

CHAPTER 1

INTRODUCTION

- 1-1. Purpose. This manual provides guidance in the planning, layout, and design of shallow-draft waterways, factors that should be considered and solutions that have been successful in avoiding or eliminating undesirable conditions.
- 1-2. Applicability. This manual applies to all field operating activities having responsibilities for the design of civil works projects.
- 1-3. References and Bibliography. See Appendix A.
- 1-4. Background. Development or improvement of waterways for shallow-draft navigation involves the solution of many problems, particularly when the use of natural streams is involved. These problems are concerned with the factors that could adversely affect the safe and efficient movement of traffic, water quality, and/or environment. Unless these factors are considered and incorporated in the design of the project, hazardous conditions or delays could occur to such an extent that commercial traffic would not be economically competitive with other modes of transportation or the traffic potential of the waterway would not be fully developed. Development or improvement of waterways for navigation usually involves large expenditures for channel excavation, rectification, and stabilization; training structures; modification and construction of bridges; and in many cases, the construction of locks and dams. Since the modifications and structures are provided primarily for navigation, it is important that conditions resulting from these works be satisfactory and adequate for the traffic anticipated and provide a high degree of reliability.
- 1-5. Scope. This manual covers some of the principal factors that should be considered in the design and improvement of inland waterways for commercial traffic consisting mostly of barge traffic rather than for seagoing vessels or freighters using the Great Lakes. Some of the factors affecting the safety and efficiency of waterways that are discussed include: types of waterways; environmental considerations; equipment in general use on connecting waterways; alignment and velocity of currents; channel alignment and dimensions; number, location, and size of locks; harbors and docking facilities available; visibility; bridge location and clearances; ice and debris; and weather conditions.