



THE UNIVERSITY OF TEXAS AT AUSTIN  
BUREAU OF ECONOMIC GEOLOGY  
AUSTIN, TEXAS 78712

University Station, Box X  
Phone 512—471-1534

February 27, 1975

Mr. Joe C. Moseley  
Texas Coastal and Marine Council  
P. O. Box 13407  
Austin, Texas 78711

Dear Joe:

Attached is a brief report and list of references of beach nourishment prepared at your request.

Please contact me if you need additional information.

Sincerely yours,

*Bob*

R. A. Morton  
Research Scientist

RAM/cjs

RECEIVED MAR 3 1975

*file: CEM: shoreline Processes*

*BF47.03*

BUREAU OF ECONOMIC GEOLOGY  
THE UNIVERSITY OF TEXAS AT AUSTIN

Beach Nourishment Programs

Beach nourishment is one of several methods employed to reduce beach erosion or to aid in the maintenance and stabilization of a particular beach segment. Sand is generally supplied to the beach by (1) offshore dumping (2) offshore scraping (3) by-passing of impounded sediment (4) direct placement or (5) stockpiling.

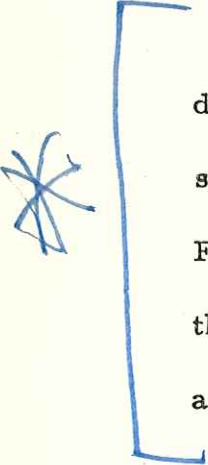
Because of the wide diversity of natural processes and potential sources of sand, each beach nourishment program is somewhat unique. As a result some beach nourishment programs have been successful in stabilizing the beach whereas others have completely failed.

In cases where shoreline erosion is critical, beach nourishment should be viewed as a procedure requiring continued expenditures. Thus, the problem is generally reduced to one of economics or the cost of continuous maintenance versus the benefits derived from the beach stabilization.

Beach nourishment projects have been carried out in some of the northeastern states, Florida, and California. Failure of some of those projects is attributed to a deficit in sediment budget which was not overcome. Stated another way, the sand placed on the beaches was less than that being removed by normal littoral processes. Erosion of sand placed on the beach in the vicinity of Rollover Pass is an example of this type of failure.

Nourishment of North Beach in Corpus Christi Bay has been

proposed by the Galveston District, U. S. Army Corps of Engineers. Their plan calls for restoration of the beach by hydraulic emplacement of dredged bay-fill sediment which would serve as a base. The base material would be covered by a layer of river sand transported to the area from either the Nueces River or the Guadalupe River.



Shoreline erosion in the vicinity of Freeport is an entirely different matter. The old Brazos River was unable to construct a substantial delta prior to river mouth modifications and construction of the Freeport Harbor jetties which serve as an impermeable barrier. After the diversion channel was constructed in 1929, the old delta entered into an erosional phase.

Specific problems that should be considered for the Gulf shoreline in the Freeport area are the limited sources of offshore sand owing to the paucity of sand along that segment of the coast and a deficit in sediment budget that is reflected in general shoreline erosion. Beach maintenance at Freeport would require the periodic placement of large quantities of sand which would eventually be eroded during hurricanes and by longshore currents. At this time, neither the volume of sand required for beach maintenance nor the cost of such a project have been estimated.

## REFERENCES

- BRUUN, P., 1967, By-passing and back-passing with reference to Florida:  
Jour. Waterways and Harbors Div., ASCE, v. 93, WW2,  
p. 101-128.
- BUNCH, J. W., 1970, Beach nourishment at Virginia Beach: Proc. 12th  
Coastal Eng. Conf., v. 2, p. 967-973.
- DALRYMPLE, R. A., 1970, An offshore beach nourishment scheme:  
Proc 12th Coastal Eng. Conf., v. 2, p. 955-966.
- ESCOFFIER, F.F., and DOLIVE, W. L., 1954, Shore protection in  
Harrison County Mississippi: Bull. Beach Erosion Board,  
v. 8, no. 3, p. 1-12.
- GEE, H. C., 1965, Beach nourishment from offshore sources: Jour.  
Waterways and Harbors Div., ASCE, v. 91, WW3.
- GOVATOS, G., and ZANDI, I., 1969, Beach nourishment from offshore  
sources: Shore and Beach, v. 37, no. 2, p. 40-49.
- HALL, J. V., Jr., and HERRON, W. J., 1950, Test of the nourishment  
of the shore by offshore deposition of sand: Beach Erosion  
Board Tech. Memo. 17, 32 p.
- HALL, J. V., 1952, Artificially nourished and constructed beaches:  
Beach Erosion Board Tech. Memo. 29, 25 p.
- HARRIS, R. L., 1954, Restudy of test-shore nourishment by offshore  
deposition of sand, Long Branch New Jersey: Beach  
Erosion Board Tech. Memo 62, 18 p.

- HERRON W. J., and HARRIS, R. L., 1967, Littoral by-passing and beach restoration: Proc. 10th Coastal Eng. Conf., p. 651-675.
- SAVAGE, R. P., 1957, Sand by-passing at Port Hueneme, California: Beach Erosion Board Tech. Memo. 92.
- U.S. Army Coastal Engineering Research Center, 1966, Shore protection, planning, and design: Tech. Rept. no. 4, 3rd edition, 401 p.
- WATTS, G. M., 1958, Behavior of beach fill and borrow area at Harrison County, Mississippi: Beach Erosion Board Tech. Memo. 107, 14 p.
- \_\_\_\_\_, 1959, Behavior of beach fill at Virginia Beach, Virginia: Beach Erosion Board Tech. Memo. 113, 26 p.
- WIEGEL, R., 1959, Sand by-passing at Santa Barbara, California: Jour. Waterways and Harbors Div., ASCE, paper 2066.