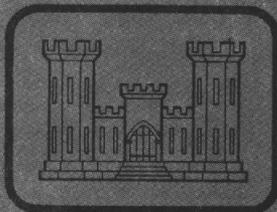


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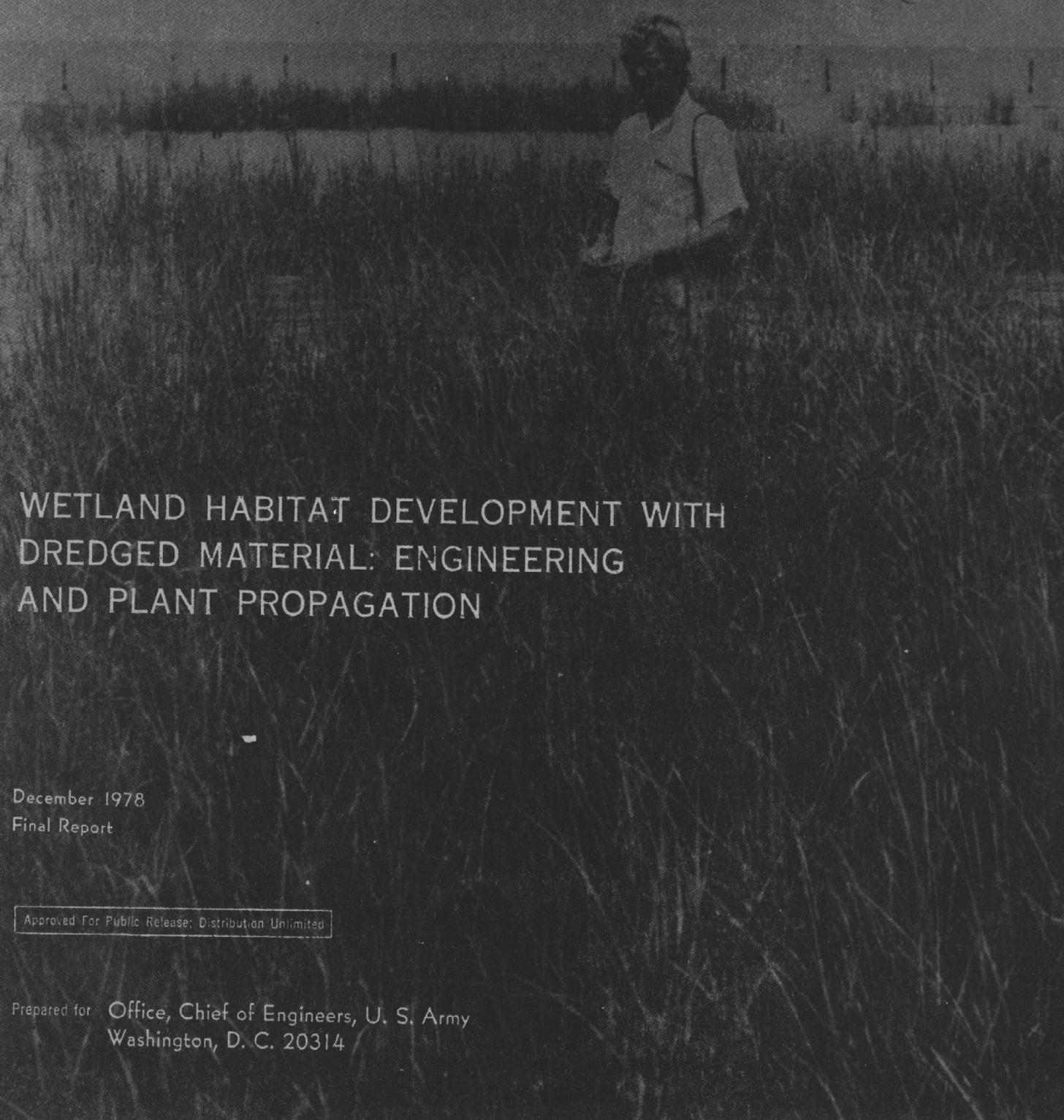
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DREDGED MATERIAL RESEARCH PROGRAM



TECHNICAL REPORT DS-78-16



WETLAND HABITAT DEVELOPMENT WITH DREDGED MATERIAL: ENGINEERING AND PLANT PROPAGATION

December 1978

Final Report

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Prepared for Office, Chief of Engineers, U. S. Army
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<p>Marsh habitat development using dredged material as a substrate was shown by the Dredged Material Research Program (DMRP) to often be a feasible alternative to traditional dredged material disposal operations. This report synthesizes pertinent literature and research of the DMRP including six major marsh development field sites: Windmill Point in the James River, Virginia; Butter-milk Sound on the coast of Georgia; Bolivar Peninsula in Galveston Bay, Texas;</p> <p style="text-align: right;">(Continued)</p>			

20. ABSTRACT (Continued).

Miller Sands, Columbia River, Oregon; Drake Wilson Island in Apalachicola Bay, Florida; and Salt Pond No. 3, South San Francisco Bay, California.

Guidelines for developing marsh habitat are presented: (a) planning the project in relation to the proposed site and project goals; (b) engineering construction of the site including dredging operations; (c) propagation, maintenance, and monitoring of the site as habitat, including potential problems that may be encountered; and (d) costs. Emphasis is placed on two major areas: engineering and plant propagation. Engineering aspects and design of potential sites are discussed and include protective and retention structures, substrate and foundation characteristics, dredging operations, and elevation and drainage requirements. Phases of plant propagation are detailed in the text and tables: selecting plant species for the site, collecting and storing plant materials, selecting a propagule type, planting the site, maintaining and monitoring the site, pilot studies, costing the work, and allowing natural colonization. A synopsis of 28 plant species discussing their characteristics, value, and potential use on dredged material is included as an appendix. Tables of 115 selected plant species showing best propagules; occurrence by region and whether now occurring on dredged material; growth requirements; propagule handling methods; soil, salinity, and inundation tolerances; and other pertinent information are given.

PREFACE

This report synthesizes literature and research pertinent to marsh development conducted by the Habitat Development Project (HDP), Dredged Material Research Program (DMRP), U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi.

Research synthesized in this report was performed by WES, other Federal and state agencies, private individuals, consulting firms, and educational institutions.

The following personnel of the Environmental Laboratory (EL) participated in preparation of this report: Ms. Mary C. Landin, Mr. Michael R. Palermo, Ms. L. Jean Hunt, Dr. R. Terry Huffman, Mr. Charles V. Klimas, Ms. Mary K. Vincent, and Dr. James S. Wilson. Ms. Hunt compiled the report. The report is also being published as Engineer Manual 1110-2-5020.

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