

Comments

SAND RIGHTS: USING CALIFORNIA'S PUBLIC TRUST DOCTRINE TO PROTECT AGAINST COASTAL EROSION

Since the 1950s, many rivers and streams running from inland areas to the California coastline have been dammed for water supply and flood control. The reduced streamflow has resulted in much less sand being transported to California beaches to replace sand lost through coastal erosion. Consequently, much of the coastline is eroding at an alarming rate. The public trust doctrine provides that the tidelands are held in trust by the state for the benefit of the public. Most legislation regarding the public trust doctrine has focused on ownership interests in public trust resources. This Comment argues for a system of public rights to the sand which makes up public beaches. A system of sand rights would provide a basis for judicial enforcement of the state's fiduciary duty to maintain beaches in the face of threats to sand supply.

INTRODUCTION

Beaches are vital California resources. They offer public recreation opportunities and protect coastal property from severe ocean storms.¹ Beaches generate significant tourist income to California and its coastal communities.² Under natural conditions, coastal

1. DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, STATE OF CALIFORNIA, STUDY OF BEACH NOURISHMENT ALONG THE SOUTHERN CALIFORNIA COASTLINE 5 (Oct. 1977) [hereinafter DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT].

2. Stone & Kaufman, "Sand Rights" *A Legal System to Protect "The Shores of the Beach"*, in CALIFORNIA'S COAST, PROCEEDINGS FROM A CONFERENCE ON COASTAL EROSION 280, 283-84 (J. McGrath ed. Sept. 1985) [hereinafter Stone and Kaufman].

beaches are eroded by the forces of wind and waves, and are replenished by sediments carried to the shoreline by rivers and streams.³

Since the 1950s, many southern California rivers and streams have been dammed for water supply and flood control. Unfortunately, dams that provide water to inland residents and protect inland property from floods also trap sand destined for coastal beaches. This seriously affects sand supply and beach stability.⁴ In southern California, beach materials are trapped behind 311 water supply lakes and flood control projects. In northern California, a number of dams along the central coast between San Francisco and Point Conception have reduced streamflow and sand transport.⁵ Construction of most dams and flood control basins has proceeded without provisions for sediment bypassing.⁶ The result is rapid erosion and loss of beaches as public recreation areas and buffers for coastal property.⁷ Since 1977 ocean scientists have recognized problems responsible for beach erosion;⁸ however, California law has failed to recognize in any comprehensive fashion the importance of sand transport.⁹ The California Legislature has recognized the importance of beaches as a natural resource,¹⁰ and has legislated for their protection under the California Coastal Act.¹¹ Unfortunately, the Coastal Act applies

3. DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1, at 5.

4. LIVING WITH THE CALIFORNIA COAST 21 (G. Griggs & L. Savoy eds. 1985).

5. *Id.*

6. DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1, at 34.

7. See Inman, *Budget of Sediment in Southern California: River Discharge Versus Cliff Erosion*, in CALIFORNIA'S BATTERED COAST, PROCEEDINGS FROM A CONFERENCE ON COASTAL EROSION 10, 10-13 (J. McGrath ed. Sept. 1985). See generally CALIFORNIA'S BATTERED COAST, PROCEEDINGS FROM A CONFERENCE ON COASTAL EROSION (J. McGrath ed. Sept. 1985) [hereinafter BATTERED COAST CONFERENCE].

8. See DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1, at 43.

9. Stone & Kaufman, *supra* note 2, at 280.

10. CAL. PUB. RES. CODE § 30001 (Deering Supp. 1986). Section 30001 states: The Legislature hereby finds and declares:

(a) That the California coastal zone is a distinct and valuable natural resource of vital and enduring interest to all the people and exists as a delicately balanced ecosystem.

(b) That the permanent protection of the state's natural and scenic resources is a paramount concern to present and future residents of the state and nation.

(c) That to promote the public safety, health, and welfare, and to protect public and private property, wildlife, marine fisheries, and other ocean resources, and the natural environment, it is necessary to protect the ecological balance of the coastal zone and prevent its deterioration and destruction.

(d) That existing developed uses, and future developments that are carefully planned and developed consistent with the policies of this division, are essential to the economic and social well-being of the people of this state and especially to working persons employed within the coastal zone.

11. CAL. PUB. RES. CODE § 30001.5 (Deering Supp. 1986). Section 30001.5 states:

The Legislature further finds and declares that the basic goals of the state for the coastal zone are to:

only to decisions made within the coastal zone.¹² Dams, reservoirs, and debris basins usually are constructed in the sediment source area far inland of the coastal zone and beyond the jurisdiction of the Coastal Act.¹³ Under the California Environmental Quality Act (CEQA),¹⁴ public projects such as dams and water projects generally require comprehensive Environmental Impact Reports (EIR) before they can be approved for construction; however, CEQA normally does not require consideration of a project's impact on sand supply in the project's EIR.¹⁵

In the past, failure to consider the impact of development on coastal resources has caused catastrophic monetary and environmental losses.¹⁶ Without recognition of the effects of dams and water projects on beach replenishment, construction of such projects will continue to threaten the coastline.¹⁷ In California the lines are drawn between two legitimate public interests competing for precious California resources: inland residents need flood control and water conservation; coastal residents, coastal communities, and the general public need beaches for recreation, protection of property, and

(a) Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.

(b) Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.

(c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners.

(d) Assure priority for coastal-dependent and coastal-related development over other development on the coast.

(e) Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

12. CAL. PUB. RES. CODE § 30103 (Deering Supp. 1986). Section 30103 provides

in part:

(a) "Coastal zone" means that land and water area of the State of California from the Oregon border to the border of the Republic of Mexico . . . extending seaward to the state's outer limit of jurisdiction . . . and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards.

13. Stone & Kaufman, *supra* note 2, at 296.

14. CAL. PUB. RES. CODE §§ 21000-21177 (Deering Supp. 1986).

15. See *infra* notes 127-30 and accompanying text.

16. See Lemonick, *Shrinking Shores*, TIME, Aug. 10, 1987, at 38.

17. Stone and Kaufman, *supra* note 2, at 295.

income.

California must adopt a system of rights to stream-borne sand to protect California's tidelands¹⁸ and public beaches. Development of a system of "sand rights", similar in some respects to California's system of water rights, and based on California's public trust doctrine, is a logical solution. "A theory of sand rights would require that new water projects be designed and existing projects be reevaluated to mitigate interference with the system which transports sand to the beach. It would also provide a legal basis for funding sand replenishment through fees, taxes, and assessments."¹⁹

FACTUAL BACKGROUND

The California coast is over 1800 miles long. Much of the coastline is rocky or cliffed, with narrow beaches below the cliffs. The rest of the coastline consists of sandy beaches or wetlands.²⁰ Millions of Californians and tourists visit the beaches each year,²¹ making the beaches one of California's most valued public resources. Currently, about 85 percent of the coastline is eroding.²² A major cause of this erosion is the lack of sand transported to beaches by rivers and streams.²³

An understanding of the natural process of beach erosion and replenishment is fundamental to a theory of sand rights. Ocean scientists refer to this natural erosion and replenishment phenomenon as the "littoral" process.²⁴ Human interference with the littoral process has created the need for a legal solution to ensure beach replenishment.

18. Tidelands are the lands lying between the lines of mean high tide and mean low tide, covered and uncovered successively by the ebb and flow of the tide. *See, e.g.*, *City of Berkeley v. Superior Court*, 26 Cal. 3d 515, 518-19 n.1, 606 P.2d 362, 363 n.1, 162 Cal. Rptr. 327, 329 n. 1 (1980); *Marks v. Whitney*, 6 Cal. 3d 251, 257-58, 491 P.2d 374, 378-79, 98 Cal. Rptr. 790, 794-95 (1971); *City of Long Beach v. Mansell*, 3 Cal. 3d 462, 478 n. 13, 476 P.2d 423, 434, 91 Cal. Rptr. 23, 34 (1970).

19. *Stone & Kaufman, supra* note 2, at 280.

20. A. ORME, *THE WORLD'S COASTLINE* 27 (E. Bird & M. Schwartz ed. 1985). CAL. PUB. RES. CODE § 30121 (Deering Supp. 1986). Section 30121 defines "wetlands" as "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens."

21. *See* Comment, *Surviving the "Chubasco": Liability of California Beach Communities for Natural Conditions of Unimproved Public Property*, 23 SAN DIEGO L. REV. 723, 723 n.2 (1986).

22. *See* A. ORME, *supra* note 20, at 27.

23. *See* Inman, *supra* note 7, at 10. *See generally* BATTERED COAST CONFERENCE, *supra* note 7.

24. *See, e.g.*, Inman, *supra* note 7.

The Littoral Process

Under natural conditions, sand and gravel eroding from rocks and soils far inland are carried downstream by rivers and streams. These particles ultimately reach the shoreline where they are deposited as beach sand. An estimated 75 percent to 95 percent of the sand along the California coast originally was derived from streams.²⁵

In northern California, winter and spring streamflows carry sand-sized particles directly to the coast. In southern California, these particles are not carried to the coast, but are held in flood plains or lagoons at the mouths of rivers. They are eventually carried to the beach during large-scale periodic floods.²⁶ Waves and currents then move the sand along the coast.²⁷

Generally, winter storms cause large, steep waves which scour away beach sand and remove it to form offshore sand bars. Less severe storms of the spring and summer return some of this sand to the beach,²⁸ but much of the eroded sand is not returned. Instead, it is moved back and forth by waves and carried along the coast by longshore, or littoral currents. Current and wave patterns along the California coast result in a net flow of sand southward and eastward along the coast.²⁹ This longshore "river of sand" moves along the coast until it is intercepted and swallowed by a submarine canyon, and channelled into deep water where it is lost.³⁰

The Budget of Sediment

To be protected from erosion, a beach must receive a supply of sand equal to the amount of sand carried away by littoral currents. Dr. Douglas Inman, Director of Coastal Studies at the Scripps Institute of Oceanography, refers to the relationship between sediment supply and littoral sand loss as the "budget" of sediment. According to Dr. Inman, if the supply of new sand is less than the the amount of sand carried away, a net deficit in the budget of sediment results and the coastline erodes. This deficit is the basic problem facing the

25. LIVING WITH THE CALIFORNIA COAST, *supra* note 4, at 15.

26. Stone & Kaufman, *supra* note 2, at 282.

27. LIVING WITH THE CALIFORNIA COAST, *supra* note 4, at 15.

28. *Id.* at 22; *see also* Warshaw, *California Big Waves*, SURFER, July 1986, at 100.

29. *See* DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1; Inman, *supra* note 7.

30. *See* Inman, *supra* note 7.

coastline. "Coastal erosion would be a far less serious problem if there were sufficient sand on the beaches. Dams on streams result in a deficit of sand to the coast and are a principal cause of beach and cliff erosion."³¹

Littoral Cells

A budget of sediment is unique to a particular littoral cell. A littoral cell is a portion of the coast consisting of sediment sources (usually river mouths), sediment transport paths (longshore currents), and sediment sinks (submarine canyons).³² The greater littoral cell includes the littoral cell and the inland areas from which sediments and rivers originate.³³ Ocean scientists divide the southern California coast into five littoral cells: the Santa Barbara cell (Point Conception to Hueneme Canyon), the Dume cell (Hueneme Canyon to Dume Canyon), the Santa Monica cell (Dume Canyon to Redondo Canyon), the San Pedro cell (Redondo Canyon to Newport Canyon), and the Oceanside cell (Newport Canyon to La Jolla Canyon).³⁴

Sand entering a littoral cell can never travel along the coast beyond the sediment sink marking the downstream boundary of the cell. A reduction in the flow of sand to a particular cell will cause erosion in that cell, but will not affect any other cell.³⁵ Understanding this phenomenon is essential to the development of a system of sand rights and a funding system for beach replenishment because it allows ocean scientists to pinpoint specific coastal areas which are affected by particular developments along inland streams. Replenishment costs then can be allocated by requiring those benefitted by the projects to help fund beach replenishment within each cell.³⁶

The Oceanside littoral cell is typical of southern California cells.³⁷ Under natural conditions, sand is carried to the cell's beaches primarily by the Santa Margarita, San Luis Rey, and San Dieguito Rivers, and by the San Juan Creek. Waves erode the sand from the cell's beaches, and longshore currents carry it south, eventually depositing it into the La Jolla and Scripps submarine canyons. In the past, natural conditions prevailed and the amounts of sand reaching the coast, being transported along the coast, and being deposited in

31. Inman, *Damming of Rivers in California Leads to Beach Erosion*, 1 OCEAN ENGINEERING AND THE ENVIRONMENT 22, 25 (Conference Record, Nov. 12-14 1985).

32. See Inman, *supra* note 7, at 7.

33. See Stone & Kaufman, *supra* note 2, at 284.

34. See Ingle, *The Movement of Beach Sand*, in 5 DEVELOPMENTS IN SEDIMENTOLOGY figure 13 (1966); see also DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1, at 15, Plate 1 (map showing littoral cells).

35. DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1, at 17.

36. See *infra* notes 144-47 and accompanying text.

37. Inman, *supra* note 7, at 11.

submarine canyons were approximately equal. Today, most of the rivers in the Oceanside cell contain dams which intercept sand. These dams have resulted in a 41 percent decrease in drainage area and a 51 percent decrease in the amount of sand transported to the coast.³⁸ Because the amount of sand lost to longshore drift has not changed, a deficit in the budget of sediment exists. As a result, the beaches and cliffs in the Oceanside cell continue to erode.³⁹

Other coastal areas are experiencing similar problems. In the Los Angeles area, eleven dams and eighteen debris basins have trapped over 78.8 million cubic yards of sediment, much of which would have reached the coast as beach sand.⁴⁰ The Ocean Beach and Sunset Cliffs areas of San Diego, south of the Oceanside cell, are rapidly eroding due to the damming of 62 percent of the drainage into the San Diego River basin.⁴¹ In northern California, damming along the Salinas River has impounded 15 percent of the watershed, effectively trapping all of the sand which would have flowed to the southern Monterey Bay area from sub-basins along the river.⁴²

Beach Nourishment in Southern California

In 1977 the California Department of Navigation and Ocean Development (Department) conducted an extensive study of beach nourishment in southern California.⁴³ The Department studied the coastal watersheds tributary to the California coastline from Cape San Martin, south of Monterey county, to the Mexican border. According to the study, about 50 percent of the total area tributary to the Pacific Ocean is situated upstream of a principal watershed structure. All major rivers in the study area except the Santa Clara River have more than one-half of their drainage area controlled by dams. The 50 percent reduction in watershed area has resulted in an even greater reduction in sediment production, primarily because dams and water projects reduce the peak stream flows required to carry sediments. Further development in southern California threatens the sand-carrying capacity of much of the remaining uncon-

38. *Id.* at 25.

39. *See id.*

40. *See* Potter, *Sand Sluicing from Dams on the San Gabriel River — Is it Feasible?*, in BATTERED COAST CONFERENCE, *supra* note 7, at 251, 254.

41. *See* Burns & Gayman, *Coastal Mismanagement in San Diego: The Sunset Cliffs Erosion Control Project*, in BATTERED COAST CONFERENCE, *supra* note 7, at 79.

42. *See* Griggs & Jones, *Erosion Along an "Equilibrium Coastline", Southern Monterey Bay, California*, in BATTERED COAST CONFERENCE, *supra* note 7, at 102.

43. *See* DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1.

trolled watershed area, as more water will be needed for commercial and domestic use.⁴⁴

Although the Department study was restricted to southern California, inland water projects seriously threaten beach replenishment along the entire California coastline. Dr. Inman summarizes the problem:

Sand is a natural resource just as water is a resource. Dams provide water and intercept the normal flow of sand to the beaches. Dams benefit people, cities and agriculture and hurt coastal communities and beach users. We must reconcile this inequality to coastal communities and beach users by the users of water. The cost of nourishing beaches with the sand intercepted by dams should be a legitimate part of the cost of using water. The cost of replenishing beach sand should be borne by an additional cost of using water. It should appear on the monthly bill of water users. It is essential that we institutionalize sand nourishment if we are to have beaches, and it is equitable that revenues for this purpose be raised from those benefitting from the dams.⁴⁵

Dr. Inman's statement emphasizes the necessity of a legal system of sand rights and a method for cost allocation.

History of Sand Rights in California

Traditionally, California courts have not favored a concept of sand rights as against a city or the state. In *Joslin v. Marin Municipal Water District*,⁴⁶ the California Supreme Court ruled that a private downstream landowner has no right, as against a city, to the continued flow of stream-borne sand onto his property. The plaintiffs in *Joslin* operated a rock and gravel business dependent upon sand and rock carried downstream by Nicasio Creek. In 1962 the City of Marin constructed a dam upstream of plaintiff's property, reducing the flow of sand crucial to plaintiff's business. The court relied on the "reasonable use" requirement of California's riparian rights doctrine to reject plaintiff's claim.⁴⁷ The court compared the public benefit of

44. *See id.* at 34-41.

45. Inman, *supra* note 7, at 13.

46. 67 Cal. 2d 132, 429 P.2d 889, 60 Cal. Rptr. 377 (1967).

47. *Id.* at 142-43, 429 P.2d at 897, 60 Cal. Rptr. at 385; CAL. CONST. art. X, § 2 (formerly art. XIV, § 3). Section 2 states:

It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. *The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.* Riparian rights in a stream or water course attach to, but to no more than so much of the flow thereof as may be required or used consistently with this

the dam in conserving water for the public interest with the lack of public benefit derived from a continued flow of sand onto plaintiff's property, concluding that the use of the creek for carrying sand and gravel onto plaintiff's property was unreasonable.⁴⁸

Similarly, in *Miramar Co. v. City of Santa Barbara*,⁴⁹ the California Supreme Court held that a beachfront landowner has no right, as against a city, to the continued littoral flow of sand onto his property. The City of Santa Barbara constructed a breakwater three miles west of plaintiff's hotel which effectively blocked the flow of sand along the coast, completely denuding the hotel's beach of sand. The court found that a littoral owner may have a right to the flow of sand along the coast against an individual, but not against a city or the state. A city or the state has an absolute right to build coastal structures to aid commerce, navigation, or fishing, even though the structures may decrease the value of plaintiff's property. The loss of sand flowing to the hotel's beach was incidental to the State's superior right to use navigable waters for the public interest.

The *Miramar* and *Joslin* decisions rest in part on the principle that the state holds title to the tidelands and navigable waters for the benefit of the public under the public trust doctrine.⁵⁰ Under traditional public trust doctrine, public interests in the tidelands in commerce, navigation, and fishing are held superior to any private interests.⁵¹ In *Joslin* and *Miramar*, public trust reasoning was applied to situations involving continued sand deposition. In both cases, the downstream party was defeated because the benefit of the public improvement far outweighed any loss to the private landowner.

A theory of sand rights is different. Beach erosion affects the public at large. Consequently, sand rights theory focuses on the public interest in continued sand transport and deposition, not simply on private interests. This important distinction is detailed in Stone and

section, for the purposes for which such lands are, or may be made adaptable, in view of such reasonable and beneficial uses; provided, however, that nothing herein contained shall be construed as depriving any riparian owner of the reasonable use of water of the stream to which the owner's land is riparian under reasonable methods of diversion and use, or as depriving any appropriator of water to which the appropriator is lawfully entitled.

(emphasis added).

48. *Joslin v. Marin Mun. Water Dist.*, 67 Cal. 2d 132, 429 P.2d 889, 60 Cal. Rptr. 377 (1967).

49. 23 Cal. 2d 170, 173, 143 P.2d 1, 2 (1943).

50. For a discussion of the public trust doctrine, see *infra*, text accompanying notes 55-76.

51. See Sax, *The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention*, 68 MICH. L. REV. 471, 475 (1970).

Kaufman's leading paper on the subject of sand rights:

Large parts of California's coastal beaches are public. They are used for the public benefit. Erosion of beaches has proceeded in some areas to the extent that entire communities are threatened by, for example, the loss of tourist based revenues. Unlike the situation in *Miramar* or *Joslin*, where only individual interests were affected, depriving coastline beaches of sand needed to replenish them will result in an injury to the interests of the public at large. In short, unlike the situations in the reported California decisions on this topic, in the larger picture the continued supply of sand to the coastline beaches of the State confers a significant public benefit which is difficult, if not impossible, to quantify.⁵²

The purpose of the public trust doctrine is to protect the public interest in the tidelands, however, no reliable method exists for protecting the sand of which the tidelands are made. Without a comprehensive system of rights to stream-borne sand, the recreational and environmental benefits of the tidelands will disappear as California's beaches erode into the Pacific Ocean.

Sand is an important and limited natural resource just as water is an important and limited natural resource. A system of sand rights should be analogous to California's system of water rights. It should require reasonable and beneficial use of valuable stream-borne sediments.⁵³ The public trust doctrine has the breadth and substantive content to control a diversity of resource management problems.⁵⁴ The doctrine could be the foundation of a system of sand rights. To be effective, however, the public trust doctrine must "contain some concept of a legal right in the general public; it must be enforceable against the government; and it must be capable of an interpretation consistent with contemporary concerns for environmental quality."⁵⁵

THE PUBLIC TRUST DOCTRINE

The public trust doctrine is a common-law concept concerning property rights in rivers, the sea, and the seashore between the high and low tide marks. Under the doctrine, "the sovereign owns all of its navigable waterways and the lands lying beneath them 'as trustee of a public trust for the benefit of the people.'"⁵⁶ The sovereign retains an obligation to manage trust lands for the public interest even if it disposes of its ownership rights in the property.⁵⁷ The greatest

52. Stone & Kaufman, *supra* note 2, at 286-87.

53. See *supra* note 47 and accompanying text.

54. Sax, *supra* note 51, at 474.

55. *Id.*

56. National Audubon Soc'y v. Superior Court, 33 Cal. 3d 419, 434, 658 P.2d 709, 189 Cal. Rptr. 346, 355 (1983) (quoting Colberg Inc. v. State *ex rel.* Dept. of Pub. Works, 67 Cal. 2d 408, 416, 432 P.2d 3, 8, 62 Cal. Rptr. 401, 406 (1967)) [hereinafter *Mono Lake*]; People v. Gold Run Ditch & Mining Co., 66 Cal. 138, 151, 4 P. 1152, 1159 (1884).

57. See Taylor, *Patented Tidelands: A Naked Fee?*, 47 CAL. STATE BAR J. 420

interest an individual can acquire in the tidelands is bare legal title subject to the public trust easement.⁵⁸

Traditionally, the doctrine sought to preserve the interests of navigation, commerce, and fishing for the benefit of the public.⁵⁹ Ancient Roman law stated: "By the law of nature these things are common to mankind — the air, running water, the sea and consequently the shores of the sea."⁶⁰ "[T]he shores are not understood to be property in any man but are compared to the sea itself, and to the sand or ground which is under the sea."⁶¹

From this Roman legal concept, English common law developed the public trust.⁶² Justinian's rule held certain lands common, with ownership in no one, but English common law abhorred ownerless things, and introduced the concept of ownership into the public trust.⁶³ Under English common law, property used for public trust purposes was vested in the Crown, and could not be granted to private owners; "[its] perpetual use was dedicated to the public."⁶⁴ Parliament, not the Crown, retained the right to "modify, promote, or restrain public rights relating to fisheries, revenues, and the public safety,"⁶⁵ and to "enlarge or diminish the public rights for some legitimate public purpose."⁶⁶

The American public trust doctrine evolved from both Roman and English law.⁶⁷ In 1821, *Arnold v. Mundy*⁶⁸ established that the English Crown had held the rights in the beds of navigable waters in trust for the common use of the people, that "the states succeeded to this trust, and that a grant purporting to divest the citizens of these common rights was void."⁶⁹ The original thirteen states succeeded to

(1972).

58. *See id.*

59. *Marks v. Whitney*, 6 Cal. 3d 251, 259, 491 P.2d 374, 380, 98 Cal. Rptr. 790, 798 (1971).

60. INSTITUTES OF JUSTINIAN 2.1.1 (quoted in *Mono Lake*, 33 Cal. 3d at 433-34, 658 P.2d at 718, 189 Cal. Rptr. at 355).

61. *Id.* at 2.1.5.

62. *Mono Lake*, 33 Cal. 3d at 434, 658 P.2d at 718, 189 Cal. Rptr. at 355.

63. Stevens, *The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right*, 14 U.C.D. L. REV. 195, 197-98 (1980).

64. *See Sax, supra* note 51, at 475.

65. *Id.* at 476.

66. *Id.*

67. *See id.* Stevens has suggested that Hispanic law, under the Treaty of Guadalupe Hidalgo, provides an independent basis for California's public trust doctrine. *See Stevens, supra* note 63, at 197.

68. 6 N.J.L. 1 (1821).

69. Stevens, *supra* note 63, at 199.

the trust formerly held by the Crown,⁷⁰ and states admitted after the revolution were entitled to the lands beneath their waters under the "equal footing doctrine."⁷¹ The State of California acquired title to trust lands and waterways within its borders upon admission to the union.⁷²

Early American application of the public trust doctrine focused on ownership of the beds of navigable waters, their availability for use by the public for navigation, commerce, and fishing, and the inalienability of public trust lands.⁷³ *Illinois Central Railroad Co. v. Illinois*⁷⁴ is the primary authority in early American public trust law.⁷⁵ In *Illinois Central*, the Supreme Court upheld the Illinois Legislature's revocation of a four year-old grant in fee simple to the Illinois Central Railroad of 1000 acres of land underlying Lake Michigan. The Court held that the legislature did not have the power to convey the submerged lands free of the public trust, stating:

[t]he State can no more abdicate its trust over trust property in which the whole people are interested, like navigable waters and soils under them, . . . than it can abdicate its police powers in the administration of government and the preservation of the peace . . . [T]rusts connected with public property, or property of a special character, like lands under navigable waters, . . . cannot be placed entirely beyond the direction and control of the State.⁷⁶

Illinois Central established that the public trust is inalienable, except in rare cases when alienation results in the improvement of the public interest or when the alienation does not result in detriment to the public interest in the lands and waters remaining.⁷⁷ Since *Illinois Central*, changing needs have expanded the definitions of public trust uses.⁷⁸ One commentator stated:

It appears that today we are in a roundabout way returning to the Roman

70. *Martin v. Waddell*, 41 U.S. (16 Pet.) 367 (1842).

71. *See Stevens, supra* note 63, at 200. Under the United States Constitution, new states are admitted to the Union "on an equal footing with the original States in all respects whatsoever." *Coyle v. Okla.*, 221 U.S. 559, 566-67 (1911) (quoting the declaration of admission of Tennessee to the Union, 1 Stat. 491 (1796)). Restrictions cannot be imposed upon new states that were not placed upon the thirteen original states. *See Leighty, The Source and Scope of Public and Private Rights in Navigable Waters*, 5 LAND & WATER L. REV. 391, 414-18 (1970). The equal footing doctrine provides a basis for the tidelands trust in each of the noncolonial states. *See Oregon ex rel. State Land Bd. v. Corvallis Sand & Gravel Co.*, 429 U.S. 363 (1977); *Pollard v. Hagen*, 44 U.S. (3 How.) 212 (1845); *see also Shively v. Bowlby*, 152 U.S. 1 (1894).

72. *City of Berkeley v. Superior Court*, 26 Cal. 3d 515, 521, 606 P.2d 362, 365, 162 Cal. Rptr. 327, 330 *cert. denied*, 449 U.S. 841 (1980).

73. *See Stevens, supra* note 63, at 200.

74. 146 U.S. 387 (1892).

75. *City of Berkeley v. Superior Court*, 26 Cal. 3d at 521, 606 P.2d at 365, 162 Cal. Rptr. at 330.

76. *Illinois Central*, 146 U.S. at 453-54.

77. *Id.* at 455-56.

78. *See, e.g.*, text accompanying notes 94-100 for a discussion of expanded purposes of the public trust doctrine in California.

concept of public rivers and lakes. Differing theories of navigability are being enunciated to meet public needs, to reconcile state and federal rules and to accommodate property concepts. And a new enumeration of public trust rights is emerging to meet the needs of the people, to whom, in the final analysis, these waters belong.⁷⁹

DEVELOPMENT OF THE PUBLIC TRUST DOCTRINE IN CALIFORNIA

California has a significant body of public trust law. The principles of *Illinois Central* were adopted by the California Supreme Court in *People v. California Fish Co.*⁸⁰ *California Fish* involved a legislative grant of about 80,000 acres of tidelands. The court held that, whenever reasonably possible, such statutes would be interpreted to retain public use and maintain the public trust.⁸¹ The court found that the statute and grants in question were not made for trust purposes; therefore, the grantees did not acquire absolute title. They owned the soil subject to public use for public trust purposes, and subject to the right of the state to administer the public trust.⁸² The principles of *Illinois Central* subsequently were reaffirmed in *City of Berkely v. Superior Court*,⁸³ and *National Audubon Society v. Superior Court*.⁸⁴

Three factors define the scope of California's public trust doctrine: 1) the types of property included under the doctrine (traditionally the tidelands, navigable waters and the land beneath navigable waters); 2) the interests protected by the doctrine (traditionally navigation, commerce, and fishing); and 3) the powers and duties of the state as trustee.

Property Included Under the Public Trust Doctrine

"Early English decisions generally assumed the public trust was limited to tidal waters and the lands exposed and covered by the daily tides; many American decisions, including the leading California cases, also concern tidelands."⁸⁵ American courts, however, have held that the doctrine also extends beyond the reach of the tides, encompassing all navigable lakes and streams.⁸⁶ California's public

79. Stevens, *supra* note 63, at 196.

80. 166 Cal. 576, 138 P. 79 (1913).

81. *Id.* at 597, 138 P. at 88.

82. *Id.* at 598-99, 138 P. at 88.

83. 26 Cal. 3d at 515, 606 P.2d at 362, 162 Cal. Rptr. at 327.

84. 33 Cal. 3d at 419, 658 P.2d at 709, 189 Cal. Rptr. at 346.

85. *Mono Lake*, 33 Cal. 3d at 435, 658 P.2d at 719, 189 Cal. Rptr. at 356 (citing Stevens, *supra* note 63, at 201).

86. *Id.* See, e.g., *Illinois Central*, 146 U.S. at 387; *State v. Superior Court*

trust doctrine extends further, "protect[ing] navigable waters from harm caused by diversion of nonnavigable tributaries."⁸⁷ Thus, under existing California law, both the tidelands and inland rivers and streams are protected under the public trust doctrine.

The doctrine may also extend to the dry sand portion of public beaches above the tidal zone. Beaches purchased by state or local governments for recreational purposes are public parks protected under the public trust doctrine.⁸⁸ Beaches maintained by local governments for the benefit of the public may become subject to public trust restrictions through implied dedication.⁸⁹ The California Department of Parks and Recreation manages more than 210 miles of California's coastline.⁹⁰ Local governments maintain many more miles of coastline for the public. Applying sand rights to public beaches above the tidal zone would serve public trust purposes by preserving beach sand and providing public recreation areas. This also would further the intent of California court decisions,⁹¹ constitutional provisions,⁹² and legislation⁹³ requiring public access to navigable waters for all recreational purposes, and mandating preservation, protection, and development of public recreation areas. A theory of sand rights based on the public trust doctrine would provide a comprehensive solution to coastal erosion while remaining consistent with existing public policy.

Interests Protected Under The Public Trust Doctrine

In *Marks v. Whitney*,⁹⁴ the California Supreme Court recognized that the public trust doctrine extends beyond traditional usage to protect environmental and recreational values. "Public trust easements . . . have been held to include the right to fish, hunt, bathe, swim, to use for boating and general recreation purposes the navigable waters of the state, and to use the bottom of the navigable waters for anchoring, standing, or other purposes."⁹⁵ The court continued:

(Lyon), 29 Cal. 3d 210, 625 P.2d 239, 172 Cal. Rptr. 696 (1981); *State v. Superior Court (Fogerty)*, 29 Cal. 3d 240, 625 P.2d 256, 172 Cal. Rptr. 713 (1981); *People v. Gold Run Ditch & Mining Co.*, 66 Cal. 138, 4 P. 1152 (1884); *Hitchings v. Del Rio Woods Recreation & Park Dist.*, 55 Cal. App. 3d 560, 127 Cal. Rptr. 830 (1976).

87. *Mono Lake*, 33 Cal. 3d at 437, 658 P.2d at 721, 189 Cal. Rptr. at 357.

88. See D. DUCSIK, *SHORELINE FOR THE PUBLIC* 118 (1974).

89. See *id.* at 112-17; see also *Gion v. City of Santa Cruz*, 2 Cal. 3d 29, 465 P.2d 50, 84 Cal. Rptr. 162 (1970).

90. See Willard, *Coastal Erosion and State Parks: Compatible Compatriots?*, in *BATTERED COAST CONFERENCE*, *supra* note 7 at 326.

91. E.g., *Gion*, 2 Cal. 3d at 29, 465 P.2d at 50, 84 Cal. Rptr. at 162; *People ex rel. Baker v. Mack*, 19 Cal. App. 3d 1040, 97 Cal. Rptr. 448 (1971).

92. E.g., CAL. CONST. art. X, § 4 (formerly art. XV, § 2).

93. E.g., CAL. PUB. RES. CODE § 5096.111-.139 (Deering 1976).

94. 6 Cal. 3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971).

95. *Id.* at 259, 491 P.2d at 380, 98 Cal. Rptr. at 796.

[T]he public uses to which the tidelands are subject are sufficiently flexible to encompass changing public needs. In administering the trust the state is not burdened with an outmoded classification favoring one mode of utilization over another. There is a growing public recognition that one of the most important public uses of the tidelands — a use encompassed within the tidelands trust — is the preservation of those lands in their natural state, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area.⁹⁶

In *National Audubon Society v. Superior Court (Mono Lake)*, the California Supreme Court upheld the protection of environmental and recreational values through the public trust doctrine.⁹⁷ *Mono Lake* involved a 1940 permit granted by the California Division of Water Resources (currently the California Water Resources Board) to the Department of Water and Power of the City of Los Angeles (DWP) allowing the DWP to divert the flow of four of Mono Lake's five tributaries to Los Angeles. From 1970 to 1983 DWP had diverted virtually the entire flow of these streams.

To protect Mono Lake's scenic beauty and ecological and recreational values from appropriation, the Audubon Society filed a complaint for declaratory relief against the DWP in the Alpine County Superior Court.⁹⁸ The court entered summary judgment against the plaintiffs, stating that California's system of water rights was the "comprehensive and exclusive system for determining the legality of the diversions of the City of Los Angeles in the Mono Basin The Public Trust Doctrine does not function independently of that system . . . [but] is subsumed in the water rights system of the state."⁹⁹ The California Supreme Court disagreed and concluded that the public trust doctrine is not subsumed under California's system of water rights, but rather co-exists with the appropriative system of water rights as an integrated system of water law. "[P]laintiffs [could] rely on the public trust doctrine in seeking reconsideration of the allocation of the waters of the Mono Basin."¹⁰⁰

The language of *Mono Lake* and *Marks v. Whitney* suggests strong legal and policy arguments in support of a legal system of sand rights under the public trust doctrine. Both decisions held that the public trust doctrine is sufficiently broad to encompass changing

96. *Id.* at 259-60, 491 P.2d at 380, 98 Cal. Rptr. at 796 [citations omitted].

97. *Mono Lake*, 33 Cal. 3d at 435, 658 P.2d at 709, 189 Cal. Rptr. at 353 (quoting *Marks v. Whitney*, 6 Cal. 3d 251, 491 P.2d 374, 98 Cal. Rptr. 790 (1971)).

98. *Id.* at 431, 658 P.2d at 716, 189 Cal. Rptr. at 353.

99. *Id.* at 433, 658 P.2d at 718, 189 Cal. Rptr. at 354-55.

100. *Id.* at 452, 658 P.2d at 732, 189 Cal. Rptr. at 369.

public needs.¹⁰¹ Protection of beaches falls within both the expanded and traditional purposes of the public trust doctrine.¹⁰² Beaches serve recreational and environmental purposes. They also aid commerce, navigation, and fishing. *Mono Lake* held that the public trust protects the public interest in trust lands harmed by diversion of non-navigable streams.¹⁰³ The public trust doctrine likewise should protect the public interest in tidelands harmed by diversion of sand carried by non-navigable streams.¹⁰⁴

The Powers and Duties of the State as Trustee

Mono Lake established the affirmative sovereign power and duty of the state "to protect the people's common heritage of streams, lakes, marshlands and tidelands"¹⁰⁵ by exercising continued supervision over the public trust.¹⁰⁶ The court determined that owners of trust property hold title to a servient estate subject to the public trust and state action consistent with the state's duty to maintain the trust.¹⁰⁷ The court also noted that the power of the state as administrator of the trust "extends to the revocation of previously granted rights or to the the enforcement of the trust against lands long thought free of the trust."¹⁰⁸

In addition, the California Supreme Court has recognized the state's right to reconsider past decisions regarding uses of trust lands.¹⁰⁹ For example, in *Boone v. Kingsbury*,¹¹⁰ the California Supreme Court upheld the lease of public trust lands for oil drilling, but held that any license to drill remained subject to the trust. The court ruled that the state retained the power to remove the oil derricks at any time if it found they substantially interfered with the public interest in the trust lands.¹¹¹

By analogy, the state also should have the power to remove inland dams that substantially interfere with the public interest in the tidelands; however, such a drastic solution is unlikely. The public trust doctrine works by balancing competing interests and accomodating

101. *Id.* at 434, 658 P.2d at 719, 189 Cal. Rptr. at 356; *Marks*, 6 Cal. 3d at 259, 491 P.2d at 374, 98 Cal. Rptr. at 796.

102. *Stone & Kaufman*, *supra* note 2, at 293-94.

103. *Mono Lake*, 33 Cal. 3d at 437, 658 P.2d at 721, 189 Cal. Rptr. at 357.

104. *Stone & Kaufman*, *supra* note 2, at 292-93.

105. *Mono Lake*, 33 Cal. 3d at 441, 658 P.2d at 721, 189 Cal. Rptr. at 358.

106. *Id.* at 437, 658 P.2d at 721, 189 Cal. Rptr. at 358.

107. *Id.* at 440, 658 P.2d at 723, 189 Cal. Rptr. at 360.

108. *Id.* (citing *Illinois Central*, 146 U.S. at 387; *City of Berkeley v. Superior Court*, 26 Cal. 3d at 515, 606 P.2d at 362, 162 Cal. Rptr. at 327; *Boone v. Kingsbury*, 206 Cal. 148, 273 P. 797 (1928); *California Fish*, 166 Cal. at 576, 138 P. at 79.)

109. *Mono Lake*, 33 Cal. 3d at 447, 658 P.2d at 728, 189 Cal. Rptr. at 365.

110. 206 Cal. 148, 273 P. 797 (1928).

111. *Id.* at 192-93, 273 P. at 816 (citing *California Fish*, 166 Cal. at 576, 138 P. at 79; *Illinois Central*, 146 U.S. at 387).

multiple uses of trust lands whenever possible.¹¹² Courts reach resource allocation decisions only after evaluating competing interests in the resources.¹¹³ Sand rights under the public trust doctrine would require a comprehensive consideration of a project's effect on sand supply in addition to other factors currently considered prior to project approval. Sand rights also would require periodic reevaluation of each existing project's environmental effects.¹¹⁴

When authorizing uses of trust lands, the state necessarily will be required to balance competing interests in particular trust resources.¹¹⁵ Use of tidelands for oil drilling¹¹⁶ and construction of restaurants, bars, motels, swimming pools, convention centers, and apartment buildings¹¹⁷ has been held consistent with the trust when such uses further trust purposes. Unlike these situations, however, beach replenishment does not involve different trust interests competing for the same resource; it involves competition arising from trust interests in different, but related resources. Inland residents need water; the public interest in the tidelands concerns sand. Competition exists only because the damming of inland water affects the transport of sand. A compromise is needed which provides a systematic method of beach replenishment without depriving inland residents of a necessary amount of water. Recognizing sand as a resource separate from the water in which it is carried would be the first step toward an effective compromise.

The public trust doctrine has a built-in mechanism for balancing interests. Although the state has the power to choose between competing trust uses of public trust lands, it cannot abrogate the trust by authorizing a use inconsistent with it.¹¹⁸ Accordingly, state authorization of inland dams and water projects does not destroy the public interest in the tidelands merely because the dams are inconsistent with the maintenance of the tidelands. The state retains its duty to

112. See Stevens, *supra* note 63, at 224.

113. See *id.* at 223-25.

114. See Stone & Kaufman, *supra* note 2.

115. See Stevens, *supra* note 63, at 223-25.

116. See Boone, 206 Cal. at 148, 273 P. at 797.

117. See, e.g., Martin v. Smith, 184 Cal. App. 2d 571, 7 Cal. Rptr. 725 (1960).

118. *Mono Lake*, 33 Cal. 3d at 440, 658 P.2d at 723, 189 Cal. Rptr. at 360; see also Colberg, 67 Cal. 2d at 408, 432 P.2d at 3, 62 Cal. Rptr. at 401; County of Orange v. Heim, 30 Cal. App. 3d 694, 106 Cal. Rptr. 825 (1973). "Most decisions and commentators assume that 'trust uses' relate to uses and activities in the vicinity of the lake, stream, or tidal reach at issue." *Mono Lake*, 33 Cal. 3d at 440, 658 P.2d at 723-24, 189 Cal. Rptr. at 360; see also *City of Berkeley*, 26 Cal. 3d at 515, 606 P.2d at 362, 162 Cal. Rptr. at 327 (increasing tax revenues or commercial use of property not considered public purposes sufficient to allow grant of tidelands free of the public trust).

maintain the tidelands for the benefit of the public.

Although the tidelands are protected under the public trust doctrine, their recent rapid erosion indicates that the present public trust doctrine provides inadequate protection. Without a continued flow of sand to the coast, California's beaches will soon disappear. To fully protect the public interest in the tidelands, the California legislature must recognize and courts must enforce a public right to the sand of which the tidelands are made. A sand rights doctrine would not necessarily require abandonment of projects having an adverse effect on sand supply; however, it would require a balancing of project benefits and the need for sand supply prior to project approval.¹¹⁹

Mono Lake provides a number of arguments in favor of public rights to stream-borne sediments as a method of protecting the tidelands. *Mono Lake* held that the public trust doctrine protects the recreational and environmental values of an inland lake and its shores from diversion of its tributaries to the coast.¹²⁰ Under a system of sand rights, the inverse also would be true; the public trust doctrine would protect the environmental and recreational values of the coastal tidelands from *inland diversion* of sediment-carrying tributaries. *Mono Lake* held that the public trust doctrine protects Mono Lake against interference with non-navigable streams that results in a lowering of the lake's water level.¹²¹ The public interest in the coastal tidelands is similar to the public interest in Mono Lake. Under a system of sand rights, the public trust doctrine would protect the tidelands from interference with non-navigable streams that results in erosion of the tidelands.¹²²

Implementing a Legal System of Sand Rights

A system of sand rights could parallel California's system of water rights. The doctrine of reasonable use is the overriding feature of California water law; all uses of water, including use by riparian landowners, must conform to the standard of reasonable use.¹²³

In *People ex rel. State Water Resources Control Board v. Forni*,¹²⁴ the defendants owned vineyards riparian to Napa River. They pumped water directly from the river to protect their crops

119. Stone & Kaufman, *supra* note 2, at 295.

120. See *Mono Lake*, 33 Cal. 3d at 419, 658 P.2d at 709, 189 Cal. Rptr. at 346.

121. *Id.* at 437, 658 P.2d at 721, 189 Cal. Rptr. at 357.

122. See Stone & Kaufman, *supra* note 2, at 292-93.

123. See *Peabody v. City of Vallejo*, 2 Cal. 2d 351, 375, 40 P.2d 486, 498 (1935); *Fullerton v. State Water Resources Control Bd.*, 90 Cal. App. 3d 590, 596, 153 Cal. Rptr. 518, 522-23 (1979); *People ex rel. State Water Resources Control Bd. v. Forni*, 54 Cal. App. 3d 743, 749-50, 126 Cal. Rptr. 851, 855 (1976); see also *Joslin v. Marin Mun. Water Dist.*, 67 Cal. 2d 132, 429 P.2d 889, 60 Cal. Rptr. 377 (1967).

124. 54 Cal. App. 3d 747, 126 Cal. Rptr. 851 (1976).

during the frost season. The plaintiffs complained that the defendants' diversion of water constituted an unreasonable use of water because the river flow during the frost period was insufficient to supply all growers entitled to water. The court held that the defendants' direct diversion of water constituted an unreasonable use because defendants could have prevented the need for direct diversion by building and utilizing storage reservoirs in anticipation of the reduced stream flow during the frost season.¹²⁵ The defendants' failure to mitigate made the direct diversion unreasonable when the interests of the surrounding growers were considered.

A system of sand rights would apply the same reasoning to sediments, requiring a reasonable use of stream-borne sand. When the public interest in the coastline outweighs the cost of mitigating interference with sediment transport, dams and water projects that do not mitigate interference, either by allowing for natural sand transport or by providing a means of artificial beach replenishment, will be considered unreasonable. Coastal cities and counties, or private citizens acting on behalf of the public could then use the courts to force such projects to prevent loss of sand transport.¹²⁶

A system of sand rights could also be enacted by requiring the effect on sand supply to be reported in a project's EIR.¹²⁷ Under CEQA, construction of a project is authorized only after its "significant effects" on the environment have been adequately considered in an EIR. Any adverse effects must be mitigated or avoided whenever feasible.¹²⁸ Inland dams and water projects have serious effects on

125. *Id.* at 750, 126 Cal. Rptr. at 855-56.

126. *See* Stone & Kaufman, *supra* note 2, at 297.

127. CAL. PUB. RES. CODE § 21061 (Deering Supp. 1986). Section 21061 provides in part:

An environmental impact report is an informational document which, when its preparation is required by this division, shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.

128. CAL. PUB. RES. CODE § 21002 (Deering Supp. 1986). Section 21002 states: [I]t is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects The Legislature further finds and declares that in the event specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof.

the environment.¹²⁹ The reduction in sand transport and resulting coastal erosion seem to qualify as "significant effects" under CEQA,¹³⁰ and should be discussed in projects' EIRs; however, CEQA currently does not require discussion of a project's effect on sand supply in its EIR.

This loophole in CEQA may be due to a general lack of understanding of the littoral process. The far-reaching effects of inland projects on the coast often have been overlooked. Because the littoral process begins far inland and crosses many local jurisdictions, sand transport is a statewide concern. Legislation is needed which recognizes (1) a public right to stream-borne sand; and (2) that reduction in sand supply is a significant effect on the environment.¹³¹ Under an amended CEQA, dams and water projects would have to be constructed to mitigate interference with sand transport whenever feasible.¹³²

Legislation under CEQA could aid in the administration of sand rights, but would not be an ultimate solution. CEQA only requires consideration of a project's effects on the environment; it does not necessarily require mitigation or avoidance. CEQA allows public agencies to approve projects having adverse environmental effects when mitigation or avoidance is not feasible.¹³³ The public trust doctrine goes much further, requiring protection of the tidelands subject only to an overriding public interest. The state's powers and duties are greater under public trust doctrine than under CEQA. Inclusion of sand rights within the public trust doctrine would impose a continuing duty upon the state to supervise existing projects.¹³⁴ The state would retain the power to reconsider past decisions allowing projects, and could revoke permits which later appear to have been improvidently granted.¹³⁵ The state might be required, in fulfillment of its duty as trustee, to provide alternative means for beach replen-

Section 21061.1 defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." CAL. PUB. RES. CODE § 2106.1 (Deering Supp. 1986).

129. See *supra* text accompanying notes 40-44.

130. CAL. PUB. RES. CODE § 21068 (Deering Supp. 1986). Section 21068 states: "Significant effect on the environment" means substantial or potentially substantial, adverse change in the environment."

131. But see Stone & Kaufman, *supra* note 2, at 295 (New legislation is not required; state guidelines could be amended administratively to include the loss of beach replenishment as a significant effect on the environment.).

132. See CAL. PUB. RES. CODE § 21002. For the text of section 21002 see *supra* note 127.

133. See *id.*; see also CAL. PUB. RES. CODE § 21061.1. For the text of section 21061.1 see *supra* note 128.

134. See *Mono Lake*, 33 Cal. 3d at 437, 658 P.2d at 721, 189 Cal. Rptr. at 358, and authorities cited therein.

135. See *supra* notes 109-11 and accompanying text. See also Stone & Kaufman, *supra* note 2, at 297.

ishment when existing dams have destroyed natural means, or when mitigation is not feasible according to CEQA.

The Cost of Sand Rights

Cost is a major factor in adoption of a system of sand rights. Cost/benefit analyses favor sand replenishment as the best solution to coastal erosion.¹³⁶ Ocean scientists have determined that the best protection against coastal erosion is a wide beach able to absorb the forces of waves and storms.¹³⁷ When the need for inland water projects makes the continued natural process of beach replenishment impossible, artificial beach replenishment¹³⁸ is the only reasonable alternative.¹³⁹

Environmentally, beach replenishment is a better long-term solution to erosion control than construction of artificial devices such as seawalls and groins.¹⁴⁰ Artificial devices often accelerate erosion rather than protect the coastline.¹⁴¹ Economically, beach replenishment is generally more cost effective than other forms of coastline protection.¹⁴² A program of beach restoration and periodic beach nourishment could save about ten dollars per foot of shoreline per year over a twenty year period when compared to the cost of artifi-

136. See, e.g., Everts, *Effects of Small Protective Devices on Beaches*, in BATTERED COAST CONFERENCE, *supra* note 7, at 127. See generally BATTERED COAST CONFERENCE, *supra* note 7.

137. See Inman, *supra* note 7; see also DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1. See generally BATTERED COAST CONFERENCE, *supra* note 7.

138. There are a number of beach replenishment, or beach nourishment methods, including the following: 1) pumping sand from offshore sources onto a beach near the northern boundary of a littoral cell, where natural littoral currents can carry it to other beaches in the cell; see Everts, *supra* note 136, at 127, 136; 2) clearing the sand trapped behind dams and reservoirs and trucking it to the coast; see Potter, *Sand Sluicing From Dams on the San Gabriel River — Is it Feasible?*, in BATTERED COAST CONFERENCE, *supra* note 7, at 251, 258; and 3) piping the sand to the coast in special pipelines using local, imported, or reclaimed water to carry the sand through the pipeline; see *id.*

Southern California has a number of inland sand sources, including river channel alluvium, sand dunes, and marine terrace deposits. See DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1, at 63.

139. See Inman, *supra* note 7; see also DEPARTMENT OF NAVIGATION AND OCEAN DEVELOPMENT, *supra* note 1. See generally BATTERED COAST CONFERENCE, *supra* note 7.

140. See Everts, *supra* note 136, at 127; see also *supra* note 120 and accompanying text.

141. See, e.g., Burns, *Coastal Mismanagement in San Diego — The Sunset Cliffs Erosion Control Project*, BATTERED COAST CONFERENCE, *supra* note 7, at 92.

142. See Everts, *supra* note 136.

cial protective devices.¹⁴³ Therefore, it makes both environmental and fiscal sense to adopt a system of sand rights to insure beach replenishment.

An experimental sand replenishment project at Hueneme Beach, in the Ventura-Oxnard area, is a perfect example of cost effective erosion control which serves the public trust. Prior to 1940, Port Hueneme was a natural sand point backed by extensive sand dunes. Since then, development in the area caused erosion of Hueneme Beach. In response, the Army Corps of Engineers began a bi-annual project of dredging sand from Channel Islands Harbor, pumping it down the coast, and depositing it in a long line in front of Hueneme Beach. Because the project was poorly planned, it was costly and largely ineffective.¹⁴⁴

In 1984-85, a group of private citizens banded together and contacted the Surfrider Foundation, a non-profit environmental organization, with a plan for improving erosion control and enhancing the recreational value of the beach.¹⁴⁵ In 1986-87, the Surfrider Foundation submitted a proposal to the Army Corps of Engineers which recommended reducing the amount of sand to be dredged and decreasing the distance of artificial sand transport by depositing all of the sand at the northwest end of Hueneme Beach. The Corps has decided to implement the plan on an experimental basis.

The Surfrider Foundation plan will create a sand point at the northwest end of the beach; natural littoral currents will then carry sand from the point to the rest of the beach at a natural rate. The result will be decreased costs of sand replenishment, improved recreational values of the beach, and more effective erosion control.¹⁴⁶ (1) The success of the Hueneme project will help determine whether similar projects may be effective in other areas. If so, sand rights could be the vehicle for allowing future projects.

Another consideration is who should bear the cost of beach replenishment. Ocean scientists and attorneys have offered reasonable funding alternatives. Dr. Inman argues that the cost of beach nourishment should be borne by an additional charge for the use of water.¹⁴⁷ This solution would place the cost of beach replenishment on those benefitted by inland dams. Additional funding could be obtained by imposing a "sand fee" on new developments within each greater littoral cell which reduce the supply of sand to the cell's

143. *Id.* at 138. Figures are in 1984 dollars. The actual costs of artificial beach replenishment vary greatly depending on coastal conditions and the proximity of sand sources.

144. See *Hueneme Surfers Get New Wave - Creation of New Sand Point on Schedule*, MAKING WAVES, Spring 1987, at 1, 3 (Surfrider Foundation newsletter).

145. *Id.* at 3.

146. *Id.*

147. See *supra* note 45 and accompanying text.

coastline.¹⁴⁸ This would place the burden of beach replenishment directly on those who interfere with the natural littoral process.

Another method to fund beach replenishment would be to format special assessment districts along the boundaries of each greater littoral cell.¹⁴⁹ Each resident in the district would be required to pay a few dollars per year to support the issuance of bonds for funding beach replenishment.¹⁵⁰ This method places the cost of beach replenishment on all residents in the cell, rather than only on those residents using water trapped behind dams. Under this solution, the cost would be borne by all people benefitted by the tidelands trust.

Each of these potential funding solutions has a certain logical appeal. The best solution may be to integrate the methods discussed above under a system of sand rights to insure adequate consideration of the competing interests in the tidelands and inland resources.

CONCLUSION

Our beaches are eroding due to a significant lack of sand supply. The reduction in sand supply has been caused by recent development on and along inland rivers and streams that formerly transported sand to the coast. Without a system for protecting sand supply, the beaches eventually will disappear.

The tidelands belong to the state and are held in trust for the people under the public trust doctrine.¹⁵¹ The state has the power and the duty to maintain the trust for the public benefit,¹⁵² yet California law has not recognized the importance of sediment transport to beaches. Although the tidelands are protected under the public trust doctrine, no method for maintaining the transport of sediments to the beach currently exists. A system of sand rights would protect the tidelands by ensuring the continued flow of sand to the coast, whether by natural or artificial means.¹⁵³

A system of sand rights would recognize a public interest in the sand of which beaches and tidelands are made. It would require that dams and water projects operate so as to mitigate interference with sand transport. When natural forms of beach replenishment no longer exist, sand rights would require a system of fees or special

148. Stone & Kaufman, *supra* note 2, at 296.

149. See Randolph, *Use of Special Assessment Districts to Finance Privately Owned Seawall Projects*, in BATTERED COAST CONFERENCE, *supra* note 7, at 198.

150. *Id.*

151. See *supra* notes 80-84 and accompanying text.

152. See *supra* notes 105-08 and accompanying text.

153. See *supra* notes 119-31 and accompanying text.

assessments to fund artificial replenishment projects. Only by protecting the sand of which the tidelands are made can we effectively protect the public interest in one of California's most precious resources, the shores of the sea.

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