



US Army Corps
of Engineers
Norfolk District



United States
Environmental Protection
Agency, Region III

**SITE MANAGEMENT AND MONITORING PLAN
FOR THE DAM NECK OCEAN
DISPOSAL SITE (DNODS)**

March 1998

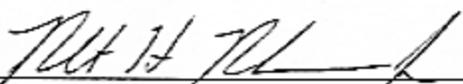


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The following **Site Management Plan for the Dam Neck Ocean Dredged Material Disposal Site (ODMDS)** has been developed and agreed to pursuant to the *Water Resources Development Act Amendments of 1992 (WRDA 92)* to the *Marine Protection, Research, and Sanctuaries Act of 1972* for the management and monitoring of ocean disposal activities, as resources allow, by the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers.



Robert H. Reardon, Jr.
Colonel, Corps of Engineers
District Engineer
Norfolk District
Norfolk, VA

26 July 90
Date



W. Michael McCabe
Regional Administrator
U.S. E.P.A., Region III
Philadelphia, PA

7/7/90
Date

This plan is effective from date of signature for a period not to exceed 10 years. The plan shall be reviewed and revised more frequently if site use and conditions at the site indicate a need for revision.

SITE MANAGEMENT AND MONITORING PLAN FOR THE
DAM NECK OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)

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SITE MANAGEMENT AND MONITORING PLAN
FOR THE DAM NECK OCEAN DREDGED MATERIAL
DISPOSAL SITE (ODMDS)
March 1998

INTRODUCTION

Under Section 102(c) of the Marine Protection, Research, and Sanctuaries Act (MPRSA), of 1972, it is the responsibility of the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers (CE) to monitor and manage Ocean Dredged Material Disposal Sites (ODMDS) to ensure that ocean dredged material disposal activities will not unreasonably degrade the marine environment or endanger human health or economic potentialities. MPRSA, as amended by section 506(a) of the Water Resources Development Act (WRDA) of 1992, and a Memorandum of Agreement Between EPA and CE require the development of a site management and monitoring plan (SMMP) to specifically address the disposal of dredged material at the Dam Neck ODMDS. Following an opportunity for public review and comment, the SMMP shall be required for all disposal activities at the site. All section 103 (MPRSA) ocean disposal permits or evaluations shall be conditioned as necessary to assure consistency with the SMMP.

This SMMP has been prepared in accordance with the Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites dated February 1996, which was prepared by the EPA and the CE. This document provides a framework for the development of site monitoring and management plans required by MPRSA and WRDA. The SMMP may be modified if it is determined that such changes are warranted as a result of information obtained during the monitoring process. The SMMP shall be reviewed and revised at least every 10 years.

SCOPE OF THE SMMP

ODMDS management involves a broad range of activities including regulating times, the quantity, and the physical/chemical characteristics of dredged materials dumped at the site. ODMDS management involves establishing disposal controls, conditions and requirements to avoid and minimize potential impacts to the marine environment. Finally, ODMDS management involves monitoring the site environs to verify that anticipated or significant adverse effects are not occurring from past or continued use of the site and that permit conditions are met.

MPRSA, as amended by WRDA 1992, provides that the SMMP shall include but not limited to:

- A baseline assessment of conditions at the site;
- A program for monitoring the site;
- Special management conditions or practices to be implemented at each site that are necessary for the protection of the environment;
- Consideration of the quantity and physical/chemical/biological characteristics of dredged materials to be disposed of at the site;
- Consideration of the anticipated use of the site over the long term;
- A schedule for review and revision of the plan.

OBJECTIVES OF SITE MANAGEMENT

There are three primary objectives in the management of the Dam Neck ODMDS:

- Protection of the marine environment, living resources, and human health and welfare;
- Documentation of disposal activities at the ODMDS and provision of information which is useful in managing the dredged material disposal activities
- Provision for beneficial use of dredged material whenever practical

The objective of the SMMP is to provide guidelines in making management decisions necessary to fulfill mandated responsibilities to protect the marine environment as discussed previously.

DAM NECK OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)

The Dam Neck ODMDS (Figure 1) was designated by EPA pursuant to Section 102(c) of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended, as suitable for the ocean disposal of dredged material from three Federal navigation Channels: the Atlantic Ocean Channel, the Cape Henry Channel, and the Thimble Shoal Channel. The final rule was promulgated by EPA on March 31, 1988 (FR. Vol. 53 No. 62), effective March 31, 1988. The Dam Neck ODMDS boundary coordinates are as follows:

36° 51' 24.1" N., 75° 54' 41.4" W.,
 36° 51' 24.1" N., 75° 53' 02.9" W.,
 36° 46' 27.4" N., 75° 51' 39.2" W.,
 36° 46' 27.5" N., 75° 54' 19.0" W.,
 36° 50' 05.0" N., 75° 54' 19.0" W.

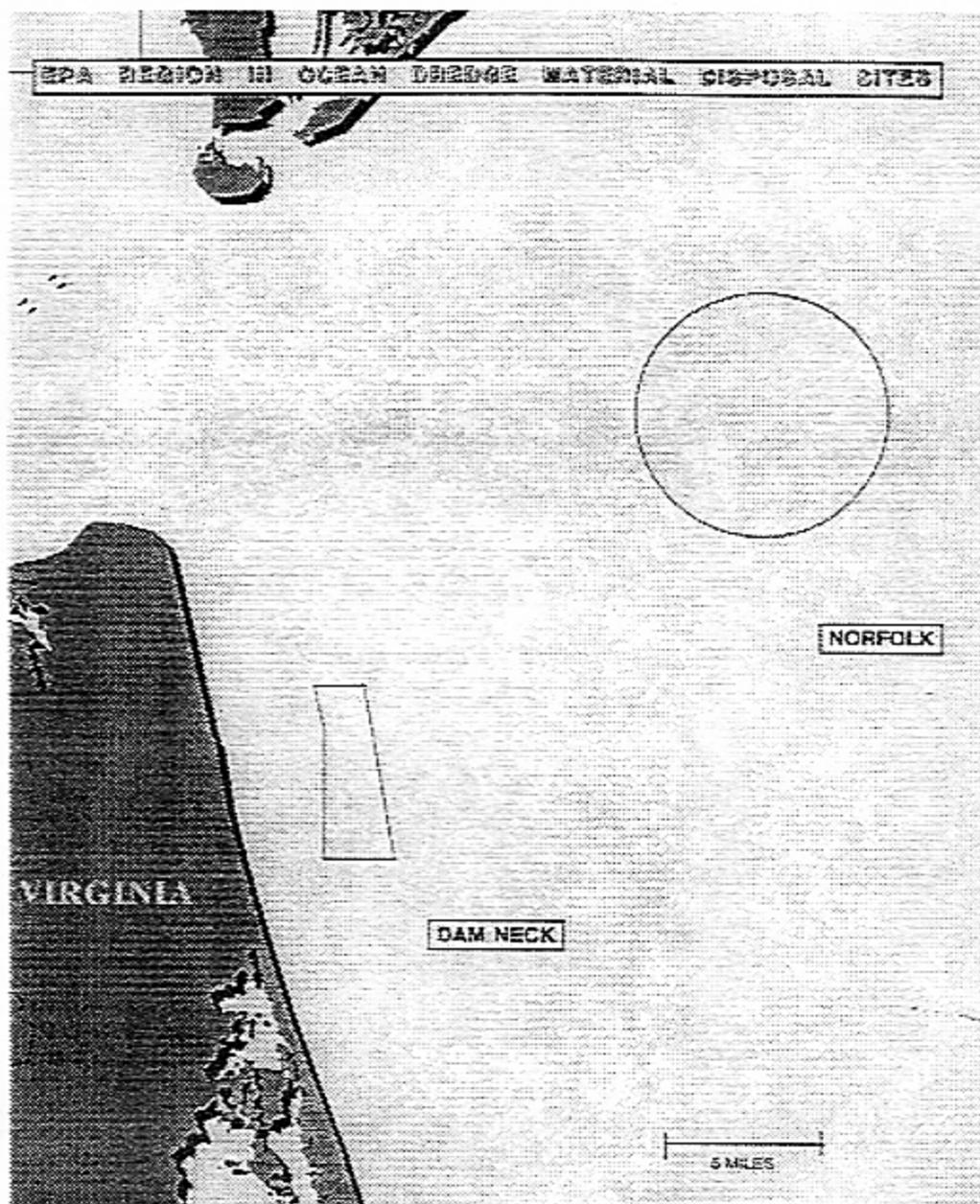


Figure 1. Dam Neck ODMDS Location Map.

The Dam Neck ODMDS has an area of about 9-square nautical miles. Water depth within the ODMDS averages about 40 feet. The topography is typical of the inner continental shelf, with a smooth bottom and a gradual seaward slope (less than 1 foot per 1,000 feet). Current use of the site indicates that approximately 1.2 million cubic yards (CYS) of material from the three Federal navigation channels will be placed in the site every 2 years.

DISPOSAL HISTORY

Historical Use of the Dam Neck ODMDS. The Dam Neck ODMDS has been in use since 1967 when the Corps initially deepened Thimble Shoal Channel to 45 feet. Since that time, all new work and maintenance dredged material from Cape Henry Channel and Thimble Shoal Channel, with limited exceptions, have been deposited at the Dam Neck ODMDS. These deposits included a variety of naturally occurring marine sediments, ranging from silts and clays to fine, medium, and coarse sands. All materials were evaluated for dredged material compliance with the U.S. Ocean Dumping Regulations (Title 40 of the Code of Federal Regulations, Parts 220-228) using the Evaluation of Dredged Material Proposed for Ocean Disposal (EPA-503/8-91/001), commonly referred to as the "Green Book".

Disposal Methods. Disposal of dredged material at the Dam Neck ODMDS has occurred using either a hopper dredge or bottom dump scow. However, this does not preclude the use of other disposal methods.

MANAGEMENT CONCERNS AND ISSUES

Mounding. The cumulative effects of dredged material disposal at the Dam Neck ODMDS are limited to bathymetric changes. Numerous pre-dump and post-dump bathymetric surveys clearly illustrate the retention of virtually all dredged material deposited at Dam Neck ODMDS. A small portion of the site is characterized by a disposal impression which is the result of the Corps of Engineers depositing dredged material.

Dumps Outside the ODMDS. Under normal circumstances, there appear to be two main reasons for misplaced materials, operator errors and equipment errors or limitations in the mechanical aspects of the dumping. Operator errors occur when a person, the equipment operator, does not correctly carry out the ocean disposal specifications. For example, the operator may not have the correct coordinates of the disposal area. Equipment errors occur when equipment malfunction or a misunderstanding of equipment limitations takes place. For example, the dump scow activates or dumps erroneously or the dump target is placed at the edge of the disposal area without adequate margins for mechanical or sea conditions and the dump vessel overshoots the dump area. Neither operator/equipment errors nor limitations in mechanical aspects of the dumping have resulted in dumps outside the Dam Neck ODMDS. The presence of dump buoys maintained by the Coast Guard at the site, as referenced below, helps to assure that this does not occur.

OCEAN DREDGED MATERIAL SITE MANAGEMENT

All ocean disposal at the Dam Neck ODMDS must be conducted in accordance with the Ocean Regulations and Criteria (40 CFR Parts 220-229), whether conducted as a permit activity or as a Federal activity. The following are Dam Neck ODMDS management requirements and all permit or evaluations concurrence shall be conditioned to include these requirements.

Types of Dredged Materials to be Disposed

Evaluated Material. Only dredged materials which have been evaluated in accordance with EPA's Ocean Dumping Regulations and Criteria and found acceptable will be accepted for unrestricted disposal in the Dam Neck ODMDS. Furthermore, disposal shall be limited to dredged material from navigation channels at the mouth of the Chesapeake Bay.

Guidance for evaluation of dredged materials under the MPRSA Section 103 program is provided in the Evaluation of Dredged Material Proposed for Ocean Disposal of Dredged Material in Southeastern Atlantic and Gulf Coastal Waters, May 1993. The determination of dredged material suitability for ocean disposal must be documented in a MPRSA Section 103 evaluation and approved by EPA Region III prior to disposal. Dredged materials will be reevaluated for suitability for ocean disposal in accordance with current Corps of Engineers/EPA guidance at an interval of at least every three years. Re-evaluation and testing procedures should be coordinated with the Corps of Engineers and the EPA prior to any sampling or testing.

Dredged Material Suitable for Beneficial Uses. Beneficial-uses refers to the concept that dredged material can be disposed in a manner that is economically and environmentally acceptable and accrues natural resource benefits to society. Beach-compatible dredged materials (sands) dredged should be placed on nearby beaches or within the active littoral system when it is economically feasible and environmentally acceptable to do so. Other beneficial uses of dredged materials, such as their use to enhance or develop fisheries resource features (reefs or berms) are also encouraged with appropriate environmental review. Site capacity and mounding problems are favorably affected by not placing beach compatible sands in the ODMDS.

Methods of Disposal. No specific disposal method is required for this site. Disposal may be by hopper dredge, dump scow, or by pipeline discharge. The most frequently used method is by hopper dredge. Dredged materials will be discharged within the ODMDS boundaries. The placement of dredged materials outside the ODMDS boundaries is not acceptable under MPRSA authorities. An

approved ocean disposal verification plan must be implemented by the permit application. Placement methods, which prevent mounding of dredged materials from becoming unacceptable navigation hazard, will be used. Placement methods, which minimize interference to fishing in adjacent areas, will be used. Specific procedures, which accomplish these goals, are discussed under the Specific Requirements section.

Disposal Quantities. Quantities of dredged materials placed within the ODMDS will be limited to those amounts that do not produce unacceptable adverse effects to human health and welfare and the marine environment or human uses of the environment (as defined in EPA's Ocean Dumping Regulations and Criteria). The Dam Neck ODMDS is currently designed and managed to hold approximately 50 million cubic yards of dredged material. Future evaluation and management could increase this quantity.

Timing of Disposal. There are no seasonal restrictions to the placement of dredged material within the Dam Neck ODMDS. However, seasonal restrictions or seasonal special requirements may be associated with a particular dredging activity at a particular location.

Disposal Buoys. To assist in assurance that all disposal takes place in the proper location, the U.S. Coast Guard has placed two special buoys to mark the location of actual discharge within the dump site. The Coast Guard will monitor these buoys periodically. Differential global positioning system is required for all disposal vessels.

Specific Requirements

Ocean Disposal Verification. The vessels used for dredged material disposal will be required to operate under an approved verification plan. The location and quantity of each disposal load placed within the Dam Neck ODMDS will be maintained in a computerized database by the Corps. All exception loads (i.e., reported disposal out of the ODMDS boundaries or no location reported) will be documented and the disposal operator questioned to determine what occurred and the reason for the exception. The verification plan will include an automated system that will record the horizontal location and draft condition of the disposal vessel from the time it passes the Chesapeake Bay Bridge-Tunnel outbound until the vessel passes the bridge-tunnel inbound. Vessel positioning shall be by differential global positioning system. Minimum required data for each load is as follows:

- Dredge or vessel name;
- Sequential load number;

- Date;
- Time in one minute intervals for the disposal cycle specified previously;
- Vessel positioning in latitude/longitude (World Geodetic System 1984) or horizontal datum based on Virginia State Plane Coordinate System (South Zone) North American Datum 1927 (NAD 27) in U.S. Survey feet;
- Draft of vessel in feet;
- Depth of water in feet referred to National Ocean Service (NOS) mean lower low water (MLLW), 1960-78 Tidal Epoch;
- Begin and end dump event times and positions;
- Source of dredged material, i.e., reach name;
- Volume of dredged material disposed, in cubic yards.

The data shall be available on a daily basis. No vessel shall leave for the disposal site without the ability to collect and record the ocean disposal verification data specified. The disposal positions reported shall be those of the disposal vessel itself (i.e., the scow not the tug). An exception load may be considered a violation of the MPRSA and subject to penalties. Operators must notify the Corps and EPA within 48 hours and provide a detailed assessment of the circumstances involving the exception load.

A summary report of operations shall be provided to the Corps of Engineers, Norfolk District and EPA, Region III at the completion of the dredging/ocean disposal activity or on an annual basis. Minimum required data to be included in the summary report is as follows:

- General Information
 - 1) Project name;
 - 2) Location;
 - 3) Public notice or permit data;
 - Disposal Site Used;
 - Project Type - Either Federal or permitted;
 - Type of Work - New or maintenance work;
 - Method of Dredging and Disposal;
 - Disposal Dates - Range of disposal dates - start to finish;

- Quantity of Dredged Materials Disposed, in cubic yards;
- Point of Contact for Disposal Activity. ✓

Disposal "Zones" Within the ODMDS. In order to manage site use (maximize site capacity, reduce multiple user conflicts, facilitate monitoring and management, and reduce potential adverse impacts to the marine environment) the Corps of Engineers, in consultation with EPA, has designated seven (7) sediment management zones (or areas) within the ODMDS for dredged material placement. Areas 1, 3, and 4 will generally be used to place sand from channel construction, if not used on beaches or elsewhere, and Areas 2, 5, 6, and 7 will generally be used for maintenance materials and material from channel construction which is predominantly clay and silt. These areas are shown on the following page.

Control of Mounding. Dredged material disposal shall be conducted in a manner to maximize ODMDS capacity and minimize mounding of material. The dumps shall be scattered throughout designated disposal zones and not placed repeatedly at one location. Depths at the time of disposal will be monitored to determine if adjustment of disposal methods is needed to prevent unacceptable mounding.

Emergency Dumps. If a Dam Neck ODMDS user experiences an emergency situation which causes a dumping of material outside of the ODMDS, the site user must notify the Corps of Engineers, Norfolk District, the U.S. Coast Guard, MSO Hampton Roads, and EPA Region III in writing within 2 days of the emergency dump, the reason for the emergency, and the location of the dump. If, in the opinion of EPA Region III and the Norfolk District, the misplaced dredged materials are a hazard to the marine environment and its uses, or if the material creates a hazard to navigation, the site user shall remove such material and deposit it where directed.

BASELINE ASSESSMENT OF CONDITIONS AT THE DAM NECK ODMDS

Site Designation EIS Baseline. Baseline conditions at the Dam Neck ODMDS are principally reported in the site designation final environmental impact statement, Final Supplement 1 to the Final Environmental Impact Statement and Appendix: Dam Neck Ocean Disposal Site and Site Evaluation Study, Norfolk Harbor and Channels, Virginia, Deepening and Disposal (June 7, 1985). This baseline data includes information referenced from the scientific literature as well as information compiled from field surveys at the Dam Neck ODMDS. The field survey data included: water and sediment chemistry; benthic macroinfauna and epifauna population

36° 51' 24.1"
75° 54' 41.4"

A

3000'

B

36° 51' 24.1"
75° 53' 02.9"

8000'

①

1.3 n.mi.²

36° 50' 05.0"
75° 54' 19.0"

C

3000'

②

1.2 n.mi.²

⑤

1.0 n.mi.²

8000'

③

1.1 n.mi.²

⑥

1.2 n.mi.²

7000'

7000'

④

1.1 n.mi.²

⑦

1.6 n.mi.²

36° 46' 27.5"
75° 54' 19.0"

D

5000'

3000'

E

36° 46' 27.4"
75° 51' 39.2"

DAM NECK OCEAN DREDGED MATERIAL PLACEMENT AREA
SEDIMENT MANAGEMENT AREAS

TOTAL AREA = 9 nautical mi.²

SCALE: 1" = 4000'

characteristics; and concentrations of trace metals and chlorinated hydrocarbons in benthic macroinfauna tissues.

SITE MONITORING

Goals of Site monitoring. Site monitoring is conducted to ensure the environmental integrity of an ocean dredged material disposal site and to verify compliance with site designation criteria, any special site management conditions, and with permit conditions or federal authorization requirements. Monitoring should provide useful and pertinent information to support site management decisions. The main purpose of a disposal site monitoring program is to determine whether site management practices, including disposal operation need to be changed to avoid unacceptable impacts. Site monitoring is not a stand alone activity. It is based on the site designation process, the characteristics of the dredged materials and compliance with authorized activities.

To use site monitoring as an effective tool, site managers will define in quantitative terms the unacceptable impacts that dredged material is having on the resources of concern. Where applicable, action levels can be set well below the defined unacceptable effect level and corrective measures can be taken before unacceptable effects occur. Continuous monitoring of all physical, chemical, and biological parameters and resources in and around the ocean dredged material disposal site is not necessary. A monitoring program should be structured to address specific questions (hypotheses) and measure key indicators and endpoint, particularly those defined during site designation or specific project issues that arise. A tiered strategy for a monitoring program is desirable. With a tiered approach, an unacceptable result may trigger further and often more complex monitoring. The technical framework for evaluating environmental impacts of dredged material placement can be found in EPA-842-B-92-008.

Dam Neck ODMDS Monitoring Objectives. The objectives of the site monitoring plan for the Dam Neck ODMDS are to provide information to:

- Determine if the disposal activities are occurring in compliance with site restrictions and permit conditions;
- Indicate the short and long-term fate of dredged material placed at the site;
- Determine the effect of the dredged material disposal on uses of the marine environment outside the ODMDS.

Monitoring Methods and Rationale. Monitoring strategies have been proposed for the Dam Neck ODMDS. These methods have provided information to address specific and current management issues at the site including; mounding (and site capacity); dumps occurring outside the disposal area; and movement or fate of material. Information obtained during any future monitoring may indicate the need for additional monitoring at a higher, more complex, level. If more intensive monitoring is required, this monitoring plan must be revised or an additional threshold for action established.

Evaluation of Direction and Magnitude of Material Movement. The extent and probable direction in which local waves and currents erode and transport the dredged material mounds may be important in determining potential effects of site use on adjacent marine resources and in managing use of the site. Sediment dispersion can increase site capacity and also make material available for transport to undesirable locations. When applicable, numerical simulation models such as LTFATE and MDFATE which couple hydrodynamic and sediment transport equations may be used to evaluate dredged material movement at the Dam Neck ODMDS. These models are included in the Corps of Engineers' PC based Automated Dredging and Disposal Alternatives Modeling System (ADDAMS).

Other Survey Techniques. Additional survey techniques such as side scan sonar, video record, still photography, bottom grab samples, and vertical sediment profiling may be utilized on a periodic basis to determine the effects of disposal in the Dam Neck ODMDS. The Norfolk District, Corps of Engineers and EPA, Region III will coordinate the appropriate use of these techniques.

Disposal Site Use Records. All dredged material disposal activities at the Dam Neck ODMDS will be conducted under an approved verification plan. The Corps of Engineers will maintain a database of site use. The documented site use information along with other information collected during monitoring will be used to direct future ocean disposal and monitoring activities. The data requirements were discussed previously. All records of use and monitoring results will be made available to the public.

Data Reporting. Data collected will be made available to interested parties.

ANTICIPATED SITE USE

It is anticipated that the Dam Neck ODMDS will be used every year or every other year for the placement of dredged material from the three Federal navigation channels, depending on the dredging requirements for these channels.

MODIFICATION OF THE DAM NECK ODMDS SMMP

Should the results of the monitoring surveys or valid reports from other sources indicate that continued use of the ODMDS would lead to unacceptable effects, then the ODMDS SMMP will be modified to mitigate the adverse effects. The SMMP will be reviewed and updated at least every 10 years. The SMMP will be reviewed and updated as necessary if site use changes significantly. For example, the SMMP will be reviewed if the quantity or type of dredged material placed at site changes significantly or if conditions at the site indicate a need for revisions. The plan should be updated in conjunction with activities authorizing use of the site.

In general, EPA and the Corps of Engineers shall share responsibility for implementation of the SMMP. The Corps of Engineers will be responsible for implementation of the SMMP for Federal operations and maintenance and new work projects. This agreement does not obligate the Norfolk District, Corps of Engineers or EPA, Region III to expend funds for site monitoring or maintenance of the Dam Neck ODMDS. If conditions at the Dam Neck ODMDS indicate that testing or monitoring of the site is needed and funds are not available to perform this evaluation, appropriate management action, including closure of the site, will be taken.

REFERENCES

U.S. Army Corps of Engineers. Final Supplement I to the Final Environmental Impact Statement and Appendix: Dam Neck Ocean Disposal Site and Site Evaluation Study, Norfolk Harbor and Channels, Virginia, Deepening and Disposal. December 14, 1984.

U.S. Environmental Protection Agency and U.S. Army Corps of Engineers. Evaluation of Dredged Material Proposed for Ocean Disposal. EPA-503/8-91/001.

U.S. Environmental Protection Agency and U.S. Army Corps of Engineers. QA/QC Guidance for Sampling and Analysis of Sediments, Water, and Tissues for Dredged Material Evaluations. EPA-823/B-95/001.