

ANNUAL SEA TURTLE MONITORING REPORT
GALVESTON DISTRICT
FISCAL YEAR 1998

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INTRODUCTION

This report is submitted in fulfillment of requirements of the Endangered Species Act and the Section 7 Consultation - Biological Opinion, dated September 22, 1995, concerning channel maintenance dredging using a hopper dredge. Specifically, this report, summarizing hopper dredging operations in Fiscal Year (FY) 1998 within the Galveston District, is submitted in compliance with reasonable and prudent measure No. 8 - Reporting.

The following two hopper dredging projects were completed in FY 98.

Freeport Harbor	Nov 11, 1997 – Dec 10, 1997
Sabine-Neches Waterway (SNWW)	Aug 13, 1998 – Oct 7, 1998

The use of hopper dredges to maintain these navigation projects is necessary because of three factors: safety, weather conditions and productivity. These factors are closely interrelated; however, the underlying emphasis is placed on safety. The nearshore Gulf of Mexico is characterized by a wide shallow shelf. The Sabine-Neches Waterway, for example, extends about 22 miles into the Gulf. A cutterhead dredge operating offshore would require a pipeline length that could extend for several miles.

The dredges operating in these channels must be highly mobile to rapidly maneuver out of the way of other vessels. Pipeline cutterhead dredges are not self-propelled, and are held into position with spuds. Furthermore, the swing of the cutterhead is controlled by cables attached to the cutterhead arm. These cables are anchored along the outer limits of the channel to be dredged. Prior to moving the dredge, tenders must raise the anchors, and a towboat must be fastened to the dredge. These characteristics prevent the pipeline dredge from quickly moving out of the channel when other vessels approach. From a practical standpoint, dredges are generally not relocated for normal ship traffic, rather, dredging may be interrupted, but the dredge remains a stationary obstruction in half of the channel. This situation is encountered in inland bays. The use of hopper dredges in the Gulf avoids such a stationary obstruction.

Weather conditions also affect the safety of the dredge and crew. Pipeline cutterhead dredges were not designed to operate in open-sea conditions. Due to the reasons stated above, these dredges cannot rapidly demobilize in harsh weather. The pipelines used to transport the dredged material to the placement sites would also be highly susceptible to breaking during rough weather. Even in relatively sheltered bays, cutterhead dredges often stop dredging in rough weather, and during frontal passages, only water is pumped to keep tension on the pipelines to prevent breaking. In the open Gulf of Mexico, this precaution would not be effective, even if it were possible to leave the dredge offshore. During relatively calm weather conditions, only the

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largest cutterhead dredges would be able to operate efficiently. Sea swells make it difficult to control the depth of the cutterhead; consequently, this affects the dredging operation. To illustrate this point, in 1977, a 27-inch diameter pipeline cutterhead dredge sank near the jetties while dredging the Entrance Channel of the Port Mansfield project. A frontal passage caused large waves, which battered the dredge, breaking the spud used to secure the vessel. Water entered the dredge through cable ports faster than it could be pumped out. A 27-inch dredge is one of the largest dredges commonly used within the Galveston District.

Productivity of the dredging operation is important because the purpose of dredging is to remove shoals and provide a safe depth for waterborne traffic. The use of cutterhead pipeline dredges in the open Gulf would result in frequent relocations, or other interruptions, due to weather and traffic conditions. Consequently, it would take longer to remove shoals, which in themselves present a hazard to safe navigation. The longer the time to remove the shoals, the longer a dredge must be on site to maintain the channel. The presence of the dredge and pipeline, themselves, present an obstruction to safe navigation. For these reasons, hopper dredges are used exclusively to maintain deep-draft entrance channels in the Galveston District.

The Galveston District will attempt to schedule hopper-dredging operations during the December 1 through March 31 window, wherever feasible. However, it is impossible to schedule all hopper-dredging projects during this time frame, due to the availability of the hopper dredge fleet. Hopper dredging priorities are developed in concert with other Corps Districts that conduct these operations along the Atlantic and Gulf Coasts. The priorities are determined after considering the dredging needs and resident sea turtle populations within the various Districts.

TURTLE MONITORING PROGRAM

A result of the consultation process, was the requirement to document turtle takes by the dredges. In order to accomplish this task, before hopper dredging operations commenced, they were equipped such that all inflows and overflows would be screened. The configuration and location of the screens depends upon the construction of the dredge. The mesh size of this screening is 4-inches by 4-inches. Additionally, around-the-clock monitoring by NMFS-approved turtle inspectors was conducted to identify any turtles or turtle parts that were caught on these screens. Draghead deflectors were 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 a sediment riffle is created ahead of the draghead, cushioning any contact with turtles thereby preventing injuries.

The observers inspected and cleaned all inflow and overflow screening at the end of each load. Dragheads and deflectors were also inspected immediately after each load, and dredge personnel were informed if repairs were necessary. Data sheets were completed daily, detailing all biological samples and debris found in the screening and dragheads. The observers also recorded

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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 were described on a separate incident report form. Additionally, all incidents were photographed and diagrams were made of the specimen sampled. Dead specimens were frozen until all concerned parties were notified. Specimens were then weighted with scrap iron and disposed of at the dredged material placement site, thereby ensuring that these same samples would not wash ashore or be taken again by the dredge.

A bridge watch for sea turtles and marine mammals was maintained during all daylight hours, except when the observer was off the bridge, cleaning and inspecting the screens and dragheads. All sightings of cetaceans and sea turtles were recorded in a bridge watch logbook.

SCREEN CONFIGURATIONS

Turtle monitoring activities were conducted aboard two different hopper dredges during FY 1998. These are the *Ouachita* and *Mermentau*. Each of these vessels was required to have 100% inflow screening with openings no greater than 4" x 4", and rigid draghead deflectors.

PROJECTS

Freeport Harbor - Entrance and Jetty Channels

On November 11, 1997, the contract hopper dredge *Ouachita* began emergency work on the Entrance and Jetty Channels of the Freeport Harbor Channel Project. Contract specifications required dredging an estimated 896,000 cubic yards (CY) of shoal material. The required depth of dredging was 49 feet below Mean Low Tide (MLT, Corps of Engineers Datum), with 2 feet of allowable overdepth dredging along the Entrance Channel and 47 feet MLT with 2 feet of overdepth along the Jetty Channel.

Dredging began on November 11, 1997, and was completed on December 10, 1997. A total of 493 loads of dredged material were collected and placed into Placement Area No. 1-A. Dredging was performed between Stations 82+66.48 along the Jetty Channel and -100+00 along the Entrance Channel. A total of 1,053,157 CY of material was excavated from this project.

The dredge was equipped with rigid draghead turtle deflectors, and 100% inflow screening with a 4-inch square mesh. NMFS-approved turtle observers provided 24-hour/day monitoring of dragheads and screens for each load cycle. The observers were employed by Coastwise Consulting, Inc.

No turtles were encountered during the performance of this dredging.

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Water temperatures were taken in conjunction with the screen and draghead monitoring. The water seemed to be well mixed, as the surface and below mid-depth temperatures were nearly identical. These temperatures ranged from 13EC to 21EC at the surface and 13EC to 20EC below mid-depth.

Throughout the duration of dredging, bridge watch observations included numerous sightings of bottlenose dolphins.

The material dredged consisted of primarily silt with significant amounts of clay. Non-biological samples commonly included wood, netting, rocks, monofilament fishing line, plastic bags, and cable, along with other debris. The most common biological samples were comprised of various species of fish, rays, crabs, shrimp, whelks, eels, tunicates, and jellyfish.

The observers reported that the dredge picked up abundant amounts of trash, which fouled the screens and required manual removal. There were also reports of clay being dredged, however, there was no indication that this presented any major difficulties. Also, during rough weather, the overboard screening baskets were tied up for safety reasons, and to prevent damage. Again, there was no indication that this caused any problems.

Sabine-Neches Waterway - Sabine Pass Outer Bar Channel.

On August 13, 1998, contract hopper dredges began work on the Sabine Bank, Sabine Pass Outer Bar, and Sabine Pass Jetty Channels of the Sabine-Neches Waterway Project. Dredging specifications required dredging an estimated 4,869,910 cubic yards (CY) of shoal material. The required depth of dredging was 44 feet below Mean Low Tide (MLT, Corps of Engineers Datum), with 2 feet of allowable overdepth dredging. The limits of dredging were revised from the original specifications. The revisions involved removal of a segment of the Jetty Channel from Station -46+00 to -180+00, and the addition of a segment of the Sabine Bank Channel from Station 18+000 to 33+000.

Dredging began on August 13, 1998, and was completed on October 7, 1998. Two dredges were employed under this contract, they were the *Mermentau*, and the *Ouachita*. The *Mermentau* worked from August 13, 1998 until August 31, 1998, dredging 400 loads. The *Ouachita* worked from August 22, 1998 until October 7, 1998, and dredged 933 loads of dredged material. A total of 1,333 loads of dredged material were collected and placed into Placement Area Nos. 3 and 4. Dredging was performed between Stations -180+00 and -214+88.3 along the Jetty Channel, and from 0+000 to 33+000 along the Outer Bar and Bank Channels. A total of 4,398,064 CY of material were excavated from within the channel. Prior to completing the dredging, the dredges were released to perform emergency work in the Mississippi River, prompted by Hurricane Georges. Instead of returning to finish the work on the SNWW, the contractor requested, and was granted a release from the contract. The segment of the project

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that was only partially dredged was the outermost reach of the contract farthest from the jetties, specifically, the section of the Sabine Bank Channel from Station 23+000 to 33+000.

The dredges were equipped with rigid draghead turtle deflectors, and 100% inflow screening with a 4-inch square mesh. NMFS-approved turtle observers provided 24-hour/day monitoring of dragheads and screens for each load cycle. The observers were employed by Coastwise Consulting under a subcontract to the dredging contractor, Weeks Marine, Inc.

No turtles were encountered during the performance of this dredging.

Water temperatures were taken in conjunction with the screen and draghead monitoring. The water seemed to be well mixed, as the surface and below mid-depth temperatures were nearly identical. These temperatures ranged from 25EC to 34EC at the surface and 25EC to 33EC below mid-depth.

Throughout the duration of dredging, bridge watch observations included numerous sightings of bottlenose dolphins. There was also one observation of a loggerhead sea turtle swimming in the vicinity of the dredge. On August 14, this turtle surfaced briefly, about 15 feet from the dredge then disappeared.

The material dredged consisted of primarily silt, with occasional accumulations of stiff clay. However, there is no indication that the clay presented any problems with clogging the screens.

Non-biological samples commonly included rope, wood, netting, and rocks, along with other debris. This material seemed to present a recurring problem by fouling the screens, requiring manual removal.

The most common biological samples were comprised of various species of fish, rays, blue crabs, shrimp, whelks, whelk eggs, eels, moon snails, oysters, seagrass, other crab species, jellyfish, and occasional bones and shell. The biotic material was relatively sparse throughout the channel, except for between the jetties, where abundance dramatically increased.

One problem was experience with the screens on the *Mermentau*. On August 14, the bottom half of the port lander fell out during load No. 12. This prevented 100% screening of material on this side of the vessel. Adverse weather prevented immediate repairs, however, repairs were satisfactorily complete on the following day.

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COSTS

The costs incurred in performing the turtle-monitoring program during FY 1998 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. Below is a table depicting the costs for FY 1998. However, costs not included in this discussion are 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.

PROJECT	COST OF MONITORING
Freeport Harbor	\$20,000.00
Sabine Neches Waterway	\$40,000.00
District labor	\$4,200.00
TOTAL	\$64,200.00

SUMMARY

During Fiscal Year 1998, two maintenance-dredging projects were performed by hopper dredges. No lethal turtle encounters were experienced.