestic use, by definition, is relatively small in relation to the flow of a stream substantial enough to be exploited for waterpower. *E.g.*, Pierson v. Speyer, 178 N.Y. 270, 70 N.E. 799 (1904) (uses in household and barn). Agricultural irrigation, a major consumptive use in the West, has seldom been a necessary practice in the East because of abundant rainfall. The major large consumptive use in the East, municipal water supply, is usually carried out with reservoirs which tend to eliminate the effects of upstream flow disruption by waterpower facilities. Finally, as central public water supply systems were established and extended throughout the nineteenth century, riparian owners often could obtain a purer, cheaper, and more reliable water supply by using these systems than by drawing water directly from a stream.

85. Lockwood Co. v. Lawrence, 77 Me. 297 (1885); Woodyear v. Schaefer, 57 Md. 1 (1881).

86. *E.g.*, Perkins v. Dow, 1 Root 535 (Conn. 1793) (no liability); Cook v. Hull, 20 Mass. (3 Pick.) 269 (1825) (liability); Colburn v. Richards, 13 Mass. 419 (1816) (liability).

same time located on streams with a relatively small or highly variable streamflow. To insure a continuous supply of water to the millwheel these sites required substantial millpond capacity. Depending on the configuration of the stream valley adequate capacity often could not be obtained without backing for considerable distances upstream beyond the property of the dam owner. The bottom land along streams, however, is often highly useful for crops and pasture, and the upstream landowner tended to become highly litigious when even temporary flooding occurred. Whenever the courts accorded liability to the dam owner, it was on a theory that the backing in itself was an actionable trespass.[87] Many courts, however, limited the situations in which liability attached to the lower owner.[88]

Liability of the dam owner, however, was not limited to invasions of riparian land upstream. The courts also granted relief in both private and public nuisance actions arising from more remote injuries. The classic case is the complaint that the milldam had caused, not a watery trespass on riparian land upstream, but a health hazard in the neighborhood because the stagnant water had provided a breeding ground for such pests as disease-carrying insects.[89]

Complaints from downstream owners typically arose when the waterpower facility was operated on an intermittent basis. A gristmill, for instance, would be operated only during the day. The miller would close his dam gates at night in order to build up the

87. *E.g.*, Loftin v. McLemore, 1 Stew. 133 (Ala. 1827); King v. Tiffany, 9 Conn. 162 (1832); Teseneer v. Henrietta Mills Co., 209 N.C. 615, 184 S.E. 535 (1936). *Contra*, Allen v. Thornapple Elec. Co., 144 Mich. 370, 108 N.W. 79 (1906) (remedy limited to recovery of damages when the backing is caused by a power dam); McCann v. Chasm Power Co., 211 N.Y. 301, 105 N.E. 416 (1914) (an injunction will be granted against backing by a power dam only if actual injury is shown); McElroy v. Goble, 6 Ohio St. 187 (1856) (backing not actionable unless the upper owner shows injury).

88. Courts often did not impose liability when the backing was caused by extraordinary rains. *E.g.*, Bell v. McClintock, 9 Watts 119 (Pa. 1839).

89. Private nuisance: Hosmer v. Republic Iron & Steel Co., 179 Ala. 415, 60 So. 801 (1913); Towaliga Falls Power Co. v. Sims, 6 Ga. App. 749, 65 S.E. 844 (1909). Public nuisance: Mills v. Hall & Richards, 9 Wend. 315 (N.Y. Sup. Ct. 1832); Attorney Gen. *ex rel.* Citizens of Raleigh v. Hunter, 16 N.C. (1 Dev. Eq.) 12 (1826); Bell v. Blount, 11 N.C. (4 Hawkes) 384 (1826); Jeremy Improv. Co. v. Commonwealth, 106 Va. 482, 56 S.E. 224 (1907).

level in his millpond and then release this water through his wheel the next day. These releases would be greater in quantity than normal streamflow and often flooded downstream land. Courts usually, but not universally, applied strict trespass rules in favor of the downstream riparian owner.[90] Several courts, however, created an exemption from liability for downstream flooding if it was incident to a waterpower facility developed to the normal capacity of the stream.[91]

A related issue involved downstream flooding caused by a failure of the dam. Different jurisdictions followed different theories. Some courts accorded liability only if the dam was negligently constructed or maintained so it would not withstand a flood which it was designed to withstand.[92] Some jurisdictions would not impose liability if the failure resulted from unforeseeable floods.[93]

D. *Legislative Intervention in Favor of Waterpower*

The remedies granted by the courts for backing water upstream by a milldam provided a serious obstacle to the exploitation of a millsite. Since the upstream landowner could obtain an injunction against the backing, the millowner was in the position of having to pay the upstream landowner's price. This legal circumstance, however, affected more than the relationship between the two disputants. During the colonial period mills were of great community importance. The establishment of a gristmill and a sawmill was a vital step in enabling a community to move beyond the subsistence level. The number of skilled millwrights in the population was so small that, during the colonial period, communities frequently granted millsites to induce millwrights to move to the

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90. *E.g.*, Gerrish v. New Market Mfg. Co., 30 N.H. 478 (1854); Mason v. Apalache Mills, 81 S.C. 554, 62 S.E. 399 (1908). *Contra*, Rosser v. Randolph, 7 Port. 238 (Ala. 1838) (remedy limited to recovery of damages); DeKalb County v. Tennessee Elec. Power Co., 17 Tenn. App. 343, 67 S.W.2d 555 (1933) (power dam not liable for releases necessitated by extraordinary rains).

91. *E.g.*, Barker v. French, 102 Me. 407, 67 A. 308 (1907); Clapp v. Herrick, 129 Mass. 292 (1880); Dunlap v. Carolina Power & Light Co., 212 N.C. 814, 195 S.E. 43 (1938).

92. *E.g.*, Lapham v. Curtis, 5 Vt. 371 (1833).

93. *E.g.*, City of Bridgeport v. Bridgeport Hydraulic Co., 81 Conn. 84, 70 A. 650 (1908); City of Piqua v. Morris, 98 Ohio St. 42, 120 N.E. 300 (1918).

community and develop the waterpower potential of the site.

Whether it was because general community opinion strongly favored the granting of concessions to waterpower development or because waterpower entrepreneurs formed a coalition strong enough to bring effective political persuasion before the state legislature, most jurisdictions enacted a mill dam act at some point during the eighteenth and nineteenth centuries.[94] The effect of these acts was to grant a power of eminent domain to a private millsite owner. The owner could then effectively condemn whatever additional property rights he needed to exploit the waterpower at his site.

The courts of Massachusetts,[95] New Hampshire,[96] Rhode Island,[97] Maine,[98] and Connecticut[99] consistently upheld the application of these statutes, or succeeding versions of them, against challenges that the statutes authorized the taking of land for other than a public purpose. The courts also favored these acts by liberally construing the types of mills to which they could be applied.[100] The Vermont Supreme Court, however, invalidated the Vermont enactment in 1871 by agreeing that, under the Vermont Constitu-

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94. The earliest of these statutes was enacted in Massachusetts by 1714 Prov. Stat., ch. 15 (codified at MASS. GEN. LAWS ANN. ch. 253, §§ 1-38, 51-62 (West 1980)). In the other New England states, a mill dam act was first passed in New Hampshire in 1718 Prov. Stat., ch. 60 (ed. 1771) (codified in N.H. REV. STAT. ANN. §§ 482:1 to 482:32 (1968)); in Rhode Island in 1734 Col. Stat. (codified at R.I. GEN. LAWS §§ 46-18-1 to 46-18-16 (1956)); in Maine in 1821 when it became separate from Massachusetts, 1821 Stat., ch. 45 (codified in ME. REV. STAT. ANN. tit. 38, §§ 611-655 (1964)); in Connecticut in 1864 Stat., ch. 26 (codified at CONN. GEN. STAT. ANN. §§ 52-446 to 54-455 (West Rev. 1958)); and in Vermont in 1866 Vt. Acts, ch. 12.

95. Murdock v. Stickney, 62 Mass. (8 Cush.) 113 (1851); Boston & Roxbury Mill Corp. v. Newman, 29 Mass. (12 Pick.) 467 (1832).

96. Amoskeag Mfg. Co. v. Head, 56 N.H. 386 (1876); Ash. v. Cummings, 50 N.H. 591 (1872). *Accord,* Head v. Amoskeag Mfg. Co., 113 U.S. 9 (1885).

97. Mowry v. Sheldon, 2 R.I. 369 (1852).

98. Jordan v. Woodward, 40 Me. 317 (1855).

99. Olmstead v. Camp, 33 Conn. 532 (1866).

100. *E.g., In re* Opinions of the Justices, 118 Me. 503, 106 A. 865 (1919) ("mills" includes manufacturing and industrial facilities); Duncan v. New England Power Co., 225 Mass. 155, 113 N.E. 781 (1916) ("water mill" includes hydroelectric facility). For an analytical discussion of the interaction of judicial policy and political opinion concerning the mill acts, see M. HORWITZ, *supra* note 21, at 47-53.

tion, no public purpose was involved.[101] The United States Supreme Court, ruling on the New Hampshire act in 1885, upheld it against a challenge that it violated the due process provisions of the fourteenth amendment.[102]

The typical mill dam act applies to mills established on nonnavigable streams,[103] and covers invasions and uses of the property of another carried out to establish a millpond, headrace, or tailrace.[104] The mill dam act was most commonly applied when the millowner found it necessary to extend his millpond beyond his own property. The procedure is initiated either by the person whose property has been invaded[105] or by the millowner[106] who petitions the local court of general jurisdiction.

At common law the invaded landowner was in the favored position. He could normally enjoin any backing of water onto his land or any extension of a millrace across his land. The effect of the mill dam act was to whittle his legal position down to two severely limited remedies. First, he could now obtain an injunction only in one situation—if the downstream mill backed water against his own existing mill or millsite.[107] Second, in all other situations, his remedy was limited to damages.[108] The amount of damages was determined either by a jury[109] or by a factfinder appointed by the court,[110] usually a committee of disinterested local landowners.

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101. Tyler v. Beacher, 44 Vt. 648 (1871).

102. Head v. Amoskeag Mfg. Co., 113 U.S. 9 (1885).

103. *E.g.*, ME. REV. STAT. ANN. tit. 38, § 651 (1964); MASS. GEN. LAWS ANN. ch. 253, § 1 (West 1959).

104. *E.g.*, CONN. GEN. STAT. ANN. § 52-446 (West 1958); ME. REV. STAT. ANN. tit. 38, §§ 651, 655 (1964); VA. CODE ANN. § 62.1-116 (1950).

105. *E.g.*, ME. REV. STAT. ANN. tit. 38, § 665 (1964); MASS GEN. LAWS ANN. ch. 253, § 4 (West 1980); R.I. GEN. LAWS § 46-18-2 (1970).

106. *E.g.*, CONN. GEN. STAT. ANN. § 52-446 (West 1958); VA. CODE § 62.1-116 (1950).

107. *E.g.*, CONN. GEN. STAT. ANN. § 52-448 (West 1958); ME. REV. STAT. ANN. tit. 38, § 653 (1964); MASS. GEN. LAWS ANN. ch. 253, § 2 (West 1980); N.H. REV. STAT. ANN. § 482:17 (1968); VA. CODE § 62.1-122 (1950).

108. *E.g.*, CONN. GEN. STAT. ANN. § 52-446 (West 1958); ME. REV. STAT. ANN. tit. 38, § 721 (1964); MASS. GEN. LAWS ANN. ch. 253, § 19 (West 1980); R.I. GEN. LAWS § 46-18-2 (1956); VA. CODE § 62.1-123 (1950).

109. *E.g.*, MASS. GEN. LAWS ANN. ch. 253, § 7 (West 1980); R.I. GEN. LAWS § 46-18-3 (1956).

110. *E.g.*, CONN. GEN. STAT. ANN. § 52-447 (West 1958); ME. REV. STAT. ANN. tit. 38,

Except for Vermont, the New England mill dam acts are still in effect. In most of these jurisdictions the dam owner must also satisfy various state statutory requirements for water resources and environmental regulation agencies before proceeding with the construction of waterpower facilities.[111] In many cases, the owner is subject to federal regulatory jurisdiction as well.[112] When waterpower facilities are covered by a federal license, the licensee has the option to exercise a federal statutory power of eminent domain as well.[113] The state mill dam acts, however, remain a principal method for adjusting the private relationships among the persons affected by the exploitation of a waterpower site.

E. *Conflicts Between Waterpower Users*

If the number of reported decisions is any indication, the most significant waterpower disputes were those that arose between competing exploiters of the waterpower of a stream. The simpler of these disputes arose when different persons owned each bank opposite a powersite on a stream. Since the riparian owner on a nonnavigable stream also owned the streambed out to the thread of the stream, the courts generally held that the opposing owners had a right to share the power at that site in the same proportion that they owned the streambed.[114]

Far more complex were the disputes involving successive waterpower developers along the run of a stream. Typically the lower owner complained that the upper owner was closing his dam gates for substantial periods of time to build up the water level in his pond. This practice would cut off the flow of water in the stream, thus interrupting the operation of the lower owner's millwheel.

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§ 705 (1964); N.H. REV. STAT. ANN. § 482:25 (1968); VA. CODE § 62.1-118 (1950).

111. See Scotch, *Small Hydropower Development and the Environment: A Survey of State and Federal Law*, 5 VT. L. REV. 251 (1980).

112. See Debevoise, *The Role of the Federal Energy Regulatory Commission in Licensing Small Hydroelectric Projects*, 5 VT. L. REV. 279 (1980).

113. 16 U.S.C. § 814 (1976).

114. *E.g.*, Munroe v. Gates, 48 Me. 463 (1860); Norris v. Hill, 1 Mich. 202 (1849); Roberts v. Claremont Ry. & Lighting Co., 74 N.H. 217, 66 A. 485 (1907); Arthur v. Case, 1 Paige Ch. 447 (N.Y. Ch. 1829); Dyer v. Cranston Print Works Co., 22 R.I. 506, 48 A. 791 (1901); West v. Fox River Paper Co., 82 Wis. 647, 52 N.W. 803 (1892).

Pure malice (or, euphemistically, "business competition") was not always the upper owner's motive. His enterprise, for valid reasons, might be operating only on the day shift.[115] Operating on such a schedule, the upper owner could develop power for the day shift far in excess of the power potential of the normal daytime streamflow by closing his milldam gates at night. The lower owner who lacked an adequate impoundment could be disadvantaged if his own enterprise required continuous operation or if limitations on his manufacturing capacity required overtime operation.

Conflicts could also arise because of natural fluctuations in streamflow. In the east, streamflow typically drops substantially during the late summer months. During these periods, the streamflow might fall so low that a millowner using a large wheel without auxiliary steampower would have no practical choice other than to shut down his mill and close his dam gates to build up the water level in his pond sufficiently to permit a useful period of mill operation. A lower millowner with a smaller wheel that could still be operated with the reduced dry-season streamflow would be greatly inconvenienced when the upper dam gates were shut for prolonged periods.[116]

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115. It was the custom in the nineteenth century to operate a manufacturing establishment from 6:00 a.m. to 6:00 p.m. for five days a week and for a half day on Saturday. This schedule was practical because a typical establishment, such as a textile mill, could be readily started up and shut down. Only a few types of operation—a paper mill using a chemical process was a common example—required continuous operation.

116. In one somewhat extreme case, the upper milldam was being closed for several days at a time to permit two to three hour periods of operation. Twiss v. Baldwin, 9 Conn. 291, 293 (1832). Ideally, the upper owner's ponding practice should not have been a matter of concern to the lower owner. All the lower owner needed to do was raise his dam sufficiently to capture all of the water released by the upper owner. Since the upper owner eventually would release all of the water flowing down the stream, the lower owner with a large enough mill pond would also be able to capture this entire flow and meter it through his own wheel according to his needs. In practice, however, the lower owner was not always in a position to capture the entire streamflow. For instance, the size of his enterprise might have been substantially smaller than that of the upper owner. For the lower owner to raise his dam and extend his pond enough to eliminate the effects of the intermittent flows could well have involved a cost disproportionate to the financial circumstances of his business. Alternatively, the distance between the upper wheel and the lower dam might have been short enough that raising the lower dam sufficiently to eliminate the effects of the flow interruptions would have backed water against the upper wheel. Under the strict trespass theories applied by the courts, the upper owner would usually have been able to obtain an injunction

Conflicts of this type were given substantial scrutiny in the state courts during the nineteenth century. Although every Eastern jurisdiction adopted the rubric of the reasonable use doctrine as its theory of water rights allocation, the courts in fact applied to these mill disputes a concept far different from the equal-proportionate-share outcome that the reasonable use doctrine implies. Instead, the courts typically adopted some form of a relatively straightforward decisional rule—if the use of the upper owner was adapted to the normal flow of the stream (that is, if the upper owner's wheel could be efficiently driven by the normal flow of the stream without having to augment that flow by ponding) then, under the circumstances of normal streamflow, the lower owner had the opportunity for fair participation in the waterpower potential of the stream. In the dry months of the year when the upper owner would have to augment the streamflow by increased ponding, the lower owner had no remedy even if his own use was entirely cut off for substantial periods. The lower owner, however, did have a remedy under this rule for interruptions that resulted when the upper owner's wheel was so large that it could not be efficiently driven by the normal flow of the stream.

A classic formulation of this rule was set forth by the New York Court of Appeals in 1871 in *Clinton v. Meyers*.[117] Nine other Eastern jurisdictions adopted this rule or a variation of it during the nineteenth century.[118] Two of the more extreme of these variations were developed by the Massachusetts Supreme Judicial Court[119] and the Connecticut Supreme Court.[120] A consideration of the doctrinal development in Massachusetts, New York, and Connecticut will illustrate the interplay of judicial policy and hydraulic

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against the backing of his wheel.

117. 46 N.Y. 511 (1871).

118. Mason v. Hoyle, 56 Conn. 255, 14 A. 786 (1888); Price v. High Shoals Mfg. Co., 132 Ga. 246, 64 S.E. 87 (1909); Pool v. Lewis, 41 Ga. 162 (1870); Dilling v. Murray, 6 Ind. 324 (1855); Gould v. Boston Duck Co., 79 Mass. (13 Gray) 442 (1859); Holden v. Lake Co., 53 N.H. 552 (1873); Whaler v. Ahl, 29 Pa. 98 (1857); Hoy v. Sterrett, 2 Watts 327 (Pa. 1834); White v. Whitney Mfg. Co., 60 S.C. 254, 38 S.E. 456 (1901); Davis v. Town of Harrisonburg, 116 Va. 864, 83 S.E. 401 (1914); Mumpower v. City of Bristol, 90 Va. 151, 17 S.E. 853 (1893); Timm v. Bear, 29 Wis. 254 (1871).

119. Gould v. Boston Duck Co., 79 Mass. (13 Gray) 442 (1859).

120. Mason v. Hoyle, 56 Conn. 255, 14 A. 786 (1888).

technology involved in the resolution of a waterpower dispute.

Beginning early in the nineteenth century, the Massachusetts Supreme Judicial Court gave extensive consideration to a long and varied series of mill disputes. Between 1812 and 1830, the Massachusetts court consistently ruled that liability attached to the backing of an upper mill wheel by a lower milldam.[121] The court did not make its rationale for these decisions explicit, but it apparently was based at first on a natural flow concept and later on a first appropriation concept.

The first appropriation concept was made explicit by Chief Justice Lemuel Shaw in 1844 in *Cary v. Daniels*,[122] a factually complex backing case involving two mills that were developed under single ownership, the lower of the two being further developed after ownership was severed. In the course of a long opinion, Shaw set forth his rationale:

> It is therefore held, that each proprietor is entitled to such use of the stream, so far as it is reasonable, conformable to the usages and wants of the community, and having regard to the progress of improvement in hydraulic works, and not inconsistent with a like reasonable use by the other proprietors of land, on the same stream, above and below. This last limitation of the right must be taken with one qualification, growing out of the nature of the case. The usefulness of water for mill purposes depends as well on its fall as its volume. But the fall depends upon the grade of the land over which it runs. The descent may be rapid, in which case there may be fall enough for mill sites at short distances; or the descent may be so gradual as only to admit of mills at considerable distances. In the latter case, the erection of a mill on one proprietor's land may raise and set the water back to such a distance as to prevent the proprietor above from having sufficient fall to erect a mill on his land. It seems to follow, as a necessary consequence from these principles, that in such

121. Bigelow v. Newell, 27 Mass. (10 Pick.) 348 (1830); Thompson v. Crocker, 26 Mass. (9 Pick.) 59 (1829); Sumner v. Tileston, 24 Mass. (7 Pick.) 198 (1828); Hatch v. Dwight, 17 Mass. 289 (1821); Hodges v. Raymond, 9 Mass. 316 (1812). *See* Jewell v. Gardiner, 12 Mass. 310 (1815).

122. 49 Mass. (8 Met.) 466 (1844).

> case, the proprietor who first erects his dam for such a purpose has a right to maintain it, as against the proprietors above and below; and to this extent, prior occupancy gives a prior title to such use. It is a profitable, beneficial, and reasonable use, and therefore one which he has a right to make. If it necessarily occupy so much of the fall as to prevent the proprietor above from placing a dam and mill on his land, it is *damnum absque injuria*. For the same reason, the proprietor below cannot erect a dam in such a manner as to raise the water and obstruct the wheels of the first occupant. He had an equal right with the proprietor below to a reasonable use of the stream; . . . his appropriation to that extent, being justifiable and prior in time, necessarily prevents the proprietor below from raising the water, without interfering with a rightful use already made; and it is therefore not an injury to him.[123]

In retrospect, it is apparent that *Cary v. Daniels* marked the beginning of a doctrinal transition. Although the stated concept is first appropriation, the language of reasonable use and economic efficiency is also apparent.[124] The reasonable use doctrine in fact

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123. *Id.* at 476-77.

124. First appropriation certainly is not the entire rationale for the puzzling case of *Cary*. The upper owner brought two complaints—backing caused by the lower milldam as it was when the ownership was severed, and further backing caused when the lower milldam was replaced with a higher dam. *Id.* at 467-68. The upper mill was the older. *Id.* at 468. Thus, under a first appropriation concept, the upper owner should have prevailed on both counts. He prevailed, however, only on the second count. *Id.* at 483. It appears that Shaw's reasoning on the first count was that when the plaintiff bought the upper mill he took it subject to the circumstance that the lower dam as it then stood was capable of backing the upper wheel. *See id.* at 479-81. The rationale for this reasoning could not have been a quasi-easement that arose when the lower owner owned both mills since the plaintiff upper owner offered testimony that the practice, before ownership was severed, was to open the waste gates in the lower dam whenever it backed the upper wheel. *Id.* at 469. This testimony would have supported a quasi-easement for the upper owner to enter the lower land in order to open the gates in the lower dam as necessary to prevent backing. Nevertheless, both the trial court and Shaw treated this testimony as irrelevant. *Id.* at 469, 483.

It is not likely that Shaw's "deep theory" was economic efficiency, as is suggested in M. Horwitz, *supra* note 21, at 41-42. The upper mill was the larger. Cary v. Daniels, 49 Mass. (8 Met.) 466, 468 (1844). Thus, it presumably exploited the waterpower potential of the stream more efficiently. In addition, the operating practice before ownership was severed, which gave preference to the upper mill, raises the presumption that the upper mill was likely the more profitable or at least that the owner of the two mills thought it was. It is interesting that two other jurisdictions reached the same result in actions similar to the first

became the stated rationale in the next two mill disputes to be considered by the Massachusetts court. These two cases raised for the first time the problem of the interruption by the upper mill of the waterflow to the lower mill. The 1847 decision in *Pitts v. Lancaster Mills*[125] involved a complaint by the lower millowner that, after the upper owner had increased the height of his dam, the flow to the lower mill was cut off during the dry season. The opinion in that case reads, in its entirety:

> SHAW, C. J. Every proprietor of land, through which a current of water flows, has a right to the use of it on his own land, amongst other things for mill purposes, making such reasonable use of it, and of the mill power furnished by it, as he can make consistently with a like reasonable use by other proprietors, above and below, through whose land it passes. What is a reasonable use must depend on circumstances; such as the width and depth of the bed, the volume of water, the fall, previous usage, and the state of improvement in manufactories and the useful arts. [*Cary v. Daniels*] 8 Met. 476.
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> It appears by the facts stated in this case, that the defendants were proprietors of land and mills above those of the plaintiffs on the same stream; that having erected a new dam, which they had a right to do, they detained the water no longer than was necessary to raise their own head of water and fill their own pond. The court are of the opinion that this was not an unreasonable use of the watercourse by the defendants, and that any loss, which the plaintiffs temporarily sustained by it, was *damnum absque injuria*.[126]

The 1852 case of *Barrett v. Parsons*[127] involved the other type

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count in *Cary*. Tucker v. Jewett, 11 Conn. 311 (1836); Olney v. Fenner, 2 R.I. 211 (1852). (Lower owner's attorney apparently did not cite *Tucker v. Jewett*. *See* Cary v. Daniels, 49 Mass. (8 Met.) 466, 473-74 (1844)). That *Cary* may be aberrational is suggested by the fact that when the backing issue arose again the Massachusetts court held, with little discussion (and citing *Cary v. Daniels* without discussion), in favor of the upper owner. Brigham v. Wheeler, 94 Mass. (12 Allen) 89 (1866). *See also* Smith v. Agawam Canal Co., 84 Mass. (2 Allen) 355 (1861) (lower owner not liable for backing of the upper wheel caused when ice broke up in the spring and collected behind lower owner's dam since the backing occurred under extraordinary circumstances).

125. 54 Mass. (13 Met.) 156 (1847).

126. *Id.* at 158-59.

127. 64 Mass. (10 Cush.) 367 (1852).

of flow interruption—the upper owner was running his mill only at night and keeping his dam gates closed during the day thereby interrupting the daytime operation of the lower mill. The lower owner prevailed at trial. On appeal, the Supreme Judicial Court approved the trial court instruction which contained the *Lancaster Mills* formulation of the reasonable use doctrine. The instruction also emphasized that usage includes the operating practices of other millowners, practices which the upper owner apparently was not following.

The problem with the reasonable use formula developed by the Massachusetts court is the wide range of relevant factors which it includes. In application, the outcome depends so much on the facts in the particular case that the doctrinal formula has little predictive value. It is significant, therefore, that only two years after *Barrett* the court began to develop a more explicit rule. *Thurber v. Martin*[128] was yet another flow interruption case. Although the statement of facts is sketchy, it appears that the interruption was occurring during periods of normal streamflow. The defendant upper owner prevailed at trial. On appeal, the court approved an instruction that included a new formula—the idea of a reasonable use includes operating a mill "adapted and appropriate to the size and capacity of the stream, and the quantity of water flowing therein."[129] What is curious about the outcome of *Thurber* is that the literal meaning of a mill "adapted to the . . . stream" would be a mill with a wheel of a size that can be efficiently run by the normal flow of the stream. Such a mill would not interrupt the streamflow except in the dry seasons of the year, but it appears that the complaint was about interruptions during times of normal flow.

The "adapted to the flow of the stream" formulation was used again in Chief Justice Shaw's opinion in 1859 in the landmark case *Gould v. Boston Duck Co.*[130] In this case, the upper mill was a large factory which was operated only during the day. The lower

128. 68 Mass. (2 Gray) 394 (1854).
129. *Id.* at 395.
130. 79 Mass. (13 Gray) 442 (1859).

owners operated a smaller saw and a grist mill

> sometimes by night, and out of the usual working hours, as well as by day and in regular working hours; but we find that at no particular seasons or periods were they accustomed to run said mills out of working hours, and only as the occasional pressure of business might demand.[131]

The case is stated in an extremely sketchy manner, but it appears that the lower owners had brought two complaints. The first was that the upper owners, who apparently closed their dam gates at night to build up the water level for the next day's operation, thereby had precluded the occasional nighttime operation of the lower mill.[132] The arbitrator's report had found nominal damages of one dollar for this complaint.[133] The second complaint was that although at times the dry-season streamflow was still adequate for the lower mill it was inadequate for the upper mill. During these conditions, the upper dam gates were closed for substantial periods during the day as well thereby interrupting the daytime operation of the lower mill. The arbitrator's report found damages of $318 for this complaint.[134]

The *Gould* opinion, curiously, addressed only the second complaint and held in favor of the upper mill.[135] The rule of the case—that there is no liability to a lower mill for dry-season interruption of streamflow by an upper mill if that upper mill is adapted to the normal flow of the stream—has been interpreted in other jurisdictions to mean that an upper mill cannot at any time interrupt the normal-season streamflow to the injury of a lower mill.[136] As the court applied the rules to the *Gould* facts, however, a mill "adapted to the normal flow of the stream" was one that could be operated throughout the customary work day by the normal, twenty-four hour flow of the stream. That is, it was appar-

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131. *Id.* at 444.
132. *See id.* at 444-45.
133. *Id.* at 446.
134. *Id.*
135. *Id.* at 452-53.
136. *E.g.*, Clinton v. Myers, 46 N.Y. 511 (1871). *But see* White v. Whitney Mfg. Co., 60 S.C. 254, 267, 38 S.E. 456, 461 (1901).

ently permissible to interrupt the normal streamflow at night to capture it for use during the next workday, but not permissible, during times of normal streamflow to interrupt the *daytime* flow of the stream.

Unfortunately, the Supreme Judicial Court did not again address this issue directly although it did raise the same implicit meaning in the last two significant mill disputes it heard. The first of these cases did not arise until over thirty years later.[137] The 1890 decision in *Whitney v. Wheeler Cotton Mills*[138] involved the construction of several deeds which severed successive millsites along a fall from an upper mill. The deeds modified the riparian right to the streamflow for all except one of the severed millsites by providing for the release of a maximum specified quantity of water during each twelve hour workday. As to the one severed site that was not made subject to this modification, the court described its riparian right to the streamflow in these terms:

> But since a riparian proprietor has a right to insist that the water shall not be unreasonably withheld or let down by an owner above, . . . [the upper owner] has no right by virtue of his position unreasonably to interfere with the natural flow of the stream, so as to give the riparian proprietors below a great deal more than the usual quantity of water during part of the year, and little or none during the remainder of the year.[139]

By addressing only the permissiblity of capturing part of the normal streamflow for use at a later time of *year* and not the permissibility of capturing part of the normal streamflow for use at a later time of *day*, the court again raised the implication, as it had in *Gould*, that the latter practice was legally reasonable.

This same implicit meaning was again suggested in 1906 in

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137. The Supreme Judicial Court did apply the "adapted to the streamflow" formula in Brace v. Yale, 92 Mass. (10 Allen) 441 (1865), but the statement of facts in the opinion is so sketchy that it is not possible to determine when the injurious flow interruptions had occurred.

138. 151 Mass. 396, 24 N.E. 774 (1890).

139. *Id.* at 403-04, 24 N.E. at 776.

Mason v. Whitney,[140] the last Massachusetts case which dealt with a conflict between mills over streamflow. The dispute in this case arose over the flow in a two-mile stream stretch in the town of Winchendon along which were located six mills: "For a long time previous to June, 1899, the usual hours for operating all of these establishments were from 7 a.m. to 6 p.m., with an hour's interval at noon."[141] In June 1899, the uppermost of these mills began to furnish electrical service to the town which necessitated nighttime operation. Due to the short intervening distance for each of the lower mills they could not capture the nighttime releases from the upper mill for use during the day.

The court rejected the contention of the lower owners that the upper mill was bound by custom, as the upper mill in *Barrett v. Parsons*[142] had been bound, to continue to operate on the schedule that all the mills had long followed:

> It is a familiar fact that certain industries cannot be conducted profitably without a use of power in the nighttime. This is true of paper manufacturing, which is an important industry in Massachusetts, of producing electricity for lighting and for the use of street railways, of powder manufacturing and of some other kinds of business. All kinds of legitimate business are alike entitled to the protection of the law.[143]

The court then turned to the question whether the operation of the upper mill was reasonable:

> A detention of water in the nighttime and an increased use of it in the daytime have often been held to be reasonable, even when they affected unfavorably a particular proprietor below. This is because such use is in accordance with the usual and convenient method of transacting most kinds of manufacturing business. But reversing the method would be detrimental to the interests of most lower riparian proprietors. In all the

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140. 193 Mass. 152, 78 N.E. 881 (1906).

141. *Id.* at 152, 78 N.E. at 882.

142. 64 Mass. (10 Cush.) 367 (1852), discussed in the text accompanying note 127 *supra*.

143. Mason v. Whitney, 193 Mass. 152, 158, 78 N.E. 881, 884 (1906).

> five cases last above cited, the decision was adverse to the contention of mill owners that they could lawfully change the natural flow of a stream by using the water at night and holding it back in the daytime, to the damage of owners below. But we are of opinion that it is not unreasonable for a mill owner, if his interest requires it, to use the water of his stream in his business at night as well as by day, so long as he leaves the natural flow of the stream unobstructed and undiminished during the ordinary working hours of the day.[144]

By distinguishing and implicitly upholding *Barrett* the court had again followed its earlier application of the *Gould* formulation that an upper mill could, without liability, interrupt the normal streamflow during the night.[145]

The parallel doctrinal development in New York began in 1805 with the decision of the Supreme Court of Judicature in *Palmer v. Mulligan*.[146] The dispute in this case arose when an upper owner built a wing dam above an existing wing dam which served the lower owner's sawmill. The upper dam caused the streamflow partially to bypass the lower dam, making it difficult for the lower owner to float logs into his dam. In one of the two opinions issued by the majority, Justice Livingston rejected the idea of first appropriation and stated one of the earliest formulations of the reasonable use doctrine:

> [A]s the plaintiffs' mills were first erected, it is said that if the defendants have any right of this kind [*i.e.*, also to establish a dam and mill], they must so use it as not to injure their neighbors. Without denying this position, which is [*sic*] in-

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144. *Id.* at 159, 78 N.E. at 884. The "five cases last above cited" were actually only four—Barrett v. Parsons, 64 Mass. (10 Cush.) 367 (1852); Bullard v. Saratoga Victory Mfg. Co., 77 N.Y. 525 (1879); Keeney & Wood Mfg. Co. v. Union Mfg. Co., 39 Conn. 576 (1873); Hazard Powder Co. v. Somersville Mfg. Co., 78 Conn. 171, 61 A. 519 (1905). Only the first, *Barrett v. Parsons*, supports the court's assertion, however.

145. The court did expressly hold, however, that while a lower owner might "have enjoyed gratuitously the benefit of the defendant's dam and reservoir for the storage of water for their wheels [*i.e.*, the capturing of the nighttime flow to augment the daytime flow], that is not a circumstance which gives them a right to have it in like manner in the future." *Id.* at 157, 78 N.E. at 883. *Accord*, Lakeside Mfg. Co. v. City of Worcester, 186 Mass. 552, 556-57, 72 N.E. 81, 83 (1904).

146. 3 Cai. R. 307 (N.Y. Sup. Ct. 1805).

> deed become a familiar maxim, its operation must be restrained within reasonable bounds so as not to deprive a man [the upper owner] of the enjoyment of his property, merely because of some trifling inconvenience or damage to others [the lower owner]. . . . As well, therefore, to secure to individuals the free and undisturbed enjoyment of their property, as to the public the benefits which must frequently redound to it from such use, the operation of the maxim *sic utere tuo ut alienum non laedas* should be limited to such cases only where a manifest and serious damage is the result of such use or enjoyment, and where it is very clear indeed that the party had no right to use it in that way. Hence it becomes impossible, and, indeed, improper, to attempt to define every case which may occur of this kind. Each must depend on its own circumstances; and the fewer precedents of this kind which are set the better.[147]

The *Palmer* court applied this concept to the case at hand by requiring the lower mill owner to accept the interference occasioned by the establishment of the newer mill above him.

In 1818 the court addressed a dry-season conflict between two mills in *Platt v. Johnson & Root.*[148] In *Platt,* the operation of a newer upper mill cut off the dry-season streamflow to a smaller lower mill for which the dry-season flow was otherwise adequate. In holding that the owner of the upper mill was without liability as long as the water was not used wastefully, the court expressly rejected a first appropriation rule[149] and again couched its decision in reasonable use and "equal right" language.[150]

Two years later, the Supreme Court of Judicature approved a "pure" reasonable use outcome in *Merritt v. Brinkerhoff.*[151] The facts in *Merritt* were quite similar to those in *Platt:* the upper mill was the newer and required twice the water as the lower mill. During the dry season the flow was cut off to build up the upper pond

147. *Id.* at 313-14.
148. 15 Johns. 213 (N.Y. Sup. Ct. 1818).
149. *Id.* at 217-18.
150. *Id.* at 218.
151. 17 Johns. 306 (N.Y. Sup. Ct. 1820).

and then released at a rate faster than the lower mill could use it. The lower dam could not be raised to capture this release without backing the upper wheel. At trial, the lower owner showed damages of about $1800.[152] The trial judge had charged the jury that "although a person situated above another on a stream had the same right with those below him, . . . he must be restricted to a reasonable use of his right."[153] Under this instruction the jury returned a verdict for the lower owner for $700.[154] On appeal the court expressed the reasonable use rule in terms of "fair participation"[155] and reasoned that the jury must have applied that concept in its deliberations:

> It has been argued, that the damages are excessive, and that the judge should have instructed the jury, that if the defendants were liable, it could only be for the use of the water beyond their relative proportion. The court do not perceive any misdirection in this particular; it followed, as a necessary consequence from the charge, that, in estimating the damages, the jury must be governed by this principle. It is not claimed by the plaintiffs, that any right to recover arises for the use of such relative proportion, but that the defendants, having unreasonably appropriated the water, in carrying on their own works, so as to deprive the plaintiffs of a beneficial use of it, thereby made themselves liable.[156]

The *Palmer v. Mulligan* reasonable use concept—the older mill must "give a little to the newer mill"—was applied in *Merritt* to yield an "each must give a little" result.

The Supreme Court of Judicature (after 1847, the Court of Appeals) did not address another conflict between millowners over the share of the streamflow until 1871.[157] In *Clinton v. My-*

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152. *Id.* at 311.
153. *Id.* at 310.
154. *Id.* at 311.
155. *Id.* at 321.
156. *Id.* at 324.
157. There were, however, several mill disputes in this period which did not involve the question of the share of the streamflow, *e.g.*, Brown v. Brown, 30 N.Y. 519 (1864) (backing by lower owner impermissible); Thomas v. Brackney, 17 Barb. 654 (N.Y. App. Div. 1851) (whether injurious dumping of tanbark by upper owner is unreasonable is a jury question);

ers,[158] the upper mill did not require all of the normal-season flow but did require more than the dry-season flow. When the upper owner attempted to store part of the excess normal flow for dry-season use, the remaining flow was inadequate for the larger lower mill. In holding in favor of the lower owner, the court made an elaborate statement of the reasonable use doctrine.[159] It then expressly adopted the syntax of the Massachusetts *Gould v. Boston Duck Co.* rule[160]—that a mill may be sized so that the normal streamflow is adequate to propel it[161]—as one that "will enable each owner to make an advantageous use of the water."[162] It applied the *Gould* rule, however, to prohibit the upper owner from interrupting the normal streamflow to the damage of the lower owner.

The language of the court in *Clinton* is still expressed in terms of the "equality of right" idea[163] of *Merritt*. The result, however, is far different from the mutual accommodation outcome of *Palmer* that required the lower owner to "give a little" to the upper owner during times of normal streamflow, and of *Merritt* that required each millowner to "give a little" during the dry season. Due to the way the court applied the *Gould* rule, it in effect adopted a rule that required the upper mill to defer to the lower during times of normal streamflow and the lower mill to defer to the upper during the dry season.

The New York Court of Appeals never was presented the kind of dispute involved in *Gould*—the normal-season interruption of a lower mill operating at night by an upper mill operating only dur-

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Van Hoesen v. Coventry & Mandeville, 10 Barb. 518 (N.Y. App. Div. 1851) (diversion impermissible); Stiles v. Hooker, 7 Cow. 266 (N.Y. Sup. Ct. 1827) (backing impermissible); Sackrider v. Beers, 10 Johns. 241 (N.Y. Sup. Ct. 1813) (diversion by upper owner impermissible); Reid v. Gifford, 1 Hopk. Ch. 416 (N.Y. Ch. 1825) (diversion by upper owner impermissible); Van Bergen v. Van Bergen, 3 Johns. Ch. 282 (N.Y. Ch. 1818) (backing impermissible).

158. 46 N.Y. 511 (1871).

159. *Id.* at 517-18.

160. *Id.* at 518.

161. *Id.*

162. *Id.*

163. *Id.* at 516.

ing daytime. The last case in which the court addressed a dispute between mills over the share of the streamflow, *Bullard v. Saratoga Victory Manufacturing Co.*[164] in 1879, involved a fact situation similar to that of *Gould* except that the interruption was confined to the dry season. The court, emphasizing that the upper mill was "adapted to the capacity of the stream in its ordinary stages,"[165] applied the *Gould/Clinton* rule in favor of the upper mill. In *Bullard,* the court continued to be faithful to the rubric of reasonable use.[166] It expressly defined "reasonable," however, as a use sized to the ordinary flow and disruptive of the dry-season flow only in a manner that is nonwasteful.[167] The court thereby completed the transformation of the mutual accommodation concept of reasonable use developed in *Palmer* and *Merritt,* under which reasonableness was effectively a question of fact to be determined by the jury. Under *Clinton* and *Bullard,* reasonableness had become a question of law.

The doctrinal development by the Connecticut Supreme Court not only provides an interesting parallel to the judicial experience in Massachusetts and New York, it also completes a rather distinct spectrum of decisional rules developed among the three jurisdictions. In a series of cases decided between 1810 and 1845, the Connecticut Court of Errors consistently imposed liability for backing an upper wheel with a lower dam and for operating an upper dam so as to disrupt the flow of the stream to the lower mill during the dry season. The rationale for the decisions in these two types of cases, however, was not as consistent as the outcomes. In some cases a first appropriation or prescription rationale was stated;[168] in some, a natural flow rationale;[169] and in some, no rationale at all.[170] One case involving the third issue, mills operating on differ-

164. 77 N.Y. 525 (1879).

165. *Id.* at 528.

166. *Id.* at 529.

167. *Id.* at 532.

168. Ingraham v. Hutchinson, 2 Conn. 584 (1818) (flow disruption); Sherwood v. Burr, 4 Day 244 (Conn. 1810) (backing).

169. Buddington v. Bradley, 10 Conn. 213 (1834) (flow disruption); King v. Tiffany, 9 Conn. 162 (1832) (backing).

170. Branch v. Doane, 17 Conn. 402 (1845) (backing); Johnson v. Lewis, 13 Conn. 303

ent daily schedules, arose during this period. In 1832, the Connecticut court held that there was no liability for operating a mill in the early morning and late evening thereby cutting off the flow to the lower mill during the day as long as the water was not held back wantonly, maliciously, or for no useful purpose.[171]

The doctrinal transition in Connecticut began with the 1856 decision in *Parker v. Hotchkiss*,[172] which involved the dry-season disruption of a lower mill. In holding that there was no liability, the court approved an instruction that was explicitly grounded on reasonable use:

> That the question of reasonable use was one for the jury, and in disposing of it they were not to look alone at what would be a reasonable use at one mill if there were no others on the stream, but to take into consideration the wants of the other mills, and from all the circumstances say whether the use in the particular instance was reasonable.
>
> That the question in this part of the case was this:—Has the defendant during the time stated in the declaration, used the water of the stream at his mill in a reasonable manner, and for a proper purpose, or has he detained it longer than was necessary for a reasonable use, or has he let it off in such quantities as materially to affect its accustomed flow to the plaintiff's mill.[173]

Like the New York Court in *Palmer v. Mulligan*,[174] the Connecticut court recognized the indeterminate nature of the reasonable use doctrine:

> It is said this gives no definite rule by which the rights of the parties may be determined, but the question is left to the varying opinions of jurors. The same objection might be urged in other cases where questions respecting reasonable care, reasonable diligence, and reasonable notice, arise, and are left to the jury.

(1839) (flow disruption); Tucker v. Jewett, 11 Conn. 311 (1836) (flow disruption).

171. Twiss v. Baldwin, 9 Conn. 291 (1832).

172. 25 Conn. 321 (1856).

173. *Id.* at 324.

174. 3 Cai. R. 307 (N.Y. Sup. Ct. 1805).

> But in our opinion the case was properly submitted.[175]

The Connecticut court did not hear another mill dispute for seventeen years. When it did, it did not pass up the opportunity to develop the reasonable use doctrine to achieve a more determinate outcome. The dispute in *Keeney & Wood Manufacturing Co. v. Union Manufacturing Co.*[176] involved the classic conflict of operating schedules. The upper textile mill was operated on the traditional twelve-hour day shift, and the dam gates were closed at night to build up the water level for the next day's operation. During the dry season this practice interrupted the flow to the lower mill which, because it was a papermill, of necessity operated around the clock. The court recited the reasonable use doctrine and found for the upper mill, emphasizing the prevailing practice of operating textile mills on one shift.[177] The policy of maximum economic development was also in the opinion. The trial court had found that the upper mill was the larger,[178] and the Connecticut Supreme Court sought to fashion a result that "will best secure the entire water of a stream to useful purposes."[179]

A determinate rule was fully developed in 1888 in *Mason v. Hoyle.*[180] The dispute involved the dry-season interruption of streamflow by an upper mill. The issue was whether the court should adopt the "sized to the usual flow" rule of *Gould v. Boston Duck Co.* A strong dissent argued for the *Gould* rule on the basis of economic utility:

> The power of a running stream is valuable property; it is the source of large profits to the owners, and therefore is beneficial to the state. When courts have been required to adjust controversies between mill-owners as to the time, manner, and degree of use of the common element in seasons of drought, they have endeavored to establish a rule which will secure the fullest possible use of the stream for the longest

175. Parker v. Hotchkiss, 25 Conn. 321, 330-31 (1856).
176. 39 Conn. 576 (1873).
177. *Id.* at 583.
178. *Id.* at 579.
179. *Id.* at 585.
180. 56 Conn. 255, 14 A. 786 (1888).

> time; to exhaust its capacity for creating wealth. . . .
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> . . . .
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> . . . In this state of things that proprietor whose mill is adapted to the best and fullest use of the stream during the entire period of ordinary flow of nine months, is preferred in the eye of the law over one whose mill allows a large portion of the water to run past unused during the same period.[181]

The majority, however, in holding in favor of the lower mill adopted a unique variant of the "adapted to the flow" rule—if seasons of low flow occur with regularity, then that is the flow to which the upper mill must be adapted.[182] The rationale of the majority was explicitly stated in terms of maximum access and avoidance of monopoly:

> A policy of the state may come in to affect the question.
>
> It is for the public interest that all our streams be improved as far as they can be. This rule has sometimes been applied to favor the larger mill-owner, but it should have regard also to small mill-owners, who are the great majority of those in such business or who incline to go into it. These men of moderate capital investing their means in mills upon our lesser streams, should be protected against such a use of the streams by mills disproportioned to their capacities as would practically deprive them of water and ruin their privileges. . . . There would be no way in which the lesser mills could hold their own against disproportionately large ones, with reservoirs of great capacity, but to enlarge their own reservoirs and ponds to an equal capacity, thus compelling all to enlarge their works in a manner not demanded by the capacity of the stream, and involving an unnecessary and perhaps ruinous expenditure.[183]

The Connecticut variant of the "adapted to the streamflow" rule developed in *Mason v. Hoyle* can be looked on as occupying one end of a spectrum. At the "Connecticut" end, the rule prohibited interruption of streamflow at any time during periods of nor-

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181. *Id.* at 274-76, 14 A. at 794-95 (Pardee, J. dissenting).
182. *Id.* at 270, 14 A. at 792 (majority opinion).
183. *Id.* at 263, 14 A. at 789.

mal streamflow or regularly-recurring low flow.[184] At the other end of the spectrum, the Massachusetts variant allowed interruption in periods of low streamflow and during the nighttime in periods of normal streamflow.[185] The New York variant occupies a middle position, prohibiting interruptions in periods of normal streamflow but not during the dry season.[186]

Whatever the precise formulation of the rule that finally emerged it is interesting that each court at an early point adopted the rubric of reasonable use. This approach was usually adopted with explicit reference to express policy considerations and applied to resolve streamflow disputes as a jury question with little predictive value. The courts remained faithful to the rubric of reasonable use from then on, but ultimately turned the inquiry into a question of law which produced a rule with high predictive value. In 1844, the Massachusetts Supreme Court adopted the rubric of reasonable use[187] and grounded it in a policy that equated profitable private development with the public benefit.[188] In 1847 the court applied reasonable use in a way that emphasized its circumstance-oriented nature.[189] By 1859 the court had adopted, still within the rubric of reasonable use, the much more determinant "adapted to the streamflow" rule.[190] At the same time public policy considerations were no longer expressly present.

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184. A similar rule was adopted in Holden v. Lake Co., 53 N.H. 552 (1873).

185. A similar rule was adopted in Whaler v. Ahl, 29 Pa. 98 (1857). *See also* White v. Whitney Mfg. Co., 60 S.C. 254, 38 S.E. 456 (1901); Mumpower v. City of Bristol, 90 Va. 151, 17 S.E. 853 (1893). The Maine Supreme Court also has held, but without using the "adapted to the streamflow" formula, that an upper mill can interrupt the streamflow during periods of normal flow as long as it is reasonable detention. Davis v. Getchell, 50 Me. 602 (1862). *See* Phillips v. Sherman, 64 Me. 171 (1873).

186. A similar rule was adopted in Pool v. Lewis, 41 Ga. 162 (1870); Dilling v. Murray, 6 Ind. 324 (1855); Timm v. Bear, 29 Wis. 254 (1871). The Vermont Supreme Court has not ruled on the question whether an upper mill can interrupt during times of normal flow. It has held, however, without using the "adapted to the streamflow" formula, that the upper mill can interrupt during the dry season. Canfield v. Andrew, 54 Vt. 1 (1882). *See* Martin v. Bigelow, 2 Aik. 184 (Vt. 1827).

187. Cary v. Daniels, 49 Mass. (8 Met.) 466, 477 (1844).

188. *Id.* at 476.

189. Pitts v. Lancaster Mills, 54 Mass. (13 Met.) 156, 158 (1847).

190. Gould v. Boston Duck Co., 79 Mass. (13 Gray) 442, 452 (1859).

The New York court first adopted reasonable use in 1805,[191] for the express purpose of serving the public interest in competition.[192] The court recognized in 1805 the circumstance-oriented nature of the doctrine.[193] In 1820, describing the doctrine as requiring "fair participation,"[194] the court explicitly approved its highly indeterminate operation.[195] In 1871, still faithful to the earlier rubric, the court adopted the "adapted to the streamflow" rule.[196] Again, public policy considerations were no longer of express concern. The Appellate Division of the New York Supreme Court would later describe the New York rule as being designed to "effect the highest average benefit to all riparian owners."[197]

The Connecticut court did not adopt the reasonable use doctrine for streamflow disputes until 1856.[198] When it did, the court also expressly recognized its lack of determinateness.[199] Public policy considerations did not expressly enter into the Connecticut decisions until 1873 when the court first began to develop its variant of the "adapted to the streamflow" rule.[200] When the court did expressly consider the public interest it expressly rejected maximum economic development in favor of the broadest possible access to the waterpower resource.[201]

Although their expessions of policy differed all of these courts developed, within the framework of the indeterminate reasonable use doctrine, decisional rules with substantial predictive value. The balance that these courts struck between fairness of access and economic efficiency primarily affected the distribution of waterpower rights among riparian owners. Whether this pattern of distribution

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191. Palmer v. Mulligan, 3 Cai. R. 307 (N.Y. Sup. Ct. 1805).
192. *Id.* at 314.
193. *Id.*
194. Merritt v. Brinkerhoff, 17 Johns. 306, 321 (1820).
195. *Id.* at 324.
196. Clinton v. Meyers, 46 N.Y. 511, 519 (1871).
197. Henderson Estate Co. v. Carroll Elec. Co., 113 A.D. 775, 99 N.Y.S. 365, 366-67 (1906).
198. Parker v. Hotchkiss, 25 Conn. 321, 331 (1856).
199. *Id.* at 330-31.
200. Keeney & Wood Mfg. Co. v. Union Mfg. Co., 39 Conn. 576 (1873).
201. Mason v. Hoyle, 56 Conn. 255, 263-64, 14 A. 786, 789 (1888).

also achieved an efficient *allocation* of the water resource would have been purely accidental, even if that had been the judges' intent. By making this distribution through determinate decisional rules, however, the courts effectively established a predictable structure of waterpower rights. This structure, in turn, facilitated the smooth allocation of these rights through market exchange among the right-holders of the most economically efficient current uses. Thus, it was the predictive value of the rules, rather than any underlying policy choices favoring utilitarianism, that worked more strongly in favor of economic development.[202]

IV. The Current Relevance of the Common Law of Waterpower

Although a number of state and federal statutes establish comprehensive administrative regulations for waterpower development, common law riparian doctrine has not been replaced entirely. For waterpower facilities that are not federally licensed, the rights and obligations of the waterpower developer are defined by a combination of state statutes and common law. Nearly every state has a statutory scheme for regulating facilities located on streams that are navigable as defined by state law. These statutes typically define the procedure by which private persons are granted the right to establish power facilities on the public streambed and provide continuing regulation of the operation of those facilities. On nonnavigable streams, however, the riparian owner, at common law, owns the streambed. The legal position of the waterpower developer on these streams is substantially defined by common law riparian doctrine and the state mill dam acts. Typically, the administrative state intrudes only to regulate the environmental effects of the facility. More comprehensive regulation is imposed only if the facility provides power for consumption by the public.

The Federal Power Act[203] establishes a comprehensive and complex administrative scheme for federally licensed dams. The

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202. *See* Tushnet, *Perspectives on the Development of American Law: A Critical Review of Friedman's "A History of American Law,"* 1977 Wis. L. Rev. 81, 95.

203. 16 U.S.C. §§ 791-828c (1976 & Supp. III 1979).

substantive rights of the licensee as against other private persons, however, are still defined to a great extent by riparian law. The Federal Power Act provides an optional procedure for the licensee to condemn the property rights required to carry out the terms of the license.[204] The substantive definition of those rights and therefore the determination of when it is appropriate to exercise that condemnation power, however, continue to be matters of state riparian doctrine.[205] For these reasons, the common law continues to be highly relevant to the matter of exploiting waterpower today.

Conclusion

On the whole, the pattern of private rights which has evolved is favorable to the waterpower developer. As against the riparian owner upstream, the mill dam acts give preference to the waterpower developer by limiting the remedy of the invaded upper owner to objectively-determined damages. The state courts usually have given a liberal interpretation to the scope of these acts. As against the lower riparian owner, the waterpower developer has often been shielded from strict liability in trespass for downstream flooding caused by excessive releases from a dam. Two New England jurisdictions, Massachusetts and Maine, have substantially narrowed liability for facilities which efficiently exploit the power potential of a stream.[206] In most jurisdictions the lower owner has had to make a substantial showing before liability would be imposed on the dam owner for any accidental downstream flooding resulting from dam failure.[207]

The rights of competing waterpower developers have been extensively litigated. The doctrines that evolved have achieved a conscious balance of the concepts of fairness and efficiency. The decisional rules tend for the most part to preserve the access of each riparian owner to the waterpower potential of the stream. At the same time, they facilitate the extensive development of this power potential at all stages of streamflow.

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204. *Id.* § 814 (1976).
205. *Id.*
206. See note 91 *supra* and accompanying text.
207. See notes 92 and 93 *supra* and accompanying text.

Although the common law of waterpower is primarily a product of nineteenth century adjudication, it would be incorrect to conclude that this law is obsolete. The law was refined over time through a series of highly contested cases. There is no reason to believe that the kinds of private disputes which will arise today as waterpower again becomes important will differ substantially from those that arose in the nineteenth century. On the contrary, these nineteenth century doctrines should continue to work well today.