General


This book comprises twenty-four individual contributions each as a separate chapter. The book is organized in five sections. Section 1 reviews the magnitude and commercial value of shell dredging over the period 1912-1930 and 1960-1969 and also reviews the literature addressing the effects of shell dredging. Section 2 reviews the physical and geological characteristics of San Antonio Bay, TX including the bathymetry, weather, geology and circulation. Sections 3 and 4 examine the chemical and biological conditions respectively of San Antonio Bay. Section 5 provides information on shell dredging from each of the following states: Florida, Alabama, Mississippi, Louisiana and Texas. Included are the magnitudes and value of shell dredging and the associated regulatory programs of the individual states.


Scaled model studies were carried out to investigate the flow field, sediment entrainment and sediment concentration in the vicinity of a cutterhead intake. It was found that scale modeling approaches were quite effective in investigating these phenomena. Five model sediments were used including sand of three sizes, glass beads and coal. The studies suggested that silt curtains placed in front of the cutter can reduce turbidity substantially.


A comprehensive tutorial of all physical aspects of dredging equipment and techniques is presented. Only limited attention is directed to environmental effects. The suitability of each type of dredge for various sediment characteristics is reviewed. The factors affecting performance and selection of dredge type include: water depth, pumping distance, depth of cut, type of material and waves, winds and currents. The hydraulics of pipeline transport is addressed with respect to horsepower requirements and sediments of differing