



REPLY

Reply to: The Per Bruun Discussion (This issue, pp. 1037–1039)

Orrin H. Pilkey and Lynn A. Leonard*

Program for the Study of Developed Shorelines
Department of Geology
Duke University
Durham, NC 27708

The authors are pleased to have elicited Per Bruun's insights on profile nourishment. Clearly, Per Bruun and Smith (see comments in this issue) believe that profile nourishment is a better approach to beach replenishment. Profile nourishment seems to be an increasingly discussed technique with much hope for the future: hope meaning increased durability. Per Bruun is correct in pointing out that most of the nourishment operations we considered did not include profile nourishment.

Per Bruun uses the Wilmington District of the U.S. Army Corps of Engineers as an example of a group using the profile nourishment approach. The Wilmington district is responsible for replenishing Carolina Beach and Wrightsville Beach, N.C. These beaches have been replenished 12 and 10 times respectively since the mid-1960's. If profile nourishment is reported to increase beach-life, these beaches are not impressive examples of longevity.

Theoretical relationships between the grain

size, slope, length and durability parameters do not, we find, clearly manifest themselves when applied to actual replenishments. We can not explain this deviation from theory nor supply new theoretical or empirical relations to describe observed beach behavior. We suggest that the significance of parameters traditionally considered of first-order importance (*e.g.* grain size) may be overshadowed by other factors (*e.g.* storms). We raise the call for more field evidence to verify and to quantify these theoretical relations.

Finally, the authors wish to re-emphasize that conclusions in LEONARD *et. al.* (1990) are based on the replenishment experience on U.S. East Coast barrier island beaches only. In other areas, similar analyses may yield different results.

LITERATURE CITED

- LEONARD, L.; CLAYTON, T. and PILKEY, O., 1990. An Analysis of Replenished Beach Design Parameters on U.S. East Coast Barrier Islands. *Journal of Coastal Research*, 6 (1), 15-36.

*Present Address: Department of Marine Sciences, University of South Florida, St. Petersburg, FL 33701.