ANNUAL SEA TURTLE MONITORING REPORT
WILMINGTON DISTRICT
MAINTENANCE DREDGING - FISCAL YEAR 2006

INTRODUCTION

This report is submitted in fulfillment of requirements of the Endangered Species Act and the Section 7 Consultation - Biological Opinion for the "Continued use of hopper dredging of channels and borrow areas in the southeastern United States" (No Consultation Number provided) dated September 25, 1997 (that incorporates the August 25, 1995 Biological Opinion for these activities). Specifically this report, summarizing hopper dredging operations in Fiscal Year (FY) 2006 within the Wilmington District, is submitted in compliance with reasonable and prudent measure No. 6 – Reporting found in the August 25, 1995 Opinion.

The following hopper maintenance dredging projects (or the portion of the project that used a hopper dredge) were completed in FY 2006.

Manteo (Shallowbag Bay) (Oregon Inlet) Ocean Bar	20 October 2005 – 3 November 2005
Morehead City Harbor Ocean Bar	23 January 2006 – 8 March 2006
Wilmington Harbor Ocean Bar	09 March 2006 – 30 March 2006

The Wilmington District schedules hopper-dredging operations during the winter months (1 December through 31 March), as recommended by SAD, when water temperatures are cool and the risk of taking sea turtles is low. However, considering the heavy sea state during the winter months at Oregon Inlet, NC, hopper dredging activities are unable to adhere to the cool water months. A risk assessment was performed (Attachment 1) to address the periods of time throughout the year at Oregon Inlet when the risk of turtle takes is low in order to identify the best time to dredge during warmer weather months. Based on the information identified in the attached risk assessment, as well as documenting a history of zero takes while dredging in warm water months, the South Atlantic Division office provided the Wilmington District with a variance to dredge outside of the recommended window. A risk assessment was also performed for Morehead City Harbor identifying that the risk of taking sea turtles with a hopper dredge is low from 1 January through 31 March (Attachment 2). This more stringent Wilmington District recommended window is based on the concern that warm water rings spin off of the Gulf Stream during otherwise cool water months resulting in un-expected sea turtle take during the month of December. Considering that sea state conditions are not excessive and there are no site specific thermal dynamic concerns relative to the Gulf stream, the hopper dredging window for Wilmington Harbor is consistent with the SAD recommended 1 December through 31 March timeframe.

TURTLE MONITORING PROGRAM

As result of the consultation process, the requirement to document turtle takes by the dredges was devised. In order to accomplish this task, before hopper dredging operations commenced, they are equipped such that all inflows and overflows are 100% screened with a 4" X 4" mesh size. The configuration and location of the screens depends upon the construction of the dredge. Additionally, 24-hour monitoring by NMFS-approved turtle observers is conducted to identify any turtles or turtle parts that may be caught on these screens. Draghead deflectors are also deployed to deflect any turtles that may happen to be in, or near, the path of the draghead during excavation. The design of the deflectors is such that, when plowing at approximately a 6" depth, a sediment wave is created ahead of the draghead cushioning any contact with benthic-oriented turtles and thereby preventing injuries. As a component of the project specifications, the contractor is required to submit drawings of the turtle deflector attachment to the draghead as well as the approach angles that are necessary to attain the required 6" plowing depth for the given project depths. These submittals are reviewed and inspected prior to commencement of hopper dredging projects.

The observers inspect and clean all inflow and overflow screening at the end of each load. Dragheads and deflectors are also inspected immediately after each load, and dredge personnel are informed of any necessary repairs. Data sheets are completed daily, detailing all biological samples and debris found in the screening and dragheads. The observers also record the start, end, and discharge times for each load, the specific location of the dredging area, the type of material being dredged, weather, tide and water temperature data, the condition of the screening, and any other pertinent information. Any sea turtle encounters or takes are described on a separate incident report form. Additionally, all incidents are photographed and diagrams are made of the specimen sampled. Once documentation has been collected, observers coordinate with the Wilmington District office in order share the specimens with the North Carolina Wildlife Commission and the National Marine Fisheries Service lab in Beaufort, NC to be used for scientific purposes. Observer reports for all projects have been compiled and entered into the USACE Sea Turtle Data Warehouse at the following links:

Manteo (Shallowbag bay) (Oregon Inlet)
http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=438&Code=Project

Morehead City Ocean Bar
http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=459&Code=Project

Wilmington Harbor Ocean Bar
http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=437&Code=Project

A bridge watch for sea turtles and marine mammals is maintained during all daylight hours, except when the observer is off the bridge, cleaning and inspecting the screens and dragheads. All sightings of cetaceans and sea turtles were recorded in a bridge watch logbook. Specific sightings of right whales are reported separately and forms are sent to the District office for reporting purposes.

SCREEN CONFIGURATIONS

Turtle monitoring activities were conducted aboard the *Atchafalaya*, *Eagle I*, and *Stuyvesant* during FY 2006. Each of these vessels was required to have rigid draghead deflectors, and 100% inflow screening or overflow screening with openings starting at 4" x 4."

PROJECTS

Manteo (Shallowbag Bay) (Oregon Inlet) Ocean Bar, Dare County, NC
Atchafalaya

Contract #W912PM-05-C-0002 included maintenance dredging for the Manteo (Shallowbag Bay) (Oregon Inlet) Ocean Bar, Dare County, NC. The contractor B+B Dredging performed the work using the Atchafalaya from 10/20/05 through 11/03/05 for a total of 35 days (195 hours) of dredging time. A request to work outside of the designated turtle window (1 August to 1 December) was provided to SAD and a variance was granted on 05/03/05 based on the historical data provided in the risk assessment. A total of 273 loads were performed and approximately 172,155 cubic yards of sandy material was excavated from the channel and disposed in the nearshore disposal area off of Pea Island. A sea turtle compliance inspection was performed in accordance with the "COE Sea Turtle Inspection Checklist for Hopper Dredges (Attachment 3)." The dredge's one dragarm was equipped with a rigid draghead turtle deflector. Inflow screening was in place and, during normal flow conditions, was 100%. However, in some cases when plugging or high pressure flow events occurred, inflow screening was not sufficient as material escaped through the top of the inflow box. This observation was noted and reported as a concern. NMFS-approved turtle observers, East Coast Observers, provided 24-hour/day monitoring of dragheads and screens for each load cycle (Attachment 4). Relocation trawling was not conducted under this contract. Copies of the observer reports were provided to Craig Theriot, a CSC contractor

at the U.S. Army Engineer Research and Development Center (ERDC). Though no sea turtle takes occurred, there were 5 sea turtle sightings (3 unknown, 1 loggerhead, and 1 leatherback) within the vicinity of the dredging operation.

Morehead City Harbor and Wilmington Harbor, Ocean Bars

Contract #W912HN-06-C-0007 included maintenance dredging for the Morehead City Harbor and Wilmington Harbor Ocean Bars, NC. The contractor Bean Stuyvesant performed the work at Morehead City using the Eagle 1 from 01/23/06 through 03/09/06 (44 days) and at Wilmington Harbor using the Stuyvesant from 03/08/06 through 03/30/06 (21 days). No sea turtle abundance or relocation trawling was implemented during this contract for both the Eagle 1 and the Stuyvesant. Copies of the observer reports were provided to the U.S. Army Engineer Research and Development Center (ERDC) for uploading to the "Sea Turtle Data Warehouse."

Eagle 1

A total of 443 loads were performed and approximately 1,004,410 cubic yards of sandy material was excavated from Range A, the cutoff, and Range B and placed in the nearshore disposal area as well as the designated ODMDS. The nearshore disposal was identified as the primary disposal option with the ODMDS utilized as a secondary disposal option if the sea state conditions were deemed too dangerous by the dredge captain to safely dump in the nearshore. A sea turtle compliance inspection was performed in accordance with the "COE Sea Turtle Inspection Checklist for Hopper Dredges (Attachment 5)." As identified in the report, the Eagle 1 does not allow for safe observer access to the aft port-side inflow basket in order to physically inspect the screen contents. Incompliance with the contract specs was documented and reported through the Contracting Officer and the Safety officer. The dredge's dragarms were equipped with a rigid draghead turtle deflector. Inflow screening was in place and was 100% effective. NMFS-approved turtle observers, Coastwise Consulting, provided 24-hour/day monitoring of dragheads and screens for each load cycle. There were no documented incidental sea turtle takes on the Eagle 1; however, there were 5 right whale sightings within the vicinity of the dredging operation (Attachment 6).

Stuyvesant

A total of 111 loads were performed and approximately 776,171 cubic yards of sandy material was excavated from the Ocean Bar (Baldhead Shoal) and placed in the designated ODMDS. A sea turtle compliance inspection was performed in accordance with the "COE Sea Turtle Inspection Checklist for Hopper Dredges." Due to concerns with woody debris clogging the overflow screens resulting in the captain's inability to control hopper ullage, removal of overflow screens was approved with 100% inflow screening in place and effective. The dredge's dragarms were equipped with a rigid draghead turtle deflector. NMFS-approved turtle observers, REMSA, provided 24-hour/day monitoring of dragheads and screens for each load cycle. There were two documented incidental sea turtle takes (1 loggerhead and 1 Kemp's ridley) on the Stuyvesant and two large whale sightings (1 right whale and 1 humpback whale) (Attachment 7).

On 24 March, during load #88, a male sub-adult Kemp' ridley sea turtle was found in the mid-inflow box. Water temperature (mid-column) at the time of take was 55 degrees Fahrenheit. The turtle was picked up by Matthew Godfrey of the North Carolina Wildlife Resources Commission (NCWRC) for transport to the National Marine Fisheries Service (NMFS) Beaufort Lab for further analysis.

On 30 March, during load #111, an adult loggerhead sea turtle was found in the starboard draghead. Water temperature (mid-column) at the time of take was 58 degrees Fahrenheit. The turtle was picked up by Matthew Godfrey of the North Carolina Wildlife Resources Commission (NCWRC) for transport to the NMFS Beaufort Lab for further analysis. Dredging operations were terminated after taking the second sea turtle.

COSTS

The costs incurred in performing the turtle-monitoring program during FY 2006 include the costs for equipping and maintaining screens and draghead deflectors on contractor-owned dredges, as well as providing NMFS-approved observers. In addition to the direct costs are District costs for administration and oversight. Table #1 depicts the costs of monitoring and dredge inspection for FY 2006. However, this table does not include costs of administration and oversight activities conducted by SAJ staff, or the unquantifiable costs associated with decreased dredging efficiency which may result from the use of the draghead deflectors, and downtime experienced during cleaning of excessively fouled screens. Estimates of these increased costs are anticipated by the potential contractors during the preparation of bids, and there is no way to determine the actual value of these costs.

SUMMARY

During Fiscal Year 2006, three maintenance-dredging projects were performed using hopper dredges. Two turtles were taken lethally by the projects conducted in FY2006. Table #2 summarizes lethal turtle encounters. No abundance or relocation trawling was performed in association with these hopper dredging projects in FY2006.

TABLE #1

COSTS ASSOCIATED WITH PROTECTION OF SEA TURTLES

DURING HOPPER DREDGING

WILMINGTON DISTRICT

MAINTENANCE DREDGING

FY2006

PROJECT	COST OF MONITORING ($500/day)	COST OF TRAWLING EFFORTS	COSTS OF INSPECTIONS
Manteo (Shallowbag Bay) Oregon Inlet, NC	$17,500	NA	$2,000
Morehead City Harbor and Wilmington Harbor Ocean Bars	$32,500	NA	$3,000
TOTAL	$50,000	$0.00	$5,000

TABLE #2

INCIDENTAL TAKES OF SEA TURTLES

WILMINGTON DISTRICT

MAINTENANCE DREDGING

FY 2006

Date Taken	Project	Dredge	Channel Reach/ Borrow Area	Water Temp. (°C)	Species and Authorized Incidental Take per Fiscal Year			
					Kemp's ridley 7	Loggerhead 35	Green 7	Hawksbill 1
24 Mar 2006	Wilmington Harbor	Stuyvesant	33' 50.93N 78' 01.60W	13	1			
30 Mar 2006	Wilmington Harbor	Stuyvesant	33' 49.10N 78' 02.25W	14		1		
TOTAL TAKE					1	1	0	0

Attachment #1 – Oregon Inlet Risk Assessment

Oregon Inlet Risk Assessment

According to the 1997 Regional Biological Opinion for hopper dredging along the south Atlantic coast, there is no dredging window in North Carolina under the NMFS protocol. However, the SAD protocol restricts hopper dredging from 1 December - 31 March. Historically, the Wilmington District has requested a variance from SAD in order to hopper dredge during the summer months and avoid the high wave climate that is common in Oregon Inlet. With each request, variances have been granted for summertime dredging and no sea turtle takes have occurred. Data for sea turtle movements in and around Oregon Inlet is minimal; however, much information is known regarding sea turtle behavior in the adjacent sounds. According to Epperly et. al. (1994), inshore waters along the Atlantic Coast are important developmental and foraging habitats for threatened and endangered sea turtles. The inshore waters of temperate latitudes are seasonally re-populated with sea turtles and in Pamlico and Core Sounds, North Carolina, there is evidence that turtles immigrate into Sounds in the spring, disperse throughout the sounds in the summer, and emigrate from the sounds in the late fall and early winter. According to Epperly et. al. (1995), reports from the public and commercial fishermen indicated that sea turtles were present in inshore waters April through December. Though data for sea turtle movements through Oregon Inlet itself is limited, based on the documented significant numbers of turtles in the adjacent inshore waters, it can be assumed that turtles are using Oregon Inlet as a corridor to the Sounds and the spring and fall months are largest immigration and emigration periods. Little is known about sea turtle presence in the inlets during the summer; however, researchers indicate that they are present. The most important indicator for determining the best time to hopper dredge is temperature. Historically, hopper dredging impacts to sea turtles have occurred when water temperatures were greater than 14 degrees Celsius. According to Mathew Godfrey of the NCWRC, the general rule of thumb is that when inshore temps reach 11 degrees Celsius, turtles leave the sounds and head for warmer waters of the Gulf Stream; however, in some cases they can endure these temperatures for longer periods of time. According to Catherine McClellan of NOAA Fisheries, 85% of satellite tagged turtles (N=45) in the vicinity of Oregon Inlet were found in water temperatures greater than 14 degrees Celsius.

Water temperatures are the best guide for guestimating turtle presence; however, a precise threshold is not known. Since there is not enough data to specify exact timeframes for dredging in Oregon Inlet with least environmental impact during the warmer months, it is important to use the data that is known. According to historical water temperature data from the Duck field research facility, it appears that water temperatures are below 14 degrees Celsius until mid- to late- April and are greater than 14 degrees throughout May. During the fall months turtles use Oregon Inlet as an emigration corridor and in 2004 turtles have been documented coming through the inlet as late as Mid-November when temperatures were around 11 degrees Celsius. Therefore, using existing data on sea turtle presence in and around Oregon Inlet from Spring through Summer timeframe and following historical temperature data as an indicator for sea turtle presence, it appears that the best times to hopper dredge outside of the sea turtle window is in the first part of April or the latter part of November. Peak sea turtle abundance occurs during the spring and fall migration periods and presence during the summer is unknown but expected. However, though turtles are expected in the inlet during the summer, historical hopper dredging during this timeframe has never had a sea turtle take.

At Oregon Inlet, it is difficult to adhere to the hopper dredge turtle window due to concerns of poor weather and heavy seas. Taking into consideration that hopper dredge impacts to sea turtles are a concern during the warmer water months, the Wilmington District is working towards the potential for having an ocean certified pipeline dredge remove the material during the calmer summer months and place it on Pea Island. The potential exists to use a hydraulic pipeline dredge to perform this work; however, the Wilmington District must consider all of the variables in this environment, including the possibility that hopper dredging is our only option. Though hopper dredges are know to take turtles, no historical hopper dredging activities at Oregon Inlet have taken a turtle; thus, based on this data, the Wilmington District believes the risk of hopper dredging during the warmer months at Oregon Inlet is low.

Literature Cited:

Epperly, S.P., J. Braun, and A.J. Chester. 1994. *Aerial Surveys for sea turtles in North Carolina inshore waters*. Fisher Bulletin, 93:254-261.

Epperly, S.P., J. Braun, and A. Veishlow. 1995. *Sea Turtles in North Carolina Waters*. Conservation Biology. Volume 9; No. 2; 384-394.

Personal Communication. Mathew Godfrey. North Carolina Wildlife Resources Commission. (252) 728-1528

Personal Communication. Joann Braun-Mcniel. NMFS/NOAA Beaufort Lab. (252) 728-8763.

Personal Communication. Catherine McClellan. NMFS/NOAA Beaufort lab. (252) 504-7640.

http://www.seamap.env.duke.edu

http://www.frf.usace.army.mil

Attachment #2 - Comments on Hopper Dredging Near Morehead City

The most recent consultation history for hopper dredging of the Morehead City Harbor vicinity consists of three separate biological opinions (BO) provided by the National Marine Fisheries Service (NMFS), dated 25 November 1991, 25 August 1995 (Attachment 1), and 25 September 1997 (Attachment 2). The 1991 BO stated that continued unrestricted hopper dredging along the Southeast Region's Atlantic coast could jeopardize the continued existence of listed sea turtles. Therefore, a reasonable and prudent alternative provided in the BO included seasonal restrictions of hopper dredging from 1 December through 31 March in channels from North Carolina through Canaveral Harbor, Fl. The implementation of seasonal restrictions on hopper dredge operations proved it self effective in reducing sea turtle takes throughout the South Atlantic; however, more research assessing sea turtle abundance within channels was recommended by NMFS. In 1995, a study performed by Dickerson *et. al*. evaluated sea turtle abundance in six South Atlantic U.S. channels (Canaveral Harbor, FL; Kings Bay, FL; Brunswick Harbor GA; Savannah Harbor, GA; Charleston Harbor, SC; and Morehead City Harbor, NC) and looked at species composition, population structure, and spatial and temporal (seasonal) distributions. This study was the first to scientifically evaluate sea turtle abundance and temporal distribution in Morehead City Harbor and concluded that fewer sea turtles were captured when water temperatures were at or below 16°C; thus, 16°C was recommended as a conservative threshold indicator for a reduced risk of sea turtle take during hopper dredging operations. Though this study helped define water temperature as a critical factor in sea turtle occurrence within these six channels, additional studies were recommended to refine site specific factors that may influence sea turtle presence (*i.e.* immigration/emigration periods, influence of coastal dynamics on water temperature, etc.).

In 1995, the Corps developed a new biological assessment (BA) and requested that NMFS consider expansion of the dredging window given the Corps' conservative take record since 1991, the willingness to continue dredging in the cooler months, during periods of reduced risk, to the maximum extent practicable, the willingness to shut down when take numbers exceed anticipated numbers, and the implementation of the turtle deflecting draghead on all hopper dredges to reduce take. The subsequent 1995 NMFS BO did not include a hopper dredging window from Pawleys Island, SC through North Carolina (considering the Corps' documented case in the BA). However, a series of new Terms and Conditions were identified to minimize take including an emphasis on the incorporation of the new turtle deflecting draghead as a mechanism to reduce takes.

The removal of a hopper dredge window requirement was incorporated into the 1997 Regional Biological Opinion for hopper dredging along the South Atlantic coast provided the Corps continued to minimize sea turtle takes by refining the turtle deflecting dragheads, continue working in the cool water months to the maximum extent practicable, and shutting down operations when high numbers of turtle takes occur before approaching the incidental take limit for a given species. Prior to the release of the 1997 BO, NMFS required the Corps to implement a South Atlantic Division (SAD) protocol (Attachment 3) to effectively manage take numbers throughout each district. This protocol expresses the Corps commitment to dredge during cool water periods in channels where sea turtle abundance is high or with substrates that render the turtle deflecting draghead ineffective. In North Carolina, the SAD protocol restricts dredging from 1 December through 31 March in Wilmington Harbor where turtle deflecting dragheads could not be used effectively. Though Morehead City was not included in this protocol, the Wilmington District extended this window commitment to include Morehead City Harbor hopper dredging operations based on a history of turtle takes when working during warm water months. The Wilmington District's willingness to reduce takes to the maximum extent practicable by utilizing water temperature and take data to direct low risk time frames for hopper dredge operations was strongly supported by SAD and NFMS as another example of the Corps continued effort to minimize takes.

Since 1992 a total of 21 sea turtles have been killed, within the vicinity of Morehead City Harbor, by hopper dredge operation with as many as 6 turtles being taken in a single project (Attachment 4). Between 1996-1999, after the release of the 1995 and subsequent 1997 BO's, which did not require a seasonal dredging window for North Carolina, a total of 14 sea turtle takes occurred in just 4 years. These significant numbers of turtle takes over the past 14 years suggests that the abundance of sea turtles within the Morehead City Harbor vicinity is higher than previously thought and that site specific variables (*i.e*. the

influence of warm water gyres from the gulfstream during otherwise cool months, reduced effectiveness of the turtle deflecting draghead due to uneven bottom contours, and emigrating and immigrating sea turtles within channel during the spring and fall months) needed to be considered when assessing the risk of sea turtle presence. According to Epperly *et. al*. (1994), inshore waters along the Atlantic Coast are important developmental and foraging habitats for threatened and endangered sea turtles. The inshore waters of temperate latitudes are seasonally re-populated with sea turtles and in Pamlico and Core Sounds, North Carolina, there is evidence that turtles immigrate into Sounds in the spring, disperse throughout the sounds in the summer, and emigrate from the sounds in the late fall and early winter. According to Epperly *et. al*. (1995), reports from the public and commercial fishermen indicated that sea turtles were present in inshore waters April through December. According to Mathew Godfrey of the NCWRC, when inshore water temperatures reach 11°C, sea turtles leave the sounds and head for warmer waters of the Gulf Stream or face the risk of becoming cold stunned; however, in some rare cases they can endure these temperatures for longer periods of time. According to Catherine McClellan of NOAA Fisheries, 85% of satellite tagged turtles (N=45) in the vicinity of Oregon Inlet were found in water temperatures greater than 14 degrees Celsius.

Beginning in FY 2000, the Wilmington District implemented an even more stringent 1 January to 31 March hopper dredge window for Morehead City, understanding that water temperature, immigration/emigration, bottom topography, etc. are critical factors contributing to the high level of sea turtle take. The implementation of this more stringent window was done in order to increase the level of confidence that water temperatures were cool enough to reduce the presence of sea turtles and that the emigration period for movement of turtles out of the sounds was finished. Since 2000, only one sea turtle was killed (19 March 2003) when dredging during this 1 January to 31 March timeframe. In 2002, a total of 5 sea turtles were killed during a permitted hopper dredging project in Bogue Banks that did not adhere to this window.

The figure provided in Attachment 1 displays the history of hopper dredging takes, within the vicinity of Morehead City Harbor, from 1992-2006 relative to month and cubic yardage dredged. From 1992-2006, when dredging within the 1 January to 31 March window, approximately 11,327,000 CY (76% of total material dredged from 1992-2006) of material was removed using a hopper dredge with only 1 sea turtle take. When dredging outside of this timeframe, a total of 20 sea turtles were killed while only dredging 3, 643,000 CY (24% of the total material dredged from 1992-2006). Therefore, the Corps of Engineers was able to accomplish over 75% of its dredging requirements within the window of 1 January to 31 March while minimizing sea turtle interactions to one take. Based on the Corps history of dredging within the Morehead City Harbor vicinity, the documented sea turtle takes at various timeframes throughout the year, and the increased understanding of hopper dredge and sea turtle interaction risks based on site specific variables, the Wilmington District continues to uphold a commitment to accomplish the dredging mission at Morehead City Harbor while minimizing risk of sea turtle take, through the incorporation of a 1 January to 31 March dredging window, to the maximum extent practicable.

Literature Cited

Dickerson, D.D., Reine, K.J., Nelson, D.A., and Dickerson, C.E., Jr. (1995). "Assessment of sea turtle abundance in six South Atlantic U.S. channels," Miscellaneous Paper EL-95-5, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Epperly, S.P., J. Braun, and A.J. Chester. 1994. *Aerial Surveys for sea turtles in North Carolina inshore waters*. Fisher Bulletin, 93:254-261.

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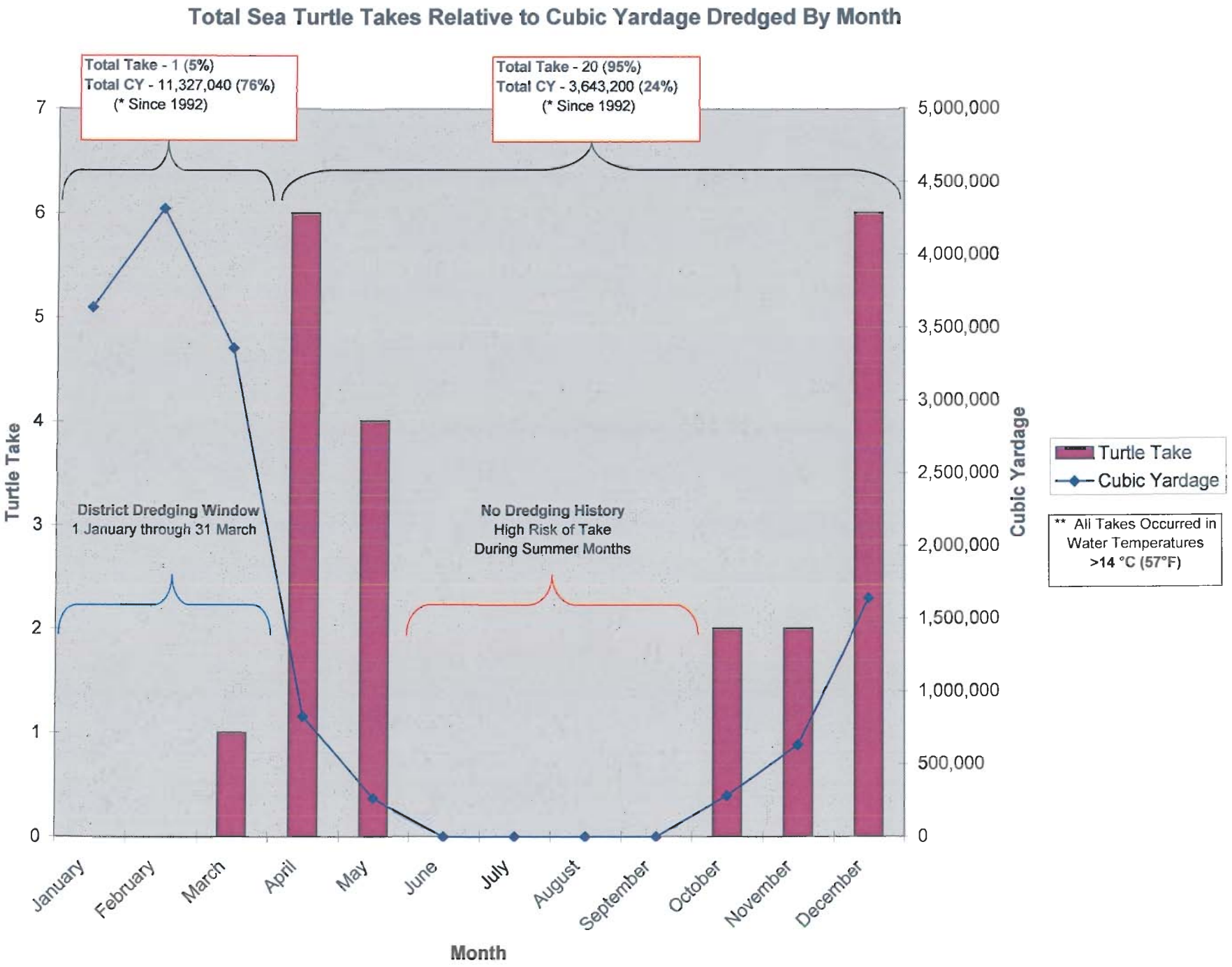
Total Sea Turtle Takes Relative to Cubic Yardage Dredged By Month
Total Take - 1 (5%)
Total CY - 11,327,040 (76%)
(* Since 1992)
Total Take - 20 (95%)
Total CY - 3,643,200 (24%)
(* Since 1992)
Turtle Take
Cubic Yardage
District Dredging Window
1 January through 31 March
No Dredging History
High Risk of Take
During Summer Months
** All Takes Occurred in Water Temperatures >14 °C (57°F)
Turtle Take
Cubic Yardage
Month
January
February
March
April
May
June
July
August
September
October
November
December
0
1
2
3
4
5
6
7
0
500,000
1,000,000
1,500,000
2,000,000
2,500,000
3,000,000
3,500,000
4,000,000
4,500,000
5,000,000

Year	Project	Months	Dredge	Relocation Trawling	Total Takes	Take Date By Dredge	Take Species	Water Temp (Celsius)	Cubic Yardage
2006	Ocean Bar	01/23 to 03/09	Eagle 1	No	0				1,004,410
2005	Ocean Bar	02/24 to 03/19	Bayport	No	0				285119
2004	Boge Banks Phase II	03/23 to 03/31	RN Weeks, BE Lindholm	Yes	0				243,076
2004	Morehead City Ocean Bar/Indian Beach Salter Path 933	02/08 to 03/31	RN Weeks, BE Lindholm	No	0				789,998
2003	Boge Banks Phase II - Emerald Isle	02/05 to 03/27	RN Weeks, BE Lindholm	Yes	1	03/19/03 (R.N. Weeks)	1 Loggerhead	03/19 - 16	989895
2002	Ocean Bar (Range A; Cutoff)	02/13 to 02/22	Mcfarland	No	0				82,160
2002	Bogue Banks Phase I - PKS and IB	11/26 to 04/11	Manhatten Island, Sugar Island, Dodge Island	Yes	5	12/15 (Manhatten Island); 04/11 (Sugar Island)	12/15 - 2 loggerheads and 2 kemps; 04/11 - kemps	12/15 - 18; 04/11 - 16	1869390
2001	Ocean Bar	02/07 to 03/10	Bayport	No	0				523358
2000	Ocean Bar	01/01 to 03/11	Dodge Island, Northerly Island, Sugar Island	No	0				1793378
1999	Ocean Bar (Beaufort Inlet Channel)	10/09 to 10/25	Mcfarland	No	2	10/25/1999	1 Green and 1 Loggerhead	10/25 -20.6	243,463
1999	Ocean Bar	11/26 to 03/09	Manhatten Island, Sugar Island, Northerly Island, Dodge Island	No	3	11/26 (Sugar Island); 11/27 (Sugar Island); 12/02 (Sugar Island)	11/26 - loggerhead; 11/27 - loggerhead; 12/02 - loggerhead	11/26 - 17.2; 11/27 - 17.2; 12/02 - 16	952364
1998	Ocean Bar	11/03 to 02/16	Northerly Island, Padre Island, Sugar Island	No	1	12/9/1998 (Padre Island)	1 Loggerhead	12/09 - 12.8	2240267
1997	Ocean Bar	04/25 to 05/15	Manhatten Island	Yes	6	04/27; 04/30; 05/01; 05/15; 05/15; 05/02	6 loggerheads	04/27 - 16.7; 04/30 - 16.7; 05/01 - 12.7; 05/15 - 20; 05/15 - 20; 05/02 - 17.8;	267655
1996	Ocean Bar	04/02 to 05/01	Padre Island	No	2	04/21; 04/27	2 loggerheads	04/21 - 15.6; 04/27 - 21.1	771539
1995	Ocean Bar	01/01 to 02/23	Eagle 1	No	0				815600
1994	Ocean Bar	01/06 to 04/04	Eagle 1, Mermentau, Ouachita	No	1	4/2/1994 (Eagle 1)	Loggerhead	04/02 - 15.5	2098600
1992	Ocean Bar	12/26 to 01/30	Eagle 1	Yes	0				NA
Total					21	RN Weeks - 1; Manhatten Island - 10; Sugar Island - 4; McFarland - 2; Padre Island - 3; Eagle 1 - 1	Loggerhead - 17; Kemp's Ridley - 3; Green - 1	Max. - 21.1; Min. - 12.8; Average - 19.3; Comment - (High Risk at temp. > 14)	14,970,272

Attachment #3 – COE Sea Turtle Inspection Checklist for Hopper Dredges

CESAW-TS-PE 26 September 2005

MEMORANDUM FOR RECORD:

SUBJECT: W912PM-05-C-0010, FY05 Maintenance Dredging, Manteo (Shallowbag Bay) (Oregon Inlet) Ocean Bar - Sea Turtle Compliance Inspection Trip Report.

1. On 22 September 2005, an inspection of the hopper dredge *Atchafalaya*, working in Oregon Inlet, was performed to assess compliance with project specifications and the "COE Sea Turtle Inspection Checklist for Hopper Dredges." Submittal requirements and other aspects of the Oregon Inlet contract, as they relate to the inspection protocol, were reviewed and discussed with Tim Ekren, the current project manager.

2. At approximately 1400, Mr. Doug Piatkowski of the Wilmington District met with Tim Ekren, B+B project manager, and Trish Bargo, East Coast Observers, at the Oregon Inlet Fishing Center and boarded the *Atchafalaya* via crew boat at approximately 1430. Once on-board the dredge, the captain, dragtender, CQC, and turtle observers were briefed on the Corps intentions in performing the sea turtle compliance inspection. The purpose of the field visit was to inspect the dredge according to the COE Sea Turtle Inspection Checklist, developed by Phil Bates of CESAJ, prior to commencement of dredging. The inspection protocol guides the Corps inspectors through requirements that must be carefully checked so that the Corps Districts are in compliance with the Regional Biological Opinion requirements as well as SAD hopper dredge requirements. The observers on board representing East Coast Observers Daylin Muñoz and Heather Scadova.

3. Mr. Doug Piatkowski performed a walkthrough of the dredge in accordance with paragraph 3a-n of the inspection protocol. The contractor was compliant with all components in the protocol, however; a few issues are worth documenting:

a.) Between 1015-1122 HRS On 21 September 2005 there was a hydraulic failure resulting in a slow release of sediment all the way to the nearshore dump site. An estimated 598 CY of material were short-dumped.

b.) During the 2003 Manteo Ocean Bar contract, the inflow screening on the *Atchafalaya* was documented as incompliant with the project specifications. Due to high pressure flows coming through the inflow box, water and sand were flowing through the top of the inflow box resulting in less than 100% screening efficiency. During the inspection on 22 September 2005, inflow pressure was not as high and screening was functioning at 100% effectiveness. Considering that the inflow screening design has not changed since 2003, this inflow screening issue was discussed with the captain, project manager, drag tender, and the observers on board. The observers are aware of the potential problem and will report any screening deficiencies.

c.) The contractor was directed during the pre-construction conference to provide calculations for the approach angle at the various depths dredging depths for this contract. These calculations were not on board during the time of the inspection. The project manager, Tim Ekren, indicated that he would provide these calculations for the varying depths as soon as possible. Though the calculations were not immediately available, the successful paint test indicated that the draghead was being operated according to the contract specifications.

4. A paint test was performed on the deflector in order to assure that the deflectors were plowing at about a 6" depth. As indicated in photos 6 & 7, about 6" of the paint had worn off the turtle excluding draghead indicating compliance.

5. It was discussed with the dragtender how essential it is to be sure the draghead is on the bottom and plowing at all times in order to reduce sea turtle takes. In our conversation, the issue of ship crabbing was discussed. Though ship crabbing is inevitable while working in the harsh environment of Oregon Inlet with a hopper dredge containing one dragarm, it is critical that crabbing of the draghead be minimized to the maximum extent practicable and the dragtender and first mate should work together to avoid ship crabbing of the draghead. It is believed that during these periods of time when the dragheads are lifted off the bottom turtles are most vulnerable to being sucked through the draghead. Tim Ekren (or his substitute project manager) will provide the Corps, via disc or email, with Silent Inspector data (Draghead elevation, slurry density and velocity, pump RPM, etc.), which will document any instance where the dredge is lifted off the bottom while the pumps are still running.

6. New observer sheets and an updated genetics sampling protocol sheet were provided to Daylin Muñoz for future use. Trish Bargo indicated that all State endangered species permits have been obtained by Matthew Godfrey of the NCWRC. Also, copies of observer resumes will be provided in order to verify observer qualifications.

7. The COE Sea Turtle Inspection Checklist for Hopper Dredges and representative photographs taken by Mr. Doug Piatkowski are attached for informational purposes.

8. If there are any questions, contact Doug Piatkowski at 910-251-4908.

COE SEA TURTLE INSPECTION CHECKLIST FOR HOPPER DREDGES
For
COE Projects or COE/Army Permitted Project

1. Read contract plans and specs and/or all applicable permits (Dept. of the Army Permit, State Permits) to determine the contract or permit requirements for the protection of endangered sea turtles (each District specs or permit may be different).
2. Read the Biological Opinion and any COE Division Protocol if available.
3. Develop a list of inspection requirements:
    a. Leading edge angle (90 degrees or less).
    b. Approach angle or leading edge plowing depth (6 inches or more).
    c. Aft rigid attachment of deflector to the drag head (hinged or trunnion).
    d. Forward deflector attachment point (adjustable pinned or cable/chain with stop).
    e. Opening between drag head and deflector (4”X 4” max).
    f. Is screening of dredged material required?
    g. Are inflow screens or overflow screens or both required?
    h. Are inflow basket screen openings 4”X 4” max and is 100% of the dredged material being screened.
    i. Lighting of inflow and overflow screens and proper access for cleaning (must meet EM 385-1-1).
    j. Structural design of deflector (per approved deflector submittal).
    k. Dredge operational requirements (starting /stopping dredge pump, draghead plugging, razing draghead, turning the dredge).
    l. Is dredging data recording (drag elevation, slurry density & velocity) required by specs or permit? If so is it being collected?
    m. Is turtle trawling required by specs or permit? If so is it being performed?
    n. Turtle observers requirements (12 or 24 hours req.)
4. Review turtle deflector submittal (do not allow dredging to start until submittal is approved):
    a. Structural soundness
    b. Leading edge angle (90 degrees or less).
    c. Approach angles for dredging depths.
    d. 4”X 4” opening between deflector and draghead.
5. Assure the CQC performs a pre-dredging inspection:
    a. CQC is required to review and inspect all items in paragraph 3a-n.
6. Assure the CQC performs a startup-dredging inspection:
    a. CQC is required to check the turtle deflector to see if the deflector is installed and adjusted for the required dredge depth of this project in accordance with the approved deflector submittal.
    b. CQC is required to assure the drag tenders are operating the dredge pump and draghead in accordance with the specs/permit.
    c. CQC should perform a paint test to assure deflector is plowing at least 6” into the dredge material.
7. QA should perform dredging operation inspection:
    a. Review and inspect all items in paragraph 3a-n.

b. Inspect the turtle deflector to see if the deflector is installed and adjusted for the required dredge depth of this project in accordance with the approved deflector submittal.
c. Require the contractor to perform paint test to assure deflector is plowing at least 6” into the dredge material (over penetration of the deflector will reduce production and increase fuel consumption of the dredge).
d. Ride the dredge though at least one dredging cycle (dredging, to the dump, and back to the dredge site).
e. Watch the drag tender to assure he is operating the dredging equipment in accordance with the plans and specs (starting/stopping dredge pump, lower dragarm angle, swell compensator, slurry specific gravity, plugging of the draghead, ship crabbing).
f. Lockout tagout procedure for cleaning the inflow and overflow screens (must meet EM 385-1-1).
g. Talk to turtle observers to assure they are aware of contract and permit requirements and are performing inspection of screens and deflectors and reporting any maintenance required to the dredge personnel. Assure that correct turtle observer forms are being used and filled out properly.
h. Talk to Dredge Captain about maintaining the screens and deflectors.
h. All pre-dredge/post-dredge and follow up inspections should be noted in the CQC Daily Reports.

COMMENTS:_____

COE Inspector:
Name:__Doug Piatkowski_____
Office Symbol:___CESAW_____Date of Inspection:___22 September 2005_____

Photo 1. Inflow screening performing at 100% efficiency during the 2005 Manteo Ocean Bar contract.

Photo 2. Inflow screening performing at <100% efficiency during a previous Manteo Ocean Bar contract.

Photo 3. Overflow operation on-board the "Atchafalaya." Overflow screening is not possible; thus, 100% inflow screening is critical.

Photo 4. 4x4 inflow screening with "open-box" design.

Photo 5. Observer cleaning out the inflow screens.

Photo 6. Paint test of the turtle deflecting draghead.

Photo 7. Post-paint test picture indicating that the draghead was plowing at a depth of 6-inches.

Attachment #4 – Daily Load Sheets – Manteo Project

Available from the USACE Sea Turtle Warehouse

http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=438&Code=Project

Attachment #5 – COE Sea Turtle Inspection Checklist for Hopper Dredges

Eagle 1

CESAW-TS-PE 16 November 2006

MEMORANDUM FOR RECORD:

SUBJECT: W912HN-06-C-0007, FY06 Maintenance Dredging, Morehead City Harbor (Ocean Bar) Carteret County, NC / Wilmington Harbor Ocean Bar Brunswick County, NC - Sea Turtle Compliance Inspection Trip Report (Morehead City Harbor portion).

1. Representatives from the district office (Rolando Serrano and Doug Piatkowski) met with representatives from Bean Styvesant (Saul Prejean – dredging superintendent) and Coastwise consulting (Andrew Brown) aboard the Eagle 1 hopper dredge working in Morehead City Ocean Bar at the Cutoff and Range A. A sea turtle compliance inspection was conducted on board the Eagle 1 in accordance with the COE Sea Turtle Inspection Checklist, prior to commencement of dredging.

2. Turtle deflector submittals were reviewed with the superintendent and the CQC. Approach angle calculations and turtle deflector drawings that were submitted with the EPP were not consistent with the operating dredge. New approach angle calculations and subsequent gimble depths relative to the varying project depths were provided and approved prior to dredging commencement. A paint test was performed on both the starboard and port dragheads during the first load. The paint test confirmed that the documented approach angle and gimble depths were accurate to keep the turtle deflector plowing at ~6" for the given project depths. The captain performed a walkthrough of the dredge verifying that all required screening measures (inflow baskets) were in place and consistent with the project specifications (see comment 4). The captain requested that the wier overflow caps be removed without screening to allow water release from the hopper during the months of January and February (consistent with the specs). This was approved only during the months of January and February when water temperatures are <50 F and turtles are not present in the channel. During the month of March, 4X4 screens will be in place to cover these overflow weirs. Once the physical inspection of equipment was complete we reviewed components of the contract specs for the protection of endangered sea turtles.

3. The Silent Inspector (SI) data monitoring computer on board Eagle 1 was up and running and was receiving data from the Contractor's DSS system. The necessary Project, Sub-project, contract #, etc. was added to the SI data explorer following the guidelines outlined in the SI user manual. Data will be downloaded on a daily to weekly basis by the contractor or the QA inspector and will be sent to Doug Piatkowski via thumbdrive or CD. Upon receipt, the SI data will be exported to the SI database and reviewed for contract compliance.

4. As identified in section 01355A of the project specifications:

"*The Contractor shall install and maintain floodlights suitable for illumination of the baskets or screening to allow the observer to safely monitor the hopper basket(s) during nondaylight hours*

or other periods of poor visibility. Safe access shall be provided to the inflow and overflow baskets or screens to allow the observer to inspect for turtles and sturgeons, or parts thereof, and clean the baskets or screens for the next loading cycle."

During our visual inspection, it was clear that there was no safe access for the observers to physically inspect the port-side mid-ship inflow basket (photo 2). The only way to inspect this inflow box is to observe from the starboard side catwalk. Though you can see the box from the starboard side, the observation would not be considered 100%. Given a situation where debris clogs the screens, it would be nearly impossible to discern a piece of turtle intestine from some other debris without physically sorting through the material. The observer on-board the dredge commented on the difficulties of inspecting this port side mid-ship box. Considering that we are currently in the cold water months when 100% screening is not required, the other screens are in place and accessible, and the observers can still perform a rough inspection from the starboard side, I would recommend that the contractor can continue operating as is through February 28. However, the contractor should begin preparations for constructing a port side catwalk in order to provide safe access to the currently inaccessible inflow box by March 1 when turtles will likely be present.

5. The COE Sea Turtle Inspection Checklist for Hopper Dredges and photographs of the Eagle 1 inflow screening are attached for informational purposes.

6. If there are any questions, contact Doug Piatkowski at 910-251-4908.

COE SEA TURTLE INSPECTION CHECKLIST FOR HOPPER DREDGES
For
COE Projects or COE/Army Permitted Project

1. Read contract plans and specs and/or all applicable permits (Dept. of the Army Permit, State Permits) to determine the contract or permit requirements for the protection of endangered sea turtles (each District specs or permit may be different).
2. Read the Biological Opinion and any COE Division Protocol if available.
3. Develop a list of inspection requirements:
    a. Leading edge angle (90 degrees or less).
    b. Approach angle or leading edge plowing depth (6 inches or more).
    c. Aft rigid attachment of deflector to the drag head (hinged or trunnion).
    d. Forward deflector attachment point (adjustable pinned or cable/chain with stop).
    e. Opening between drag head and deflector (4”X 4” max).
    f. Is screening of dredged material required?
    g. Are inflow screens or overflow screens or both required?
    h. Are inflow basket screen openings 4”X 4” max and is 100% of the dredged material being screened.
    i. Lighting of inflow and overflow screens and proper access for cleaning (must meet EM 385-1-1).
    j. Structural design of deflector (per approved deflector submittal).
    k. Dredge operational requirements (starting /stopping dredge pump, draghead plugging, razing draghead, turning the dredge).
    l. Is dredging data recording (drag elevation, slurry density & velocity) required by specs or permit? If so is it being collected?
    m. Is turtle trawling required by specs or permit? If so is it being performed?
    n. Turtle observers requirements (12 or 24 hours req.)
4. Review turtle deflector submittal (do not allow dredging to start until submittal is approved):
    a. Structural soundness
    b. Leading edge angle (90 degrees or less).
    c. Approach angles for dredging depths.
    d. 4”X 4” opening between deflector and draghead.
5. Perform pre-dredging inspection:
    a. Review and inspect all items in paragraph 3a-n.
6. Perform dredging operation inspection:
    a. Review and inspect all items in paragraph 3a-n.
    b. Train USACE QAR’s, contractor’s CQC System Manager and Turtle Observers how to perform a turtle compliance inspection in accordance with this checklist.

c. Require the contractor to perform paint test to assure deflector is plowing at least 6” into the dredge material (over penetration of the deflector will reduce production and increase fuel consumption of the dredge).
d. Ride the dredge though at least one dredging cycle (dredging, to the dump, and back to the dredge site).
e. Watch the drag tender to assure he is operating the dredging equipment in accordance with the plans and specs (starting/stopping dredge pump, lower dragarm angle, swell compensator, slurry specific gravity, plugging of the draghead, ship crabbing).
f. Lockout tagout procedure for cleaning the inflow and overflow screens (must meet EM 385-1-1)..
g. Talk to turtle observers to assure they are aware of contract and permit requirements and are performing inspection of screens and deflectors and reporting any maintenance required to the dredge personnel.
h. Talk to Dredge Captain about maintaining the screens and deflectors.

COMMENTS:_____
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COE Inspector:
Name__Doug Piatkowski and Rolando Serrano
Date of Inspection: 23 Jan 2006

Attachment #6 – Right Whale Sightings

Morehead City Harbor and Wilmington Harbor, Ocean Bars

Eagle 1

ENDANGERED SPECIES OBSERVER PROGRAM

Large Whale Observation Data

(Append to Daily Report)

Dredge EAGLE 2

Project Morehead: Ocean Bar

Date: 01 / 24 / 06

Load # 13 Times: Start 1256 End 1350 Dump 1418

Location (Lat/Long) 34° 37.912N 76°42.895W Tide High Beau Sea State 2

Wind Direction NE Speed 4-7K Cloud Cover (%) 85 H20 Surf. Temp 52°F

Sighting #1. Time 1424 - 1442 Vessel Location (Lat/Long) 34° 37.912X 76°42.895W

Magnetic bearing to sighting SE Estimated Distance 1½ - 2 miles

Species observed RIGHT WHALE (Eubalaena glacialis) # of animals 1

Vessels Heading EASTERLY Animal's heading SW

Comments (visual description (length, color, flukes, fin) behaviors observed, surfacing intervals, duration of observation)

SMALL COAST GUARD VESSEL # 47287 CALLED IN THE INITIAL SIGHTING BETWEEN BUOYS 3/4 – 5/6. THEY SAID WHALE SURFACED VERY CLOSE, DEFINITE V-SHAPED BLOW AND NO DORSAL FIN. I WAS ABLE TO SEE WHALE AT SURFACE (DISTANCE 1½ - 2 MILES) 3 TIMES. MY LAST SIGHTING (1 MILE) INCLUDED A BLOW AND A SOUNDING. I COULD VERIFY THE SPECIES FROM LACK OF DORSAL FIN. WHALE HEADED S.W.

Sighting #2 Time_____ Vessel Location (Lat/Long)_____ X_____

Magnetic bearing to sighting_____ Estimated Distance_____

Species observed_____ # of animals_____

Vessels Heading_____ Animal's heading_____

Comments (visual description (length, color, flukes, fin) behaviors observed, surfacing intervals, duration of observation)

Detailed observations and general comments (who was notified, was whale's behavior influenced by dredging, etc.)

Observer(s) on Duty : Andrew BROWN

ENDANGERED SPECIES OBSERVER PROGRAM

Large Whale Observation Data

(Append to Daily Report)

Dredge Eagle 1

Project Morehead-Ocean Bar

Date: 02 / 11 / 06

Load # 193 Times: Start 0430 End 0730 Dump 0801

Location (Lat/Long) 34°40.016N/076°41.512W Tide ebb Beau Sea State 1

Wind Direction NNE Speed 8-11kts Cloud Cover (%) 100% H20 Surf. Temp 48° F

Sighting #1. Time 0807 Vessel Location (Lat/Long) 34°40.016 X 076°41.512

Magnetic bearing to sighting 40° Estimated Distance 1/4 mile

Species observed E. glacialis # of animals 1

Vessels Heading ESE Animal's heading ESE

Comments (visual description (length, color, flukes, fin) behaviors observed, surfacing intervals, duration of observation)

Northern right whale spotted off port side, slowly traveling just under surface. Rolled 2-3 times, fluked/sounded 3x, short (~2 min) dives. Watched until appox. 0830 when we lost sight of it as we approached dig site.
Notified Captain, Chris Slay, USACE - Doug Piatkowski, + NMFS pager#.
Animal's behavior did not change during observation (did not flee, seem skittish, etc.)

Sighting #2 Time _____ Vessel Location (Lat/Long) _____ X _____

Magnetic bearing to sighting _____ Estimated Distance _____

Species observed _____ # of animals _____

Vessels Heading _____ Animal's heading _____

Comments (visual description (length, color, flukes, fin) behaviors observed, surfacing intervals, duration of observation)

Detailed observations and general comments (who was notified, was whale's behavior influenced by dredging, etc.) _____

Observer(s) on Duty : Sasha Ertl

ENDANGERED SPECIES OBSERVER PROGRAM

Large Whale Observation Data

(Append to Daily Report)

Dredge Eagle I.

Project Morehead : Ocean Bar

Date: 2 / 14 / 06

Load # 225 Times: Start 16:02 End 17:10 Dump 17:39

Location (Lat/Long) 34°40.702N 076°40.169 Tide RISING (H-2:40) Beau Sea State 4

Wind Direction WSW-SW Speed 20KTS. Cloud Cover (%) 10% H20 Surf. Temp 47.5°F

Sighting #1. Time 17:04 Vessel Location (Lat/Long) N34°40.425X W/076° 40.332

Magnetic bearing to sighting ~165° Estimated Distance ¾ - 1 mi.

Species observed Eubalaena glacialis # of animals 1

Vessels Heading 185° Animal's heading appeared to be heading E

Comments (visual description (length, color, flukes, fin) behaviors observed, surfacing intervals, duration of observation)

A Northern Right whale was sighted ~ 1mi away. Due to weather and distance was only able to observe for 20 min. The whale blew about 8 times. At 1 time there was a small splash observed back with no dorsal fin. The whale did not raise its fluke. . Notified the Captain, project Manager, Chris Slay, USACE and NMFS pager #. Slow Roll was observed.

Sighting #2 Time_____ Vessel Location (Lat/Long)_____X_____

Magnetic bearing to sighting_____ Estimated Distance_____

Species observed_____ # of animals_____

Vessels Heading_____ Animal's heading_____

Comments (visual description (length, color, flukes, fin) behaviors observed, surfacing intervals, duration of observation)

Detailed observations and general comments (who was notified, was whale's behavior influenced by dredging, etc.)_____

Observer(s) on Duty : I. Briga

Attachment #7 – Large Whale Sightings and all data forms

Morehead City Harbor and Wilmington Harbor, Ocean Bars

Stuyvesant

Available from USACE Sea Turtle Warehouse

http://el.erdc.usace.army.mil/seaturtles/project.cfm?Id=437&Code=Project