DREDGED MATERIAL RESEARCH PROGRAM

TECHNICAL REPORT D-78-22

DEVELOPMENT OF PROCEDURES FOR SELECTING AND DESIGNING REUSABLE DREDGED MATERIAL DISPOSAL SITES

by

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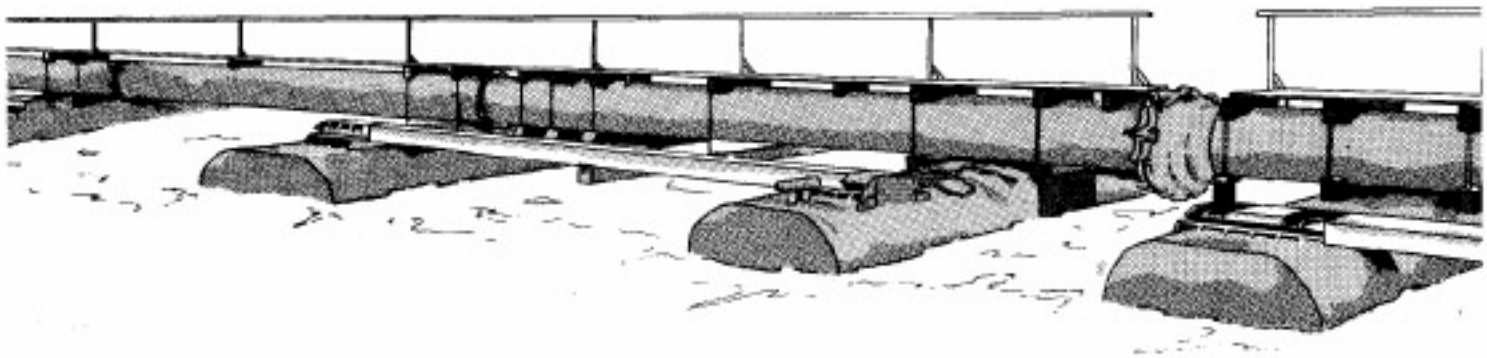
June 1978
Final Report



Prepared for Office, Chief of Engineers, U. S. Army
Washington, D. C. 20314

Under Contract No. DACW39-75-C-0119
(DMRP Work Unit No. 5C05)

Monitored by Environmental Laboratory
U. S. Army Engineer Waterways Experiment Station
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SUBJECT: Transmittal of Technical Report D-78-22

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1. The report transmitted herewith presents results of one work unit initiated as part of Task 5C (Disposal Area Reuse Research) of the Corps of Engineers' Dredged Material Research Program (DMRP). Task 5C was part of the Disposal Operations Project of the DMRP and, among other considerations, included developing methods to extend the useful life of confined disposal areas.

2. Confining dredged material on land is a disposal alternative to which little specific design or construction improvement investigations have been addressed. There has been a dramatic increase in the last several years in the amount of land disposal necessitated in part by restrictions on open-water disposal. In order to minimize the amount of land required for confined disposal areas, a significant portion of the DMRP was aimed toward identifying ways of increasing the capacity of containment areas.

3. One concept considered under Task 5C was that of the reuseable disposal site. A reuseable disposal site is distinguished from a conventional disposal site in that dredged material is continuously or periodically removed from the reuseable site to retain its disposal capability. By definition of this report, dredged material is not removed from conventional sites. This study (Work Unit 5C05) was initiated to provide guidance on the selection and design of reuseable disposal sites. The study was conducted by Acres American, Inc., Buffalo, New York.

4. This report presents a logical step-by-step methodology for site selection and design. The method provides the capability for handling anything from a single disposal site serving a single dredging location to an entire dredging program involving several dredging locations and disposal sites. The methodologies identify pertinent factors (legal, environmental, and technological) that influence selection of candidate disposal sites and determine their suitability as reuseable or nonreuseable sites. The methodology includes site design and operating recommendations

and a preliminary costing procedure to enable evaluation of alternative disposal options for each site and cost modifications of an entire dredging program. Numerous numerical examples are provided to assist in applying the procedures to a particular case. Although the report promotes reuseable disposal sites, management procedures for extending the life of nonreuseable sites of a conventional nature are also discussed in detail for those situations where reuseable sites are inappropriate or economically unfeasible.

5. The results of this study were used in part in the development of final guidelines for selecting and designing reuseable disposal sites. Consequently, guidelines given in this report should be considered interim with the final guidelines being forthcoming in a report that synthesizes and interprets work conducted under this and other work units in Task 5C.

JOHN L. CANNON
Colonel, Corps of Engineers
Commander and Director

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Technical Report D-78-22	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)* DEVELOPMENT OF PROCEDURES FOR SELECTING AND DESIGNING REUSABLE DREDGED MATERIAL DISPOSAL SITES		5. TYPE OF REPORT & PERIOD COVERED Final Report 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Thomas E. Raster David C. Steuernagel Harbinder S. Gill David J. Lipiro		8. CONTRACT OR GRANT NUMBER(s) Contract No. DACW39-75-C-0119
9. PERFORMING ORGANIZATION NAME AND ADDRESS Acres American Incorporated Liberty Bank Building Main at Court, Buffalo, N. Y. 14202		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS DMRP Work Unit No. 5C05
11. CONTROLLING OFFICE NAME AND ADDRESS Office, Chief of Engineers, U. S. Army Washington, D. C. 20314		12. REPORT DATE June 1978 13. NUMBER OF PAGES 339
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)* U. S. Army Engineer Waterways Experiment Station Environmental Laboratory P. O. Box 631, Vicksburg, Miss. 39180		15. SECURITY CLASS. *(of this report)* Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Dredged material disposal
Environmental factors
Waste disposal sites

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

Environmental and economic concerns are providing impetus for an evolution in confined disposal site design and management. Some Districts are already experiencing economic pressures on their dredging programs. These pressures are generated by environmental factors--primarily changes in disposal procedures made necessary by legislation protecting surface and groundwater quality, wetlands, shorelines, etc.--and by inefficient conventional disposal practices

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20. ABSTRACT (Continued).

which have used up most of the prime disposal sites. The reusable disposal site--boasting a long life and producing useful by-products--is the ultimate successor of the conventional site--too frequently short-lived, poorly engineered and operated, and failure-prone. Although this report promotes reusable disposal sites, nonreusable sites of a nonconventional nature are also discussed in detail for those situations where reusable sites are inappropriate or economically unsound.

This report presents a logical, step-by-step methodology for site selection and design. The methodology is capable of handling anything from a single disposal site serving a single dredging location to an entire dredging program involving several dredging locations and disposal sites. The methodology identifies pertinent factors--legal, environmental, and technological--which influence selection of candidate disposal sites and determine their suitability as reusable and nonreusable sites. The methodology presents site design and operating recommendations and a preliminary costing procedure to enable the District to evaluate alternative disposal options for each site and to cost modifications of the District's entire dredging program. Numerous numerical examples are provided to assist the reader in applying the procedures to his particular case.