

jetties can result in erosion of the updrift shoreline. If all of the downdrift transport passes through the updrift jetty, the updrift shoreline will erode at the rate of the updrift transport component. For the same scenario, the downdrift shoreline will erode at the rate of the downdrift transport component.

From the preceding discussion, there is a clear need at modified entrances to attempt to reinstate the sediment transport that has been interrupted by the modifications. Unfortunately our "track record" in this regard has been much less than exemplary. In many cases sand removed by hopper dredges for channel maintenance has been transported offshore and deposited in water too deep to benefit the nearshore system. Data available for the East coast of Florida shows that within the last 5 decades or so, more than 50 million cubic meters of beach quality sand has been disposed of in excessive water depths. Today's market value of this sand is on the order of \$250 million to \$500 million. Sand deposits as a result of channel modifications and construction should be regarded as a valuable natural resource and not as a material to be disposed of in the least costly manner. Returning to Florida East coast examples, it can be shown that this 50 million cubic meters is sufficient to advance the entire 600 km East coast shoreline seaward by 8 m. Dean (1988) has estimated that 80% of the erosion along Florida's East coast is due to poor sand management practices, which continue today albeit to a lesser degree.

In general, there are two approaches to maintaining longshore sediment transport. One approach is to allow the sediment to accumulate either updrift of the updrift jetty or in the channel and to bypass periodically, relatively large quantities of sand. Such bypassing could be carried out annually or biennially and could involve from hundreds of thousands of cubic meters to 2 million cubic meters in each bypassing event. This mode of bypassing is accomplished by a rather large dredge brought to the area periodically or when needed. The alternative approach is a "dedicated" bypass facility which transfers sand with much greater frequency more or less as it becomes available. The downdrift consequences of these two modes of bypassing differ markedly. In the "batch mode" of bypassing, the downdrift shoreline will widen and narrow as the replenishment and erosional sand waves move downdrift. This variation in beach width may not be favorable for intertidal or nearshore fauna. Clearly in cases where nearshore rock or reef is present and considered a valuable habitat,