

GRAND ISLE BARRIER ISLAND, LOUISIANA — HUMAN ACTIVITY IN A NATURAL, DYNAMIC SYSTEM

Willis E. Conatser¹ and Charles C. Almy, Jr.²
New Orleans, Louisiana 70112

ABSTRACT

Grand Isle, Louisiana is a recently formed barrier island developed by the marine reworking of the seaward edge of the Lafourche Delta, the last major deltaic deposit laid down by the Mississippi River prior to the development of its present delta. Marine reworking of the deltaic front provides sediment which is moved northeastward and northwestward by long-shore currents to form barrier spits and chains of barrier islands, such as Isles Dernieres to the west and Grand Isle — Grand Terre Islands to the east.

Grand Isle became a subaerial deposit about 700 years ago and began to lengthen and grow southeastward by ridge accretion. Its shape and location are controlled primarily by interaction of the long-shore currents in the surf zone and the tidal-pass currents that interrupt them. Changes in the tidal channels, such as position or depth, drastically affect the action of the long-shore currents. This has been dramatically shown at Grand Isle during 1970. High winds in the summer of 1970 and Hurricane Camille in 1969 have deepened and changed the location of the tidal channels northeast and southwest of the island. As a result, accelerated erosion at the island's southwest end has removed several acres of a state park, set the Gulf shoreline back 300 feet, and caused the loss or removal of several beach-front homes. The causeway to the island and a large marina are threatened. Government money has been made available for jetty construction and for eventual sand-pumping operations to reduce erosion and restore the beach.

Destruction of the Lafourche Delta and construction of the ephemeral and migrating barrier islands on its flanks provided sites attractive for development by man. The desire for permanency of the developed sites is in conflict with the natural dynamic shoreline processes.

¹Pelto Oil Company.

²Chevron Oil Company.