

**BENEFICIAL USE OF DREDGED MATERIAL DISPOSAL HISTORY
MISSISSIPPI RIVER, BATON ROUGE TO THE GULF OF MEXICO, LA
HEAD OF PASSES
HOPPER DREDGE DISPOSAL AREA**

Dredged material removed by hopper dredges working in the Lower Mississippi River navigation channel below Venice, Louisiana has been discharged into the open water hopper dredge disposal area (HDDA) located at the heads of Pass a Loutre and South Pass since the early 1900s. The HDDA was originally a deep scour hole that did not require maintenance dredging to enable its continued use by hopper dredges due to the natural scouring action of the Mississippi River that maintained its depth. However, during the 1990s it became apparent that this natural river scouring action was no longer removing enough sediments from the HDDA to allow hopper dredges to safely access this disposal site during maintenance dredging operations of the Southwest Pass channel. In fiscal year (FY) 1998, the New Orleans District (CEMVN) implemented a management plan for the HDDA in order to insure continuous availability of the site for hopper dredge disposal. The management plan consisted of dredging within the existing HDDA boundaries to a maximum depth of -40 feet Mean Low Gulf (MLG) to increase the capacity of this disposal site for future placement of hopper-dredged material removed from the Lower Mississippi River channel below Venice, Louisiana. HDDA dredged material was to be placed unconfined into a 298-acre, shallow, open water area located on the east side of the Mississippi River north of Pass a Loutre within the Delta National Wildlife Refuge (DNWR) in a manner conducive to wetlands development. No vegetative plantings were necessary as these sites vegetated within a single growing season by colonization and seed bank contained in the dredged material.

Fiscal Year 1998

Under contract **97-C-0081**, the cutterhead dredge ARKANSAS (working from 24 November 1997 to 21 February 1998) removed a total of 1,051,661 cubic yards (CY) from the western portion of the HDDA and placed this material unconfined in shallow open water in the DNWR site located about 6,500 feet north of the HDDA. Dredged material was to be discharged to a maximum initial elevation of about +3.0 feet MLG for marsh habitat creation.

Several active pipelines were located within the disposal area and pipeline crossing ramps had to be constructed to avoid impacting them with construction equipment activities. A construction equipment access road was constructed within the disposal area using discharged HDDA dredged material. The access road was built to a higher elevation than the +3.0 feet MLG limit in order to handle the traffic needs of construction equipment hauling dredge discharge pipeline. Dredged material was discharged perpendicular to this access road as a series of “fingers” that were also allowed to exceed the +3.0 feet MLG placement height limit in order to provide adequate support for the pipeline and associated construction equipment. A total of 12 “fingers” were constructed of varying lengths. Following completion of HDDA dredging, the contractor was required to wash down the portions of the disposal area that exceeded the maximum placement height limit of +3.0 feet MLG such that the majority of the site was at, or nearly at,

this height limit before being released from the job. It was anticipated that, following compaction and de-watering, final elevations of +1.0 to +0.5 feet MLG would be achieved.

About 197 acres of marsh habitat were initially created by this placement effort.

Final contract cost was \$3,360,000.



FY 1998 Delta National Wildlife Refuge Placement Site



Access Corridor with Mats and Ramps



Pipeline Discharging Dredged Material



Pipeline Discharging Dredged Material



Dredge Pipelines with "Y" Valve



FY 1998 DNWR Placement Site

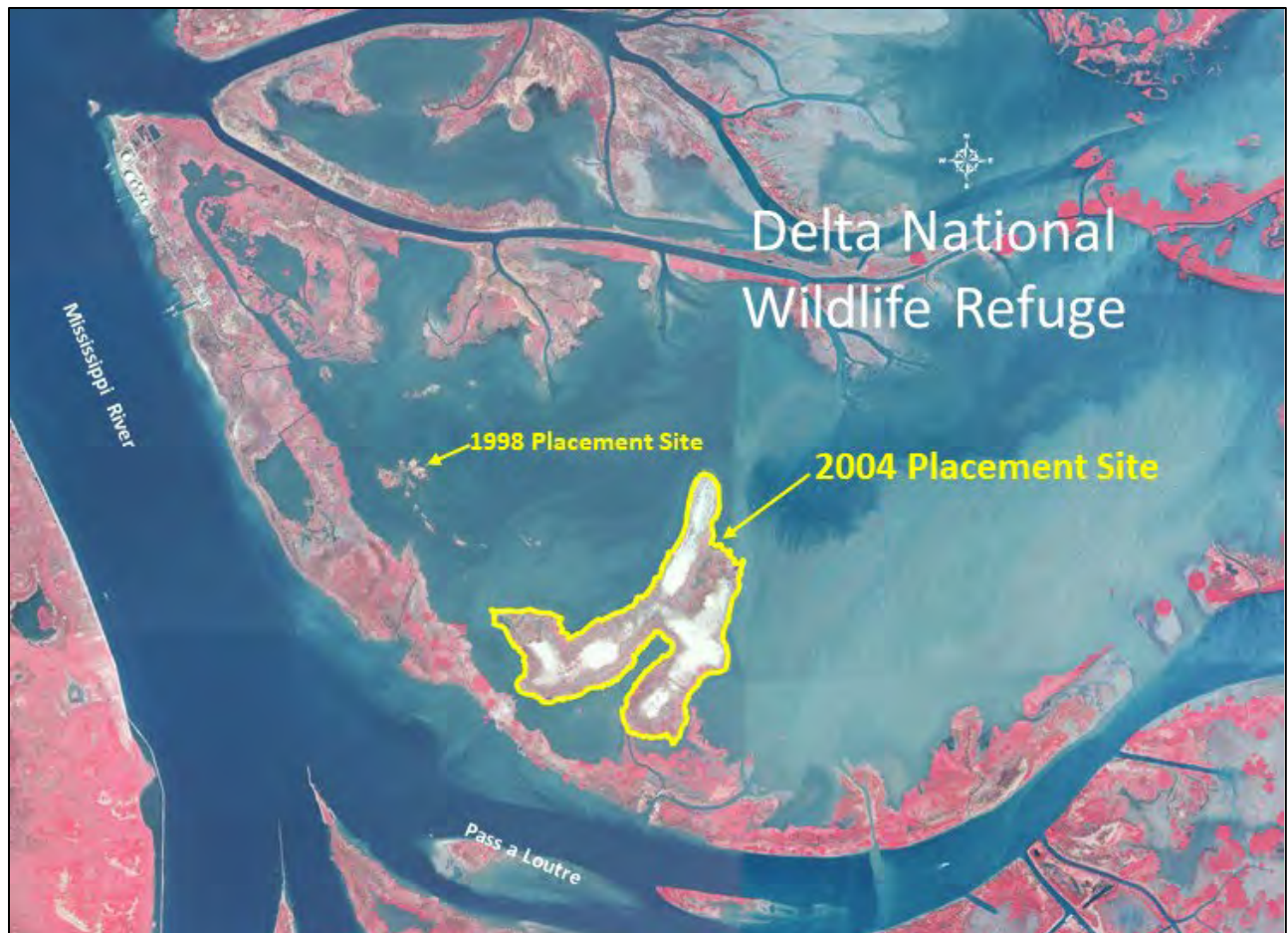
FY 2004

Under contract **03-C-0061**, the cutterhead dredge CALIFORNIA (working from 24 November 2003 to 15 February 2004) removed a total of 4,124,598 CY from the HDDA and placed this material unconfined in shallow open water in the DNWR site. At the request of the US Fish and Wildlife DNWR personnel, dredged material was to be discharged in a series of peninsulas with a crown width of about 300 feet to a maximum initial elevation of about +7.0 feet MLG for coastal habitat creation. It was anticipated that the final settled elevation of these peninsulas would be about +4.0 to +5.0 feet MLG. The peninsulas were designed to be supportive of duck nesting habitat along their crowns with wetlands along the lower elevation peninsula fringes. It was also planned to excavate gaps in the peninsulas at 1,000-foot intervals to facilitate intertidal exchange. Gaps were to be excavated to a width of 100 feet to a depth of 0.0 feet MLG.

Approximately 4,124,598 cubic yards of material were placed in the DNWR site as two peninsulas to a maximum initial slurry elevation of +5.0 feet MLG. The excavation of peninsula gaps was abandoned following unsuccessful attempts to construct these features. The DNWR site substrate consisted of sediments so fine-grained that any excavation of the placed dredged material caused the substrate material to well upwards to fill in any attempted gaps as a result of the overlying dredged material's weight. It should be noted that the HDDA dredged material consisted primarily of fine-grained sands while the DNWR site's substrate appears to consist primarily of clays and silts. During this work, the CALIFORNIA encountered rocks in that were part of the submerged mattress sills constructed by Captain Eads across the head of Pass a Loutre in the late 1800s.

About 274 acres of marsh habitat were initially created by this placement effort. However, by 27 December 2004, primarily due to subsidence, the FY 98 placement site had been reduced from a size of about 197 acres to about 20 acres, and the FY 04 placement site was measured at about 252 acres.

Final contract cost was \$7,340,805.



FY 2004 Delta National Wildlife Refuge Placement Site



DNWR: Constructing First Peninsula (17 December 2003)



DNWR: First Peninsula Looking North Towards FY 1998 Placement Site



DNWR: Two Constructed Peninsulas (May 2004)



DNWR: FY 1998 and FY 2004 Placement Sites (May 2004)



FY 2004 Peninsula: Sand with Scattered Rocks from Captain Eads Submerged Sill



FY 2004 Peninsula with Vegetation (3 August 2004)



Excavating Peninsula Gaps with Substrate Upwelling Problems



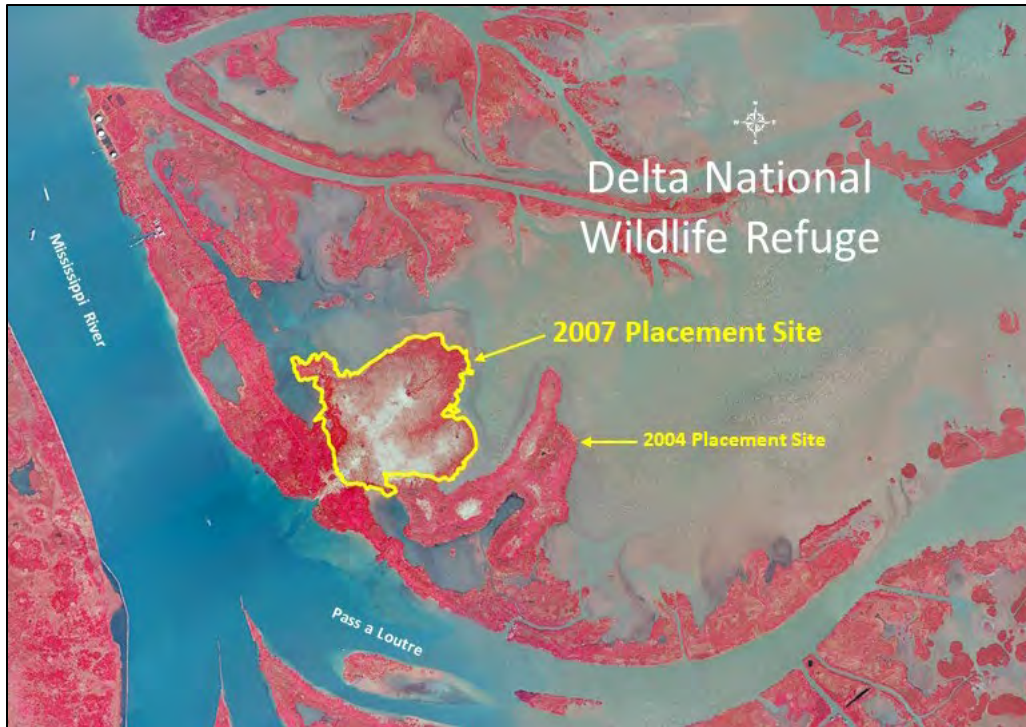
FY 2004 DNWR Placement Site (15 November 2014)

FY 2007

Under contract **07-C-0022**, the cutterhead dredge MERIDIAN (working from 16 January 2007 to 27 March 2007) removed a total of 4,266,078 CY from the HDDA and placed this material unconfined in shallow open water in the DNWR site. Dredged material was discharged as a peninsula with a crown width of about 300 feet to a maximum initial elevation of about +7.0 feet MLG for coastal habitat creation. Although planned for, intertidal exchange gaps were unable to be constructed across the peninsula for the same reason that prevented the FY 2004 disposal effort from constructing gaps.

About 332 acres of marsh habitat were initially created by this placement effort. Much of this dredged material was placed on the FY 1998 placement site that had mostly reverted back to shallow open water due to subsidence by this time.

Final contract cost was \$8,850,000.



FY 2007 Delta National Wildlife Refuge Placement Site



FY 2007 DNWR Placement Site (23 July 2008)



FY 2007 DNWR Placement Site (15 November 2014)

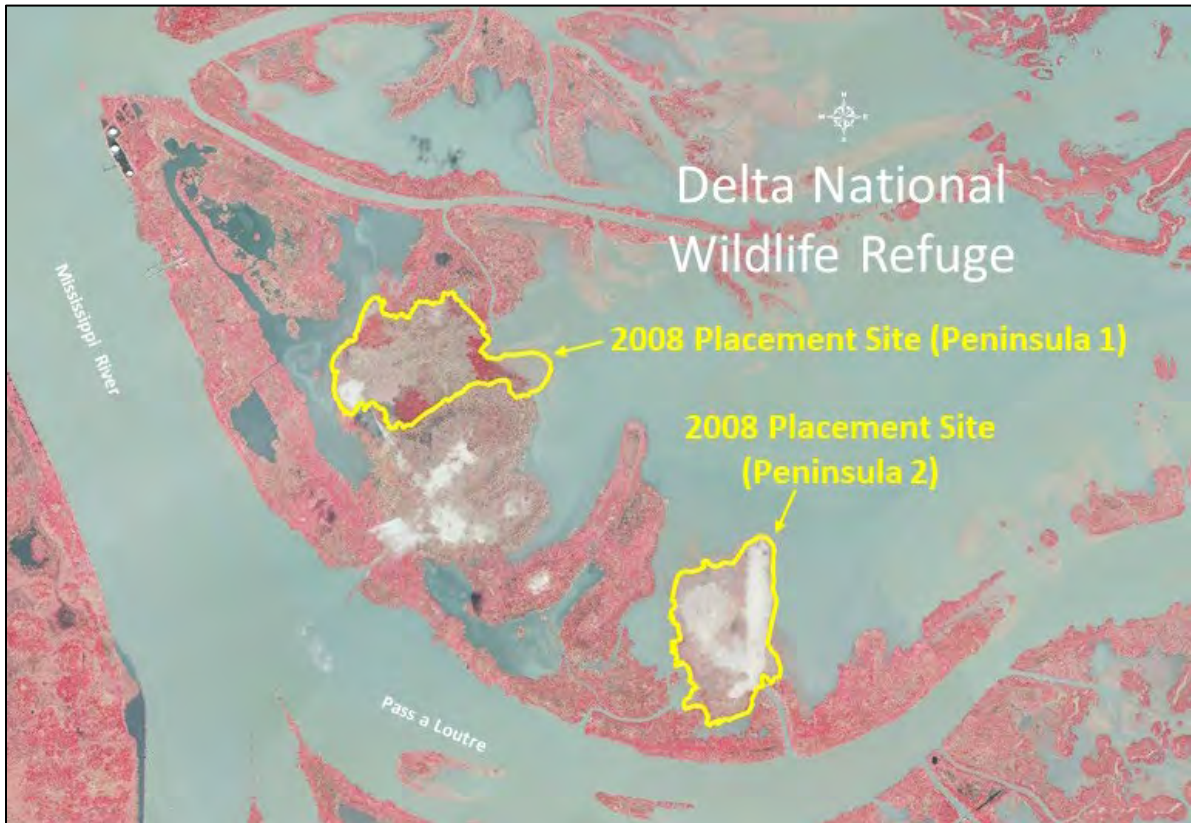
FY 2008

Under contract **08-C-0039**, the cutterhead dredge TOM JAMES (working from 21 April 2008 to 28 July 2008) removed a total of 4,013,912 CY from the HDDA and placed this material unconfined in shallow open water in the DNWR site. Dredged material was discharged in a series of two peninsulas with a crown width of about 300 feet to a maximum initial elevation of about +7.0 feet MLG for coastal habitat creation. Although planned for, intertidal exchange gaps were unable to be constructed across the peninsulas for the same reason that prevented the FY 2004 disposal effort from constructing gaps. The dredging contractor was allowed to use the north-south crown of the FY 2007 peninsula as an access corridor for pipeline and associated construction equipment.

Discharge of HDDA dredged material in the DNWR site resulted in the inadvertent shoaling in of an existing channel used by local landowners to access the shallow open water interior of the DNWR site for waterfowl hunting and fishing. This access channel was originally created by the excavation and burial of a Southern Natural Gas 18-inch pipeline. Rather than excavating in this channel with its active gas pipeline, a new access channel was excavated along the west side of the Southern Natural Gas pipeline. Approximately 15,000 CY of sediments were removed by a marsh backhoe over a length of about 5,000 feet, a width of 20 feet, and a depth of 2-4 feet to construct this new access channel. Access channel material was placed to either side of the channel in shallow open water to a maximum initial elevation of about +3.5 feet MLG.

A total of about 414 acres of marsh habitat were initially created by this placement effort. Much of this dredged material was placed on the FY 1998 placement site that had mostly reverted back to shallow open water due to subsidence by this time.

Final contract cost was \$9,039,841.



FY 2008 Delta National Wildlife Refuge Placement Sites



FY 2008 DNWR Peninsula 1 with the TOM JAMES Working in the HDDA (27 May 2008)



FY 2008: Dredged Material Being Discharged at DNWR Placement Site



FY 2008 DNWR Peninsula 1 Placement Site (23 July 2008)



FY 2008 DNWR Peninsula 2 Placement Site (23 July 2008)



FY 2008: DNWR Peninsula 2 Placement Site (August 2008)



FY 2008 DNWR Peninsula 2 Placement Site (2 July 2009)



FY 2008 DNWR Site: Peninsula 2 (15 November 2014)

FY 2010-2011

Under contract **09-C-0071**, the cutterhead dredges FLORIDA (working from 11 October 2009 to 27 October 2009) and CALIFORNIA (working from 15 February 2010 to 9 March 2011) removed a total of 8,332,707 CY from the HDDA and placed this material unconfined in shallow open water in the DNWR site. Dredged material was discharged in a series of four peninsulas with a crown width of about 300 feet to a maximum initial elevation of about +7.0 feet MLG for coastal habitat creation. The dredging contractor was allowed to use the north-south crown of easternmost FY 2008 peninsula as an access corridor for pipeline and associated construction equipment.

On 20 April 2010, the Deepwater Horizon oil rig exploded in the Gulf of Mexico about 41 miles southeast of the Louisiana coast and began leaking large amounts of oil into the surrounding water. On 4 June 2010, the CEMVN gave the approval to release the CALIFORNIA from the Corps contract in order to work for the state of Louisiana to perform emergency sand berm construction in an effort to prevent spilled oil from impacting Louisiana's barrier islands located in the vicinity of the oil release. The CALIFORNIA temporarily ceased dredging work in the HDDA on 10 June 2010. The CALIFORNIA resumed dredging operations in the HDDA on 28 January 2011. During this time, the state of Louisiana removed approximately 3.5 million CY of sediments from the HDDA for use in their emergency sand berm construction project.

A total of 4 intertidal exchange gaps were successfully constructed across 3 of the peninsulas. These gaps were excavated to a depth of about 0.0 feet MLG and a width of about 50 feet to prevent substrate material from upwelling and filling the gaps.

The access channel excavated in FY 2008 for local landowners was extended northwards by about 1,200 feet to width of 20 feet and a depth of -2.0 feet MLG upon request by the local landowners. Access channel material was placed to either side of the channel in shallow open water to a maximum initial elevation of about +3.5 feet MLG.

Nesting birds (least terns) were discovered occupying one of the disposal peninsulas on 14 May 2010. The contractor stopped pumping on the bird nesting peninsula and began pumping to an alternate disposal peninsula. Bird nesting prevention measures were implemented for all other disposal areas where nesting birds were not yet present.

A total of about 463 acres of marsh habitat were initially created by this placement effort.

Final contract cost was \$28,784,400.



FY 2010-2011 Delta National Wildlife Refuge Placement Sites



FY 2008 DNWR Peninsula 2 Placement Site Looking East Towards 2010 Placement Site



FY 2010-2011 DNWR Placement Site (8 December 2011)



FY 2010-2011 DNWR Placement Site (8 December 2011)



FY 2010-2011 DNWR Placement Site: Least Tern Nest with Eggs

FY 2012-2013

Under contract **12-C-0034**, the cutterhead dredge McCASKILL (working from 10 September 2012 to 17 March 2013) removed a total of 8,022,655 CY from the HDDA and placed this

material unconfined in shallow open water in the DNWR site. Dredged material was discharged in a series of three peninsulas with a crown width of about 300 feet to a maximum initial elevation of about +7.0 feet MLG for coastal habitat creation. Dredged material was also discharged unconfined into a shallow open water area located between two previously constructed peninsulas to a maximum initial elevation of about +4.5 feet MLG for marsh habitat creation. The dredging contractor was allowed to use the crowns of the FY 2010-2011 peninsulas as access corridors for pipeline and associated construction equipment.

Towards the end of the dredging work, HDDA dredged material consisted of more silts and clays than sands. This resulted in a greater spreading of the dredged material being discharged at the far eastern side of the DNWR placement area with final elevations below +7.0 feet MLG.

A total of about 644 acres of marsh habitat were initially created by this placement effort.

Final contract cost was \$19,321,756.



FY 2012-2013 DNWR Placement Sites



FY 2012-2013 DNWR Marsh Creation Site (5 October 2012)



FY 2012-2013 DNWR Marsh Creation Site (5 October 2012)



FY 2012-2013 DNWR Marsh Creation Site (29 October 2012)



FY 2012-2013 DNWR Peninsulas and Marsh Creation Site (29 October 2012)



FY 2012-2013 DNWR Marsh Creation Site (19 November 2012)



FY 2012-2013 DNWR Marsh Creation and Peninsula Sites (8 December 2012)



FY 2012-2013 DNWR Peninsula Sites (8 December 2012)



FY 2012-2013 DNWR Easternmost Peninsula Sites (10 February 2013)



FY 2012-2013 DNWR Easternmost Peninsula Sites (1 April 2013)