

TOWARDS A PROPERTY-ORIENTED SYSTEM FOR BEACH MANAGEMENT\*

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During the last three decades, coastal states like Florida have experienced some of their fastest rates of population growth near beaches. The rapid development of these areas has often combined with natural processes to accelerate erosion rates or change the distribution of sediment in impacted areas. Consequently, new construction has sometimes contributed to the loss of sediment in precisely those areas where it is most wanted. The example of Miami Beach readily comes to mind.

Government's response to erosion has taken two distinct policy tracks. One, the engineering solution, is to reduce or offset erosion with physical defenses and renourishment projects, respectively. The other approach is to regulate new development to minimize its impact upon the beach.

In Florida, a combination of these two policies is evident. The state's Department of Natural Resources (DNR) and the U.S. Corps of Engineers have replenished over a dozen beaches. The larger projects are located in counties facing the Atlantic, where wave action is stronger and hence relative erosion rates higher than along the calmer Gulf. These are also areas where the ratio of a county's population to linear beach miles is highest, e.g., Miami, Jacksonville, and Palm Beach. Thus, the policy works to relieve scarcity of sediment where it is most acute. Economically, this is a sensible fiscal policy.

The state's regulatory policy, however, is less benign. DNR has drawn a coastal construction setback line to keep new development away from the interface of sand and surf. It is believed that this will reduce man-made erosion and allow natural processes like dune formation to stabilize beaches more effectively and aesthetically than engineering projects. The state is also prodding local governments in areas with relatively underdeveloped beaches to protect and preserve them.

Engineering and regulatory policies are quite different in purpose and result. An engineering policy responds to scarcity by supplying an area in need with a valuable resource, e.g., sediment. The reconstructed beach, sometimes larger than the previous natural one, affords protection to property and makes additional space available for construction and recreation. Substantial stretches are reserved for common use by the public, who acquires access rights to the beach.

In contrast, regulation usually aims to change people's behavior toward the beach. It tries to redirect the nature of urban development away from the beach, or at least reduce its rate of growth. This policy is not popular with property owners, developers, and locally-elected officials, particularly in areas presently undergoing the fastest growth, such as Perdido Key, Ft. Walton Beach, and Destin. These communities are in Florida's Panhandle, which historically has lagged behind South and East-Central Florida in growth.

The fact that engineering is favored over regulation by developers and locally elected officials is understandable. Regulation undermines property rights and takes away local autonomy. This tends to reduce economic efficiency and erode political consensus. In my judgment, these effects of regulation make it less desirable than a straightforward engineering policy. In the remainder of this essay, I suggest how to strengthen this policy tool by organizing sediment according to the water law of the West.

Beyond the 100th meridian, the climate of the United States becomes increasingly arid. Water fit for human consumption is scarce relative to land. As Americans settled the region during the 19th century, they developed a new system of water law to overcome this natural limitation.

Known as the American Doctrine of Prior Appropriation, it established individual and corporate rights to quantifiable amounts of water for diversion, transport and use. This made it legally and economically feasible to manage water more efficiently with the tools of engineering. Irrigators, canal companies, municipalities, and local, state and federal agencies proceeded to build elaborate systems of canals and dams, literally making vast stretches of desert bloom.

For the purposes of public policy, water for irrigating the desert and sediment for renourishing beaches have important similarities. Both resources can be captured, transported, diverted and stored for later use. This should make it feasible to manage sediment along the coast in much the same way as water is managed in the arid West.

In principle, it should be possible for lawyers and judges to fashion property rights for sediment upon the same organizational principles underlying the American Doctrine of Prior Appropriation. These are:

(1) Individual and corporate ownership over sediment established by the act of taking possession of it for any useful purpose, including beach rebuilding, navigation, sediment diversion, construction or navigation.

(2) Any individual and any private or public corporation can acquire rights to submerged lands for the purpose of excavating, depositing or channeling sediment, and for building or development.

(3) In the case of conflicting claims to sediment or submerged land, rights are apportioned according to seniority of appropriation.

(4) The extent of any claim is limited by the quantity of sediment actually put to beneficial use. In the West, state legislatures and courts have determined what purposes are "beneficial" and have ranked various uses accordingly. A similar approach could be tried with sediment. The more inclusive the set, however, the wider the range of wants that can be satisfied in the sediment market.

(5) Any one can buy and sell rights to sediment and any owner of sediment can sue for damages to property caused by others.

By establishing property rights to sediment and submerged lands, these resources would become valuable articles of commerce, like real estate and water rights. This would induce new investment and more efficient management on the part of their owners, private and public alike. The result can only be an expansion in the supply

of beach space, making it possible for more people to derive greater enjoyment of the services beaches provide. True, the additional supply would be more "artificial" - i.e., engineered - and less "natural". In my view, the benefits of greater consumption outweigh whatever losses are associated with this change.