



Dredging and Dredged Material Disposal

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PDH: 6

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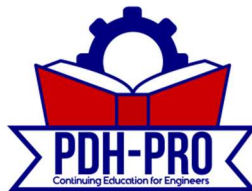
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CHAPTER 1 INTRODUCTION

1-1. Purpose. This course provides an inventory of the dredging equipment and disposal techniques used in the United States and provides guidance for activities associated with new work and maintenance projects. This course also presents engineering and design guidance for use on both new work and maintenance dredging projects. The guidance is primarily for projects that have been authorized and are in the preliminary design stages. However, much of the information is equally applicable to the preliminary engineering and design required during the authorization phase of dredging projects. This course further provides guidance on the evaluation and selection of equipment and evaluation of disposal alternatives.

1-2. Applicability. This course is applicable to all field operating activities concerned with administering the Corps' dredging program.

1-3. Background. The Corps of Engineers has been tasked with the development and maintenance of navigable waterways in the United States ever since Congressional authorization was received in 1824 to remove sandbars and snags from major navigable rivers. Their dredging program involves the planning, design, construction, operation, and maintenance of waterway projects to meet navigation needs. The Corps' responsibility includes developing and maintaining the Nation's waterways and harbors, as well as maintaining a minimum dredging fleet to meet emergency, national defense, and national interest dredging requirements. The importance of the Corp's dredging program to the economic growth of the country is suggested by the fact that the total waterborne commerce of the United States continued its record-breaking advance during the 1970's. The viability of the economy of the United States is clearly dependent upon maintenance of the waterways, ports, and harbors for navigation. The Corp's annual dredging workload is approximately 287 million cu yd of material, including both maintenance and new work. The Corps accomplishes the majority (70 percent in FY 81) of its annual dredging workload by contracting privately owned equipment under competitive bidding procedures; it performs the remaining work using hired labor to operate Corps-owned dredges (item 5). An overview of the Corps' dredging program is shown in figure I-1.

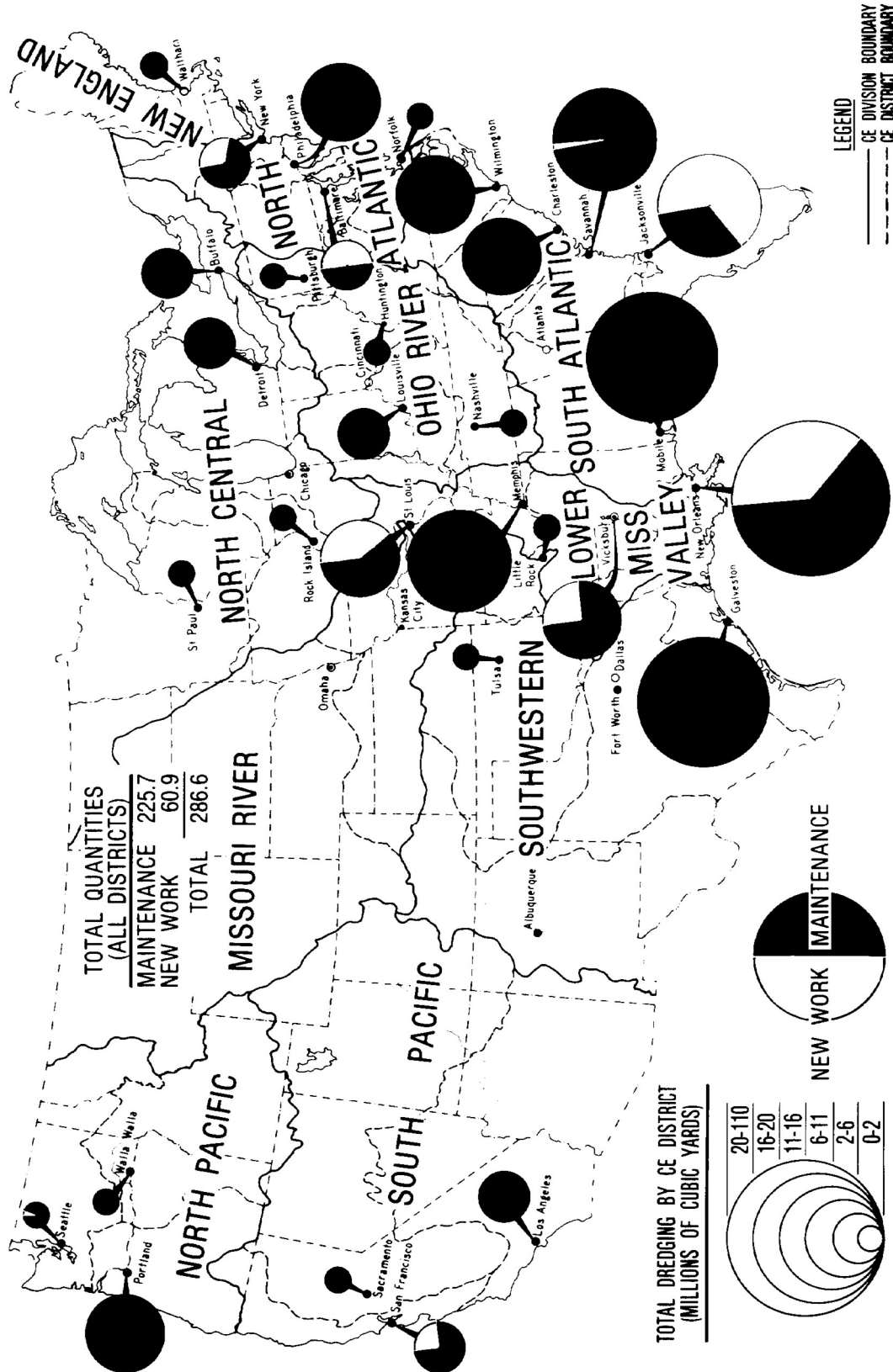


Figure 1-1. Corps' dredging program (FY 81).

1-6. Considerations Associated with Dredging and Dredged Material Disposal. Some considerations associated with dredging and dredged material disposal are as follows:

- a. Selection of proper dredge plant for a given project.
- b. Determining whether or not there will be dredging of contaminated material.
- c. Adequate disposal facilities.
- d. Long-term planning for maintenance dredging projects.
- e. Characterization of sediments to be dredged to support an engineering design of confined disposal areas.
- f. Determining the levels of suspended solids from disposal areas and dredge operations.
- g. Disposal of contaminated sediments.
- h. Disposal in remote areas.
- i. Control of dredging operation to ensure environmental protection.
- j. Containment area management for maximizing storage capacity.



CHAPTER 2 DESIGN CONSIDERATIONS

2-1. General. A dredging and dredged material disposal operation requires consideration of both short- and long-term management objectives. The primary short-term objective of a dredging project is to construct or maintain channels for existing navigation needs but not necessarily to authorized project dimensions. This should be accomplished using the most technically satisfactory, environmentally compatible, and economically feasible dredging and dredged material disposal procedures. Long-term objectives concern the management and operation of disposal areas to ensure their long-term use. This chapter outlines the design consideration usually needed to meet the objectives of a dredging project.

2-2. Preliminary Data Collection. In order to gather the data required for a dredging and dredged material disposal project, it is necessary to do the following:

- a. Analyze dredging location and quantities to be dredged, considering future needs.
- b. Determine the physical and chemical characteristics of the sediments.
- c. Evaluate potential disposal alternatives.
- d. Identify pertinent social, environmental, and institutional factors.
- e. Evaluate dredge plant requirements.

2-3. Dredging Locations and Quantities.

a. Dredging locations and the quantities of material to be dredged are two of the most important considerations in planning dredging projects. Since disposal of dredged material is usually the major dredging problem, it is essential that long-term projections be made for disposal requirements of each project. Records should be kept of quantities dredged and maintenance interval(s) to forecast future dredging and disposal requirements.

b. Hydrographic surveys are the principal dredged contract management tool of the Corps. Hydrographic surveys should be made prior to dredging to determine existing depths within the project area and after dredging to determine the depths that were attained as a result of the dredging operation. Each district should have the capability, either in-house or by contract, to make accurate, timely, and repeatable hydrographic surveys. To ensure accuracy, quantity calculations must be made from survey data gathered in a timely manner using proper equipment and based upon precisely established horizontal and vertical controls. Direct tide level readings must be made at the site of the work to eliminate gross errors in quantity calculations. Quantity measurement methods must be fully consistent



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