



## Project Summary

# Implementation of Innovative Dredging Techniques in the Chesapeake Bay Region

Don V. Aurand and Alexandra Mamantov

The environmental effect of dredging and dredged material disposal is a controversial issue in the Chesapeake Bay region. This report reviews eleven years of dredging records for Federal projects, six years of dredging records for private projects, current management programs, and scientific literature to define current programs, and their effectiveness. Potential technological improvements are described. A series of recommendations for improving dredging practices in the Chesapeake Bay is presented.

Although it appears that current operations are not producing major consequences on the ecology of the Bay, future programs must be evaluated to ensure the environmental quality of the Bay. Specific areas for improvements are: implementation of study programs to more clearly define the chemical nature of the sediments; better long-range planning for disposal options; comprehensive monitoring programs to clarify long-term impacts; incentive payments to encourage innovative technologies; renewal of seasonal dredging restrictions by turbidity standards; Federal ownership of a small, pneumatic dredge for use in highly polluted areas; and repeal or modification of those portions of the Jones Act affecting importation of dredging equipment.

*This Project Summary was developed by EPA's Chesapeake Bay Program, Annapolis, MD, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).*

## Introduction

Maryland, Virginia, and two Corps of Engineers' district offices set performance standards and issue permits for both new starts and maintenance dredging projects in Chesapeake Bay. Individually, and in some cases through joint review sessions, officials within the appropriate state and Corps district offices evaluate private and Federal dredging proposals for compliance with environmental guidelines and procedural requirements established by state and Federal legislation. Federal laws, including the Clean Water Act, National Environmental Policy Act, and Resource Conservation and Recovery Act set minimum standards for evaluating dredging proposals. States can establish requirements more stringent than those authorized by Federal statute. Standards, permit processing procedures, and project operational requirements mandated by Maryland and Virginia differ. The two Corps district offices also employ different procedures to review dredging permit applications.

The environmental and economic effects of both private and public dredging projects are major issues within the Chesapeake Bay region. The Bay is an important commercial fishery and recreational area. It also contains two major commercial ports, Baltimore and Norfolk, which together load approximately 90 percent of domestic coal exports, excluding the Great Lakes.

Coal exports in 1980 reached 92 million tons, a 39 percent increase over 1979 shipments. The two Chesapeake Bay ports were unable to expeditiously process shipments, and colliers were

forced to drop anchor and wait until dockage and loading facilities were available. The coal industry projects that export demand could rise to 280 million tons by the year 2000. The industry maintains, however, that increased coal shipments cannot be moved through Baltimore and Norfolk unless channels and harborage facilities are expanded.

Harbor expansion, maintenance dredging, and private dredging are viewed cautiously by Bay fishermen and environmentalists for several reasons. Dredging itself results in increased turbidity, which some view as detrimental to fisheries. Dredged sediment disposal is also a major problem, particularly in the northern portions of the Bay. Although open water disposal was practiced in the past, concern over turbidity and the disposal of sediments contaminated by toxic pollutants has resulted in increased use of costly upland or confined disposal.

This report examines environmental, economic, and procedural issues related to dredging in the Chesapeake Bay region. Dredging methods, effects, specific program requirements and permit processing procedures are reviewed. The volume of dredging activity (both private and public), types of equipment used domestically and abroad, costs, and approaches for streamlining the permitting process also are examined.

## **Procedure**

Dredging records for the eleven years from 1970 to 1980 for Federal projects, and for the six years from 1975 to 1980 for private permits were examined at the Corps of Engineers' Baltimore and Norfolk district offices to determine historic dredging practices (equipment used), volume of material removed, disposal method (open water, upland, or confined disposal), project location, and project costs. Federal statutory requirements, state standards, and permitting procedures were reviewed and differences in processing techniques used by the two Corps district offices and the two states are described.

Domestic and foreign dredging equipment (importation of foreign equipment is restricted by the Jones Act) is examined. Equipment capabilities, design features, and turbidity factors are evaluated.

## **Conclusion**

The investigators conclude that the overall environment of Chesapeake Bay has not been adversely affected by past

dredging and disposal operations. They state, however, that concerns over dredging and disposal of contaminated sediments are legitimate and deserve special consideration.

Several options are presented, both technological and managerial, that the investigators feel could help minimize dredging costs -- attributable to compliance with environmental standards -- and ease permit processing procedures without increasing the risk of environmental degradation.

Other options include: repeal or modification of the Jones Act to ease restrictions on importation of equipment manufactured abroad; use of positioning equipment and silt curtains to minimize turbidity; and increased use of pneumatic dredges on small projects and on projects involving the removal of contaminated sediments.

Options for improving management of dredging programs, including measures that might streamline the permit review process, are: use of turbidity performance standards instead of imposing seasonal moratoriums on dredging activity; chemical and bioassay testing of sediments for toxic contaminants; use of advanced treatment methods in confined disposal areas; and revision of effluent standards for upland disposal areas.

## **Recommendations**

State regulatory agencies should evaluate several of the above options and possibly modify their dredging programs. Specifically, states should attempt to eliminate uncertainty concerning the extent of sediment contamination within their jurisdictions by sampling and then developing advance plans for dredging and disposing of contaminated sediments. Existing policies requiring confined disposal should be reevaluated and justified. States should encourage dredging contractors to use new, innovative equipment, but incentives instead of requirements should be the basis of such encouragement. Also, seasonal restrictions on dredging should be repealed and replaced by turbidity standards.

Two recommendations are advanced for consideration by Congress and the Corps of Engineers. Repeal of appropriate portions of the Jones Act is advocated. The Corps of Engineers should investigate the purchase of advanced pneumatic dredging equipment for use on the east coast.

*Don V. Aurand and Alexandra Mamantov are with Mitre Co., McLean, VA 22102.  
Mark Alderson is the EPA Project Officer (see below).*

*The complete report, entitled "Implementation of Innovative Dredging Techniques  
in the Chesapeake Bay Region," (Order No. PB 83-209 684; Cost: \$19.00,  
subject to change) will be available only from:*

*National Technical Information Service  
5285 Port Royal Road  
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Telephone: 703-487-4650*

*The EPA Project Officer can be contacted at:  
Chesapeake Bay Program  
U.S. Environmental Protection Agency  
2083 West Street, Suite 5G  
Annapolis, MD 21401*

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