

PART I
INTRODUCTION AND GENERAL TYPES OF DREDGING AND COASTAL PROBLEMS
ENCOUNTERED BY THE NATIONAL PARK SERVICE

Introduction

The coastal zone is ever-dynamic responding to the forces of waves, tides, currents and winds. Long periods of relative stability can be terminated by a sudden storm causing both temporary and permanent changes much greater than those occurring over many years of mild weather. Even during periods when the beach is relatively stable, there may be a large unnoticed transport along the shore.

The coastal zone is a desirable region for habitation, recreation and industry. Some of these uses lead to desires to alter the natural system by various means. Such modifications could include channel deepening for navigational purposes, dredging for beach nourishment, coastal armoring to stabilize an eroding shoreline, etc. Engineering interaction with the coastal zone usually causes effects which can be anticipated adequately only through a detailed and quantitative understanding of the natural processes. Although understanding of these processes has developed considerably over the past few decades, our information base is still inadequate and generally unanticipated effects of engineering interaction may occur. Some of these effects are slow and large scale and may influence the shoreline for distances of many kilometers from their cause.

The National Park Service (NPS) as a manager of coastal lands including barrier islands can be impacted by a variety of modifications by adjoining property owners. In some cases, the concern occurs on NPS property and the NPS may initiate a study seeking appropriate remedial measures. The present report is directed to Park resource managers with the intent of providing a familiarization of the natural processes, the range of dredging related modifications that can occur and the potential areas of concern that should be voiced at the first level of review by the resource managers. The following section presents several generic problems to illustrate with greater specificity the types of modifications, impacts and the significant factors.