University of Wyoming
College of Law

LAND AND WATER
LAW REVIEW

REPRINTED FROM:

VOLUME XIII 1978 NUMBER 2

The ordinary high water line is typically defined as the boundary between privately-owned riparian uplands and publicly-owned lands beneath non-tidal navigable waters. Dean Maloney considers the definition of the ordinary high water line, the question of whether federal common law controls the definition of the line, the use of the meander line as an alternative boundary, the necessity of an ambulatory line, and the question of whether a definition based on statistical averaging would be legally valid.

THE ORDINARY HIGH WATER MARK: ATTEMPTS AT SETTLING AN UNSETTLED BOUNDARY LINE

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INTRODUCTION

It would seem that something as basic to the determination of property rights as the method for establishing the boundaries of lands bordering navigable inland waters would be more than well-settled in the law. In most states and in the federal system the ordinary high water line[1] (OHWL) is the boundary between privately-owned riparian uplands and publicly-owned sovereignty lands beneath non-tidal navigable

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The preparation of this article has been supported by the Department of Natural Resources, State of Florida, and by the Office of Water Resources Research, United States Department of the Interior, as authorized under the Water Resources Research Act of 1964.

The assistance of Bram D. E. Canter, J.D., 1977, University of Florida, is gratefully acknowledged.

1. Most cases defining ordinary high water *line* or ordinary high water *mark* use the two terms interchangeably. Even though the word "mark" seems to describe a *point* on the bank rather than a continuous line, most cases clearly recognize that "mark" or even "point" means "line" in this context. *See, e.g.*, Tilden v. Smith, 113 So. 708, 712 (Fla. 1927). At least one case has stated that the terms are "synonymous." City of Manhattan Beach v. Cortelyou, 10 Cal. 2d 653, 76 P. 2d 483, 487 (1938). *See generally* 19A WORDS AND PHRASES 80 (1970); 30 WORDS AND PHRASES 429 (1972); BLACK'S LAW DICTIONARY, 1763 (4th ed. 1951). For purposes of consistency, this article will use the term ordinary high water line (OHWL) as inclusive of all other variants of wording.

waters.[2] Ironically, the determination of the OHWL is as confused as it is important.

The most significant aspect of the OHWL is its operation as a boundary for purposes of title. It delineates the riparian upland with its concomitant entitlement to certain rights not available to the public generally[3] from the submerged bed owned by the sovereign[4] and usually held in trust for public use, enjoyment and protection.[5] Additionally, the title to lands below the OHWL is held subject to the paramount power of Congress to regulate commerce and navigation.[6]

The OHWL is not the only standard used to separate public and private interests in navigable water bodies. A number of states[7] have chosen the line of ordinary low water[8] to accomplish this purpose. The low water line allows the riparian owner a greater property interest and, where seasonal influences cause significant fluctuation in water elevation, would include title to the exposed shore as well. In states recognizing the OHWL, any such exposed area between the OHWL and the actual water level at the moment is part of the public domain and the public may be allowed to travel along it or even recreate there.[9]

2. It is important to understand at the outset the scope of applicability of the OHWL definition. It applies to non-tidal, navigable water bodies, generally inland from the coast. It does not apply to inland non-navigable, and therefore privately-owned water bodies, although it may have some relevance in that context where the extent of surface usage of riparian owners must be defined. *Cf.*, Diana Shooting Club v. Husting, 145 N.W. 816 (Wis. 1914); Duval v. Thomas, 114 So.2d 791 (Fla. 1959); Publix Super Market, Inc., v. Pearson, 315 So.2d 98 (Fla. 2d Dist. Ct. App. 1975).
3. *See generally* TRELEASE, WATER LAW: RESOURCE USE AND ENVIRONMENTAL PROTECTION 238-456 (2d. 1974).
4. The interests of the state in ownership and control of the bed, *e.g.*, navigation, recreation, conservation, are quite different from the traditional property interests of the individual upland owner. The distinction has taken on added significance since the case of Bonelli Cattle Co. v. Arizona, 414 U.S. 313 (1973), which suggests that the nature and extent of sovereign ownership and control may be limited according to the interests which the public actually has in maintaining title to the bed. In some situations, for example, sovereign ownership may be limited where the value of the bed is restricted to particularized public uses such as navigation and recreation.
5. Illinois Central R.R. v. Illinois, 146 U.S. 387 (1892).
6. Oklahoma v. Texas, 258 U.S. 574 (1922), *appeal denied*, 260 U.S. 711 (1922); The Abby Dodge, 223 U.S. 166 (1912); Gibbons v. Ogden, 22 U.S. (9 Wheat.) 1 (1824).
7. Including Alabama, Delaware, Illinois, Indiana, Louisiana, Massachusetts, Minnesota, Missouri, Montana, North Carolina, Pennsylvania, South Dakota, Tennessee, Virginia and West Virginia. *See* 78 AM.JUR. 2d *Water* 386 (1975) for a compilation with case citations.
8. The ordinary low water mark may be defined to be the usual and common or ordinary stage of the river, when the volume of water is not increased by rains or freshets, nor diminished below such usual stage or volume by long continued drouth, to extreme low water mark. Nance v. Womack, 2 Shannon's Cases 202 (Tenn. 1877).
9. Some jurisdictions, however, have denied public use of the shore on the theory that it interferred with the riparian owner's "exclusive privileges." *See, e.g.*, Doeml v. Jantz, 180 Wis. 225, 193 N.W. 393 (1923), criticized in Waite, *Public Rights to Use*

It should also be noted that there are lands within the United States which were acquired from Mexico and Spain and which included submerged lands under navigable waters previously conveyed to private ownership. The general rule is that the foreign law in force at the time of the grant will govern the area, nature and extent of such conveyances.[10] In other words, a valid grant of title to submerged lands into private ownership before such lands were ceded to the United States would be preserved,[11] thereby preventing the acquisition of title by the state through operation of the equal footing doctrine which granted to new states the same "right, sovereignty, and jurisdiction . . . as the original states possess within their respective borders",[12] including title to lands under navigable waters.

The OHWL should be clearly distinguished from the mean high tide line of waters subject to tidal influence.[13] The primary distinction is that the latter is determined through a statistical averaging technique[14] while the former is generally ascertainable by reference to the physical characteristics of the banks and bed of the water body.[15] The leading definition of the OHWL emphasizes the actual, physical nature of the line.

> This line is to be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual and so long continued in all ordinary years, as to mark upon the soil of the bed a character distinct from that of the banks, in respect to vegetation, as well as in respect to the nature of the soil itself.[16]

Thus, the determination of the OHWL depends in large part upon several factors which are physical characteristics of the

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and Have Access to Navigable Waters, 1958 WIS. L. REV. 335, 371-74. *See generally* MALONEY, PLAGER & BALDWIN, WATER LAW AND ADMINISTRATION Chs. 4-5 (1967).

10. *See* Hill, *Spanish and Mexican Land Grants Between the Nueces and Rio Grande*, 5 S. TEX. L.J. 47 (1960).
11. Knight v. United Land Ass'n, 142 U.S. 161 (1891); State v. Grubstake Inv. Ass'n, 117 Tex. 53, 297 S.W. 202 (1927); Apalachicola Land & Development Co. v. McRae, 86 Fla. 393, 98 So. 505 (1923).
12. Mumford v. Wardwell, 73 U.S. (6 Wall.) 423, 436 (1867); Pollard's Lessee v. Hagan, 44 U.S. (3 How.) 212 (1845).
13. *See generally* Maloney & Ausness, *The Use and Legal Significance of the Mean High Water Line in Coastal Boundary Mapping*, 53 N.C.L. REV. 185 (1975) [hereinafter cited as *Coastal Boundary Mapping*].
14. *Id.* at 195-98.
15. Willis v. United States, 50 F. Supp. 99 (S.D. W.Va. 1943); Kelly's Creek & Northwestern R.R. Co. v. United States, 100 Ct. Cl. 396 (1943).
16. Howard v. Ingersoll, 54 U.S. 381, 427 (1851) (Concurring Op. of Curtis, J.).

bed and banks.[17] The efficacy of the determination depends upon how closely these physical indicators correlate with the common and ordinary level of the water.

Three recent cases from the United States Supreme Court[18] provide the major impetus for this article. These cases raise questions regarding traditional legal theory associated with the OHWL and the role of the state and federal courts in its determination. In order to cover these questions as fully as possible, this article will address what the author considers to be the most critical points: the definition of the OHWL; the question of whether federal common law controls the definition of the line, the use of the meander line as an alternative boundary, the necessity of an ambulatory line, and the question of whether a definition based on statistical averaging would be legally valid.

DEFINITION OF THE ORDINARY HIGH WATER LINE

The source of the modern definition of the OHWL is the leading case of *Howard v. Ingersoll*.[19] At issue was the meaning of a call in a deed conveying land from Georgia to the United States, which land later became part of the State of Alabama. The boundary was described as running up the western bank of the Chattahooche River.[20] The three opinions rendered in the case do little, however, to establish a clear definition.

Mr. Justice Wayne speaking for the majority construed the language of the call to mean the "water line impressed upon the bank."[21] But, rather than clarifying his definition, his explanation was confusing and tended toward what with hindsight we would call over-breadth.

> When banks of rivers were spoken of, those boundaries were meant which contain their waters at their highest flow. . . . [The line] neither takes in overflowed land beyond the bank, nor includes swamps or low

17. *See* text accompanying notes 28 to 35, *infra*.
18. Oregon *ex rel.* State Land Bd. v. Corvallis Sand & Gravel Co.,___U.S.___, 97 S.Ct. 582 (1977); Utah v. United States, 425 U.S. 948 (1976), for full text *see* Report of Special Master reproduced in 1976 UTAH L. REV. 245; Bonelli Cattle Co. v. Arizona, 414 U.S. 313 (1973).
19. 54 U.S. 381 (1851).
20. *Id.*, at 397.
21. *Id.*, at 415.

> grounds liable to be overflowed, but reclaimed for meadows or agriculture. . . . Such a line may be found upon every river, from its source to its mouth. It requires no scientific exploration to find or mark it out. The eye traces it in going either up or down a river, in any stage of water.[22]

The main problem with this version is that it apparently contemplates drawing the line at the "highest flow" or stage of the river.

In a concurring opinion, Mr. Justice Nelson brought this line closer to the normal or ordinary stage of the river.

> [T]he true boundary line . . . is the line marked by the permanent bed of the river by the flow of the water at its usual and accustomed stage, and where the water will be found at all times in the season except when diminished by drought or swollen by freshets. This line will be found marked along its borders by the almost constant presence and abrasion of the waters against the bank. It is always manifest to the eye of any observer upon a river, and is marked in a way not to be mistaken.[23]

Although this was generally more accurate, the idea that the line is "always manifest" is over-simplistic, especially where property rights are involved. It was left to the final concurrence to develop a more practical and usable definition.

Mr. Justice Curtis emphasized the importance of a line which would "promote the convenience and advantage of the parties" rather than any fixed line on the bank. To this end he defined the line by reference to several ascertainable physical characteristics of the bank.[24]

> [The] line is to be found by examining the bed and banks, and ascertaining where the presence and action of water are so common and usual and so long continued in all ordinary years, as to mark upon the soil of the bed a character distinct from that of the banks, in respect to vegetation, as well as in respect to the nature of the soil itself. Whether this line . . . will be

22. *Id.*, at 415-16.
23. *Id.*, at 424.
24. *Id.*, at 427. It should be noted that Justice Curtis was here also referring to the legal rule for interpretation of the language of the deed in the absence of the clear intent of the parties.

> found above or below, or at a middle stage of water, must depend upon the character of the stream.[25]

Although the opinion speaks mainly of differences in the soil, and the manner in which vegetation[26] relates to this difference, later cases[27] have distilled out soils and vegetation as well as other related factors for more distinct treatment.

Before discussing those cases, it is helpful to delineate the factors more fully.[28] It is important to note that unlike the mean high water mark of tidal waters,[29] the OHWL refers to an observable physical mark caused by the action of water upon the banks.[30] The OHWL represents the point at which the water prevents the growth of terrestrial vegetation.[31] The Curtis opinion pointed out that this test does not require the absence of all vegetation, but only of *terrestrial* vegetation.[32] Obviously, a vegetation line may mark the division between land-based and aquatic plant species. Another aspect of the vegetation test emphasized by Justice Wayne is that it should exclude from the bed land which is fit for agricultural purposes.[33] Probably more useful than the vegetation test in most areas is the soil test.[34] The OHWL represents the point at which the character of the soil of the bank differs from that of the upland. This includes surface markings, such as erosion, shelving and litter,[35] as well as sub-surface geological characteristics.

25. *Id.*
26. The opinion emphasizes that the water may not necessarily denude the bed of vegetation, but that aquatic vegetation may exist there. The test requires an absence of *terrestrial* vegetation. *Id.*, at 428.
27. The subsequent decision of Alabama v. Georgia, 64 U.S. (23 How.) 505 (1860), involving the same boundary as in Howard v. Ingersoll attempted to clarify the definition. "[T]he bed of the river is that portion of its soil which is alternately covered and left bare, as there may be an increase or diminution in supply of water, and which is adequate to contain it at its average and mean stage during the entire year, without reference to the extra-ordinary freshets of the winter and spring, or the extreme droughts of the summer or autumn." *Id.* at 515. As to the validity of averaging to determine the OHWL, *see* the text accompanying notes 174 to 204.
28. Beyond their apparent legal significance, these factors have a great deal of importance with regard to the surveying effort. The convenience and accuracy of surveys of the OHWL should be kept in mind in order to appreciate the utility, or lack thereof, of the various factors.
29. *See, Coastal Boundary Mapping, supra* note 13, at 195-8.
30. *See* note 15, *supra.*
31. *See* note 26, *supra;* Hayes v. State, 496 S.W.2d 372 (Ark. 1973).
32. Howard v. Ingersoll, *supra* note 19, at 428.
33. *Id.*, at 415-416.
34. *See* Borough of Ford City v. United States, 345 F.2d 645, 648 (3d Cir. 1965), *cert. denied*, 382 U.S. 902. "The vegetation test is useful where there is no clear, natural line impressed on the bank. If there is a clear line, as shown by erosion, and other easily recognized characteristics such as shelving, change in the character of the soil, destruction of terrestrial vegetation, and litter, it determines the line of ordinary high water .... These are not really two separate tests but must, of necessity, complement each other."
35. *Id.*

The federal cases defining OHWL after *Howard* often involve the question of navigable servitude,[36] rather than the physical limits of ownership. Under federal law, the bed beneath navigable waters is subject to an easement or servitude in behalf of the government to maintain or improve navigability.[37] Often-cited dictum in the opinion of *Harrison v. Fite* [38] adopts the *Howard* definition for OHWL and applies it to the question of the limit of the government's navigable servitude.

> The bed of the river is that soil so usually covered by water that it is wrested from vegetation and its value for agricultural purposes is destroyed. It is the land upon which the waters have visibly asserted their dominion, and does not extend to or include that upon which grasses, shrubs, and trees grow, though covered by the great annual rises.[39]

Thus, the orientation of the Curtis opinion toward the ascertainment of physical factors was ultimately adopted and strengthened.[40]

Recent cases demonstrate some of the potential pitfalls in applying this OHWL definition. In *Borough of Ford City v. United States*[41] the question of damages caused to the city's gravity-flow sewerage system by the construction of a dam on the Allegheny River by the United States raised the issue of the location of the OHWL before construction of the dam. The District Court adopted the findings of Ford City's witness who used the vegetation test exclusively, and appeared to ignore three government witnesses who considered shelving, erosion and litter, as well as vegetation, in setting the OHWL

36. *See generally* Martz, *The Role of the Federal Government in State Water Law*, 5 KAN. L. REV. 626 (1957); Sato, *Water Resources Comments Upon the Federal-State Relationship*, 48 CAL. L. REV. 43 (1960); Trelease, *Federal Limitations on State Water Law*, 10 BUFFALO L. REV. 399 (1961).
37. The case of United States v. Chicago, M., St. P. P. R.R. Co., 312 U.S. 592 (1941) embodies the several principles of the servitude. It extends to the OHWL of a navigable stream. The bed is subject to the servitude regardless of who owns the bed, and the government may take the land below the OHWL without payment of compensation. If lands above the OHWL are taken, however, the owner of such uplands must receive just compensation. United States v. Kansas City Life Ins. Co., 339 U.S. 799 (1950). But no compensation need be paid where the rights taken are dependent on or derive their values from the flow of navigable waters, since ownership of the flow is already in the public. United States v. Virginia Elec. & Power Co., 365 U.S. 624 (1961). *See also* United States v. Commodore Park, Inc., 324 U.S. 386, 390 (1945).
38. 148 F. 781 (8th Cir. 1906).
39. The opinion cites a state court which follows Howard v. Ingersoll in this respect. *Id.*, at 783.
40. *See also* Paine Lumber Co. v. United States, 55 F. 854, 865 (E.D. Wis. 1893) (emphasizing the usefulness for agricultural purposes in charge to the jury).
41. 345 F.2d 645 (3d Cir. 1965), *cert. denied*, 382 U.S. 902 (1965).

at a somewhat higher point.[42] According to the Court of Appeals, the initial problem was that the City's witness failed to consider at what point the soil could not be used for agricultural purposes while at least one government witness did.[43] In applying the vegetation test of *Harrison v. Fite*, the court emphasized one aspect.

> What the river or action of the water actually destroys is the value of its soil for agricultural purposes. The difference [between this and the general absence of vegetation test] is vital here and generally and is readily discernible. It is merely a question of using the proper norm.[44]

The court apparently did not recognize the practical difficulties inherent in a judgement of the "value for agricultural purposes" of a given tract of land.[45] Fortunately, this apparent overemphasis of one aspect of the basic test has not been strictly followed by later courts.

The case of *Snake River Ranch v. United States*[46] demonstrates the difficulty in applying any one test of OHWL to all navigable rivers in the country.[47] The court held in a quiet title action by a private landowner, the Government had not sustained its burden of proof in attempting to show gross fraud or error in a meander line survey in that the meander line was so divergent from the actual water boundary as to manifest an intent not to delineate a water boundary.[48] The difficulty was in the nature of the Snake River. Specifically,

> [It] is characterized as braided, and has multiple interlacing flow patterns, during low periods, around alluvial lands within its channel. The braiding is caused by the carrying of a large sediment load on a steep gradient at high velocity, eight feet per second in the vicinity of the Snake River Ranch, which has resulted in the formation of a wide, shallow channel with either no clearly apparent thalweg . . .[49] at a given point in time or a shifting thalweg over time.[50]

42. *Id.* at 649-50.
43. *Id.* at 649.
44. *Id.* at 651
45. This is the type of judgment which would be difficult for a surveyor to make, for example.
46. 395 F. Supp. 886 (D. Wyo. 1975).
47. *See also* Motl v. Boyd, 286 S.W. 458, 469-70 (Tex. 1926).
48. Snake River Ranch v. United States, *supra* note 46, at 900.
49. This is defined as the point of deepest and most rapid flow. *Id.* at 893.
50. *Id.*

The court recognized the necessity for a departure from the traditional definition of OHWL in such a situation.

> The "mean high water mark" of the banks of the main channel, while properly defined as the point of separation between surrounding vegetation and the water is more appropriately characterized on the Snake River as the outer boundaries of the braided channel that carries water during the substantial part of the snowmelt high-flow period from May to September of most years.[51]

The court apparently felt it was necessary to look beyond the definition to the practicalities of the situation. Clearly, the reasonable expectations of landowners would be that the boundary extends to the spring limits of the bank. Further, the public interest in the maintenance of navigability by the sovereign owner of the bed favors such a result.

The case of *Goose Creek Hunting Club, Inc. v. United States*[52] provides a final illustration of the application of the OHWL definition in the federal courts. The United States had constructed a dam on a navigable stream which was two waterbodies downstream from the plaintiff's land. That is, water in the non-navigable stream on which the plaintiff's tract bordered flowed into a navigable stream that in turn flowed into the stream upon which the dam was constructed.[53] The result was the permanent flooding of 110 acres of the plaintiff's land which had previously been flooded only during the wet season.[54] The court noted that the OHWL had been defined in various ways by the federal courts:[55]

> [E].g., as the line where that water stands sufficiently long to destroy vegetation below it . . .;[56] or, the line below which the soil is so usually covered by water that it is wrested from vegetation and its value for agricultural purposes destroyed . . .;[57] or as the line below which the waters have so visibly asserted their domain that terrestrial plant life ceases to grow and,

51. *Id.* at 893. This case is a good one to demonstrate the types of factual analyses that are necessary to determine the OHWL using physical characteristics as determinants.
52. 518 F.2d 579 (Ct. Cl. 1975).
53. *Id.* at 581-82.
54. *Id.* at 581.
55. *Id.* at 583.
56. *Citing* Kelly's Creek & Northwestern R.R. v. United States, 100 Ct. Cl. 396, 406 (1943).
57. *Citing* Harrison v. Fite, 148 F. 781, 783 (8th Cir. 1906).

> therefore, the value for agricultural purposes is destroyed ... .;[58] or as the line below which the soil is kept practically bare of vegetation by the wash of the waters of the river from year to year in their onward course.[59]

Yet whatever differences the court discerned in these definitions, by any of them the land in question was above the OHWL[60] and not subject to the navigational servitude of the government.[61] In particular the opinion noted that the land was "covered with good grass during the dry season" and contained several species of terrestrial trees, among them willows, bitter pecan, and overcup oak trees.[62] The court gave the plaintiff a judgement for damages for the property taken.[63]

A number of state courts[64] have put their stamp of approval upon the traditional definition of the OHWL. One of the leading cases is *Diana Shooting Club v. Husting*,[65] where the owner of the upland[66] sued a hunter who had rowed his boat into the wild aquatic vegetation at the edge of a navigable river. The court adopted a fairly broad definition of OHWL:

> By ordinary high water mark is meant the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.[67]

The definition was held to apply whether the waters be deep or shallow, clear or covered with vegetation,[68] and in this case to preclude the trespass action.

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58. *Citing* Borough of Ford City v. United States, 345 F.2d 645, 648 (3d Cir. 1965), *cert. denied*, 382 U.S. 902 (1965).
59. *Citing* Oklahoma v. Texas, 260 U.S. 606, 632 (1923).
60. 518 F.2d at 583-84.
61. *Id.* at 583.
62. *Id.* at 584.
63. *Id.* On its demands for the determination of damages the court made a very interesting determination. It held that since 49 acres of land above the 110 which were clearly inundated would be "permanently damaged" because of the raised water table, damages, would lie for these acres as well.
64. *See, e.g.*, Tilden v. Smith, 113 So. 708 (Fla. 1927); Sun Dial Ranch v. May Land Co., 119 P. 758 (Ore. 1912), which quoted 2 FARNHAM, WATER AND WATER RIGHTS § 417 for the traditional definition taken from Howard v. Ingersoll.
65. 145 N.W. 816 (Wis. 1914).
66. Here the owner of the upland also had a valid exclusive lease of the bed of the river in the area of the alleged trespass. In Wisconsin the beds of navigable rivers are privately owned subject to the public right of navigation and rights incident thereto. *Id.*
67. *Id.* at 820.
68. *Id.*

It is important to note that it would be impractical and unrealistic to strictly apply the OHWL definition where the situation calls for some departure. The state courts have followed the lead of the *Snake River Ranch* court in the avoidance of ridiculous results through flexible application of the definition. Certainly the presence or absence of vegetation is not always conclusive. The Iowa Supreme Court stated in *State v. Sorenson*,[69] for example, that large trees may sometimes continue to grow although covered with water at their bottoms for some period. The court relied on the testimony of a botany expert that trees of the size and character involved could easily have gained a foothold and grown below the OHWL notwithstanding the fact that small vegetation could not grow there.[70] This and other cases[71] imply the converse as well. That is, even where aquatic vegetation is found some distance inland, in marshland or other poorly drained areas, for example, the finding of a realistic OHWL should not be upset.

As noted above, most state courts addressing the problem[72] have simply adopted word for word the definition of Justice Curtis in *Howard v. Ingersoll. State v. Bonelli Cattle Co.*,[73] a case which was reversed on other grounds[74] which will be discussed later,[75] conforms to this pattern. In holding that the state rule regarding avulsion applied to vest in Arizona title to land exposed as a result of a federal channelization project, the opinion adopted the Curtis statement of the definition.[76] In addition the court attempted a clarification.

> [Ordinary high-water mark] is not the line reached by unusual floods, but it is the line to which high water ordinarily reaches. "High-water mark" means what its language imports—a water mark. It is co-ordinate with the limit of the bed of the water, and that only is to be considered the bed which the water occupies sufficiently long and continuously to wrest it from

69. 271 N.W. 234 (Iowa 1937).
70. *Id.* at 236-7.
71. *See, e.g.*, Hayes v. State, 496 S.W. 2d 372 (Ark. 1973).
72. This article does not purport to analyze even a small fraction of these state court cases. Particularly instructive are the recent decisions in Belmont v. Umpqua Sand and Gravel, Inc., 542 P.2d 884 (Ore. 1975); Hayes v. State, 496 S.W.2d 372 (Ark. 1973); Dep't of Nat. Resources v. Pankratz 538 P.2d 984 (Alas. 1975).
73. 108 Ariz. 258, 495 P.2d 1312 (1972).
74. Bonelli Cattle Co. v. Arizona, 414 U.S. 313 (1973).
75. *See* text accompanying notes 96 to 107 *infra*.
76. State v. Bonelli Cattle Co., *supra* note 73, at 1314.

vegetation, and destroy its value for agricultural purposes.[77]

This emphasis on physical markings has been reinforced by usage in other state courts. In Florida, the OHWL was expressly defined in *Tilden v. Smith*,[78] adopting language from a Minnesota opinion, *Carpenter v. Hennepin County*.[79]

> [The] high-water mark, as a line between a riparian owner and the public, is to be determined by examining the bed and banks, and *ascertaining where the presence and action of the water are so common and usual, and so long continued in all ordinary years, as to mark upon the soil of the bed a character distinct from that of the banks, in respect to vegetation, as well as respects the nature of the soil itself.* "High-water mark" means what its language imports—a water mark.[80]

Thus, it appears that most state definitions conform substantially with each other and federal law on the definition of the OHWL.

DOES FEDERAL COMMON LAW CONTROL THE DEFINITION OF THE OWHL?

It appears from the previous discussion that the federal and state definitions of OHWL are all derived from the same source and, thus, are substantially the same. However, the question of whether federal common law controls is an important one for several reasons. Under some circumstances the state might think it desirable to fix the line relative to some point in time.[81] Moreover, the definition of OHWL carries with it a number of corollary property concepts related to accretion, reliction and avulsion. If the federal courts retain jurisdiction over these matters in all cases, it would mean that the extent of basic property rights, traditionally left to the states for determination, would be litigated at the federal level.[82] Although these substantive issues are dis-

77. *Id.*
78. 113 So. 708 (Fla. 1927). It should be noted that the Tilden court was not called upon to define the limits of sovereignty lands. However, it is fairly clear that the definition given was intended to cover title questions as well. *Id.* at 711.
79. 56 Minn. 513, 58 N.W. 295 (1894).
80. Tilden v. Smith, *supra* note 78, at 712 (emphasis in original).
81. *See, e.g.*, FLA. STAT. § 253.151 (3) (a) (1975); State v. Florida National Properties, Inc., 338 So.2d 13 (Fla. 1976); United States v. Washington, 294 F.2d 830 (9th Cir. 1961), *cert. denied*, 369 U.S. 817 (1962).
82. *See generally* Note, *Artificial Additions to Riparian Land: Accretion*, 14 ARIZ. L.

cussed later in this article,[83] it is necessary at the threshold to attempt to delineate the circumstances under which federal law has been held to control their determination. Obviously, if the federal definition controls, the question of what the states can do to clarify their own definitions is wholly academic.[84]

The landmark case of *Borax Consolidated, Ltd. v. Los Angeles*[85] set forth the rule that federal law would apply to determine tidal boundaries where a federal question was involved. In that case the upland owner, Borax, received title through a federal patent to its predecessors. As to whether this situation called for the application of federal common law the Supreme Court declared:

> The question as to the extent of this federal grant, that is, as to the limit of the land conveyed, or the boundary between the upland and the tideland, is necessarily a federal question. It is a question which concerns the validity and effect of an act done by the United States; it involves the ascertainment of the essential basis of a right asserted under federal law.[86]

This principle was subsequently applied to accretion in the *Washington* and *Hughes* cases discussed below.

United States v. Washington[87] concerned the ownership of accretions to littoral land owned by the federal government along the coast of Washington. The primary issue was whether state or federal law applied. It was argued that federal law followed the common law position and recognized the ambulatory nature of tidal boundaries. Under state law, however, the boundary was fixed as of the date of statehood, and subsequent accretions were owned by the state rather than the littoral owner.

The federal court of appeals, reversing the trial court, held that the *Borax* case was controlling and declared that,

REV. 315 (1972); Comment, *Federal Common Law Determines Ownership of Re-Exposed Navigable River Beds*, 50 WASH. L. REV. 777 (1975); Young, *Riparian Owner, Not State, Owns Bed Deserted by River*, 60 A.B.A.J. 221 (1974).

83. *See* the discussion regarding "The Necessity of an Ambulatory Line" beginning at p. 29, *infra*.
84. The Florida National Properties case, *infra*, which declared Florida's boundary statute unconstitutional, illustrates this point. *See* text at page for an analysis of the present status of this opinion.
85. 296 U.S. 10 (1935).
86. *Id.* at 22.
87. 294 F.2d 830 (9th Cir. 1961), *cert. denied*, 369 U.S. 817 (1962).

accordingly, federal law would prevail over state law. The court stated that, while *Borax* had not been directly concerned with accretion, the principle of that case is equally applicable because accretion is an attribute of title and "the determination of the attributes of an underlying federal title, quite as much as the determination of the boundaries of the land reserved or acquired under such a title, 'involves the ascertainment of the essential basis of a right asserted under federal law.' "[88]

The rule in the *Washington* case was reaffirmed several years later by the Supreme Court in *Hughes v. Washington*.[89] The issue involved whether the plaintiff, successor in title to an original federal grantee, was entitled to the gradual and imperceptible accretions added to her land both before and after the admission of Washington to the Union. The state trial court, relying upon the *Borax* and *Washington* decisions, held that federal law applied and confirmed title to the accreted lands in the plaintiff. The State supreme court, however, reversed, declaring that state rather than federal law governed in this instance. Since under the law of Washington the boundary was fixed as of the date of statehood, the court held that all accretions since that time belonged to the state rather than the littoral owner.

The case was then brought before the United States Supreme Court. The issue before the Court was whether or not a state could alter the ambulatory boundary between its tidelands and uplands patented by the federal government prior to statehood by declaring that boundary to be permanently fixed at the line of ordinary high tide on the date of admission to statehood, thereby depriving the uplands owner of natural accretions occurring since that date. The Supreme Court held that this question was controlled by federal law, not state law and, therefore, the littoral owner was entitled to the accretions. The Court relied on the *Borax* case to reach its decision: "While the issue appears never to have been squarely presented to this Court before, we think the path to decision is indicated by our holding in *Borax, Ltd. v. Los Angeles*. . . . No subsequent case in this Court has cast

88. *Id.* at 832.
89. 389 U.S. 290 (1967).

doubt on the principle announced in *Borax*."[90] The Court reached its decision in spite of the fact that the *Borax* case did not deal with accretions. It nevertheless declared:

> While this is true, the case did involve the question as to what rights were conveyed by the federal grant and decided that the extent of ownership under the federal grant is governed by federal law. This is as true whether doubt as to any boundary is based on a broad question as to the general definition of the shoreline or on a particularized problem relating to the ownership of accretion.[91]

The right asserted by Mrs. Hughes, whose predecessor in title had acquired the upland before statehood, was a right asserted under federal law. Under federal law accretion belonged to the upland owner. The main policy behind the federal common law was to protect the riparian owners' access to the water.[92] Therefore, the accretion to Mrs. Hughes' property belonged to her, and not to the state. In a concurring opinion, Mr. Justice Stewart recognized Washington's fixed boundary rule as a change in the state's water law. He argued that Mrs. Hughes' right to accretion should be based on the principle that the application of state law was a taking of property without compensation.[93]

Thus, both the *Washington* and the *Hughes* cases recognized the ambulatory boundary as a part of the federal law and held that this principle would prevail over a contrary state rule. While *Hughes* involved a federal patent made prior to statehood, both *Washington* and *Borax* involved patents made after statehood. These decisions would therefore suggest that federal law will govern wherever a federal patent is involved. This would virtually destroy the efficacy of any state law that attempted to establish a fixed boundary as far as those states carved out of the federal domain are concerned,[94] including well over half of the coastline of the United States. The validity of these decisions, at least as they might have applied to inland non-tidal navigable water bodies, is now in question, however, since the rendering of a very

90. *Id.* at 291-92.
91. *Id.* at 292.
92. *Id.* at 293.
93. *Id.* at 294-98.
94. Note, *Florida Sovereignty Submerged Lands: What Are They? Who Owns Them and Where Is the Boundary?*, 1 FLA. ST. L. REV. 596, 630 (1973).

recent United States Supreme Court decision to be discussed later, *Oregon v. Corvallis Sand and Gravel Co.*[95]

Another decision by the Supreme Court, *Bonelli Cattle Co. v. Arizona*[96] further extended the applicability of federal common law when the Court took the position that when states are successors in title to the federal government, they are subject to federal common law with respect to boundaries of land abutting on all navigable waters. *Bonelli* involved a dispute between an upland owner and the State of Arizona, as owner of the bed of the Colorado River, over title to land exposed by rechanneling the river. The Arizona Supreme Court considered the exposed land to be the result of avulsion since a sudden change in the character of the land was involved, and held that title to the exposed land remained in the State.[97] The Supreme Court of the United States reversed. Although urged to apply the *Hughes* analysis—that a federal question was involved because the upland owner traced his title through a federal grant—the Court sidestepped this argument[98] in favor of a broader rationale.[99] A federal question was involved, the Court reasoned, because the State acquired its title to the riverbed under the equal footing doctrine.[100] Further, the State's title was held to be a limited one in that it held the beds of navigable waters for the purpose of public navigation.[101] In cases in which the channeling project enhanced the state's interest in the navigability of the river, the Court decided that as a matter of public policy the State should not be permitted to acquire the exposed land in what would amount to a "windfall, since unnecessary to the State's

95. ___U.S.___, 97 S.Ct. 582 (1977).
96. 414 U.S. 313 (1973).
97. State v. Bonelli Cattle Co., 107 Ariz. 465, 489 P.2d 699 (1971).
98. "[I]t is unclear whether at the time of Santa Fe Pacific's patent, the portion of the land which ultimately became Bonelli's parcel was actually riparian." Bonelli Cattle Co. v. Arizona, *supra* note 96, at 321 n. 11.
99. The court made an important distinction between questions of riparian rights granted by the states in sovereignty beds (determined by state law said the court), and questions of the extent of state ownership of sovereign lands (determined by federal common law). "We continue to adhere to the principle that it is left to the states to determine the rights of riparian owners in the beds of navigable streams which, under federal law, belong to the State . . . The issue before us is not what rights the state has accorded private owners in lands which the state holds as sovereign right; but, rather, how far the State's sovereign right extends under the equal-footing doctrine. . . ." *Id.* at 319.
100. The states which entered the Union after its formation were admitted with the same rights as the original states within their respective borders. Mumford v. Wardwell, 73 U.S. (6 Wall.) 423 (1867). Title to lands under navigable waters passed to the new states under the equal footing doctrine. Pollard's Lessee v. Hagan, 44 U.S. (3 How.) 212 (1845).
101. Bonelli Cattle Co. v. Arizona, *supra* note 96, at 322-23.

purpose in holding title to the beds of the navigable streams within its borders."[102] To avoid this windfall to the State, which would have resulted from classifying the drying up of the bottomlands as avulsion, the Court in effect redefined avulsion and accretion, no longer emphasizing the speed with which the change was brought about, but rather finding accretion because of the lack of "navigational or related public purposes."[103] Lack of such interests, said the Court, called for application of the accretion theory, which gave the land to Bonelli, the adjoining landowner.

Obviously the holding of *Bonelli* implied far-reaching consequences. The majority apparently intended through use of the equal footing doctrine to broaden the applicability of federal common law under *Borax* beyond those relatively limited[104] lands to which title derived from a federal patent. Under the equal footing rationale the only submerged sovereignty land that would be excepted would be that under navigable waters situated in the original thirteen states and Texas, where the federal government was not the source of title. It was this seemingly irrational exclusion against which Mr. Justice Stewart dissented.[105] The impact of the decision was to shift the basis of the holding that federal law applies when there is a finding that title to the upland derived from a federal grant[106] to a determination of the extent of state interests in sovereignty land under the equal footing doctrine.[107] The effect was to require an analytical focus on the extent of sovereignty land as a federal question, rather than on the extent of riparian land.

Despite the fact that *Bonelli* was so recently decided and by a seven-to-one majority, its treatment of the equal footing

102. *Id.* at 328.
103. *Id.* at 329.
104. The *Borax* rule was relatively limited in that it apparently applied only to those states carved out of the federal domain.
105. "I think this ruling emasculates the equal footing doctrine . . . The upshot of the Court's decision is that the 13 Original States are free to develop and apply their own rules of property law for the resolution of conflicting claims to an exposed bed of a river, while those States admitted after the Constitution's ratification must under today's decision knuckle under to this court's supervisory view of 'federal common law.' A later-admitted State like Arizona is thus not at all on an equal footing with the original States in the exercise of sovereignty over real property within its boundaries." Bonelli Cattle Co. v. Arizona, *supra* note 96, at 336.
106. Borax Consolidated, Ltd. v. Los Angeles, 296 U.S. 10 (1935); United States v. Washington, 294 F.2d 830 (9th Cir. 1961), *cert. denied*, 369 U.S. 817 (1962); Hughes v. Washington, 389 U.S. 290 (1967).
107. 414 U.S. at 321 n.11. *See* note 100, *supra*.

doctrine as a source of federal common law has been expressly overruled by *Oregon v. Corvallis Sand and Gravel Co.*[108] *Corvallis* concerned a complicated situation involving a "cut-off" formed during a flood of the Willamette River in Oregon. During the flood a wide bend in the main channel of the river became a secondary branch when the force of the water cut across the neck of the peninsula formed by the bend.[109] Corvallis Sand had been excavating in the new riverbed for forty to fifty years without a lease from the State. The State brought an ejectment action against Corvallis to recover eleven parcels of riverbed as well as damages for the use of the parcels. The trial court awarded parcels to each party and set damages for previous use by Corvallis of parcels awarded to the State.[110] Both parties appealed from that court to the Oregon Court of Appeals. The question there was whether the landowners in the area of the cut retained title under avulsion theory, or whether the title reverted to the State. In a sense, the issue was whether *Bonelli* could be applied in reverse.[111] The Oregon Court of Appeals clearly held that *Bonelli* required the application of federal law to determine whether the change was avulsive.[112]

Arizona, dissatisfied with the decisions of its own courts, successfully carried its case to the United States Supreme Court on petition for certiorari. The Court's opinion was delivered by Mr. Justice Rehnquist.

> Our analysis today leads us to conclude that our decision to apply federal common law in *Bonelli* was incorrect. . . . Although federal law may fix the initial boundary between fast lands and the riverbeds at the time of admission to the Union, the State's title to the riverbed vests absolutely as of the time of a State's admission and is not subject to later defeasance by operation of *any* doctrine of federal common law.[113]

The Court, then, elaborated upon the proper scope and effect of the equal footing doctrine.

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108. 429 U.S. 363 (1977) [hereinafter cited as Corvallis].
109. Oregon v. Corvallis Sand & Gravel Co., 526 P.2d 469, 473-74 (Ore. Ct. App. 1974).
110. *Id.* at 472.
111. "While *Bonelli* involved title to lands formerly under the main channel that had since become dry, the basic public policy discussion is equally applicable to the case where certain lands which were not under water are presently under water." *Id.* at 475.
112. "The State relies heavily upon Purvine v. Hathaway 238 Or. 60, 393 P.2d 181 (1964), to support its position that this change was not avulsive in nature. First, it should be noted that federal common law controls ownership questions under *Bonelli*, and thus, state cases are of limited applicability," *Id.* at 476 n.5.
113. Corvallis, *supra* note 108, at 370-71. (emphasis added).

> Once the equal footing doctrine had vested title to the riverbed in Arizona as of the time of its admission to the Union, the force of that doctrine was spent; it did not operate after that date to determine what effect on titles the movement of the river might have. Our error, as we now see it, was to view the equal footing doctrine enunciated in *Pollard's Lessee v. Hagan* as a basis upon which federal common law could supercede state law in the determination of land titles. Precisely the contrary is true.[114]

Thus, the *Bonelli* decision's broadening of the applicability of federal common law beyond the holding in *Borax* by use of the equal footing doctrine is no longer valid.

The origin and development of the equal footing doctrine required that the *Bonelli* interpretation be undone. In 1845, the Supreme Court held in *Pollard's Lessee v. Hagan*[115] that new states joining the Union were entitled to the soil under navigable waters within the state, which had not previously been conveyed, just as were the original thirteen states upon forming the new nation. The rule in *Pollard's Lessee* was reaffirmed in *Weber v. Harbor Commissioners*[116] which held that California entered the Union as sovereign over all its soils under tidewater within its borders with the right to dispose of such title in any manner considered proper, subject only to the federal government's paramount authority over navigation to facilitate foreign and interstate commerce. In 1891, *Packer v. Bird*[117] was decided, holding that the high water mark constituted the limit below which the United States could not convey lands bordering navigable waters because such lands belong to the state under the equal footing doctrine. Importantly, the *Packer* Court went on to rule that while state law could not define the boundaries of a federal grant nor impair the use and enjoyment of that property, state law was determinative as to the rights attached to the property conveyed.[118]

The *Bonelli* expansion of the equal footing doctrine to make federal common law applicable to determine disputed

114. *Id.* at 371.
115. 44 U.S. (3 How.) 391 (1845).
116. 85 U.S. (18 Wall.) 57 (1873).
117. 137 U.S. 661 (1891).
118. *Id.* at 672.

inland navigable water boundaries created an inequality between the original thirteen states and Texas, whose source of title was not the federal government, and all other states in the Union. This interpretation was contrary to the very meaning of "equal footing" and the notion that new states were admitted to the Union on an equal basis with the original thirteen states which included equality in the exercise of sovereignty over the beds of navigable waters. The *Corvallis* decision has put the "equal" back into the equal footing doctrine as it was envisioned by the Supreme Court in *Pollard's Lessee.*

In addition to ruling that federal common law must be applied to resolve disputed inland navigable water boundaries, the *Bonelli* decision fashioned a new federal law of accretion under which courts were to balance the state's interest in navigational and related public interests[119] against the traditional principles for determining ambulatory boundaries.[120] The *Bonelli* court tied sovereign ownership of the beds of nontidal navigable waterbodies to the purposes underlying the public trust doctrine. When those purposes were determined not to exist in the circumstances under consideration, ownership of the bed by the State was no longer thought essential.[121] Carrying this to its logical extreme would arguably mean that a state need not own the beds of any navigable waterbody within its jurisdiction. A navigable servitude would be enough to protect the public interest in such lands.[122] The

119. The Court would apparently approve an expansive definition of related public interests. "The extent of the State's interests should not be narrowly constructed because it is demonstrated a navigational purpose" Bonelli Cattle Co. v. Arizona, *supra* note 96, at 323 n.15 (*Citing* Zabel v. Tabb, 430 F.2d 199 (5th Cir. 1970), *cert. denied*, 401 U.S. 910 (1971)).

120. The *Bonelli* court analyzed the policies behind accretion and reliction: "There are a number of interrelated reasons for the application of the doctrine of accretion. First, where lands are bounded by water, it may well be regarded as the expectancy of the riparian owners that they should continue to be so bounded. Second, the quality of being riparian, especially to navigable water, may be the land's 'most valuable feature' and is part and parcel of the ownership of land itself. *Hughes v. Washington*, 389 U.S. at 293; Yates v. Milwaukee, 10 Wall. 497, 504 (1871). Ripariannes also encompasses the vested right to future alluvion, which is an 'essential attribute of the original property.' County of St. Clair v. Lovington, 23 Wall. 46, 68 (1874). By requiring that the upland owner suffer the burden of erosion and by giving him the benefit of accretions, ripariannes is maintained. Finally, there is a compensation theory at work. Riparian land is at the mercy of the wanderings of the river. Since a riparian owner is subject to losing the land by erosion beyond his control, he should benefit from any addition to his lands by the accretions thereto which are equally beyond his control." Bonelli Cattle Co. v. Arizona, *supra* note 96, at 326.

121. "Since the State asserts no public need for ownership of the subject land we do not attempt to define the exact parameters of the permissible public purpose." *See* note 119, *supra.*

122. Obviously this would not be enough in many circumstances. If the bed is in private

Corvallis opinion, in expressly overruling the equal footing doctrine as a basis for applying federal law, makes it unnecessary for the states to adopt this balancing of interests approach formulated in *Bonelli*. Title determinations to lands bordering navigable non-tidal waters in those states which joined the Union under the equal footing doctrine are now controlled by state law. A state could, however, choose to follow the principle enunciated in *Bonelli*, that when a state changes the course of a waterbody or lowers water levels so that formerly submerged lands are exposed and no navigation-related public goals remain in the exposed lands, the exposure will be treated as accretion with a resultant transferring of title to the accreted lands to the adjacent riparian owners. The significance of the *Corvallis* decision is that the application of the *Bonelli* principle is no longer *required* of the states. That much of the Supreme Court's opinion seems clear. Not so clear, however, is the effect of *Corvallis* on the principle enunciated in *Hughes*—that federal common law governs boundary disputes involving lands whose title derived from a prior federal patent.

In the words of Mr. Justice Marshall, dissenting from the *Corvallis* majority opinion.

> The Court holds that federal common law governs only the determination of the initial boundaries of the grant; all other questions are to be determined under state law.[123]

Such a holding would constitute a return to the limited principle originally pronounced in *Borax* that federal law will govern the determination of the boundary that demarks the extent of a grant as originally conveyed by the United States, and a retreat from *Hughes'* expansion of *Borax* to make federal law equally applicable to the resolution of title disputes to lands added by the process of accretion to the original federal grant.[124] More significantly, *Corvallis* seems to implicitly

ownership the state's authority to control the taking of minerals, etc. from the bed is severely diminished. If there is any lesson to be learned from recent environmental skirmishes, it is that state ownership allows for flexibility of alternatives while private ownership does not. Clearly, it would be a mistake to irrevocably fix the interests of the public in this manner.

123. Corvallis Sand, *supra* note 108, at 385.

124. "[A]s the Court is certain to announce when the occasion arises, today's holding also overrules Hughes v. Washington, 389 U.S. 290 (1967)." *Id.* at 593 (Dissenting Opinion, Marshall, J.).

reject the whole idea that the existence of a federal source of title will constitute a proper basis upon which to apply federal common law to non-tidal navigable water boundary disputes. After rejecting *Bonelli's* novel application of the equal footing doctrine, the *Corvallis* majority observed that the only other basis for applying federal law in that case was the fact the Bonelli's property was part of a conveyance previously patented to the Santa Fe Railroad by the federal government. The Court found this second basis equally deficient to justify superceding Arizona's own law because the land in question "had long been in private ownership and, hence, under the great weight of precedent from [the United States Supreme Court], subject to the general body of state property law."[125] This perfunctory language, without elaboration by the majority, might be explained by the Supreme Court's decision in *Corvallis* not to reconsider *Hughes*, since that case had not been cited by the Oregon courts nor relied upon in *Bonelli*.[126] It is obvious that reconsideration of *Bonelli's* use of the equal footing doctrine as a basis for applying federal law to inland navigable water boundary disputes was the focus of the *Corvallis* opinion. Nevertheless, there are comments in the *Corvallis* opinion that clearly suggest the existence of a prior federal patent does not require application of federal common law and, therefore, that the holding in *Hughes* has been implicitly overruled in this respect.

In the first place, as discussed above, the majority of the Court concluded that it was wrong to have applied federal law in *Bonelli*—not merely that the equal footing doctrine was inapplicable to justify its use. Secondly, after elaborating upon the proper scope of the equal footing doctrine, the *Corvallis* Court stated:

> Thus, if the lands at issue did pass under the equal footing doctrine, state title is not subject to defeasance and state law governs subsequent dispositions. A similar result obtains in the case of riparian lands which did not pass under the equal footing doctrine.[127]

Use of this broad language is another indication by the Court

125. *Id.* at 587, *citing* Wilcox v. Jackson, 13 U.S. (13 Pet.) 266 (1839). In his dissenting opinion, Justice Marshall found Wilcox unsupportive of the majority's position. *Id.* at 595-96.
126. *Id.* at 377 n.6.
127. *Id.* at 378.

that the existence of a prior federal grant would not alter the necessity for state law to control the boundary determination. Finally, the majority's rejection of *Hughes* was implied when it cited the case of *Joy v. City of St. Louis*[128] for the proposition that a claim to accretions to land patented to one's predecessor by the federal government was not a basis for the application of federal common law.[129]

> We also think there was no other basis [besides the equal footing doctrine] in that case [*Bonelli*], nor is there any in this case, to support the application of federal common law to override state real property law.[130]

Thus, while prior to the rendering of the Supreme Court's decision in *Corvallis*, federal law likely would have governed whenever a federal patent was involved based upon the holdings in the *Washington* and *Hughes* cases, that would seem to no longer hold true. The Supreme Court appears to embrace again the language of its older decisions.[131] *Corvallis* does suggest, however, that *Hughes* may still control title determinations in regard to lands bordering the ocean due to the "vital interest" of the federal government in the marginal sea.

> We are aware of the fact that *Hughes* gave to *Borax* the same sort of expansive construction as did *Bonelli*, but we are likewise aware that *Hughes* dealt with ocean-front property, a fact which the Court thought sufficiently different from the usual situation so as to justify a "federal common law" rule of riparian proprietorship.[132]

Disputes involving the nation's coastline would thus be resolved by application of the federal common law of ambulatory boundaries and this would seem to hold true despite the absence of a federal patent in the chain of title and notwithstanding a state's participation in any such boundary controversy. The majority of the Court in *Corvallis*, by their reference to *Hughes* as being distinguishable because of its ocean-

128. 201 U.S. 332, 343 (1906).
129. Corvallis, *supra* note 108, at 377.
130. *Id.* at 381.
131. *E.g.*, "In our judgement the grants of the government for lands bounded on streams and other waters, without any reservation or restriction of terms, are to be construed as to their effect according to the law of the state in which the lands lie." Hardin v. Jordon, 140 U.S. 371, 384 (1891).
132. Corvallis, *supra* note 108, at 377 n.6.

front property context, has seemingly broadened the *Hughes* precedent for the application of federal law. Instead of merely standing for the application of federal law to determine title to lands added by accretion to ocean-front property derived from a federal patent, the *Hughes* decision has arguably been extended to support the application of federal law to determine title boundaries on all coastal waters—the prior federal patent element of the holding having been exorcised.

Since the decision in *Corvallis*, a federal district court in Iowa has rendered an opinion which lends further support to the proposition that state law will control the resolution of boundary disputes involving inland navigable waters.[133] The United States, as trustee for the Omaha Indian Tribe, brought suit to establish title to lands bordering the Missouri River—a determination that required the court to decide whether the movement of the River over a span of one hundred years had resulted in accretion to the riparian properties of the defendants or had been an avulsive movement which might have placed title in the Omaha Indian Tribe. In holding that state law governed,[134] the court began by citing *Joy v. City of St. Louis*[135] for the general proposition that state law is applicable to determine not only title to lands within its jurisdiction, but "questions concerning the rights of riparian landowners to accretion lands" as well.[136] As to whether the fact that the United States as claimant to the land involved created an exception to this general rule, the court expressly held that it did not.[137] *Hughes v. Washington*[138] was distinguished,[139] as it was in *Corvallis*, as limited to ocean-front property involving the nation's international boundaries.[140]

133. United States v. Wilson, 433 F. Supp. 57 (N.D. Iowa 1977).
134. In this case, Nebraska law was applied on the authority of Nebraska v. Iowa, 406 U.S. 117 (1972). "The 1972 Nebraska-Iowa case began when Iowa claimed thirty separate parcels which were wholly on the Iowa Side of the 1943 compact line. For purposes of resolving the choice of law issues, the Court divided the thirty parcels into two groups. The classification was based on whether the land in the parcels was formed before or after 1943 . . . Nebraska law would provide the rule of decision for land disputes as to river changes occuring prior to 1943, and Iowa law would provide the rule of decision for changes occuring after that date." *Id.* at 60.
135. 201 U.S. 332 (1906).
136. Wilson, *supra* note 133, at 59.
137. *Id.* at 61. Citing Mason v. United States, 260 U.S. 545 (1923); United States v. Little Lake Misere Land Co., Inc., 412 U.S. 580, 595 (1973); 14 WRIGHT, FEDERAL PRACTICE AND PROCEDURE, 141 n.4 (1976).
138. 389 U.S. 290 (1967).
139. Wilson, *supra* note 133, at 61.
140. "In any event, *Hughes* was concerned only with the question whether a title included accretion lands deposited subsequent to issuance of a patent, not whether accretion had in fact occurred." Wilson, *supra* note 133, at 61 n.3.

The court then turned to a rationale not utilized in the cases previously discussed.

> Under the Rules of Decision Act, 28 U.S.C. § 1652,[141] the Constitution, treaties and Acts of Congress must be examined in each case to determine whether federal law supplants state law as the rule of decision.[142]

After examining these sources to ascertain whether the application of federal law was required by any of them, the court found that no such requirement existed and there was no "federal policy broad or strong enough to supplant the strong local policy concerning title to land."[143] The district court, in effect, found that the existence of a prior federal patent does not mandate the application of federal common law to resolve boundary disputes involving non-tidal navigable waterbodies either as a federal decisional principle or under the authority of the Rules of Decision Act. Additionally, the special circumstance of the federal government's paramount interest in the nation's international boundaries reappears in dicta in *Wilson* as the justification for federal law to control in cases involving coastal waters.

USE OF THE MEANDER LINE AS AN ALTERNATIVE BOUNDARY

In a few exceptional cases, the meander line has been designated the boundary separating publicly-owned submerged lands from private upland ownership. Most of these cases involved disputes over boundaries of tidal waters but one notable case that will be discussed, *Utah v. United States*,[144] concerned the Great Salt Lake. Because it is conceivable that the meander line may be urged as an alternative boundary when the location of the OHWL is in dispute, these cases are worth examining here.

Meander lines are established by public survey and were traditionally determined by the surveyor actually walking around the shoreline of a navigable body of water to record a

141. "The laws of the several states, except where the Constitution or treaties of the United States or Acts of Congress otherwise require or provide, shall be regarded as rules of decision in civil actions in the courts of the United States, in cases where they apply."
142. Wilson, *supra* note 133, at 61.
143. *Id.* at 62.
144. 425 U.S. 948 (1976); *see* Report of Special Master *reproduced in* 1976 UTAH L. REV. 245.

line which purportedly followed the sinuosities of the shore.[145] The meander line of a particular piece of land will be a straight line or a series of straight lines connecting points or monuments on the shore for use in determining the quantity of public land in the subdivision being surveyed.[146] It has been held in innumerable cases[147] that unless a clear intent to make the meander line the boundary is shown,[148] it is not the proper line of demarcation for title purposes, but the water whose margin is meandered is the true boundary. Courts have, nevertheless, occasionally declared the meander line to be the property boundary where the water line was obscured in some way.

In *Trustees of Internal Improvement Fund v. Wetstone*,[149] involving an island meandered under an original government patent, the Florida Supreme Court reasoned that it was the State's duty to establish the boundary between private and sovereignty lands. When the State failed to present any evidence as to the location of the mean high water line in an area of dense mangrove growth, the Florida high court accepted the meander line as the boundary.[150] *Hawkins v. Alaska Freight Lines, Inc.*,[151] was a trespass case in which the meander line was presumed to substantially indicate a mean high water line obscured by fill and road construction.[152] The

145. *See generally* U.S. BUREAU OF LAND MANAGEMENT, MANUAL OF INSTRUCTIONS FOR THE SURVEY OF THE PUBLIC LANDS OF THE UNITED STATES (1902).
146. Den v. Spalding, 39 Cal. App.2d 623, 625, 104 P.2d 81, 83 (1st Dist. Ct. App. 1940). *See also* 2 SHALOWITZ, SHORE AND SEA BOUNDARIES 89 (1962) note 450, at 5.
147. *E.g.*, Whitaker v. McBride, 197 U.S. 510 (1905); Hardin v. Jordan, 140 U.S. 371 (1891); Jeffry v. Grosvenor, 261 Iowa 1052, 157 N.W.2d 114 (1968); Narrows Realty Co. v. State, 52 Wash.2d 843, 329 P.2d 836 (1958).
148. Mitchell v. Smale, 140 U.S. 406, 414 (1891); Hardin v. Jordan, 140 U.S. 371, 380 (1891). The general statement of the rule is that "a meander line may constitute a boundary where so intended or where the discrepancies between the meander line and the ordinary high water line leave an excess of unsurveyed land so great as clearly and palpably to indicate fraud or mistake." Lopez v. Smith, 145 So.2d 509, 515 (Fla. 1962); *cf.* Udall v. Oelschlaeger, 389 F.2d 974 (D.C. Cir. 1968) (Where the federal government refused to approve plaintiff's application for a patent under federal homestead legislation, claiming that the land in question had previously been withdrawn from entry by a Department of Interior Public Land Order which purported to withdraw from appropriation an area "parallel to and one mile distant from the line of mean high tide of Turnagin Arm", a tidal inlet. The Interior Department construed "the line of mean high tide" to mean the meander line and the Court of Appeals held that the Department's interpretation was controlling for identifying the lands affected by its withdrawal order as long as that interpretation was not plainly unreasonable or unauthorized). 389 F.2d at 976.
149. 222 So.2d 10 (Fla. 1969).
150. The State, in fact, offered no evidence as to the boundary line. *Id.* at 11. Pointing out that the meander line was in places several hundred feet offshore in navigable waters, the dissent argued that the State had no authority to convey sovereignty lands except in the public interest. *Id.* at 14-19.
151. 410 P.2d 992 (Alas. 1966).
152. The purpose of the presumption was to determine whether a trespass had occurred

Alaska court, however, did not intend that the meander line would be presumed the boundary for title purposes.

In 1966 the State of Utah brought an action within the original jurisdiction of the United States Supreme Court to obtain a judicial determination of the proper boundary separating state and federal landholdings surrounding the Great Salt Lake. A Special Master was appointed in 1972 to conduct proceedings and submit reports to the Court.[153] The Special Master's first report, recommending that the doctrine of reliction not be applied to the Great Salt Lake, was adopted in 1975.[154] In a second report, the Special Master recommended that the meander line be designated the boundary between the State's submerged lands and the federal uplands surrounding the Lake. The Supreme Court subsequently adopted this second report also.[155]

The parties to the proceedings both stipulated that the ordinary high water mark is the legal measure of the bed of inland navigable waters.[156] Nevertheless, because the land surrounding the Great Salt Lake is extremely flat, small fluctuations of the Lake's elevation cause inundation or exposure of large areas of land in a short period of time. Moreover, vegetation and erosion lines are incapable of determination on the shores of the Lake.[157] The absence of these indicia made determination of the OHWL nearly impossible. Because the meander line was considered by the Special Master to be the most reliable evidence of the OHWL, he adopted that alternative boundary as urged by the State of Utah.[158] Of special interest are the criteria that the Special Master used to solve the boundary problem.

> [I]t would seem that custom, mutual acceptance and recognition, congressional and executive conduct, as well as scientific data, are allowable aids to the solution of the present problem. . . . In combination those factors seem to the Special Master to point to the

in fact on certain private property. Since the trespass consisted of fill and road construction that had obliterated the actual water line, the court felt that it was unfair to require the property owner to produce evidence of the actual boundary.

153. Utah v. United States, 406 U.S. 940 (1972).
154. Utah v. United States, 420 U.S. 304 (1975).
155. Utah v. United States, 425 U.S. 948 (1976).
156. *See* note 144, *supra*, at 255.
157. *Id.*
158. *Id.* at 306-7.

surveyed meander line as the most rational delineation of the statehood boundary now available.[159]

Use of the meander line as an alternative to the ordinary high water line presents both practical and legal problems. The meander line may be highly inaccurate, reflecting errors in surveying or failing to reflect changes in the shoreline since the original survey. If the meander line is below the OHWL the state may lose ownership and control of a valuable resource, while if the line is significantly shoreward of the OHWL, the riparian owner may lose some of his valuable riparian rights.

From the legal viewpoint, the meander line is arguably unacceptable as a standard boundary line because the private owner may not be deprived of his riparian rights to accretion without due process. Since meander lines do not fluctuate with changes in water levels or land contours, they are analogous to the attempts by some states to fix boundaries as of statehood which have been declared unconstitutional.[160] Conversely, a meander line below the OHWL would not adversely affect the riparian owner, but the validity of such a boundary designation would depend upon the state's concept of the public trust doctrine. Because that doctrine is regarded as a judicial restraint on the power of the legislature to alienate lands except in the public trust,[161] some courts might not recognize meander line boundaries which in effect give away sovereignty submerged lands.

Thus, the meander line does not appear to be a reasonable substitute for the OHWL as a general rule. It should be emphasized that the meander line has only been used where unusual circumstances caused the determination of the actual OHWL to be extremely difficult or even impossible. The meander line is "only an approximation"[162] or evidence of

159. *Id.* at 309. The meander line referred to in this case was pieced together from several segment surveys; one made in 1855, three in 1856 and 1885, two in 1886, 1887, 1899, 1906 and 1912, three in 1913 and 1928, and the closing survey was made in 1966, *Id.*, n.24, at 265. Thus it did not conform to the water boundary of the Great Salt Lake as that boundary had ever actually existed.

160. Hughes v. Washington, 389 U.S. 290 (1967), (coastal waters); United States v. Washington, 294 F.2d 830 (9th Cir. 1961), *cert. denied*, 369 U.S. 817 (1962) (coastal waters). State v. Florida National Properties, Inc., 338 So.2d 13 (Fla. 1976) (navigable lake).

161. Note, *Maryland's Wetlands: The Legal Quagmire*, 30 MD. L. REV. 240, 261 (1970). *See* Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 557-65 (1970).

162. *See* note 144, *supra*, at 309.

the OHWL, and as a fixed line is not a satisfactory substitute for the actual water boundary which is ambulatory in nature.

THE NECESSITY OF AN AMBULATORY LINE

Notwithstanding the furor over *Bonelli* and *Corvallis*, this much is clear: the states cannot fix the OHWL, relative to a point in time, without doing violence to the principles of accretion and reliction. A very recent Florida Supreme Court decision, *State v. Florida National Properties, Inc.*,[163] illustrates this principle admirably.

In 1971 the Florida Legislature passed a boundary statute[164] which is fairly representative of attempts by several states[165] to fix the OHWL as of the date of statehood. The statute provided in part that the water's edge, as evidenced at the date of statehood, would constitute the boundary line of any navigable meandered freshwater lake.[166]

At the trial level,[167] the circuit court found multiple constitutional infirmities in the statute. The court said that an application of *Hughes* through *Bonelli* required two holdings: first, that federal law applied over state law,[168] and second, that any attempt by the state to deprive riparian landowners of their right to accretion was invalid under federal common law.[169]

163. 338 So. 2d 13 (Fla. 1976).
164. FLA. STAT. § 253.151 (1975).
165. *E.g.*, Harris v. Hylebos Indus., Inc., 81 Wash.2d 770, 505 P.2d 457 (1973); Vavrek v. Parks, 6 Wash.App. 684, 495 P.2d 1051 (1972); Wilson v. Howard, 5 Wash.App. 169, 486 P.2d 1172 (1971). Washington, however, does not recognize loss of title by erosion of land abutting lakes, bays or waters treated as lakes or bays if the land was conveyed by federal grant prior to statehood. This rule relies on the theory that the state may dispose of its land beneath navigable waters if it desires.
166. "The boundary line shall be established by, or under the supervision of, the board (of trustees of the internal improvement trust fund) by use of one or more of the following procedures: (a) where physical evidence exists indicating the actual water's edge of any navigable meandered freshwater lake *as of the date such body came under the jurisdiction of the state*, regardless of where the water's edge exists as of the date of the determination of the boundary line, the water's edge as evidenced on the former date shall be deemed the boundary line." FLA. STAT. § 253.151 (3) (a) (1975) (emphasis added). The statute also established several alternative means for determining the OHWL, including physical inspection, affidavits of local residents, and statistical averaging of stage data.
167. Case No. 74-5-7, Cir. Ct. Highlands County, May 3, 1974.
168. "In order to establish the boundary line, the Court must determine the extent of the State's title, if any, and to the disputed area. Since the State acquired title to the bottom lands from the Federal Government, the boundary line is necessarily controlled by Federal law. *Bonelli* . . . Upon reviewing the applicable law, the court has concluded that the boundary line between plaintiff's upland property and the sovereignty bottom lands of Lake Istokpoga is the present ordinary high water mark . . . This boundary is movable or ambulatory in character, and its location is subject to change in the future as a result of the processes of accretion, reliction and erosion." Case No. 74-5-7, Cir. Ct. Highlands County, May 3, 1976, slip op. at A-36.
169. *Id.* at A-41-42.

This position was subsequently adopted by the Florida Supreme Court.[170] That opinion would now be open to question as a result of the United States Supreme Court's decision in *Corvallis*, discussed previously. The majority in *Florida National Properties* cited *Hughes* to hold Section 253.151 unconstitutional as a violation of the supremacy clause of the United States Constitution, in that it was an attempt by the State to regulate in an area governed by federal law.[171] This basis can no longer be used after *Corvallis'* holding that state law is determinative.

Additionally, however, the Court held that the effect of the statute was to unlawfully take private property without the payment of just compensation in violation of the due process clauses of both the federal and Florida constitutions.[172] The attempt by the State to freeze boundaries of navigable meandered fresh water lakes ignored the principles of accretion and reliction which, according to the majority, were rights vested in the owners of lands bounded by navigable water.[173] This second basis for holding the statute unconstitutional is not dependent upon federal common law for its viability and has not been weakened by the subsequent rendering of the *Corvallis* decision.

THE USE OF STATISTICAL AVERAGING TO DETERMINE THE OHWL

As noted at the outset, the predominating rule is that the OHWL is to be determined from physical marks upon the banks,[174] and not through a statistical averaging process.[175] Use of such a process in this context has in fact been declared to be reversible error.[176] However, there are several reasons why this type of methodology has been urged. In certain areas of the country a stream or river may run wide and deep during the wet season while containing little or no water during dry months. The application of accretion-reliction theory under those circumstances is extremely difficult,[177] and an

170. 338 So.2d 13, 17 (Fla. 1976).
171. *Id.*
172. *Id.*
173. *Id.*
174. Howard v. Ingersoll, 54 U.S. (How.) 381 (1851).
175. *Coastal Boundary Mapping*, *supra* note 13, at 195-98.
176. Willis v. United States, 50 F. Supp. 99 (S.D. W.Va. 1943); Kelly's Creek & Northwestern R.R. Co. v. United States, 100 Ct.Cl. 396 (1943).
177. *See, e.g.*, Snake River Ranch v. United States, 395 F. Supp. 886 (D. Wyo. 1975).

averaging technique might serve to stabilize land boundaries and, therefore, property rights.[178] Further, where statistical stage data is available, the determination of the OHWL could arguably be brought closer to a scientific certainty. Such a determination may have much greater relevance for regulatory purposes than does the traditional definition.[179] Finally, since the examination of the bank of a water body with reference only to the traditional factors of the OHWL definition often may reveal several lines of varying distinctness, statistical data can provide invaluable collateral or secondary information as to the OHWL's location.[180] For these reasons it is helpful to examine some possible precedents for the use of statistical data in this context, and also some of the potential problems.

Language in the Supreme Court case of *Oklahoma v. Texas*,[181] lends some support to the use of averaging. The question for determination was the intent of the language in an early Spanish conveyance which set the boundary along "the course of the southern bank of the Arkansas" River.[182] The Court apparently did not read *Howard v. Ingersoll* as excluding the use of averaging. The Court stated:

> The boundary intended is on and along the bank at the average or mean level attained by the waters in the periods when they reach and wash the bank without overflowing it.[183]

In later proceedings[184] a method of determining the boundary along the cut banks of the river which apparently included averaging was validated by the court.

For several reasons, the case can be distinguished from more recent decisions defining the OHWL for navigable water bodies. First, the river had already been declared to be nonnavigable.[185] Second, and as a result of this finding, the Court placed primary reliance on what is perceived to be the intent of the parties expressed in the conveyance.[186] Since this was

178. *See* Motl v. Boyd, 286 S.W. 458 (Tex. 1926).
179. *See* 33 C.F.R. § 209.120(d)(2) (h) (ii) (a) (1976).
180. *See* FLA. STAT. § 253.151(3) (c) (1975).
181. 260 U.S. 606 (1922).
182. *Id.* at 623.
183. *Id.* at 632. Alabama v. Georgia, 64 U.S. 505, 515 (1859) contains almost identical language and therefore can be cited to the same proposition. *See* note 27, *supra*.
184. 265 U.S. 493 (1924).
185. Oklahoma v. Texas, 258 U.S. 574, 591 (1922).
186. Oklahoma v. Texas, *supra* note 181, at 633.

an arid area where water levels fluctuated drastically throughout the course of the year, the application of averaging appears logically to be within this intent. Because of these major distinguishing factors, there is no reason the decision should be considered as precedent in cases dealing with the OHWL of navigable waters, and the later federal decisions discussed above have uniformly adopted the physical test of *Howard v. Ingersoll.*

One result of *Oklahoma v. Texas*, however, was the adoption by Texas of a similar cutbank definition for the determination of the limit of the bed of navigable streams.[187] In the case of *Maufrais v. State*[188] the Supreme Court of Texas asserted that their definition is in "complete harmony"[189] with *Alabama v. Georgia* and *Howard v. Ingersoll.*

> The bed of a stream is that portion of its soil which is alternately covered and left bare as there may be an increase or diminution in the supply of water, and which is adequate to contain it at its average and mean state during an entire year, without reference to extra freshets of the winter or spring or the extreme drouths of the summer or autumn.[190]

The definition itself goes a long way toward explaining why such a method is necessary. Since floods are extremely prevalent in Texas and similar geographic areas,[191] and since during the dry season the same beds that flooded in spring may run almost dry, some method is necessary to equitably determine a stable boundary.[192] It remains to be seen whether the Texas definition will retain its validity.[193]

Although statistical averaging to determine the OHWL was the method incorporated in a proposed draft regula-

187. Motl v. Boyd, *supra* note 178.
188. 180 S.W. 2d 144 (Tex. 1944).
189. *Id.* at 147.
190. *Id.*
191. *See* Motl v. Boyd, 286 S.W. 458, 469-70 (Tex. 1926); Snake River Ranch v. United States, note 177, *supra.*
192. Another reason that Texas has stuck to an averaging technique for the determination of the OHWL is that the definition of navigability of streams is determined by statute in a similar manner. "All streams so far as they retain an average width of thirty feet from the mouth up shall be considered navigable streams . . ." TEX. REV. STAT. art. 5302 (1962). The width of the stream necessary for this statutory navigability is measured by the width of the bed so defined despite the fact that the width of the waters in ordinary season does not meet the requirement. This helps to explain the acceptability of an averaging technique of OHWL determination.
193. Of course it is possible that the courts in recognition of the difficulty of application to arid areas of the traditional OHWL definition, may adopt some variant of statistical averaging.

tion[194] promulgated by the Army Corps of Engineers to meet the requirements of the Federal Water Pollution Control Act,[195] the draft was subsequently discarded and the latest published rules and regulations of the Corps contain the traditional physical factors test.[196] Regardless of what definition is used by the Corps, it should be clearly borne in mind that the definition is promulgated for regulatory purposes only[197] and should not be considered an attempt to redefine property rights.[198] As a regulatory measure under the police power, it is not subject to the same potential constitutional infirmities as would be an attempt to redefine the traditional OHWL property boundary.

Two federal cases are instructive as to why the use of statistical averaging to determine the OHWL for title purposes is objectionable. *Willis v. United States*[199] concerned a dam which the government had constructed to improve the navigation in the Kanawha River in West Virginia. One of the consequences was the flooding of a strip of plaintiff's land. The government's argument that official river stage records should be used to determine the OHWL for compensation purposes was rejected. The court reasoned that such a method would be inappropriate because any result reached would depend upon a time period and frequency of occurrence arbitrarily selected by the individual analyst. While useful for engineering purposes, the statistical averaging approach was "utterly unreliable as a means of determining the respective rights of the United States and the riparian property owner."[200]

Another case involving the same river and a similar flooding situation, *Kelly's Creek & Northwestern R.R. Co. v. United States*,[201] also rejected the asserted averaging method. The Court of Claims adopted a variant of the traditional definition[202] and specifically rejected testimony regarding stage

194. 33 C.F.R. § 209.120(d) (2) (ii) (a) (1975).
195. *See* 33 U.S.C. § 1344 (Supp. 1972); N.R.D.C. v. Callaway, Civ. No. 74-1242 (D.C. March 27, 1975).
196. 42 Fed. Reg. 37144 (1977).
197. *See* United States v. Holland, 373 F. Supp. 665 (M.D. Fla. 1974).
198. As noted above, the private ownership of underlying beds of navigable water bodies has no bearing on the existence or extent of the dominant navigable servitude. United States v. Chicago, M., St. P. & P. R.R. Co., 312 U.S. 592, 596 (1941).
199. 50 F. Supp. 99 (S.D. W.Va. 1943).
200. *Id.* at 101.
201. 100 Ct. Cl. 396 (1943).
202. *Id.* at 406.

data as "wholly without value."[203] Thus, it appears that the federal courts are unwilling to accept a definition of OHWL based on statistical averaging, at least where property boundaries are involved.[204]

CONCLUSION

Mr. Justice Curtis' definition of the OHWL in *Howard v. Ingersoll*[205] is the one most frequently applied in both state and federal courts. It makes determination of the OHWL dependent upon the examination of several physical factors indicating the common and ordinary level of the water.

The *Corvallis* decision[206] may have created uncertainties as to whether federal or state rules are to be applied in determining boundaries in tidally-affected areas, but it seems clear that state rules will now be applied in determining property boundaries along non-tidal inland navigable waterbodies. This does not mean that the states are free to adopt whatever rules they please. Any attempt to permanently freeze such boundaries such as those made by the states of Washington and Florida, would still run into state as well as federal constitutional problems related to the taking issue.

Moreover, the *Bonelli* concept, that rapid boundary changes may be treated as accretion where navigation-related interests are not involved and riparian rights to navigable waterbodies are in need of protection,[207] may still be adopted as state law in those states which desire to do so. Perhaps it is fair to conclude that while the states are now free to apply and develop their own rules of law with respect to non-tidal fresh water boundaries, the concept recently developed by the federal judiciary in *Bonelli*[208] may lead to a re-thinking of such rules by the states, looking toward more equitable solutions to the problem created by the ambulatory nature of such boundaries. The dynamic character of the hydrologic

203. *Id.*
204. The recent Florida case, State v. Florida National Properties, Inc., 338 So.2d 13 (Fla. 1976), invalidated an averaging technique required by Florida statute. FLA. STAT. § 253.151(3)(c) (1975). This resulted, however, from a finding that this provision was not severable, and not from any analysis of the efficacy of statistical averaging.
205. 54 U.S. 381, 427 (1851).
206. Corvallis, *supra* note 108.
207. Bonelli Cattle Co. v. Arizona, *supra* note 96, at 328.
208. *Id.*

factors that play a part in the creation of the OHWL may call for flexible approaches by the states in resolving disputes over their inland navigable water boundaries.

The ambulatory nature of the actual water boundary makes use of the surveyed meander line as an alternative to the OHWL impractical and legally problematic. Use of the meander line or any other fixed boundary, such as a natural water boundary frozen as of a particular date, is subject to constitutional challenge as a deprivation of riparian rights. While a determination of the OHWL by use of mathmatical averaging would provide an ambulatory line, there is authority holding such a method unconstitutional due to the inherently arbitrary nature of the selection of data for analysis.

Consistent with the idea that the law should strive to conform as nearly as it is practical and feasible to do so with the state of things as they actually exist, the boundary for title purposes between sovereignty submerged lands and privately-owned uplands should be based on a delineation of the water's true boundary. In addition, because actual water boundaries are ambulatory in nature, the legal boundary for title purposes must change with the movement of the water's edge. After much controversy and debate, the OHWL, as determined by reference to physical indicators of the true water-land boundary, is still recognized by the courts, both federal and state, as the true boundary except in very unusual circumstances. In applying these legal rules to accurately locate the line on the ground, the legal profession will require the aid of experts from many disciplines, often including biologists, geologists and land surveyors. It is hoped that the legal guidelines set forth in this article may assist the legal profession in working with these experts to more accurately locate this sometimes elusive boundary line.