CHARTER 13

ENVIRONMENT

Section I. Existing Regulations

13-1. Background. With the passage and implementation of the National Environmental Policy Act (NEPA) of 1969 (Public Law (PL) 91-190), environmental impact assessments of water resource projects under the U. S. Army Corps of Engineers and other Federal agencies assumed a greater level of importance. Previously environmental assessments were controlled by internal regulations and were usually not distributed or reviewed outside the agency; subsequently, NEPA established a broad national policy directing Federal agencies to maintain and preserve environmental quality.

13-2. Environmental Impact Statement. Section 102(a)c of NEPA requires all Federal agencies and officials to (a) direct their policies, plans, and programs to protect and enhance environmental quality; (b) view their actions in a manner that will encourage productive and enjoyable harmony between man and his environment; (c) promote efforts that will minimize or eliminate adverse effects to the environment and stimulate the health and well-being of man; (d) promote the understanding of ecological systems and natural resources important to the nation; (e) use a systematic and interdisciplinary approach that integrates the ecological, social, cultural, and economic factors in planning and decision-making; (f) study, develop, and describe alternative actions that will avoid or minimize adverse impacts; and (g) evaluate the short- and long-term impacts of proposed actions.

Section II. Recent Research and Research in Progress

13-3. Dredged Material Research Program (DMRP). The DMRP was completed by the WES in 1978. The objective of the program was to determine the environmental effects of dredged material disposal and to develop methods for eliminating or minimizing any adverse effects. Results of the DMRP were synthesized into a series of 23 reports (and corresponding EM's) that should be referred to when evaluating and/or minimizing impacts associated with dredged material disposal. (See Appendix A. References.)

13-4. Dredging Operations Technical Support (DOTS). The DOTS Program was established in 1978 at the conclusion of the DMRP to assist all Corps elements in the implementation of DMRP results. The program has the responsibility to maintain the capability at WES of responding to requests for assistance from the Corps elements on all environmental problems associated with dredging, dredged material disposal, and habitat creation. Continued monitoring of DMRP-developed engineering and operations methodologies are also under DOTS management. Regulatory functions research under DOTS include research in support of criteria development and wetlands identification/delineation.

13-5. Environmental and Water Quality Operational Studies (EWQOS). The principal objective of EWQOS, initiated in 1977, is to provide new or improved technology for planning, design, construction, and operation of CE Civil Works projects to meet environmental quality objectives in a manner compatible with authorized project purposes. Because there presently is a significant lack of data regarding the environmental effects of CE activities on navigable river systems, one of the major areas of investigation under EWQOS is providing information on the environmental effects of various waterway activities plus developing resource management plans and new or improved design and operation guidance to maximize environmental benefits or attain environmental quality objectives.

Section III. Factors to be Considered

13-6. Background Environmental Considerations. Problems to be considered in the development or improvement of waterways for shallow-draft navigation include the potential adverse effects of the project on environmental quality. Some of the factors that could affect the environmental quality of a waterway are:

a. Excessive Sedimentation. Bank erosion potential, adjacent land use practices, and general soil characteristics should be given consideration during site selection to prevent undesirable environmental effects from sedimentation and to minimize or eliminate the need for maintenance dredging. The need for reduction of bank slopes or other means of protection such as use of vegetation, gabions, or rock riprap to reduce the tendency for erosion from currents and waves should be considered. Old bendways cutoff during construction are becoming more

important as aquatic habitats. Such areas function effectively as sediment traps and may require special treatment to maintain their effectiveness as desirable aquatic habitats. Disposal areas located adjacent to the main stream or tributaries should be designed and operated such that the effluent meets appropriate Federal and State water quality standards for suspended sediments.

b. Resuspension of Contaminants. Construction and maintenance dredging could cause the resuspension of contaminants. This is most likely to occur in waterways that have been used in the past as carriers of industrial, agricultural, or municipal wastes. Existing and past industrial and agricultural practices within the watershed should be examined and, if deemed necessary, appropriate sediment and water chemistry conducted to evaluate the potential impacts of any resuspended contaminants upon the aquatic environment.

c. Increased Water Temperature. Care should be taken to prevent the unnecessary removal of woody vegetation adjacent to the waterway. If such removal is a necessity, it may be possible to remove such vegetation from only one side of the waterway so as to maximize the shading effect.

d. Water Table Effects. Canalization and subsequent pooling of water behind a lock and dam may result in changes in the water table, thus changing the vegetation and the habitats available.

e. Excavated Material. A major concern in many project areas will be the methods used to remove and treat excavated and dredged materials, depending on the nature of the materials and their potential for releasing contaminants as discussed in paragraphs 13-6a and b above.

f. Impacts on Aquatic, Wetland, and Terrestrial Habitats. The route selected, construction activity, and management and operation of the project are all likely to have some adverse effects on biological habitats. The project and alternatives available should be evaluated to determine if any of the adverse effects could be eliminated or at least minimized. It might be possible to provide alternate habitats for certain species that are seriously affected.

g. Interruption of Migratory Routes. Evaluation of the use of the streams and adjacent terrestrial habitats as migration routes for aquatic and terrestrial animals is an important consideration during the planning process. Critical routes should be avoided when practical or provisions should be made for allowing alternate passage of the affected animals. Construction and/or maintenance activities could also

be scheduled in such a manner as to avoid peak migration periods to reduce impact.

h. Modifications of Riparian Habitats. Bottomland hardwood forests are regarded as an important, though rapidly disappearing riparian habitat. Alternatives to the removal of existing natural riparian habitat should be developed so as to lessen such an adverse impact. Plans for revegetation should be developed where habitat modifications are necessary.

i. Disruptions of Breeding or Nursery Areas. Certain areas such as Cypress or Tupelo swamps, marshes, and Oxbow Lakes along rivers and streams are more critical than others for breeding, nursery, or nesting areas for aquatic, terrestrial, or arboreal animals. Particular care should be taken to identify such areas and arrive at suitable alternatives to the disruption of such habitat.

j. Increased Turbidity. Turbidity is an indication of suspended and colloidal materials in the water. Continuing high turbidity levels in a waterway over preproject conditions could adversely affect aquatic species. Measures such as construction of sediment traps, reseeding of construction areas, and construction of channel bypasses to prevent project contributions to increases in turbidity should be carefully considered in all phases of project design.

k. Impacts upon Wetlands. Our nations wetlands have been diminishing rapidly during the past half century. Such wetlands, in addition to serving as valuable habitat for diverse fish and wildlife communities, often are valuable for natural purification of polluted or contaminated waters. Wetlands also serve to eliminate severe changes in the water table, and often are highly regarded aesthetically. It may be possible, with proper consideration, to enhance wetland habitats along waterways and prevent unnecessary losses to existing wetland areas by using dredged material to create additional wetland areas.

l. Changes Associated with the Formation of Bendway Cutoffs. Many shallow-draft waterways projects result in the formation of bendway cutoffs by channelization for realignment of the navigation channel. Such areas in the past often served as a repository for excess dredged materials. This is no longer an acceptable practice, and furthermore, the potential value of such bendway cutoffs as aquatic habitat and recreation areas is being frequently included in the planning and design. Ongoing research is seeking to develop definitive guidance for the use and management of these cutoffs. These areas are often subject to rapid

sedimentation and filling by bedload materials, and some structural measures are often required to prevent the premature loss of these areas as aquatic habitats.