



1976

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Aimee Hess Conlan, *Emerging Rights for Owners of Subsidized Lands: Coastal Industrial Water Authority v. York*, 30 Sw L.J. 943 (1976)
<https://scholar.smu.edu/smulr/vol30/iss5/7>

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NOTES

Emerging Rights for Owners of Subsided Lands: Coastal Industrial Water Authority v. York

W.D. York owned property adjacent to the Houston Ship Channel near the confluence of the channel and the San Jacinto River. Groundwater withdrawal in the Houston-Baytown area had lowered the water table so that York's property gradually subsided beneath the waters of the ship channel. Of the 28.083 acres originally conveyed to York only 24.73 acres remained above water. Coastal Industrial Water Authority, the local government agency in charge of the Houston Ship Channel,¹ initiated a condemnation action as to York's property. Contending that title to the submerged land was lost to York by operation of law and had vested in either the city of Houston or the State of Texas,² the authority asserted that it was obliged to compensate York only for the land remaining above water. York filed this declaratory judgment suit in district court to determine the effect of submergence upon his ownership. The district court's judgment for York was affirmed by the court of civil appeals³ and writ of error was granted by the Texas Supreme Court. *Held, affirmed*: Although a riparian owner may not acquire title to submerged lands by self-help methods such as land fill, an owner is not divested of title by reason of the submergence of his land beneath navigable coastal waters. *Coastal Industrial Water Authority v. York*, 532 S.W.2d 949 (Tex. 1976).

I. PAST APPLICATION OF RIPARIAN PRINCIPLES

Riparian, or littoral,⁴ land is property located adjacent to a river, stream, lake, or ocean.⁵ When the water level or shore configuration of a riparian estate changes, the ownership of the property thereby gained or lost is a function of both the manner in which the change occurred and the nature of the body of water or watercourse involved.⁶ In this context the general rule is that a state is the owner, as trustee for the public,⁷ of all navigable⁸ waters

1. The Coastal Industrial Water Authority is a conservation and reclamation district created pursuant to ch. 601, §§ 1-11, [1967] Tex. Laws 1381.

2. Coastal Industrial Water Authority relied in part upon ch. 155, § 1, [1925] Tex. Laws 366, by which the State of Texas granted to cities with populations over 40,000 persons the title to the beds of all streams, rivers, or channels within the cities' corporate limits.

3. *Coastal Indus. Water Authority v. York*, 520 S.W.2d 494 (Tex. Civ. App.—Houston [1st Dist.] 1975).

4. The terms riparian and littoral are used interchangeably by the courts.

5. As a condition precedent to the application of many of the riparian principles discussed in this Note, the property must not only be located next to a watercourse, but also the grant to the riparian owner must have used the shore or water's edge as the boundary line; a surveyor's call adjacent to the shoreline is not sufficient. *Tyler v. Gonzales*, 189 S.W.2d 519 (Tex. Civ. App.—San Antonio 1945, writ ref'd w.o.m.).

6. This Note deals only with riparian rights in the context of changes to riparian boundaries. For a general discussion of other riparian rights see Hildebrand, *The Rights of Riparian Owners at Common Law in Texas*, 6 TEXAS L. REV. 19 (1927).

7. *Bonelli Cattle Co. v. Arizona*, 414 U.S. 313 (1973). The public rights and easements which arise from this state ownership include navigation, fishing, hunting, and other recreational easements. *See, e.g., Diversion Lake Club v. Heath*, 126 Tex. 129, 86 S.W.2d 441 (1935). *See*

within its territory as well as the bed beneath these waters.⁹ This same fiduciary ownership embraces navigable rivers,¹⁰ lakes,¹¹ and coastal waters.¹² Since a change in a shoreline often means a loss of private property, questions involving riparian boundaries on navigable waters often present a contest between the state and a private landowner.¹³

Riparian estates may be altered in any one of five ways: accretion,¹⁴ reliction,¹⁵ erosion,¹⁶ avulsion,¹⁷ or submergence.¹⁸ Accretion is an addition to

generally Note, *The Public Trust in Tidal Areas: A Sometime Submerged Traditional Doctrine*, 79 YALE L.J. 762 (1970). See also 3 AMERICAN LAW OF PROPERTY § 12.32, at 265-71 (A. Casner ed. 1952).

8. The test for the navigability of rivers is set forth in TEX. REV. CIV. STAT. ANN. art. 5302 (1962) which provides in part that "[a]ll streams so far as they retain an average width of thirty feet from the mouth up shall be considered navigable streams . . ." As for other bodies of water, a navigability-in-fact standard is used. *Welder v. State*, 196 S.W. 868 (Tex. Civ. App.—Austin 1917, writ ref'd).

9. *Bonelli Cattle Co. v. Arizona*, 414 U.S. 313 (1973). Two statutes in Texas serve to vest title to navigable waters and the bed beneath them in the state. TEX. PARKS & WILDLIFE CODE ANN. § 1.011(c) (1976) provides in part that the beds of all public rivers, bayous, lagoons, creeks, lakes, and bays in the state, along with the bed beneath that part of the Gulf of Mexico within Texas, are property of the state. TEX. WATER CODE ANN. § 5.021(a) (1972) provides in part that the flow, underflow, and tides of every flowing river, natural stream, lake, and bay or arm of the Gulf of Mexico located within the state are the property of the state.

10. *Bonelli Cattle Co. v. Arizona*, 414 U.S. 313 (1973); *Chicago, R.I. & G. Ry. v. Tarrant County Water Control & Improvement Dist. No. 1*, 123 Tex. 432, 73 S.W.2d 55 (1934); *Manry v. Robison*, 122 Tex. 213, 56 S.W.2d 438 (1932); *State v. Bradford*, 121 Tex. 515, 50 S.W.2d 1065 (1932); *Motl v. Boyd*, 116 Tex. 82, 286 S.W. 458 (1926).

11. See *Diversion Lake Club v. Heath*, 126 Tex. 129, 86 S.W.2d 441 (1935); Note, *Water and Watercourses—Public Right of Fishery in Navigable Waters over Private Submerged Lands*, 12 TEXAS L. REV. 72 (1933).

12. *Lorino v. Crawford Packing Co.*, 142 Tex. 51, 175 S.W.2d 410 (1943). See also *City of Galveston v. Mann*, 135 Tex. 319, 143 S.W.2d 1028 (1940); *City of Galveston v. Menard*, 23 Tex. 349 (1859); *Gustafson v. State*, 40 Tex. Crim. 67, 48 S.W. 518 (1898). In the case of coastal waters a claim of ownership by the state often raises the question of where the precise boundary between the upland estate and the public lands lies. At one time this question generated considerable controversy concerning whether the mean high tide line (common law rule and current rule) or the line of the highest yearly tide (civil law rule) should apply. *Borax Consol. Ltd. v. City of Los Angeles*, 296 U.S. 10 (1935); *Luttes v. State*, 159 Tex. 500, 324 S.W.2d 167 (1958); *Rudder v. Ponder*, 156 Tex. 185, 293 S.W.2d 736 (1956). See also *Humback & Gale, Tidal Title and the Boundaries of the Bay: The Case of the Submerged "Highwater" Mark*, 4 FORDHAM URB. L.J. 91 (1975); Comment, *Fluctuating Shorelines and Tidal Boundaries: An Unresolved Problem*, 6 SAN DIEGO L. REV. 447 (1969).

13. The policy behind state ownership of navigable waters and the bed beneath these waters is to insure that common rights in these waters are preserved for the benefit of the public. *Rossmiller v. State*, 114 Wis. 169, 89 N.W. 839 (1902). Furthermore, state ownership allows trade-offs to be made regarding competing uses of these resources. *Lindsay & Phelps Co. v. Mullen*, 176 U.S. 126 (1900). State authority is subject, however, to the superior power of the federal government for navigational purposes arising from the commerce clause of the Constitution. See, e.g., *United States v. Rands*, 389 U.S. 121 (1967); *United States v. Rio Grande Dam & Irrig. Co.*, 174 U.S. 690 (1897). See generally *Leighty, The Source and Scope of Public and Private Rights in Navigable Waters*, 5 LAND & WATER REV. 391 (1970). See also *Leighty, Public Rights in Navigable State Waters—Some Statutory Approaches*, 6 LAND & WATER REV. 459 (1971).

14. *Humble Oil & Ref. Co. v. Sun Oil Co.*, 190 F.2d 191 (5th Cir. 1951), cert. denied, 342 U.S. 920 (1952) (accretion defined as the process of addition to land by means of a naturally caused gradual and imperceptible deposit of alluvion, or sediment).

15. *Baumhart v. McClure*, 21 Ohio App. 491, 153 N.E. 211 (1926); *Hancock v. Moore*, 137 S.W.2d 45 (Tex. Civ. App.—El Paso 1939), aff'd, 135 Tex. 619, 146 S.W.2d 369 (1941).

16. *Oklahoma v. Texas*, 260 U.S. 606 (1923) (erosion defined as the abrasion or washing away of soil from the banks).

17. A common avulsive change is that which occurs when a river cuts through what had been a horseshoe or meander. *Ross v. Green*, 135 Tex. 103, 139 S.W.2d 565 (1940) (a sudden change of course by a river constituted avulsion). In *Denny v. Cotton*, 3 Tex. Civ. App. 634, 22 S.W. 122 (1893, writ ref'd), avulsion was defined generally as any rapid and sudden change in the boundaries of a stream or river.

18. *Michelsen v. Leskowitz*, 55 N.Y.S.2d 831, 838 (Sup. Ct. 1945), aff'd, 270 App. Div. 1042, 63 N.Y.S.2d 191 (1946) ("[P]roprietorship of land may be lost by . . . submergence, . . . [consisting of] its . . . disappearance under the water and the formation of a more or less navigable body over it.").

riparian land by gradual and imperceptible deposits of sediment, or alluvion, by the action of the water;¹⁹ unlike avulsion,²⁰ the process must be so gradual that its progress cannot be perceived while it is taking place.²¹ Reliction is the addition of soil to a riparian estate due to a permanent recession in the water level.²² When an addition to riparian lands occurs by means of accretion or reliction, the owner of the estate ordinarily gains title to the newly formed land.²³ This result has been reached in cases of land riparian to rivers²⁴ and to lakes.²⁵ The converse of accretion is erosion, the gradual wearing away of the soil by the action of water.²⁶ A riparian landowner loses title to land adjacent to rivers²⁷ and lakes²⁸ when carried away by erosion.²⁹ Avulsion, another means by which riparian estates are diminished or enlarged, is a sudden change in the banks or shore of the watercourse.³⁰ In contrast to the effect of accretion or erosion, avulsive changes do not produce changes in ownership or boundary lines.³¹ The doctrine of avulsion applies to land riparian to both rivers³² and lakes.³³

A few cases which involve the alteration of riparian boundaries come within another category: submergence of the riparian estate. Submergence is the disappearance of land due to the formation of a navigable body of water

19. *Humble Oil & Ref. Co. v. Sun Oil Co.*, 190 F.2d 191 (5th Cir. 1951), *cert. denied*, 342 U.S. 920 (1952).

20. *See note 17 supra.*

21. The rate at which the change takes place is the key determinant of whether a change in riparian boundaries is an accretion or an avulsion. *Denny v. Cotton*, 3 Tex. Civ. App. 634, 639, 22 S.W. 122, 124 (1893, writ ref'd) (the process of accretion or reliction is "gradual and imperceptible"; avulsion is a "rapid and sudden change").

22. *See authority cited note 15 supra.*

23. *See, e.g., Bonelli Cattle Co. v. Arizona*, 414 U.S. 313 (1973).

24. *Id.*; *Pendery v. Panhandle Ref. Co.*, 169 S.W.2d 766 (Tex. Civ. App.—Fort Worth 1943, no writ); *State v. Texas Land & Cattle Co.*, 34 Tex. Civ. App. 460, 78 S.W. 957 (1904, no writ).

25. *Humphreys-Mexia Co. v. Arseneaux*, 116 Tex. 603, 297 S.W. 225 (1927) (riparian rights usually associated with rivers attach as well to lakes and ponds regardless of the origin of these bodies of water); *Chew v. DeWare*, 207 S.W. 988 (Tex. Civ. App.—Texarkana 1918, writ dism'd) (after a gradual reliction or recession of a lake's water level, a riparian owner's property extended to the new lower waterline). Owners of land adjacent to a lake may have a unique riparian right to the maintenance of a constant water level. *See Taylor v. Tampa Coal Co.*, 46 So. 2d 392 (Fla. 1950); *Thomas v. Fin & Feather Club*, 106 Tex. 490, 171 S.W. 698 (1914); *Lakeside Irrig. Co. v. Kirby*, 166 S.W. 715 (Tex. Civ. App.—San Antonio 1914, writ ref'd).

26. *Oklahoma v. Texas*, 260 U.S. 606 (1923).

27. *Hancock v. Moore*, 135 Tex. 619, 146 S.W.2d 369 (1941); *Whittenberg v. State*, 157 S.W.2d 691 (Tex. Civ. App.—Galveston 1941, writ ref'd n.r.e.).

28. *Lakefront Trust, Inc. v. City of Port Arthur*, 505 S.W.2d 606 (Tex. Civ. App.—Beaumont 1974, writ ref'd n.r.e.).

29. *Id.*; *Manry v. Robison*, 122 Tex. 213, 56 S.W.2d 438 (1932).

30. *Denny v. Cotton*, 3 Tex. Civ. App. 634, 22 S.W. 122 (1893, writ ref'd).

31. *Bonelli Cattle Co. v. Arizona*, 414 U.S. 313 (1973); *Southwestern Portland Cement Co. v. Kezer*, 174 S.W. 661 (Tex. Civ. App.—El Paso 1915, writ ref'd). As an exception to this general rule, Texas courts have held that when an avulsion in a navigable river results in an abandonment of a riverbed and the creation of a new bed, the state, as owner of all navigable waters and the soils beneath them, takes title to the newly created bed. Under this exception, however, title to islands created by the change remains with the original owner. *State v. R.E. Janes Gravel Co.*, 175 S.W.2d 739 (Tex. Civ. App.—Austin 1943), *rev'd on other grounds sub nom. Maufrais v. State*, 142 Tex. 559, 180 S.W.2d 144 (1944). As might be expected, the title to the abandoned riverbed accrues to the owner of the estate riparian to it. *Manry v. Robison*, 122 Tex. 213, 56 S.W.2d 438 (1932).

32. *Arkansas v. Tennessee*, 246 U.S. 158 (1918); *Marks v. Sambrano*, 170 S.W. 546 (Tex. Civ. App.—El Paso 1914, writ ref'd).

33. *See City of Chicago v. Ward*, 169 Ill. 392, 48 N.E. 927 (1897); *Diversion Lake Club v. Heath*, 126 Tex. 129, 86 S.W.2d 441 (1935) (the court considered the issue of whether a riparian owner whose land is inundated by a lake retains an exclusive right to fish in the water above his land, and assumed that the landowner retained title to his submerged lands).

over it.³⁴ Submergence is distinguished from subsidence in that submergence involves an increase in the water level, the elevation of the riparian land remaining unchanged, while subsidence is the "lowering or shifting downward" of the land itself.³⁵ When the question of the effect of submergence has been presented directly, it has been held that the riparian owner retains title to land submerged beneath a non-navigable lake.³⁶ Decisions in Texas and other jurisdictions have upheld the retention of title by the private owner following submergence beneath inland navigable waters.³⁷ At least one Texas court, however, has implied that the riparian owner loses title to submerged land when the submergence was beneath a navigable lake.³⁸ This view is accepted in other jurisdictions.³⁹

Riparian boundary changes in the case of lands adjacent to the Gulf of Mexico are ruled by principles similar to those involved in the case of rivers or lakes, at least to the extent that land formed by accretion or reliction along the coast will accrue to the upland owner.⁴⁰ The effect of the submergence of

34. *Michelsen v. Leskowitz*, 55 N.Y.S.2d 831, 838 (Sup. Ct. 1945), *aff'd*, 270 App. Div. 1042, 63 N.Y.S.2d 191 (1946).

35. *Kenny v. Texas Gulf Sulphur Co.*, 351 S.W.2d 612 (Tex. Civ. App.—Waco 1961, writ *ref'd*).

36. *Taylor Fishing Club v. Hammett*, 88 S.W.2d 127 (Tex. Civ. App.—Waco 1935, writ *dism'd*); *accord*, *Tapoco, Inc. v. Peterson*, 213 Tenn. 335, 373 S.W.2d 605 (1963).

37. *See Tapoco, Inc. v. Peterson*, 213 Tenn. 335, 373 S.W.2d 605 (1963) (land retained its character as private property subsequent to submergence beneath a man-made navigable reservoir). In *Diversion Lake Club v. Heath*, 126 Tex. 129, 86 S.W.2d 441 (1935), the submergence of privately owned land subsequent to the creation of a dam and lake did not divest the owner of title, but gave rise to a public fishing easement in the water over the privately owned land. The court reasoned that if the water of all navigable streams is owned by the state in trust for the public, then the public easements which arise from that trust must extend over all the waters of a lake created by damming a public stream, and are not confined to that portion of the lake above the original river channel. A like result upon a substantially similar fact situation was reached in *Schulte v. Warren*, 218 Ill. 108, 75 N.E. 783 (1905). *See also State v. Cockrell*, 162 So. 2d 361 (La. Civ. App. 1964, writ *ref'd*) (under civil law a private owner retains title to property gradually submerged beneath navigable waters); *Gilbert v. Eldridge*, 47 Minn. 210, 49 N.W. 679 (1891) (riparian owner allowed to reclaim land which had become gradually submerged beneath Lake Superior on the basis that a gradual encroachment of navigable waters does not divest the private owner of title); *Baumhart v. McClure*, 210 Ohio App. 491, 153 N.E. 211 (1926) (as long as the boundaries of the submerged property remain identifiable, title is not lost to the riparian owner); *State v. West Tenn. Land Co.*, 127 Tenn. 575, 158 S.W. 746, 752 (1913) (that lands have become submerged by a body of navigable water does not deprive the owners of their title so long as the boundaries of the private property can be reasonably identified).

38. *See Seabrook Land Co. v. Lipscomb*, 331 S.W.2d 429 (Tex. Civ. App.—Houston 1960, no writ). After land riparian to a navigable stream had become submerged beneath the stream, the court upheld the grant of an injunction, requested by owners of property made riparian by the submergence, which prohibited the construction of a pier on the submerged land. The court expressly refrained from deciding whether title to the submerged land had vested in the state.

39. *See Village of Pewaukee v. Savoy*, 103 Wis. 271, 79 N.W. 436 (1899) (state's title to the bed beneath navigable lake would be extended to include lands submerged by an increase in the water level caused by the construction of a dam on the lake if the increased water level continued long enough to be considered a natural condition); *accord*, *Burrus v. Edward Rutledge Timber Co.*, 34 Idaho 606, 202 P. 1067 (1921). *See also Miami Corp. v. State*, 186 La. 784, 173 So. 315 (1937) (inundation of private property by navigable water resulted in acquisition by the state of the land inundated); *Jones v. Turlington*, 243 N.C. 681, 92 S.E.2d 75 (1956) (dictum) (gradual encroachment of navigable water divests the owner of title); *Conneaut Lake Ice Co. v. Quigley*, 225 Pa. 605, 74 A. 648 (1909) (court cited with approval the statement of the trial court that title to land submerged by the enlargement of a lake vests in the state); *Wilbour v. Gallagher*, 77 Wash. 2d 306, 462 P.2d 232 (1969) (title to land permanently submerged by construction of a dam was lost to the state); *Attorney General v. Bay Boom Wild Rice & Fur Farm*, 172 Wis. 363, 178 N.W. 569 (1920) (riparian owner held not entitled to construct dike on his submerged property on grounds that title to land submerged beneath navigable lake vested in the state); *Illinois Steel Co. v. Bilot*, 109 Wis. 418, 84 N.W. 855 (1901) (dictum) (state may acquire title to private property following submergence beneath a navigable lake upon a theory of adverse possession).

40. *Humble Oil & Ref. Co. v. Sun Oil Co.*, 190 F.2d 191 (5th Cir. 1951), *cert. denied*, 342 U.S. 920 (1952); *Luttes v. State*, 159 Tex. 500, 324 S.W.2d 167 (1958); *State v. Balli*, 144 Tex. 195, 190

privately owned land beneath coastal waters in Texas, however, is not clear. Two early cases, *Fisher v. Barber*⁴¹ and *Fitzgerald v. Boyles*,⁴² held that submergence beneath coastal waters did not deprive a riparian owner of title to the submerged land. In *City of Galveston v. Mann*⁴³ the city argued that it should be allowed to construct a public wharf partially situated upon submerged property acquired by the city from private owners who had in turn acquired the property prior to the time it had become submerged beneath the Gulf of Mexico. The Texas Supreme Court did not explicitly consider the question of the effect of submergence on title, but held that the proposed wharf would be an encroachment upon the superior rights of the state in the bed beneath coastal waters, and denied the city authority to construct the wharf in the absence of state permission. This holding might be read as a tacit indication that title to lands which become submerged beneath the Gulf is lost to the property owner, at least to the extent that the owner may not construct a wharf upon that property.⁴⁴

II. COASTAL INDUSTRIAL WATER AUTHORITY V. YORK

Coastal Industrial Water Authority v. York, the first reported case to consider the effect of subsidence upon riparian boundaries, determined that a riparian landowner does not lose title to a portion of his land which in the absence of any evidence of erosion has gradually subsided beneath navigable coastal waters. The court expressly reaffirmed the traditional doctrines as to accretion, avulsion, and erosion,⁴⁵ but decided that a new standard was applicable. Unlike the foregoing natural phenomena, subsidence is not an ordinary hazard of riparian ownership because it is not the result of "the force of the waters which takes from some owners and gives to others."⁴⁶ Holding that subsidence does not divest a riparian owner of title, nor change the boundary of his land, the court limited the application of the doctrines of avulsion, accretion, erosion, and reliction and extended the rule of submergence⁴⁷ in situations involving subsidence of coastal land.

The court could have plausibly determined that subsidence is similar to the other riparian phenomena in that it is a gradual and imperceptible process and, therefore, the boundary of a coastal tract should shift with the shoreline as in

S.W.2d 71 (1944), *cert. denied*, 328 U.S. 852 (1945); see *Curry v. Port Lavaca Channel & Dock Co.*, 25 S.W.2d 987 (Tex. Civ. App.—San Antonio 1930, no writ) (accretions must occur above the high tide line before the rule as to ownership applies).

41. 21 S.W.2d 569 (Tex. Civ. App.—Beaumont 1929, no writ), *noted in* 8 TEXAS L. REV. 604 (1930).

42. 66 S.W.2d 347 (Tex. Civ. App.—Galveston 1931, writ *dism'd*).

43. 135 Tex. 319, 143 S.W.2d 1028 (1940).

44. In *Mulry v. Norton*, 100 N.Y. 424, 3 N.E. 581 (1885), a state court employed reasoning similar to that found in *Fisher* and *Fitzgerald* and held that a private owner did not lose title to property submerged beneath coastal water. The court emphasized, however, that the boundaries of the submerged private property remained identifiable beneath the water. *But see* *United States v. Property on Pinto Island*, 74 F. Supp. 92 (S.D. Ala. 1947), *rev'd sub nom.* *United States v. Turner*, 175 F.2d 644 (5th Cir.), *cert. denied*, 388 U.S. 851 (1949), in which the Court of Appeals for the Fifth Circuit reversed the determination by the trial court that the owner of an island off the Louisiana coast retained title to that part of the island inundated by Gulf waters as a result of a hurricane.

45. See notes 14-33 *supra* and accompanying text.

46. 532 S.W.2d at 952.

47. See notes 35-38 *supra* and accompanying text.

the case of accretion, reliction, or erosion. When considered in light of this traditional rule that gradual changes work changes in ownership, the *Coastal* decision introduces certain disparities in the area of water law. The coastal riparian owner is unfairly benefited by the decision, for his ownership is now increased by accretions to his shoreline, but not decreased by its subsidence. The court distinguishes subsidence, however, from other riparian phenomena on the basis that no soil is moved or altered. The shoreline simply sinks below the water as the withdrawal of groundwater diminishes the elevation of the shore.⁴⁸ Moreover, the *Coastal* result is consistent with cases in Texas and other jurisdictions which have considered the effect of submergence, a process similar to subsidence in that no displacement of soil is involved.⁴⁹

The decision in *Coastal* is valuable in that it implicitly recognizes the hazards of ownership of coastal property. In the case of lands riparian to rivers or lakes, the landowner faces the loss of land through avulsion or erosion, but is compensated with the possibility of gains to his estate by accretion or reliction. For landowners on the Gulf coast, however, the probability of gains through any means may be remote in the face of the certain and continual subsidence which threatens many coastal areas.⁵⁰ Formidable obstacles face a riparian owner who would attempt to recover damages for subsidence from those persons withdrawing groundwater.⁵¹ The outcome in *Coastal*, therefore, may be grounded in a recognition of the unique characteristics of coastal property.⁵²

48. 532 S.W.2d at 952.

49. See notes 35-38, 41-42 *supra*.

50. See Fisher, *Subsidence Causes and Effects*, TEX. PROF. ENG'R, Apr. 1975, at 8; Steelhammer & Garland, *Subsidence Resulting from the Removal of Groundwaters*, 12 S. TEX. L.J. 201 (1971). See also Bagley, *Water Rights Law and Public Policies Relating to Ground Water "Mining" in the Southwestern States*, 4 J.L. & ECON. 144 (1961); Comment, *Ground Water Management: A Proposal for Texas*, 51 TEXAS L. REV. 289 (1973).

51. See Steelhammer & Garland, *supra* note 50.

52. The opinion in the noted case did not extend to a consideration of whether the riparian owner's loss of title to land which had subsided beneath navigable coastal waters would constitute a taking of property for which compensation would be due since the outcome of the case precluded a consideration of this issue and the matter was apparently not raised by the parties. The courts have not discussed this question directly, but, in broad terms, a taking of private property for public use makes the payment of adequate compensation necessary. U.S. CONST. amend. XIV; TEX. CONST. art. I, § 17; see *West v. Chesapeake & Potomac Tel. Co.*, 295 U.S. 662 (1935); *State v. Hale*, 136 Tex. 20, 146 S.W.2d 731 (1941). It must be considered whether a loss of title to subsided lands would constitute the incidental result of an exercise of the police power, or a taking sufficient to make compensation necessary. A government regulation, reasonably necessary for a legitimate government end, will not entitle one whom the regulation deprives of property to compensation. *Goldblatt v. Hempstead*, 369 U.S. 590 (1962). Nevertheless, in many cases where property was inundated by water or otherwise physically invaded, it was held that a taking had occurred. See, e.g., *United States v. Cress*, 243 U.S. 316 (1917); *United States v. Lynah*, 188 U.S. 445 (1903); *Brazos River Authority v. City of Graham*, 163 Tex. 167, 354 S.W.2d 99 (1961). See generally Sax, *Takings, Private Property and Public Rights*, 81 YALE L.J. 201 (1971). See also Bagley, *Water Rights Law and Public Policies Relating to Ground Water Coastal*, unlike the usual taking-by-inundation case, involves potential loss of property due to both subsidence and the operation of state statutes and cases which provide that navigable waters and the beds beneath them are owned by the state. A number of state statutes were found to involve a taking of property on the basis that the statutes served to cut off vested rights in private property which arose prior to the effective date of the statutes. See generally Annot., 56 A.L.R. 277 (1928); Annot., 51 A.L.R. 1119 (1927). It is doubtful that a riparian owner's interest in subsided land could be considered a vested right superior to that of a state in light of the pre-eminent position traditionally accorded the state's authority in this area. Title to navigable waters and their beds is considered to have passed from the King to the American colonies by means of royal charters, and this title was passed from the federal government to each state upon admission to the Union. The Submerged Lands Act, 43 U.S.C. § 1311 (1970), confirmed the states' title to beds beneath navigable waters within each state, subject to the federal govern-

The decision of the Texas Supreme Court in *Coastalis* significant, not only in its modification of traditional riparian rules in the case of subsidence, but also in its explicit formulation of the rule in Texas concerning alteration of riparian boundaries by artificial means. The courts have indicated in the past that additions to a riparian estate by man-made or artificial means could not be claimed by the private owner.⁵³ In *Coastal* the court makes clear that changes in riparian boundaries caused by third parties over which the riparian owner has no control will be viewed in the same light as changes resulting from natural phenomena.⁵⁴

In broad terms, the *Coastal* holding stands for the proposition that title to property is not lost to the private owner by reason of subsidence of the property beneath coastal waters. This holding is limited by a footnote by Justice Reavley that the holding may not apply to subsidence of land adjacent to waters affected by tides because this aspect of the case was not raised by the parties.⁵⁵ The footnote reasons that an application of the case to lands reached by tides might "allow private owners generally to hold land beneath the sea, would restrict the enjoyment of public beaches, and would make the location of seaward boundaries an exercise in pure guesswork."⁵⁶ Why these concerns are not as relevant in the case of navigable, non-tidal waters as in the case of navigable, tidal waters is not clear.⁵⁷ Since this issue was not squarely presented, the application of *Coastal* to much of the Gulf coast is uncertain.⁵⁸ Nevertheless, the potential problems raised by Justice Reavley are significant. Private ownership of subsided lands could certainly lead to considerable conflict between the incidents of private ownership and public rights in coastal waters such as navigation and fishing easements.⁵⁹ A comprehensive

ment's authority in the area of navigation. See, e.g., *Shively v. Bowlby*, 152 U.S. 1 (1894). See also note 12 *supra*. A similar analysis indicates that even when private ownership is retained subsequent to submergence beneath navigable waters, the subjection of the property to a variety of public easements could not be considered a taking in the constitutional sense. Finally, even if the deprivation of title to subsided land by operation of statute were a taking, a problem is presented as to the determination of damages. The general rule is that compensation is determined as of the time of the taking. E.g., *United States v. Rogers*, 255 U.S. 163 (1921). If subsidence is an ongoing process, however, it may be difficult to determine at what point an assessment of adequate compensation should be made.

53. The facts of the cases upon which this rule is based involved situations where the riparian owner himself made use of artificial means, such as landfill, to extend his property. See, e.g., *Lorino v. Crawford Packing Co.*, 142 Tex. 51, 175 S.W.2d 410 (1943); *Cox v. City & County of Dallas Levee Improvement Dist.*, 258 S.W.2d 851 (Tex. Civ. App.—Dallas 1953, writ ref'd n.r.e.). See also Dinkins, *Texas Seashore Boundary Law: The Effect of Natural and Artificial Modifications*, 10 HOUS. L. REV. 43 (1972).

54. 532 S.W.2d at 952.

55. *Id.* at 951 n.1.

56. *Id.*

57. The general rule is that whether or not a body of water is affected by the tide is not material to the question of its navigability. See *Utah v. United States*, 403 U.S. 9 (1971); *Manry v. Robison*, 122 Tex. 213, 56 S.W.2d 438 (1932). The state's ownership of all navigable waters, see notes 7-9 *supra* and accompanying text, indicates that the presence or absence of the tides should not control the question of to which waters state ownership extends. In *Coastal* the court noted that the water directly above the disputed property was not in fact used for navigation. The property, however, was clearly covered by the waters of the Houston Ship Channel, a navigable body of water. When the water over submerged land is shallow and not capable of being used for navigation, but is part of a larger, navigable body of water, the title to the submerged property is, nonetheless, lost to the private owner and vests in the state. *United States v. Turner*, 175 F.2d 644 (5th Cir.), cert. denied, 388 U.S. 851 (1949).

58. The tidal-nontidal distinction to which the footnote refers may be questioned due to the testimony at trial that the disputed property was in fact reached by the Gulf tide. 520 S.W.2d at 497.

59. See notes 7-9, 13 *supra*.