

DECEMBER 2012

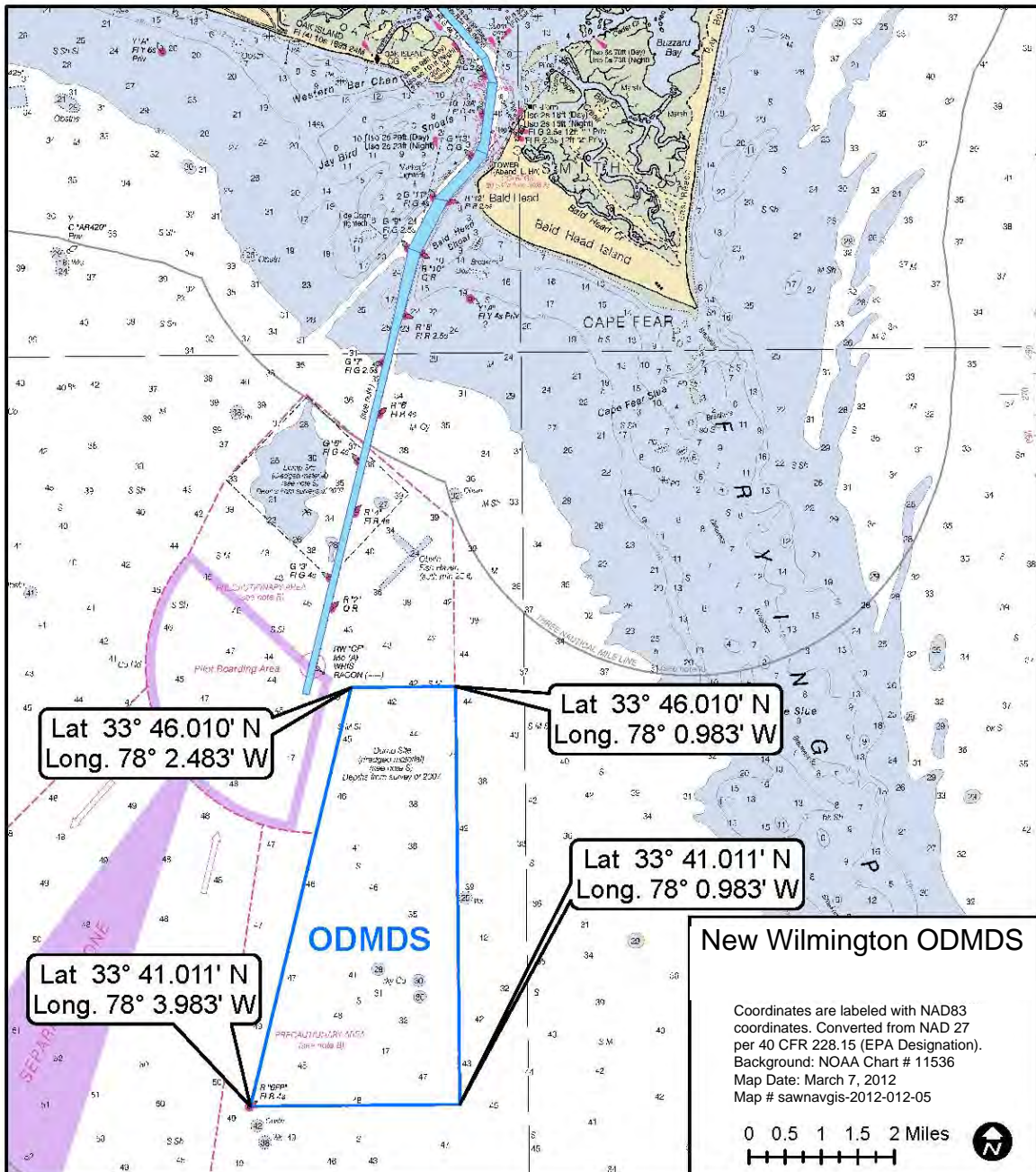


NEW WILMINGTON OCEAN DREDGED MATERIAL DISPOSAL SITE



U.S. Army Corps
of Engineers

SITE MANAGEMENT AND MONITORING PLAN



December 2012

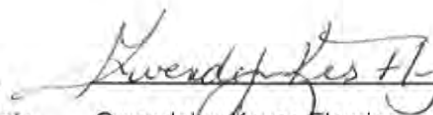
New Wilmington ODMDS, SMMP

The following Site Management and Monitoring Plan for the New Wilmington 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.

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Colonel, U.S. Army
District Engineer
Wilmington District
U.S. Army Corps of Engineers
Wilmington, North Carolina

Date



Gwendolyn Keyes Fleming
Regional Administrator
U.S. E.P.A., Region 4
Atlanta, Georgia

1/8/13

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 site indicate a need for revision.

Table of Contents

INTRODUCTION.....1

SCOPE OF THE SMMP1

OBJECTIVES OF SITE MANAGEMENT2

NEW WILMINGTON OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS).....2

HISTORICAL USE OF THE NEW WILMINGTON ODMDS2

CHARACTERISTICS OF DREDGED MATERIALS3

 Grain Size 3

 Chemical and Biological Testing of Sediments 4

DISPOSAL METHODS.....4

MANAGEMENT CONCERNS AND ISSUES.....5

 Material Transport..... 5

 Site Use Management, Implementation, and Documentation..... 5

 Woody Debris..... 5

OCEAN DREDGED MATERIAL SITE MANAGEMENT5

 Material Evaluation 6

 Dredged Material Suitable for Beneficial Uses..... 6

 Dredged Material With Debris 6

 Methods of Disposal..... 6

 Disposal Quantities..... 7

 Timing of Disposal 7

SPECIFIC REQUIREMENTS.....7

 Ocean Disposal Verification 7

 Disposal Monitoring..... 7

 Reporting and Data Formatting..... 8

 Designated Route To and From the New Wilmington City ODMDS 9

 Disposal ‘Zones’ Within the ODMDS..... 9

BASELINE ASSESSMENT OF CONDITIONS AT THE NEW WILMINGTON ODMDS9

 Site Designation EIS Baseline..... 9

 Information Obtained For Site Designation 9

 Sediment Characterization 10

 Benthic Communities 10

 Information Obtained Since Site Designation 10

 Bathymetry 10

 Sediment Characterization 11

 Benthic Communities 11

SITE MONITORING12

 Goals of Site Monitoring..... 12

 Monitoring Methods and Rationale..... 12

 Site Bathymetry 13

 Sediment Sampling and Grain Size Characterizations 13

 Disposal Site Use Records..... 13

ANTICIPATED SITE USE13
MODIFICATION OF THE NEW WILMINGTON ODMDS SMMP13
IMPLEMENTATION OF THE NEW WILMINGTON ODMDS SMMP14
REFERENCES.....16

LIST OF TABLES

Table 1. Summary of ocean dredged material placed in the New Wilmington ODMDS area 3
Table 2. Grain Size Characterization of Wilmington Harbor navigation project..... 4
Table 3. Summary of Benthic Community Parameters from 2010 Status & Trends Study 12
Table 4. New Wilmington ODMDS monitoring strategies and thresholds for action 15

LIST OF FIGURES

Figure 1. New Wilmington ODMDS and Vicinity
Figure 2. Wilmington Harbor navigation project Map
Figure 3. New Wilmington ODMDS. Reference Sites
Figure 4. New Wilmington ODMDS. Bathymetry - pre-disposal
Figure 5. New Wilmington ODMDS. Map of Study Area for Site Designation
Figure 6. New Wilmington ODMDS. Areas of Potential Hard Bottoms
Figure 7. New Wilmington ODMDS. Site Bathymetry - May 2011
Figure 7a. New Wilmington ODMDS. Site Bathymetry - June/July 2012
Figure 7b. New Wilmington ODMDS. Plot of Bathymetric Differences, 2004-2005 and 2012
Figure 8. New Wilmington ODMDS. May 2010 Status and Trends Monitoring Stations

APPENDICES

- Appendix A** – Numerical Model (STFATE) Input Parameters
- Appendix B** – Generic Special Conditions for MPRSA Section 103 Permits
New Wilmington ODMDS
- Appendix C** – Public Involvement, New Wilmington ODMDS, SMMP

**SITE MANAGEMENT AND MONITORING PLAN
FOR THE
NEW WILMINGTON OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)
December 2012**

INTRODUCTION

Under the MPRSA (Marine Protection, Research, and Sanctuaries Act) of 1972, it is the responsibility of the EPA (U.S. Environmental Protection Agency) and the USACE (U.S. Army Corps of Engineers) to monitor and manage Ocean Dredged Material Disposal Sites (ODMDS). The goals of the monitoring and management are to ensure that ocean dredged material disposal activities will not unreasonably degrade the marine environment or endanger human health or economic potential. The Marine Protection, Research, and Sanctuaries Act (MPRSA), the Water Resources Development Act of 1992 (WRDA), and a Memorandum of Understanding (MOU) between EPA and USACE requires the development of a Site Management and Monitoring Plan (SMMP) to specifically address the disposal of dredged material at the New Wilmington ODMDS. Following an opportunity for public review and comment, the SMMP provisions will be requirements 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 (EPA and USACE, 1996). 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 will be reviewed and revised as often as needed, but at a minimum, at least every ten years.

A New Wilmington ODMDS SMMP was originally finalized in July 2002. This SMMP updates the 2002 SMMP focusing on areas where site use and conditions and evolving ocean policy indicate a need for revision.

SCOPE OF THE SMMP

ODMDS management involves a broad range of activities including regulating the schedule of use, the quantity, and the physical/chemical characteristics of dredged materials dumped at the site. It also 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 unanticipated or significant adverse effects are not occurring from past or continued use of the site and that permit conditions are met.

The SMMP shall include but not be 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 the site that are necessary for the protection of the environment;
- Consideration of the quantity and physical/chemical 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 New Wilmington 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;
- Provide for beneficial use of dredged material whenever practical.

The purpose of the SMMP is to provide guidelines for effective management decision-making necessary to fulfill mandated responsibilities to protect the marine environment as discussed previously. Risk-free decision-making is an impossible goal. However, an appropriate SMMP can narrow the uncertainty.

NEW WILMINGTON OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)

The New Wilmington ODMDS (Figure 1) was designated by EPA pursuant to Section 102(c) of MPRSA, as suitable for the ocean disposal of dredged material. The final rule was promulgated by EPA on 5 July 2002 (F.R. Vol 67 No. 129), effective 5 August 2002. The boundary coordinates for the New Wilmington ODMDS are:

(NAD 27 Geographic)		(NAD 83 Geographic)		(NC State Plane - Feet)	
33 ⁰ 46.0' N	78 ⁰ 02.5' W	33 ⁰ 46.010' N	78 ⁰ 02.483' W	7535 N	2291404 E
33 ⁰ 46.0' N	78 ⁰ 01.0' W	33 ⁰ 46.010' N	78 ⁰ 00.983' W	7609 N	2299003 E
33 ⁰ 41.0' N	78 ⁰ 01.0' W	33 ⁰ 41.011' N	78 ⁰ 00.983' W	-22718 N	2299304 E
33 ⁰ 41.0' N	78 ⁰ 04.0' W	33 ⁰ 41.011' N	78 ⁰ 03.983' W	-22865 N	2284089 E

The site is located approximately 5 nautical miles (nmi) offshore Bald Head Island, North Carolina. The New Wilmington ODMDS has an area of about 9.4 square nautical miles (nmi²). Depths within the ODMDS range from about -35 to -52 feet local mean lower low water (m.l.l.w.).

HISTORICAL USE OF THE NEW WILMINGTON ODMDS

Disposal of dredged materials in the ocean has been associated with the Wilmington Harbor Federal navigation project and the Military Ocean Terminal at Sunny Point (MOTSU) for many years, although disposal within the New Wilmington ODMDS did not occur prior to 2002. The Cape Fear River ocean bar channel has been maintained by the Federal government for well over 100 years. The Wilmington Harbor Federal navigation project consists of a series of channels or "reaches" extending from the ocean bar channel at the mouth of the Cape Fear River to a point above Wilmington, North Carolina (Figure 2). Continued use of the Wilmington Harbor navigation channel depends upon maintenance dredging. Annual maintenance dredging is required at project extremes, the ocean bar channel and

anchorage basin and approaches at Wilmington Harbor. Reaches or channels between these extremes require maintenance but generally less frequently and with less volume of dredged material than the extremes. MOTSU is a military port facility located on the west bank of the Cape Fear River, approximately 10 miles upstream from the river's mouth. MOTSU requires annual maintenance dredging to meet its mission requirements.

The placement of dredged materials in the New Wilmington ODMDS since 2002 is documented in Table 1. Since August 2002 (the date of site designation) dredged materials from both the Wilmington Harbor Federal project channels and MOTSU have been placed within the New Wilmington ODMDS.

Table 1. New Wilmington ODMDS Disposal History. Data source is USACE Wilmington District unpublished dredging records.

DREDGED MATERIAL QUANTITY – CUBIC YARDS			
YEAR	WH	MOTSU	YEAR TOTAL
2002	1,259,000	233,000	1,492,000
2003	3,165,000	0*	3,165,000
2004	95,000	0	95,000
2005	2,384,000	1,503,000	3,887,000
2006	1,680,000	0	1,680,000
2007	1,114,000	1,198,000	2,312,000
2008	138,000	934,000	1,072,000
2009	0	0*	0
2010	470,000	723,000	1,193,000
2011	360,000	429,000	789,000

Note: WH- Wilmington Harbor Federal Navigation Project.

MOTSU – Materials associated with MOTSU only.

*- Ocean disposal crossed the calendar year. Quantity reported in year majority work performed.

CHARACTERISTICS OF DREDGED MATERIALS

Grain Size. The sediments dredged from navigation channels in the Cape Fear River include ocean source (sandy, littoral materials), river source (fine grained sands, silts, and clays derived from easily eroded soils from the upper Cape Fear River basin), and mixtures of both. Shoals occur where specific physical factors promote deposition or movement of sediments. These factors may vary spatially and temporally. Table 2 indicates the grain size characteristics of Wilmington Harbor channel sediments and divides the Wilmington Harbor project into broad groups by sediment characteristics. Based on the grain size data, some Wilmington Harbor channel sediments have significant silt and clay components and therefore do not meet Part 227.13(b) criteria for exclusion from further evaluation. For those materials, additional information is necessary to determine compliance with the Ocean Dumping Regulations and Criteria.

Table 2. Grain Size Characteristics of Wilmington Harbor and MOTSU channel sediments.

Channel	%Gravel	%Sand	%Silt/Clay	Sediment Grouping
Bald Head Shoal				
Offshore reaches	0.0	73.2	26.8	Silty offshore
Inlet reaches	0.0	98.7	1.3	Sandy, lower
Smith Island	7.9	92.0	0.1	project reaches
Caswell-Southport	18.0	80.5	1.5	"
Southport	12.5	85.5	2.0	"
Battery Island	38.0	61.0	1.0	"
Lower Swash	27.0	70.0	3.0	"
Horseshoe Shoal	0.0	98.0	2.0	"
Reaves Point	0.0	99.0	1.0	"
Lower Midnight	0.0	76.0	24.0	Varied, mid proj.
Upper Midnight	0.0	82.5	17.5	reaches
Lower Lilliput	0.0	53.5	46.5	"
Upper Lilliput	0.0	98.0	2.0	"
Keg Island	0.0	63.0	37.0	"
Upper/lower Big Is	2.0	94.0	3.0	"
Lower Brunswick	0.0	92.7	7.3	"
Upper Brunswick	0.0	57.0	43.0	"
4 th East & Between	0.0	80.0	20.0	"
Anchorage Basin	0.0	6.0	94.0	Silty, upper
Betw. Memorial &				proj. reaches
Hilton RR bridges	10.0	55.0	35.0	"
Above Hilton RR	0.0	58.0	42.0	"
MOTSU*	0.0	30.0	70.0	Silty riverine

NOTE: Gravel – grain size larger than 5.0 mm; Sand – grain size between 0.07 and 5.0 mm; Silt/clay – grain size smaller than 0.07 mm. (Source: USACE 1996; except for * which is USACE 1993.)

Chemical and Biological Testing of Sediments. Several representative samples of fine grained sediments from the Wilmington Harbor channels and the MOTSU basin which are dredged and placed in the New Wilmington ODMDS have been chemically and biologically tested several times since 1978. The tested sediments have been found consistently suitable for ocean disposal.

DISPOSAL METHODS

Disposal of dredged material at the New Wilmington ODMDS will occur using two methods; by hopper dredge, and by tug and barge or scow. For the ocean bar reaches, shoal material is usually removed and transported to the ODMDS by a hopper dredge. Hopper dredges are designed to hydraulically dredge sediments, load and retain solids in the hoppers, and then haul them to the disposal site where disposal is accomplished by dumping through doors in the bottom of the hoppers or through the hull. For the interior river reaches, shoal material is usually removed by clamshell or bucket dredge.

Dredged materials are mechanically picked up by the bucket and placed into a 2,000 – 7,000 cubic yard capacity scow moored next to the dredge. When full, the scow is pulled by a tug to the ODMDS and the load discharged through the bottom of the scow.

MANAGEMENT AND MONITORING CONCERNS AND ISSUES

Material Transport. The behavior of the dredged material following placement determines many environmental effects. The characteristics, settlement, and movement patterns of the placed dredged material and resultant disposal mounds are important considerations in management of the ocean disposal site.

Site Use Management, Implementation, and Documentation. The best efforts for environmental management are for naught if the actual site use is not carried out in a manner that fulfills the stated management goals and objectives. A robust site use verification program must be implemented as a part of site management. The site use information must be readily available and used to facilitate monitoring and management. Correct implementation of the ocean disposal specifications is a key management concern. Dredging equipment, particularly that in the realms of navigation and documentation have improved significantly in recent years and use of these improved technologies is a key to successful management and monitoring.

Woody Debris. Shrimp fishermen fishing areas near the older Wilmington ODMDS have reported fouling and tearing of their nets with roots, tree limbs, and other natural origin wood debris. Such debris made portions of traditional shrimp trawling areas unusable. The fishermen attributed the wood debris to the ocean disposal of dredged material from the “river” reaches of the Wilmington Harbor navigation channel and the Military Ocean Terminal, Sunny Point. The old Wilmington ODMDS was immediately adjacent to and partially overlaps important shrimp trawling areas. Based on these reports a management plan was developed and included in the Wilmington ODMDS Site Management and Monitoring Plan dated November 1996. Implementation of the plan has apparently reduced wood debris problems.

The New Wilmington ODMDS is also located near the shrimping areas. Although not as near as the old Wilmington ODMDS, woody debris associated with dredged material remains a management issue.

OCEAN DREDGED MATERIAL SITE MANAGEMENT

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

Material Evaluation. Only dredged materials which have been evaluated in accordance with EPA's Ocean Dumping Regulations and Criteria and found in compliance with those criteria will be transported for disposal in the New Wilmington ODMDS.

Guidance for evaluation of dredged materials under the MPRSA Section 103 program is provided in the Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual, February 1991 and the Southeast Regional Implementation Manual (SERIM) for Requirements and Procedures for Evaluation of the Ocean Disposal of Dredged Material in Southeastern U.S. Atlantic and Gulf Coast Waters, May 2008. The determination of dredged material suitability for ocean disposal must be documented by the Wilmington District USACE in a MPRSA Section 103 evaluation and independently concurred on by EPA Region 4 prior to disposal. Dredged materials will be reevaluated for suitability for ocean disposal in accordance with current USACE/EPA guidance at an interval not to exceed three years. Reevaluation and testing procedures will be coordinated with the Wilmington District USACE and EPA Region 4 before any sampling or testing. Reference sites needed for evaluation compliance with the ODC are shown in Figure 3.

Dredged Material Suitable for Beneficial Uses. "Beneficial uses" refers to the concept that dredged material can be disposed in a way that is economically and environmentally acceptable and accrues natural resource benefits to society.

Beach-compatible dredged materials (sands) dredged from the navigation channel should be placed on nearby beaches or within the active littoral system when it is economically feasible and environmentally acceptable to do so. Site capacity and mounding factors are favorably affected by not placing beach compatible sands in the ODMDS. Other beneficial uses of dredged materials are also encouraged pending appropriate environmental review.

Dredged Material With Debris. If significant quantities of debris (either wood or man-made) are present in the dredged materials, then debris management should be conducted. Significant quantities of debris are considered to be those which would materially interfere with fishing in areas near the New Wilmington ODMDS or interfere with re-use of dredged material from within the ODMDS (i.e., beach nourishment borrow material). Debris management may involve the following:

- Removal of the debris from the dredged material before transportation to the ODMDS;
- Placement of dredged material in the ODMDS in a location (e.g., farthest distance possible from the fishing areas or borrow areas) such that debris interference is unlikely;
- Immobilizing the debris within the ODMDS by covering it (capping) with dredged material.

Methods of Disposal. Disposal may be by hopper dredge or dump scow. For each disposal project, a specific area within the ODMDS will be designated for use and a specific placement pattern will be prescribed. Dredged materials will be discharged within the ODMDS boundaries. Dredged material

placement will not be allowed closer than 600 feet from the site boundary. The placement of dredged materials outside the ODMDS boundaries is not acceptable under MPRSA authorities. An approved ocean disposal verification plan must be carried out. Placement methods that minimize mounding of dredged material within the designated placement area will be required. Specific procedures which accomplish these goals are discussed under the **Specific Requirements** section which follows.

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 that environment (as defined in EPA's Ocean Dumping Regulations and Criteria). The disposal quantity management objective for the New Wilmington ODMDS is to regulate disposal quantities such that depths in the disposal area following disposal do not interfere with navigation. In accordance with this objective, the disposal depth limitation will be –30 feet m.l.l.w. Current average depths in the ODMDS are approximately – 45 feet m.l.l.w.

Timing of Disposal. There are no seasonal restrictions to the placement of dredged material within the New Wilmington ODMDS. However, all dredging activities must comply with applicable seasonal restrictions and seasonal special requirements at the locations of the dredging.

SPECIFIC REQUIREMENTS

Ocean Disposal Verification.

Disposal Monitoring. For all disposal activities, an electronic tracking system (ETS) must be utilized. The ETS will provide surveillance of the transportation and disposal of dredged material. The ETS will be maintained and operated to continuously track in real-time the horizontal location and draft condition (nearest 0.5 foot) of the disposal vessel (ie. hopper dredge or disposal scow) from the point of dredging to the disposal site, and return to the point of dredging. Data shall be collected at least every 500 feet during travel to and from the ODMDS and every minute or every 200 feet of travel, whichever is smaller, while approaching within 1,000 feet and within the ODMDS. In addition to the continuous tracking data, the following information shall be electronically recorded for each disposal cycle:

- Load Number
- Disposal Vessel Name (or Number) and Type (e.g. scow)
- Estimated Volume of Load
- Description of Material Disposed
- Source of Dredged Material (i.e., channel or reach name)
- Date, Time and Position at Initiation and Completion of Disposal Event

The monitoring/verification plan will include an automated system that will record the horizontal location and draft condition of the disposal vessel from the time it enters Baldhead Shoal Channel outbound until it leaves Baldhead Shoal Channel inbound. Vessel positioning as a minimum shall be global positioning

system. 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).

Use of the USACE National Dredging Quality Management (DQM) system (formerly the Silent Inspector (SI) system) is required for ETS monitoring/verification at the New Wilmington ODMDS. Information about the DQM System can be found at <http://dqm.usace.army.mil>. The DQM system must be operational throughout the dredging and disposal project and that project data must be submitted to the DQM National Support Center in accordance with the specifications provided at the aforementioned website. The data collected by the DQM system shall, upon request, be made available to the Regulatory Division/Branch of the U.S. Army Corps of Engineers, Wilmington District and to EPA Region 4. Uploading of raw project data to the DQM Support Center is required. (USACE REGULATORY GUIDANCE LETTER No. 08-01 Date: 05 February 2008, SUBJECT: Guidance for Implementing the Silent Inspector (SI) system for dredging projects requiring Department of the Army (DA) permits). The use of DQM is also required for USACE federal navigation projects.

Disposal monitoring and ETS data will be reported to EPA Region 4 and Wilmington USACE (via the DQM system) on a weekly basis utilizing the eXtensible Markup Language (XML) specification and protocol (see the section to follow). EPA Region 4 and Wilmington USACE shall be notified within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone or if excessive leakage occurs. Excessive leakage is any change in draft exceeding 1.5 feet from the point of departure from the dredging site to the disposal site.

Reporting and Data Formatting. Disposal monitoring data shall be provided to EPA Region 4 electronically on a weekly basis. Data shall be provided per the EPA Region 4 XML format and delivered as an attachment to an email to DisposalData.R4@epa.gov. The XML format is available from EPA Region 4.

A summary report of operations shall be provided by the Wilmington District, USACE to the EPA, Region 4, Ocean Dumping Coordinator at the completion of the dredging/ocean disposal project or activity within 90 days after project completion. For work under a Section 103 permit, the permit holder will be responsible for providing the requested information to the Wilmington District, USACE. 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 date;
 - 4) Section 103 evaluation date;
- Disposal Site Used;
- Project Type - Either Federal or Section 103 permit;

- Type of Work - New or maintenance work;
- Method of dredging and disposal;
- Disposal dates - start to finish;
- Quantity of dredged material disposed - in cubic yards;
- Number of loads completed;
- Contractor conducting the work;
- Identification of any misplaced materials;
- Dates of bathymetric surveys of ODMDS;
- Point of contact for project.

The disposal summary reports should be accompanied by the bathymetry survey results (paper plot and X,Y,Z ASCII data file), track plots for each disposal trip, a scatter plot of all dump locations, and a summary table of the information required above. If all data is provided in the required XML format, track plots, scatter plots and summary tables will not be necessary.

Designated Route To and From the New Wilmington ODMDS. A transportation route to and from the New Wilmington ODMDS will be specified to minimize possible interference with nearby fishing grounds and commercial navigation. The disposal route is the Wilmington Harbor navigation channel to the “Red Buoy Number 4”. Minor departures from the navigation channel to avoid traffic or facilitate safe vessel passage are acceptable. The ocean disposal verification plan discussed previously provides verification that the approved route was taken.

Disposal ‘Zones’ Within the ODMDS. To manage site use, maximize site capacity, reduce multiple user conflicts, simplify monitoring and management, and reduce potential adverse impacts to the marine environment, the Wilmington District, USACE in consultation with EPA Region 4, will designate zones within the ODMDS for dredged materials from each specific ocean dumping activity.

BASELINE ASSESSMENT OF CONDITIONS AT THE NEW WILMINGTON ODMDS

Site Designation EIS Baseline. Baseline conditions at the New Wilmington ODMDS are principally reported in the site designation Environmental Impact Statement (USACE and EPA, 2001) and the Site Characterization Study (EPA, 2000). This baseline data includes information referenced from the scientific literature and information compiled from field surveys at the New Wilmington ODMDS. The field survey data included: water sediment chemistry; benthic macroinfauna; and site currents. Side scan sonar and echosounding records were also extensively used.

Information Obtained For Site Designation.

Site evaluations and monitoring in the course of site designation have produced information in the following areas.

Bathymetry. Figure 4 illustrates bathymetry of the New Wilmington ODMDS prior to any disposal of dredged material.

Sediment Characterizations. A reconnaissance survey of marine sediments within a 28 square nautical mile area (Figure 5) was initiated in 1997 (USACE 1999). Median grain size in this area ranged from 0.0797 mm to 0.770 mm. The % fines (silt and clay) ranged from 0% to 35.5%; median percentage of fines was 4.4%. The organic content of the sediments ranged from 0.56% to 3.98%. Chemical characterizations of these sediments were performed and results are summarized in EPA (2000).

Benthic Communities. In 1998 a benthic survey was conducted of the same 28 square nautical mile area (Figure 4) which encompasses the proposed Frying Pan Shoal Site (USACE 1999). A total of 21,832 organisms representing 311 taxa were identified from 28 blocks (stations)(8 or more grab samples per block). Polychaetes were the most numerous taxa representing 39.7% of the total assemblage, followed in abundance by arthropods malacostracans (23.7%), gastropods (14.1%) and bivalves (1.9%). Gastropods represented 34.3% of the total number of individuals followed by polychaetes (30.7%), and bivalves (18.4%). Dominant taxa included the gastropod *Caecum pulchellum*, the bivalve *Lucina radians*, and the polychaete *Apoprionospio pygmaea*. Mean densities ranged from 538 to 6019 organisms per square meter. The highest densities were found in the more offshore stations sampled. The greatest number of taxa tended to be located on the eastern-most edge of the survey area. Mean station biomass ranged from 27.4 to 836.4 grams per square meter (wet-weight). Statistical analysis of the data showed a relatively homogeneous distribution between stations sampled, with a significant correlation between density and sediment grain size. Density was positively correlated with percent fines (silt and clay).

A reconnaissance survey of hard bottom habitats in the project area was undertaken for the EIS. The evaluation included review of side scan sonar records and echosounder profiles. A select number of underwater video transects, SCUBA diver observations, and bottom grab samples were used to ground-truth interpretation of the side scan records. The hard bottom habitats delineated in these studies are shown in Figure 6.

Information Obtained Since Site Designation. Site evaluations and monitoring since the site designation has produced supplemental information in the following areas:

Bathymetry. Bathymetric surveys have generally been conducted on portions of the ODMDs before and after each use since the site designation. These surveys have focused on the portions of the ODMDs actually used for dredged material disposal. A composite of the most recent bathymetric surveys of the New Wilmington ODMDs is provided as Figures 7 and 7a. The more recent surveys include disposal zones that have been used for dredged material disposal more recently. Figure 7a is a comparison by contouring of the bathymetry differences between the site in 2004/2005 and summer 2012. This data shows accumulation of material in distinct mounds within the disposal zones.

Status and Trends Monitoring 2010. A status and trends study was conducted at the ODMDs in May 2010 (EPA 2010) in order to assess the current condition of the benthic communities within areas used

for disposal as well as areas surrounding the site (see Table 3 and Figure 8). The study collected water, sediment, and biological samples to determine water quality, water chemistry, sediment grain size, sediment chemistry, and macroinfaunal community parameters.

Sediment Characterizations. Samples collected in 2010 showed the sediments inside the ODMDS, as well as those in the surrounding environs to be predominantly sand (ODMDS = 98.42 % sand; non-ODMDS = 97.12 % sand) with < 5.0 % fines (silt/clay).

Chemical analyses of these sediments were also conducted, but due to laboratory constraints it was not possible to perform tests of each separate station. The original 16 benthic stations were composited (by geographical proximity) into 5 analytical samples. Analyses were conducted for heavy metals, PAH's, pesticides, and PCB's. The only contaminants seen above detection limits were metals (9 of 14), but not at levels of concern.

Benthic Communities. Macroinfaunal analyses of the same sixteen stations were also conducted by EPA (2010). The results of these analyses are summarized in Table 3. For samples collected in the ODMDS, the dominant taxon were the bivalve *Petricola pholadiformis* (25.3%), the amphipod *Erichthonius brasiliensis* (7.8%), the isopod *Edotia triloba* (7.3%), and the polychaete Family, Maldanidae (5.0%). The dominant taxon outside the site was the polychaete Family, Capitellidae (8.7%), followed by the polychaete, *Mediomastus sp.* (7.3%), and the amphipods, *Ampelisca macrocephala* (6.3%), *Oxyurostylis smithii* (5.7%), and *Protohaustorius wigelyi* (5.1%).

Table 3. Infaunal Community Parameters – New Wilmington ODMDS, May 2010. See Figure 8 for sample locations.

Station	Taxa Richness	Density (org/m ²)	Diversity	Evenness
<i>Inside the ODMDS</i>				
W13	35	4100	3.75	0.73
W14	28	2050	4.05	0.84
W15	23	1425	3.92	0.87
W16	28	6950	2.51	0.52
W17	22	1025	4.12	0.92
W18	17	825	3.80	0.93
Mean	25.5	2729.2	2.56	0.80
Std. Dev.	6.2	2382.7	0.41	0.16
<i>Outside the ODMDS</i>				
W19	32	3125	3.95	0.79
W20	48	3900	4.61	0.83
W21	40	2300	4.78	0.90
W22	15	1250	3.27	0.84
W23	31	1525	4.64	0.94
W24	31	2450	4.00	0.81
W25	28	2575	3.63	0.76
W26	24	1850	3.74	0.82
Mean	31.1	2371.9	2.83	0.83
Std. Dev.	9.9	862.1	0.38	0.06

Note: Sampling was accomplished with a Young grab (surface area = 0.04 m² ; depth of 10 cm).

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 disposal site monitoring is to determine whether site management practices, including disposal operations need to be changed to avoid unacceptable impacts or to provide benefits to resource conditions. 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 need to define in quantitative terms thresholds for unacceptable impacts and desired beneficial effects of dredged material disposal. Exceeding or not exceeding the thresholds triggers specific management actions. A tiered strategy for a monitoring program is desirable. With a tiered approach, an unacceptable result may trigger further and often more complex monitoring. 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 endpoints, particularly those defined during site designation or specific project issues that arise. For the New Wilmington ODMDS, the site designation environmental impact statement identified navigation, fishing (shrimping), and hard bottoms in nearby waters as resources of concern. These resources were not present within the site.

The objectives of the site monitoring plan for the New Wilmington ODMDS are to provide information to:

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

Monitoring Methods and Rationale. Proposed monitoring strategies for the New Wilmington ODMDS and thresholds for management actions are presented in Table 4 and discussed in the following paragraphs. These methods will provide 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. As indicated in Table 4, information obtained during 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 and additional thresholds for action established.

Site Bathymetry. Before and after single transducer surveys of the areas of active placement plus 1000 feet beyond in all directions will be conducted for each disposal activity. Positioning using GPS will be required. Survey line spacing will be at most 100 feet. The vertical datum shall be m.l.l.w. (mean lower low water, Beaufort Datum) and the UTM, NAD 1983.

Every 3 years, a site bathymetry survey of the active disposal areas will be conducted using a multibeam system.

The survey data will be made available as a coordinate data file in an electronic format specified by the Wilmington District USACE and EPA Region 4. Pre-disposal and post-disposal surveys will be evaluated using surface modeling techniques. Consecutive surveys will be compared to establish apparent net direction of sediment movement. Estimates will be made of the quantities and types of materials retained in the ODMDS. The ocean disposal verification data base will be used to associate dredging project information with bathymetric features observed.

Sediment Sampling and Grain Size Characterizations. Sediment grab sampling within the ODMDS and monitoring grain-size distributions within those samples will be periodically conducted as needed to monitor for distribution, fate, and transport of fine-grained sediment disposed of in the ODMDS. This sampling may be augmented using LDFATE and MDFATE models (USACE dredged material disposal numerical models).

Disposal Site Use Records. All dredged material disposal activities at the New Wilmington ODMDS will be conducted under an approved verification plan. The Wilmington District USACE 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.

ANTICIPATED SITE USE

It is anticipated that there will be a continued need for the New Wilmington ODMDS for many years. The site can be expected to receive between about 2 and 3 million cubic yards of dredged material per year. This projection is based on dredging records, currently available dredged material disposal options, and recent Wilmington District USACE sediment evaluations.

MODIFICATION OF THE NEW WILMINGTON 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, the ODMDS management 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 revision. The plan should be updated in conjunction with activities authorizing use of the site.

IMPLEMENTATION OF THE NEW WILMINGTON ODMDS SMMP

This plan shall be effective from date of signature for a period not to exceed 10 years. The EPA Region 4 and the Wilmington District USACE shall share responsibility for implementation of the SMMP. Site users may be required to undertake monitoring activities as a condition of their permit. The Wilmington District USACE will be responsible for implementation of the SMMP for Federal maintenance and new work navigation projects.

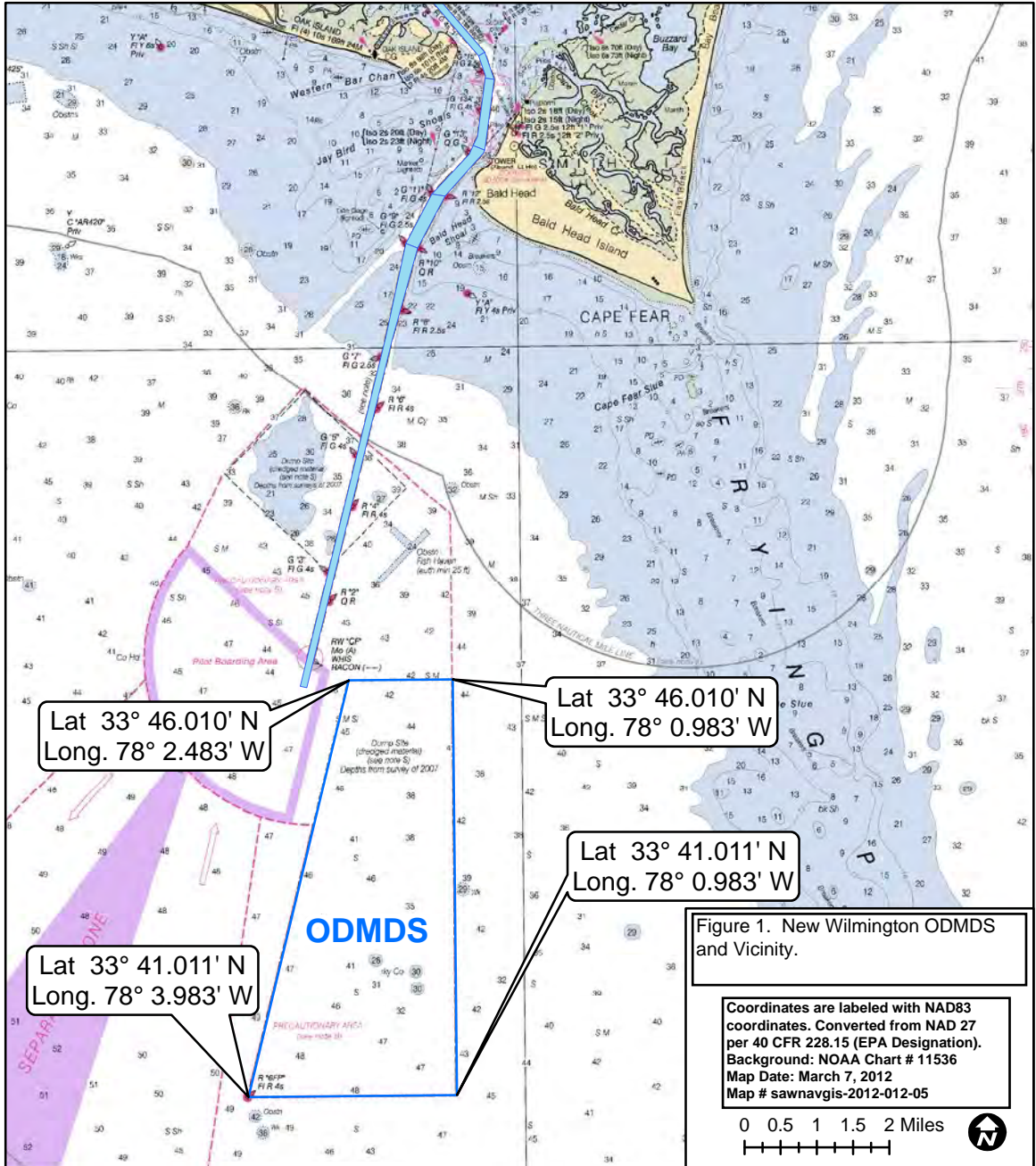
Table 4. New Wilmington ODMDS Monitoring Strategies and Thresholds for Action.

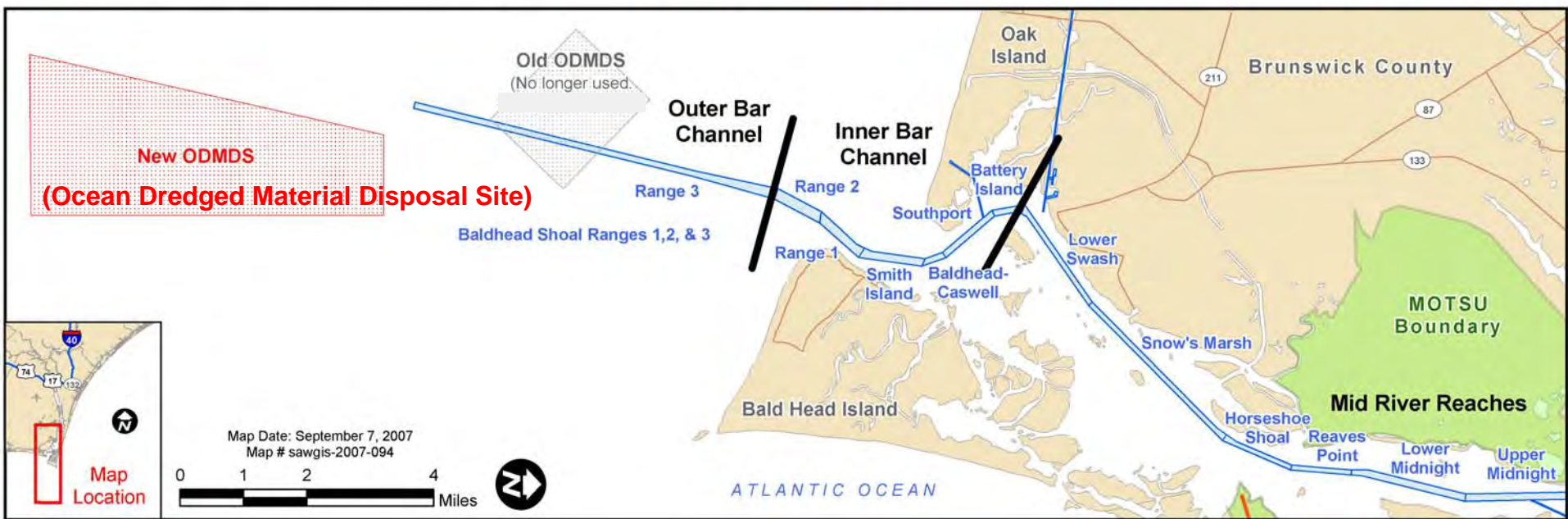
STRATEGY	THRESHOLD	MANAGEMENT OPTIONS	
Monitoring Strategy	Predefined Threshold For Action	Threshold Not Exceeded	Threshold Exceeded
Site Bathymetry	Mound Height > -30' m.l.l.w. Mound height approaching -30' m.l.l.w.	* Continue monitoring after each disposal activity (project completion) * Continue monitoring after each disposal activity (project completion)	* Move disposal points within site * Limit quantity of material * Remove material above -25' mllw * Cease use of specific area of site * Notify mariners of mound location and height * Move disposal points within site * Continue use of area but increase frequency of monitoring * Limit dredge material quantities placed at site
Site Bathymetry – Sequential Survey Analysis	Sequential surveys indicate significant erosion of disposal mounds.	* Continue monitoring after each disposal activity (project completion) * Continue monitoring at a reduced level * Stop monitoring	* Move disposal points within site * Increase monitoring level to assess impacts of material movement * Reduce quantities placed at site
Sediment Sampling and Grain Size Characterizations	Monitoring information indicates a significant transport of fine-grained material off-site and potentially affecting a resource of concern.	* Continue monitoring at a reduced level * Stop monitoring	* Increase level of monitoring * Implement a change in ODMDS use to minimize the potential for transport or change due to ODMDS use.
Disposal Site Use Records	Disposal records required by SMMP are not submitted or are incomplete Review of records indicates a dump occurred at a location other than as directed	* Continue monitoring at same level * Continue monitoring at same level	* Restrict site use until requirements are met * Dump occurred outside ODMDS boundary: Notify EPA-Region 4 and State of NC. Investigate why off-site dump(s) occurred. Remove material from off-site dump(s) if a hazard to navigation or the environment * Dump occurred in ODMDS but not in target area: Direct placement to occur as specified
Evaluation of Direction and Magnitude of Material Movement Using Numerical Models	Evaluations indicate the potential to move back to navigation channel or to adjacent areas	* Continue monitoring at a reduced level * Stop monitoring * Continue monitoring at same level	* Increase level of monitoring * Collect additional information needed to refine predictions * Change operational considerations, i.e., location and method of placement

REFERENCES

- U.S. Army Corps of Engineers, Wilmington District. 1996. *Draft Feasibility Report and Environmental Impact Statement on Improvement of Navigation, Cape Fear – Northeast Cape Fear Rivers Comprehensive Study, Wilmington, North Carolina*. Volume I, January 1996.
- U.S. Army Corps of Engineers, Wilmington District. 1993. *Ecological Evaluation of Proposed Dredged Material from Wilmington Harbor and Military Ocean Terminal, Sunny Point, North Carolina*. July 1993. Report prepared for Wilmington District by Ward, J. A., M. R. Pinza, M. E. Barrows, and J. Q. Word, Battelle, Marine Sciences Lab.
- U.S. Army Corps of Engineers (COE). 1999. Unpublished data.
- U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (USACE and EPA). 2001. *Final Environmental Impact Statement (FEIS) New Wilmington Harbor, Ocean Dredged Material Disposal Site (ODMDS) Site Designation, November 2001*.
- U.S. Environmental Protection Agency (EPA), 2000. *Wilmington Harbor, North Carolina, New Ocean Dredged Material Disposal Site Characterization Study, Draft Report, June 2000*. Draft Report Prepared by EPA Science and Ecosystem Support Division, Athens, GA.
- U.S. Environmental Protection Agency (EPA), 2010. *New Wilmington ODMDS – Status and Trends, May 2010 Monitoring Survey Report*. September 2010.
- U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE). 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal-Testing Manual (Green Book)*. EPA-503/8-91-001. February 1991.
<http://www.epa.gov/owow/oceans/gbook/gbook.pdf>
- U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE). 1996. *Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites*. February 1996.
- U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE). 2008. *Regional Implementation Manual - Requirements and Procedures for Evaluation of the Ocean Disposal of Dredged Material in Southeastern U.S. Atlantic and Gulf Coast Waters (SERIM)*. U.S. Environmental Protection Agency Region 4 and U.S. Army Corps of Engineers, South Atlantic Division, Atlanta, GA.
http://www.epa.gov/region4/water/oceans/documents/Regional_Implementation_Manual.pdf

FIGURES





Station I.D.	Description	Avg. % Fines	Range of % Fines	Latitude dd° mm.mm'	Longitude dd° mm.mm'
RS-NW-A	Sand	2.00	n/a	33 46.302	78 3.612
RS-NW-B	Sand	12.87	11.8 – 14.3	33 47.838	78 8.940
RS-NW-C	Silty sand	27.11	25.3 – 33.5	33 50.574	78 9.066
RS-NW-D	Sandy silt	63.81	53 – 66	33 47.136	77 59.370

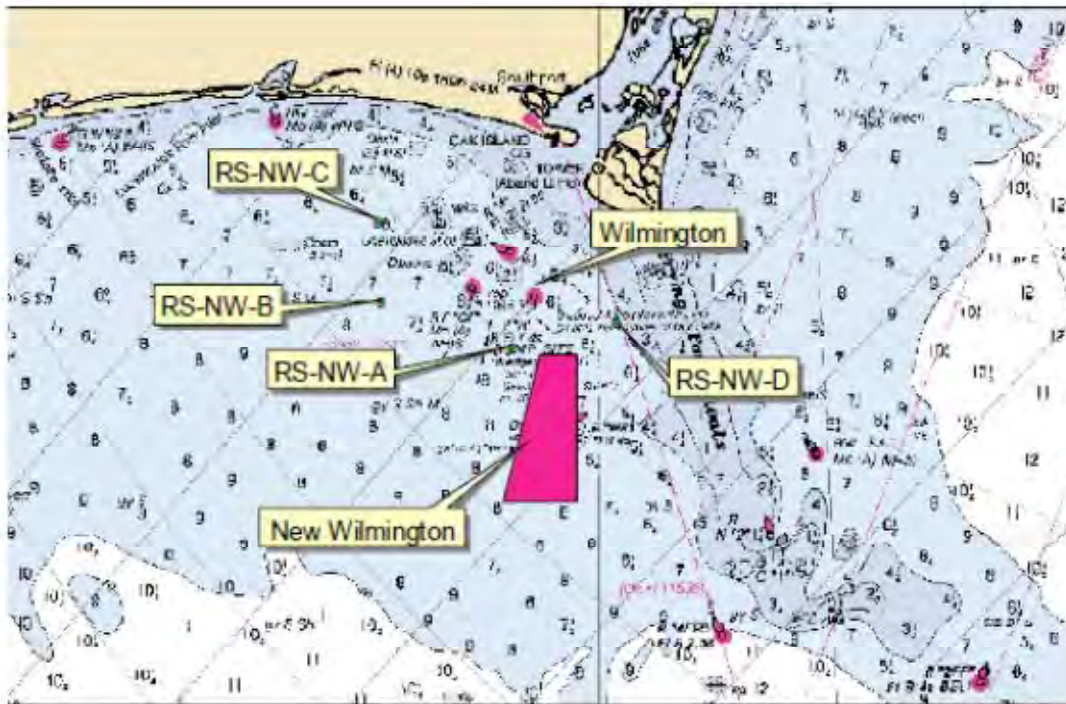
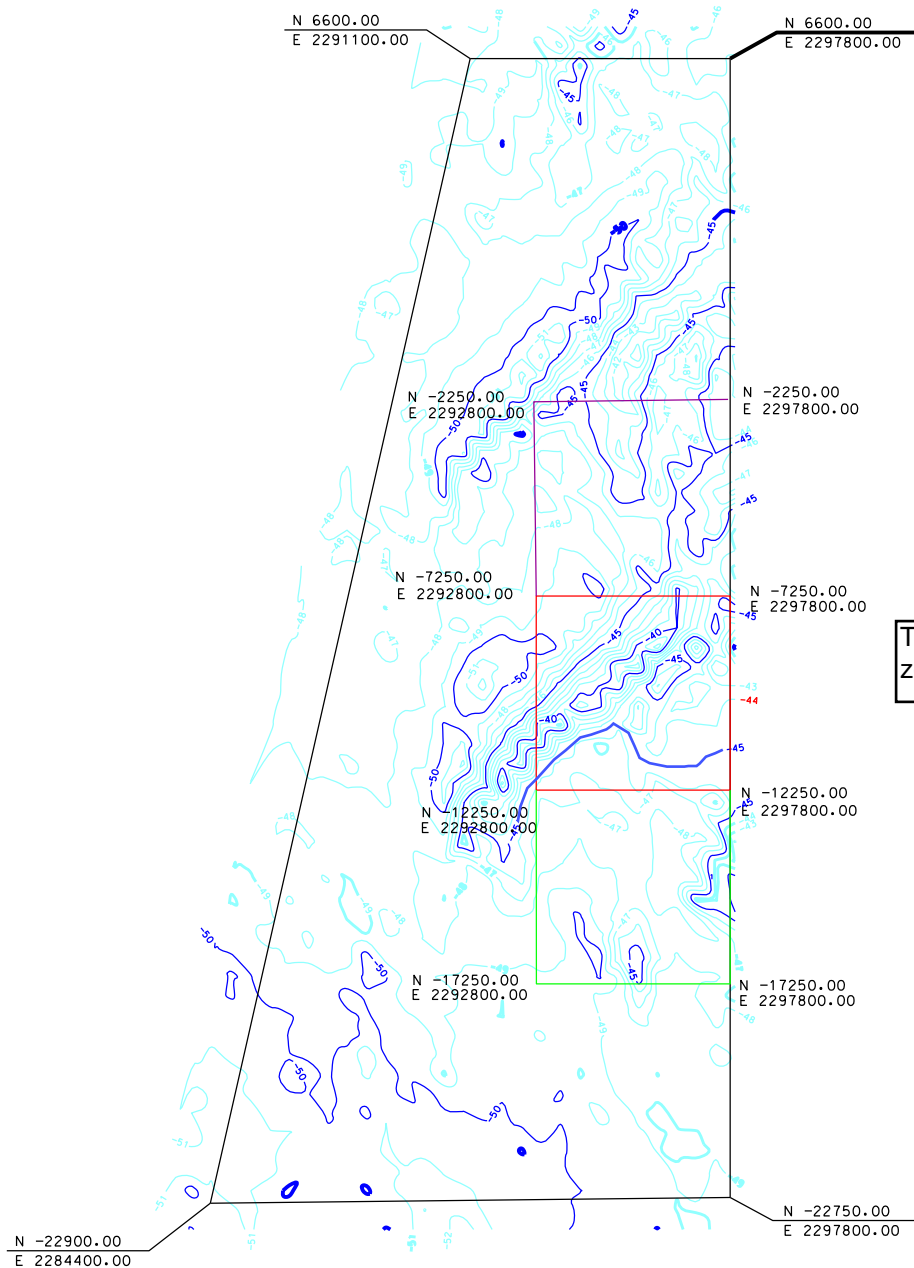


Figure 3. Recommended Reference Sites for the Wilmington Harbor navigation project. RS-NW-D used for most recent evaluations.



Three currently used disposal zones shown. Each disposal zone is 5000 ft by 5000 ft.

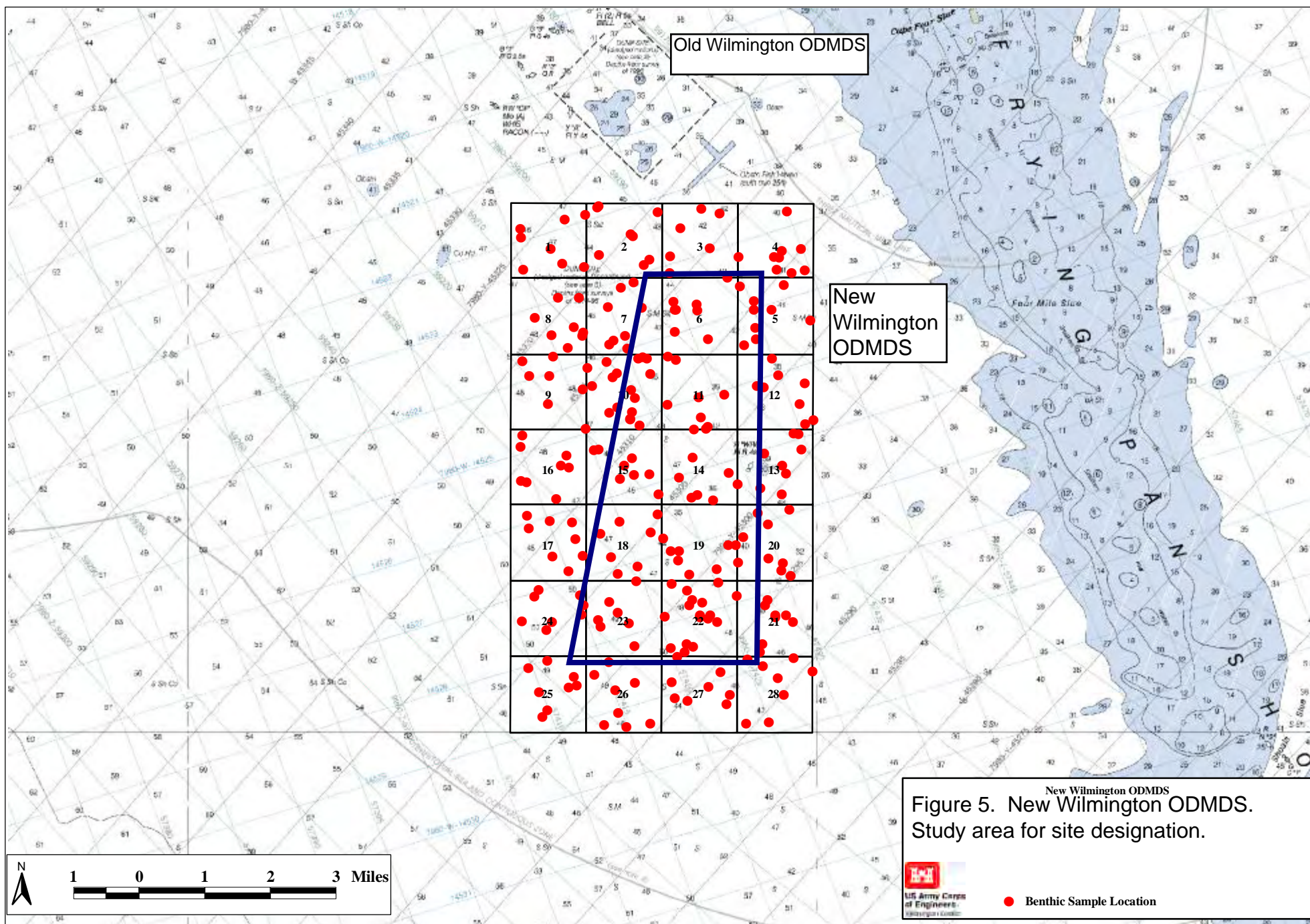
NOTES:

1. HORIZONTAL DATUM NAD 1883.
2. SOUNDINGS ARE EXPRESSED IN FEET AND TENTHS AND REFER TO MEAN LOWER LOW WATER (MLLW).
3. NEW OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS) AREA WAS SURVEYED BY NOAA SHIP "WHITING" DURING 1996-1997. THIS SURVEY DATA WAS USED TO GENERATE CURRENT EDITION OF CHART 11536 APPROACHES TO CAPE FEAR (14TH EDITION AUGUST 15, 1998).

Note: The boundary and coordinates shown on this diagram define a disposal zones established entirely within the designated site boundaries of the larger ODMDS and therefore do not represent the boundaries of the ODMDS.

Figure 4. New Wilmington ODMDS. Pre-Disposal bathymetry. Soundings are in feet mean lower low water (MLLW).





New Wilmington ODMDS
 Figure 5. New Wilmington ODMDS. Study area for site designation.



● Benthic Sample Location

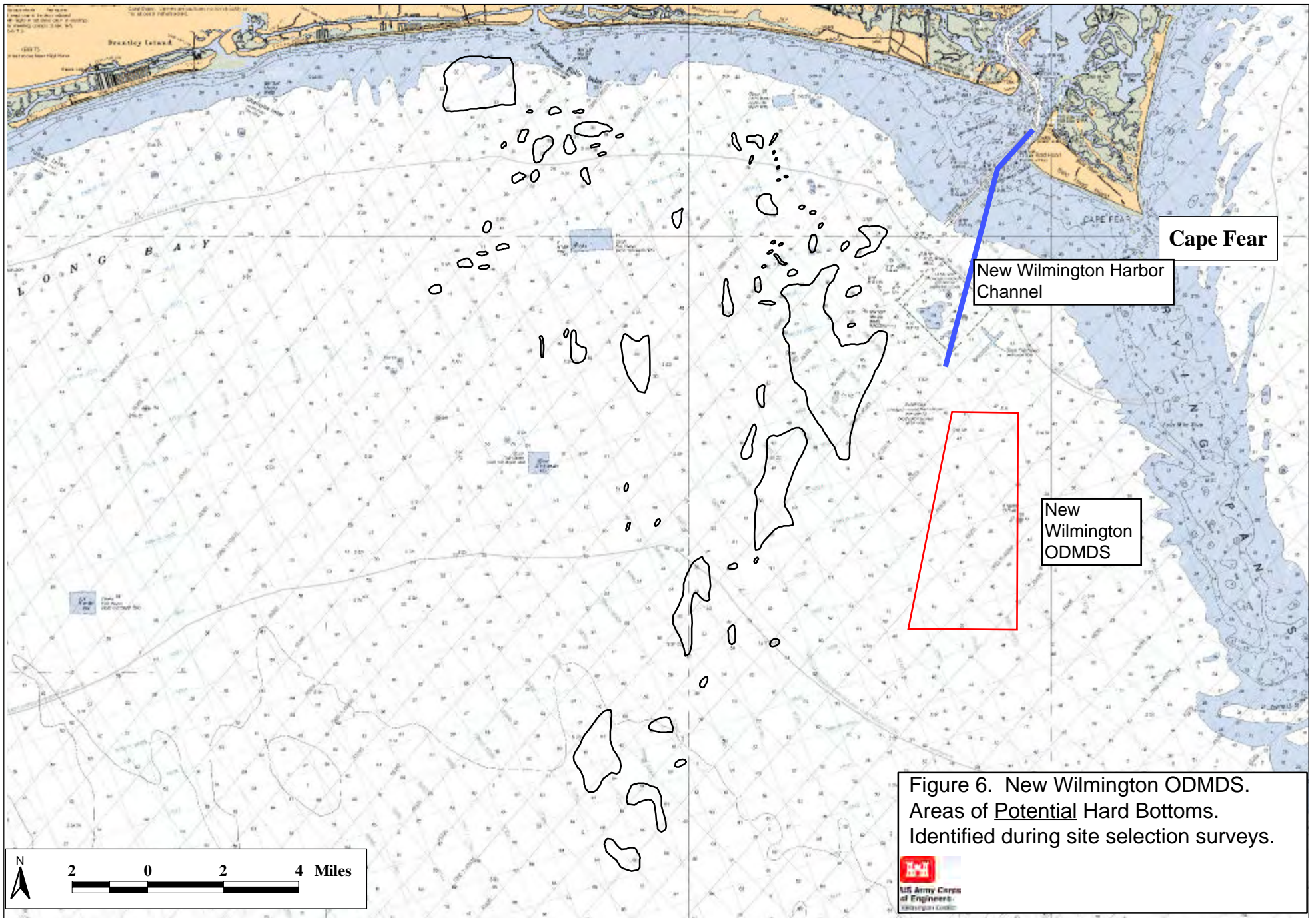


Figure 6. New Wilmington ODMDS. Areas of Potential Hard Bottoms. Identified during site selection surveys.

Note: Three "boxes" shown are disposal zones that have been used since site designation. Dredged material placement has not occurred outside of these zones. These boxes are 5000 ft by 5000 ft.

Note: The boundary and coordinates shown on this diagram define a disposal zone established entirely within the designated site boundaries of the larger ODMDS and therefore do not represent the boundaries of the ODMDS.

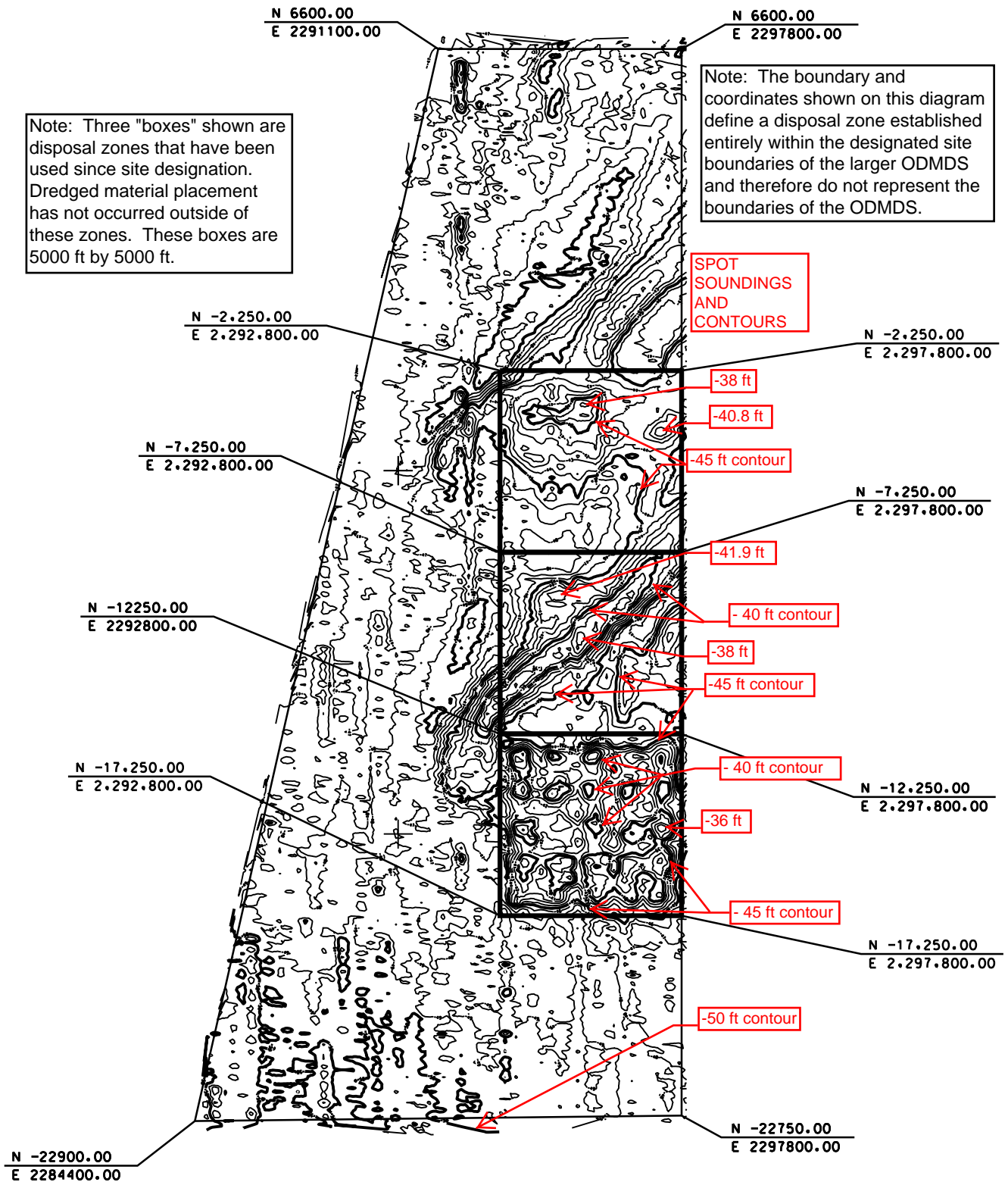
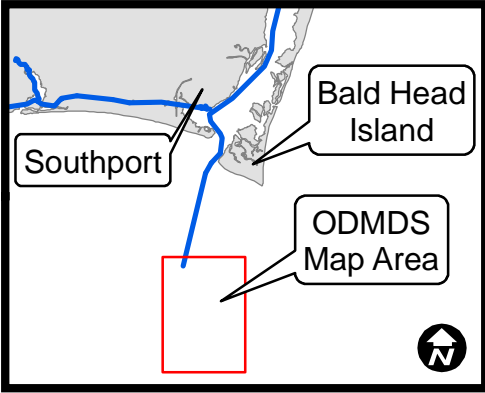
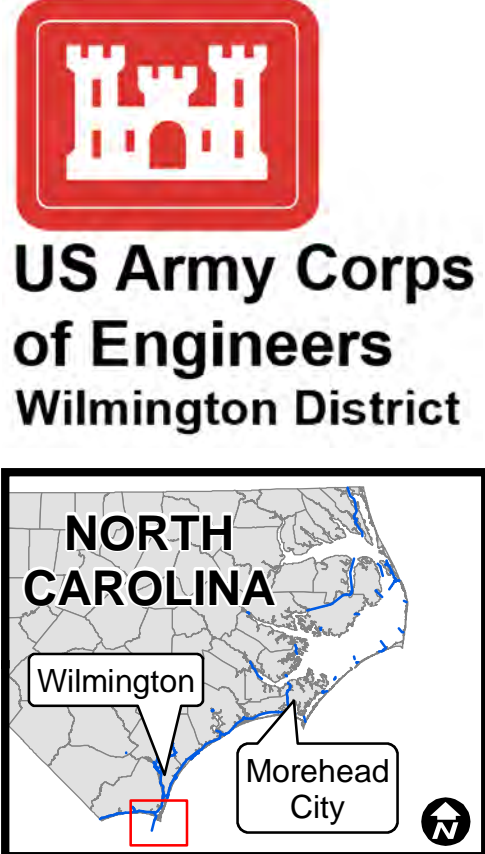
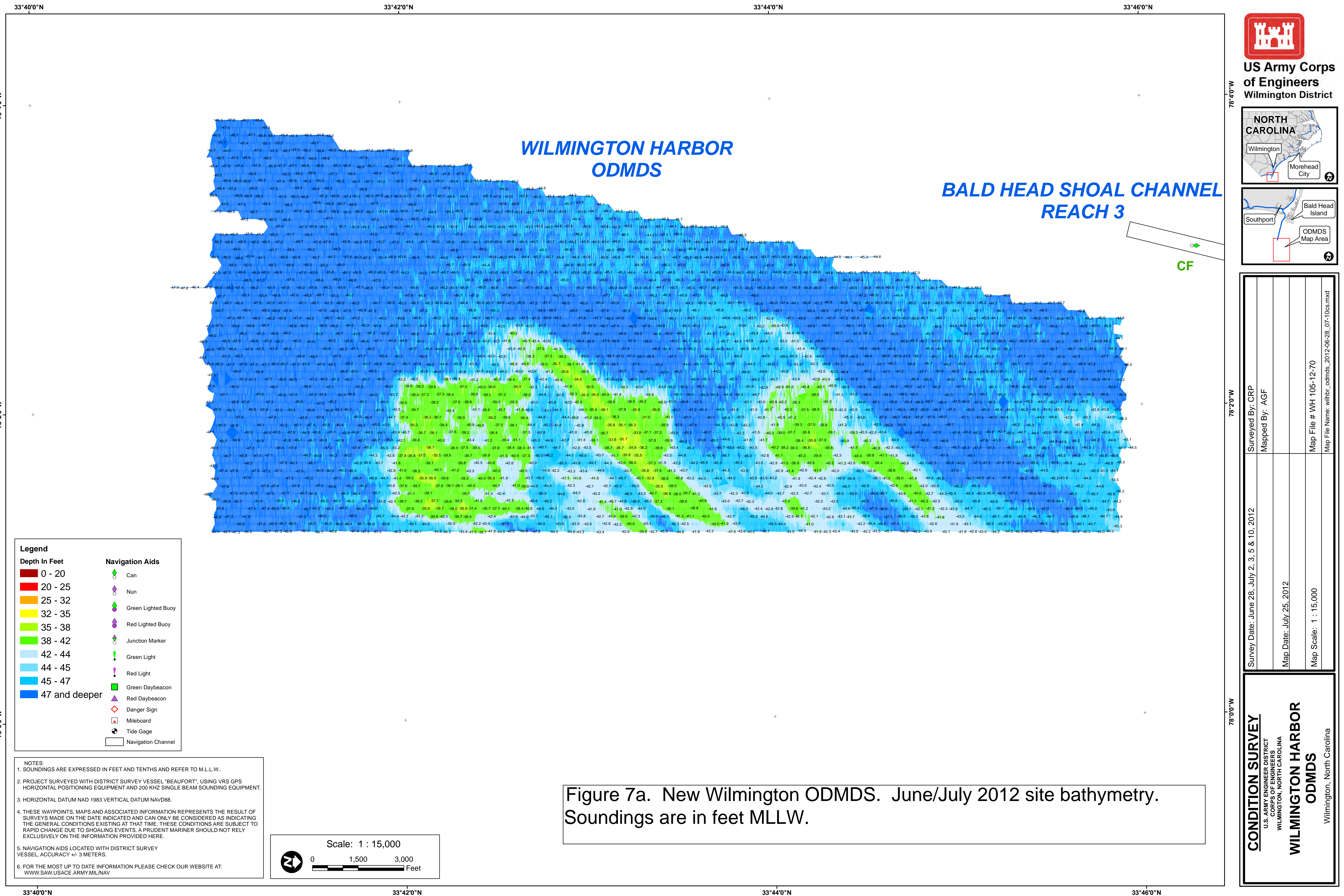


Figure 7. New Wilmington ODMDS. May 2011 site bathymetry. Soundings are in feet MLLW.



Surveyed By: CRP	Map File # WH 105-12-70
Mapped By: AGF	Map File Name: wilmington_odmms_2012-06-28_07-10cs.mxd

Survey Date: June 28, July 2, 3, 5 & 10, 2012
Map Date: July 25, 2012
Map Scale: 1 : 15,000

CONDITION SURVEY
 U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 WILMINGTON, NORTH CAROLINA

WILMINGTON HARBOR ODMDS
 Wilmington, North Carolina

Legend	
Depth In Feet	Navigation Aids
0 - 20	Can
20 - 25	Nun
25 - 32	Green Lighted Buoy
32 - 35	Red Lighted Buoy
35 - 38	Junction Marker
38 - 42	Green Light
42 - 44	Red Light
44 - 45	Green Daybeacon
45 - 47	Red Daybeacon
47 and deeper	Danger Sign
	Mileboard
	Tide Gage
	Navigation Channel

NOTES:

- SOUNDINGS ARE EXPRESSED IN FEET AND TENTHS AND REFER TO M.L.L.W..
- PROJECT SURVEYED WITH DISTRICT SURVEY VESSEL "BEAUFORT", USING VRS GPS HORIZONTAL POSITIONING EQUIPMENT AND 200 KHZ SINGLE BEAM SOUNDING EQUIPMENT.
- HORIZONTAL DATUM NAD 1983 VERTICAL DATUM NAVD88.
- THESE WAYPOINTS, MAPS AND ASSOCIATED INFORMATION REPRESENTS THE RESULT OF SURVEYS MADE ON THE DATE INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME. THESE CONDITIONS ARE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE.
- NAVIGATION AIDS LOCATED WITH DISTRICT SURVEY VESSEL. ACCURACY +/- 3 METERS.
- FOR THE MOST UP TO DATE INFORMATION PLEASE CHECK OUR WEBSITE AT: WWW.SAW.USACE.ARMY.MIL/NAV

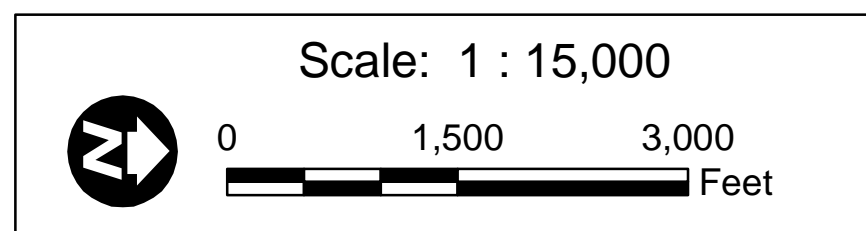
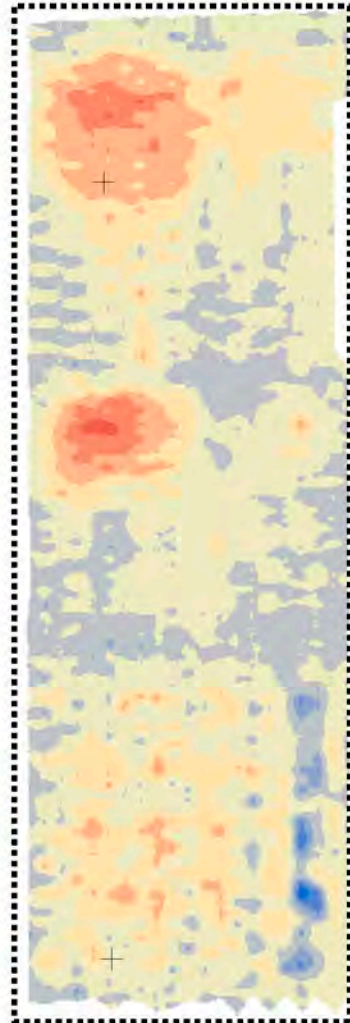
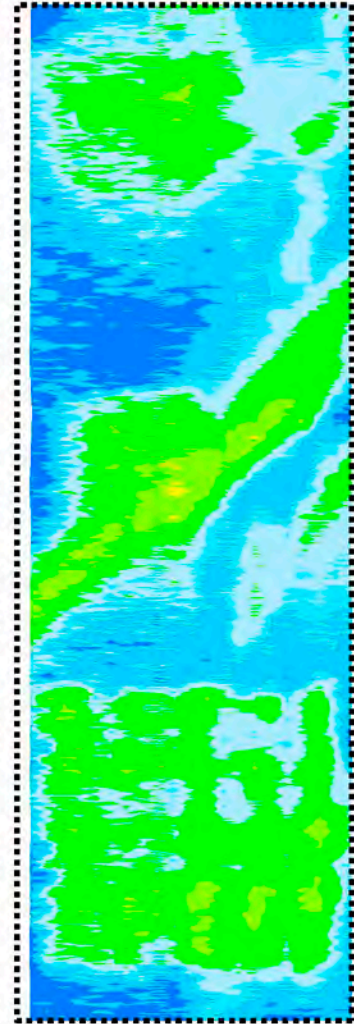
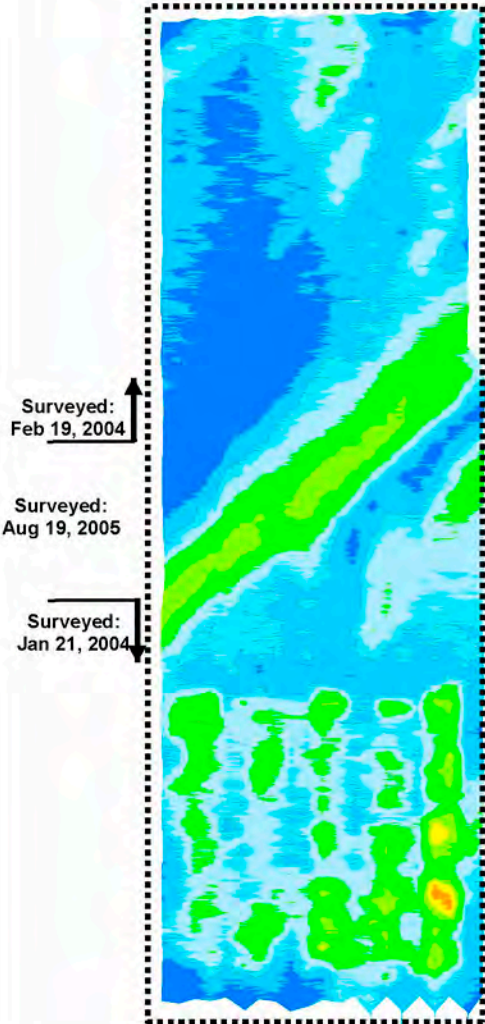


Figure 7a. New Wilmington ODMDS. June/July 2012 site bathymetry.
 Soundings are in feet MLLW.

**Wilmington Harbor
ODMDS
2004-2005**

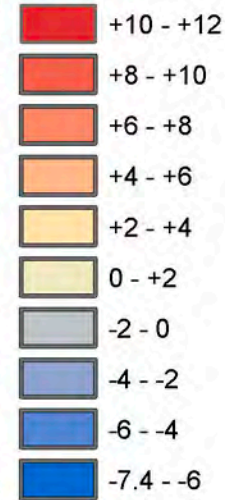
**Wilmington Harbor
ODMDS
June 2012**

**Wilmington Harbor
ODMDS
Difference
2004-2005 vs. 2012**

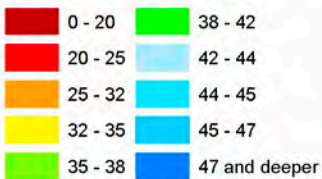


Legend

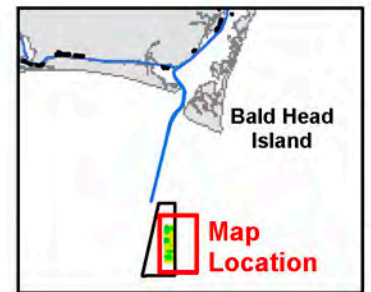
Approximate Change in Feet



Depth In Feet



Depth In Feet



Map Date: December 4, 2012
Map # sawnavgis-2012-024b

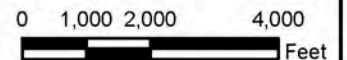


Figure 7b. New Wilmington ODMDS. Plot of bathymetric differences, (2004-2005) and (2012).

33°44'0"N

33°42'0"N

33°44'0"N

33°42'0"N

78°2'0"W

78°0'0"W

78°2'0"W

78°0'0"W

APPENDIX A

NUMERICAL MODEL (STFATE) INPUT PARAMETERS

**Numerical Model (STFATE)
Input Parameters
New Wilmington ODMDS**

STFATE (Short-Term FATE of dredged material disposal in open water) models the discharge of a single load of dredged material from a scow or hopper. STFATE computes a prediction of the deposition and water quality effects of dredged materials disposed of in open water. This numerical model is used for required evaluations of initial mixing and water column effects. STFATE is an outgrowth of the first comprehensive model for predicting the fate of dredged material developed by Koh and Chang (1993). STFATE models three disposal phases, convective descent, dynamic collapse, and passive transport dispersion. STFATE models conventional displacement (bottom dumping) where the vast majority of the dredged material released from a barge or hopper dredge descends rapidly to the bottom in a high density jet known as the convective descent phase. The dynamic collapse phase begins when the jet impacts the bottom. The more dense material immediately deposits, while the less dense particles are spread outward as a density flow when the vertical energy is transferred into horizontal momentum. Over time the less dense material also settles.

Input data for the model includes information regarding the following:

- Disposal operation
- Disposal site
- Dredged material
- Model coefficients
- Input/output/execution controls

The STFATE input parameters are to be used in future evaluations of disposal operations. These parameters are based on information obtained during site designation studies as presented in the New Wilmington ODMDS FEIS, previous applications of the disposal models, and default parameters. Additional project and site-specific information should be used in future STFATE applications to improve the predictive capability of the model.

The STFATE model input parameters include site description, ambient velocity data, disposal operation information, and coefficients. A 45 by 45 grid was chosen to provide the highest resolution. The grid spacing in the north/south and east/west directions was selected at 700 feet to keep the disposal plume within the grid during the model execution. As discussed above, an average depth of 45 feet is used and a three-point density profile is used. A depth averaged logarithmic velocity profile was selected using median values to the East. Disposal operation and execution parameters include disposal site boundaries and disposal location and model time step and duration. The duration is set to 14,400 seconds (4 hours) to meet the 4-hour dilution requirement. Project specific disposal operations data (i.e., vessel speed, dimensions and draft) will depend on the individual projects. Likewise, dredged material characteristics may vary based on specific sediment testing information. Model default values are specified where appropriate.

STFATE Model Input Parameters

Section 103 Regulatory Analysis for Ocean Water, Tier III, Short-Term Fate of Dredged Material from Split Hull Barge or Hopper/Toxicity Run

Average sediment characteristics of recent sediment 103 evaluations were used to calculate the Volumetric Fractions. Parameters described in the disposal site were obtained from the New Wilmington ODMDS Site Designation EIS (EPA, 2000), COE Bathymetric data, Nautical Charts, and The North Carolina Coastal Ocean Observing System www.NCCOOS.org, Buoy 41035. Figure 1 illustrates the ADDAMS grid input configurations. STFATE model input parameters utilized in the module were as follows:

Site Description

Parameter	Value	Units
Number of Grid Points (left to right)	45	
Number of Grid Points (top to bottom)	45	
Spacing Between Grid Points (left to right)	700	ft
Spacing Between Grid Points (top to bottom)	700	ft
Constant Water Depth	45	ft
Roughness Height at Bottom of Disposal Site	0.005 ¹	ft
Slope of Bottom in X-Direction	0	Deg.
Slope of Bottom in Z-Direction	0	Deg.
Number of Points in Ambient Density Profile Point	3	
Ambient Density at Depth = 0 ft	1.0241	g/cc
Ambient Density at Depth = 22.5 ft	1.0241	g/cc
Ambient Density at Depth = 45 ft	1.0248	g/cc

Ambient Velocity Data

Parameter	Value	Units
Water Depth	45	ft
Profile	Logarithmic	
X-Direction Velocity	0	ft/sec
Z-Direction Velocity	0.65	ft/sec

Disposal Operation Data

Parameter	Value	Units
Location of Disposal Point from Top of Grid	15,750	ft
Location of Disposal Point from Left Edge of Grid	7,875	ft
Dumping Over Depression	0	n/a

Input, Execution and Output

Parameter	Value	Units
Location of the Upper Left Corner of the Disposal Site - Distance from Top Edge	555	ft
Location of the Upper Left Corner of the Disposal Site - Distance from Left Edge	10,393.5	ft
Location of the Lower Right Corner of the Disposal Site - Distance from Top Edge	30,945	ft

Parameter	Value	Units
Location of the Lower Right Corner of the Disposal Site - Distance from Left Edge	21,106.5	ft
Duration of Simulation	14,400	sec
Long Term Time Step	600	sec

Coefficients

Parameter	Keyword	Value
Settling Coefficient	BETA	0.000 ¹
Apparent Mass Coefficient	CM	1.000 ¹
Drag Coefficient	CD	0.500 ¹
Form Drag for Collapsing Cloud	CDRAG	1.000 ¹
Skin Friction for Collapsing Cloud	CFRIC	0.010 ¹
Drag for an Ellipsoidal Wedge	CD3	0.100 ¹
Drag for a Plate	CD4	1.000 ¹
Friction Between Cloud and Bottom	FRICTN	0.010 ¹
4/3 Law Horizontal Diffusion Dissipation Factor	ALAMDA	0.0010 ¹
Unstratified Water Vertical Diffusion Coefficient	AKYO	Pritchard Expression
Cloud/Ambient Density Gradient Ratio	GAMA	0.250 ¹
Turbulent Thermal Entrainment	ALPHAO	0.235 ¹
Entrainment in Collapse	ALPHAC	0.100 ¹
Stripping Factor	CSTRIP	0.003 ¹

¹Model Default Value

New Wilmington ODMDS STFATE Input Parameters

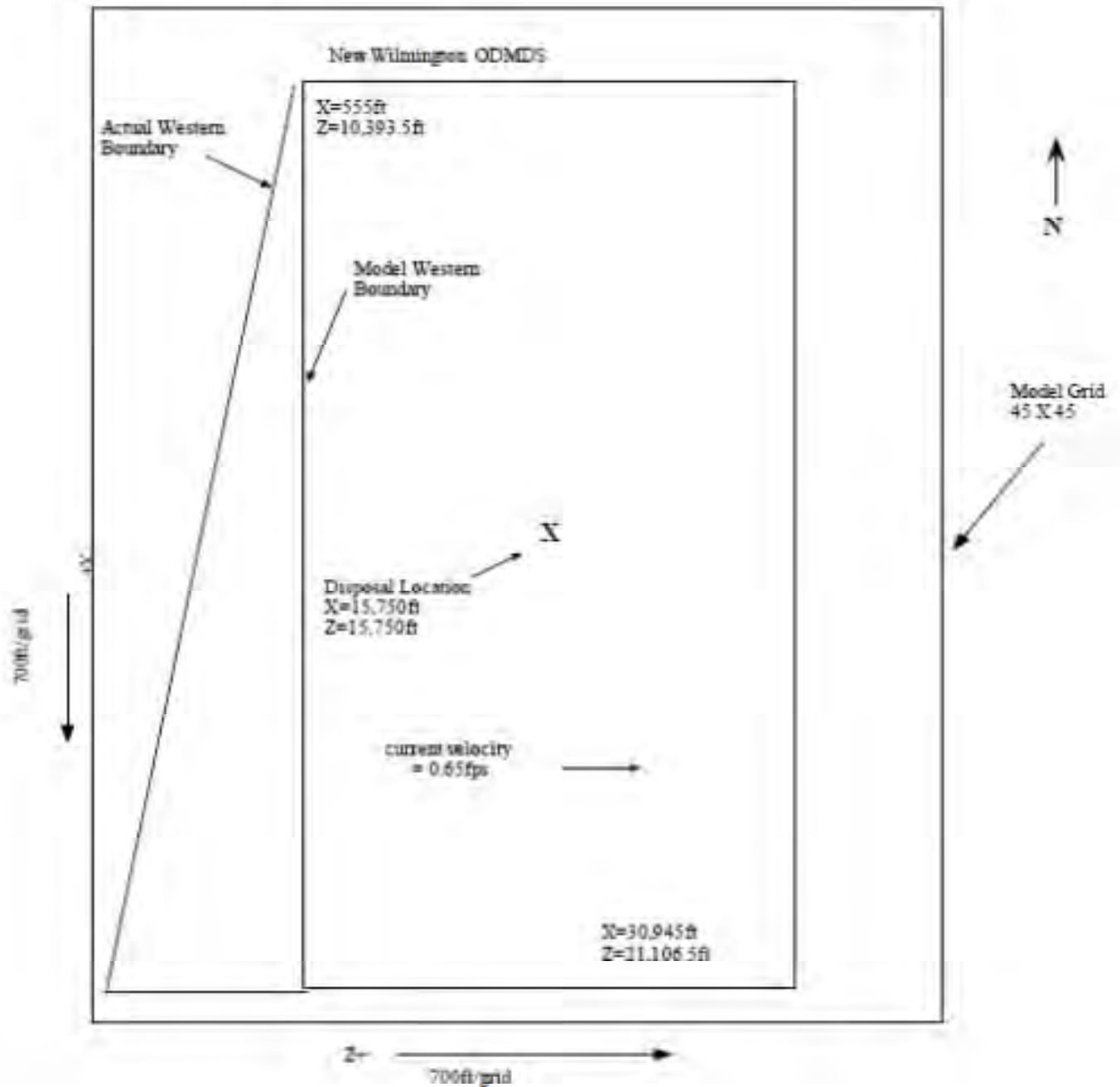


Figure 1. ADDAMS grid input configurations

APPENDIX B

GENERIC SPECIAL CONDITIONS FOR MPRSA SECTION 103 PERMITS NEW WILMINGTON ODMDS

**APPENDIX B
GENERIC SPECIAL CONDITIONS
FOR MPRSA SECTION 103 PERMITS
NEW WILMINGTON ODMDS**

I. DISPOSAL OPERATIONS

A. For this permit, the term disposal operations shall mean: navigation of any vessel used in disposal operations, transportation of dredged material from the dredging site to the New Wilmington ODMDS, proper disposal of dredged material at the disposal area within the ODMDS, and transportation of the hopper dredge or disposal barge or scow back to the dredging site.

B. The boundary coordinates of the New Wilmington ODMDS are defined by the following latitude/longitude and State Plane Coordinate system coordinates:

(NAD 27 Geographic)		(NAD 83 Geographic)		(NC State Plane - Feet)	
33 ⁰ 46.0' N	78 ⁰ 02.5' W	33 ⁰ 46.010' N	78 ⁰ 02.483' W	7535 N	2291404 E
33 ⁰ 46.0' N	78 ⁰ 01.0' W	33 ⁰ 46.010' N	78 ⁰ 00.983' W	7609 N	2299003 E
33 ⁰ 41.0' N	78 ⁰ 01.0' W	33 ⁰ 41.011' N	78 ⁰ 00.983' W	-22718 N	2299304 E
33 ⁰ 41.0' N	78 ⁰ 04.0' W	33 ⁰ 41.011' N	78 ⁰ 03.983' W	-22865 N	2284089 E

C. For this permit, the use of the New Wilmington ODMDS must be in accordance with the approved New Wilmington ODMDS Site Management and Monitoring Plan (SMMP).

D. Electronic Tracking System (ETS) monitoring/verification of dredging projects and disposal at the New Wilmington ODMDS using the USACE National Dredging Quality Management (DQM) system (formerly the Silent Inspector (SI) system) shall be implemented for this permit. Information about the DQM System can be found at <http://dqm.usace.army.mil>. The permittee's DQM system must have been certified by the DQM Support Center within one calendar year prior to the initiation of the dredging/disposal. Questions regarding certification should be addressed to the DQM Support Center at 251-690-3011. The permittee is responsible for insuring that the DQM system is operational throughout the dredging and disposal project and that project data are submitted to the DQM National Support Center in accordance with the specifications provided at the aforementioned website. The data collected by the DQM system shall be made available to the Regulatory Division/Branch of the U.S. Army Corps of Engineers, Wilmington District and to EPA Region 4. Uploading of raw project data to the DQM Support Center is required. (REGULATORY GUIDANCE LETTER No. 08-01 Date: 05 February 2008, SUBJECT: Guidance for Implementing the Silent Inspector (SI) system for dredging projects requiring Department of the Army (DA) permits)

Disposal monitoring and DQM ETS data will be reported to EPA Region 4 and Wilmington USACE (via the DQM system and email to attachment to an email to DisposalData.R4@epa.gov on a weekly basis utilizing the eXtensible Markup Language (XML) specification and protocol. EPA Region 4 and Wilmington USACE shall be notified within 24 hours if disposal occurs outside of the ODMDS or specified disposal zone or if excessive leakage occurs. Excessive leakage is any change in draft exceeding 1.5 feet from the point of departure from the dredging site to the disposal site.

E. The permittee shall not allow water or dredged material placed in a hopper dredge or disposal barge or scow to flow over the sides or leak from such vessels during transportation to the ODMDS. Excessive leakage is any change in draft exceeding 1.5 feet from the point of departure from the dredging site to the disposal site.

F. A disposal operations inspector and/or captain of any tug boat, hopper dredge or other vessel used to transport dredged material to the New Wilmington ODMDS shall insure compliance with disposal

operation conditions defined in this permit.

1. If the disposal operations inspector or the captain detects a violation, he shall report in writing the violation to the permittee immediately.

2. The permittee shall contact the U.S. Army Corps of Engineers, Wilmington District and EPA Region 4 to report the violation within twenty-four (24) hours after the violation occurs. A complete written explanation of any permit violation shall be included in the post-dredging report.

G. For disposal operations which total greater than 10,000 cubic yards, the permittee shall conduct a bathymetric survey of the New Wilmington ODMDS within two months prior to project disposal and within 60 days following project completion.

1. The number and length of the survey transects shall be sufficient to encompass the disposal zone within the ODMDS and a 1500-foot wide area around that zone. The survey transects shall be spaced at 500-foot intervals or less.

2. Vertical accuracy of the survey shall be ± 0.5 feet. Horizontal location of the survey lines and depth sounding points will be determined by an automated positioning system utilizing either microwave line of site system or differential global positioning system. The vertical datum shall be mean lower low water (mllw) and the horizontal datum shall use North Carolina State Plane or latitude and longitude coordinates (North American Datum 1983). State Plane coordinates shall be reported to the nearest 0.10- foot and latitude and longitude coordinates shall be reported as degrees and decimal minutes to the nearest 0.01 minutes.

II. REPORTING REQUIREMENTS

A. The permittee shall send the U.S. Army Corps of Engineers, Wilmington District's Environmental Branch and EPA Region 4's Wetlands, Oceans, and Coastal Branch (61 Forsyth Street, Atlanta, GA 30303) a notification of commencement of work at least thirty (30) days before initiation of any dredging operations authorized by this permit and referenced by the permit number. In addition, the permittee agrees to contact the U.S. Coast Guard (Marine Safety Office) prior to disposing of any material in the ocean disposal site.

B. The permittee shall submit to the U.S. Army Corps of Engineers weekly disposal monitoring reports. These reports shall contain the information described in the New Wilmington Site Management and Monitoring Plan, Section Disposal Monitoring on pg. 9.

C. The permittee shall send one (1) copy of the disposal summary report to the Wilmington District and one (1) copy of the disposal summary report to EPA Region 4 documenting compliance with all general and special conditions defined in this permit. The disposal summary report shall be sent within 30 days after completion of the disposal operations authorized by this permit. The disposal summary report shall include the following information:

1. The report shall indicate whether all general and special permit conditions were met. Any violations of the permit shall be explained in detail.

2. The disposal summary report shall include the following information: Corps permit number, actual start date and completion date of dredging and disposal operations, total cubic yards disposed at the New Wilmington ODMDS, locations of disposal events, and pre and post disposal bathymetric survey results (in hard and electronic formats).

III. PERMIT LIABILITY

A. The permittee shall be responsible for ensuring compliance with all conditions of this permit.

B. The permittee and all contractors or other third parties who perform an activity authorized by this permit on behalf of the permittee shall be separately liable for a civil penalty of up to \$50,000 for each violation of any term of this permit they commit alone or in concert with the permittee or other parties. This liability shall be individual, rather than joint and several, and shall not be reduced in any fashion to reflect the liability assigned to and civil penalty assessed against the permittee or any other third party as defined in 33 U.S.C. Section 1415(a).

C. If the permittee or any contractor or other third party knowingly violates any term of this permit (either alone or in concert), the permittee, contractor or other party shall be individually liable for the criminal penalties set forth in 33 U.S.C. Section 1415(b).

APPENDIX C

PUBLIC INVOLVEMENT
NEW WILMINGTON ODMDS
SITE MANAGEMENT AND MONITORING PLAN (SMMP)
November 2012

APPENDIX C

Public Involvement New Wilmington Ocean Dredged Material Disposal Site Management and Monitoring Plan (SMMP) November 2012

This SMMP has been prepared in accordance with the Guidance Document for Development of Site Management Plans for Ocean Dredged Material Disposal Sites (EPA and USACE, 1996).

Public Involvement

US EPA Region 4 / USACE Wilmington District - Joint Public Notice (JPN) and Notice of Availability (NOA) for Draft New Wilmington ODMDS SMMP published July 25 2012. JPN/NOA provided to a Wilmington District standard mailing list of Wilmington Harbor, NC stakeholders. A 30 day review period was provided.

Copies of New Wilmington ODMDS SMMP (CD and printed version) provided to NC Department of Administration, State Clearinghouse July 25, 2012.

Copies (CD or printed version) of New Wilmington ODMDS SMMP provided to Federal stakeholder agencies July 25, 2012.

New Wilmington ODMDS SMMP made available on USACE Wilmington District Website <http://www.saw.usace.army.mil/>

Public comments were incorporated into the SMMP as appropriate.

SMMP Modifications

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 will be reviewed and revised as needed or every ten years, whichever time period is shorter.