

BENEFICIAL USE OF DREDGED MATERIAL DISPOSAL HISTORY
HOUMA NAVIGATION CANAL, LA
1991 - 2012

The Houma Navigation Canal (HNC) provides a navigation channel between Houma, Louisiana, and the Gulf of Mexico south of the eastern end of Isles Dernieres. The Rivers and Harbors Act of 1962 provided for the maintenance of a 15-foot-deep by 150-foot-wide channel from Houma, Louisiana, through Terrebonne Bay and an 18-foot-deep by 300-foot-wide bar channel to the minus 18-foot contour in the Gulf of Mexico, after its construction by local interests. Construction of the 150-foot channel was completed in 1962, and the bar channel was enlarged to a 300-foot width in 1974. Maintenance of discontinuous reaches of the channel has been accomplished on an as-needed basis since the Corps of Engineers assumed project maintenance in 1962.

Historically, material dredged from the HNC during maintenance was deposited confined in upland confined disposal areas, along the bankline, and in open water. Project maintenance is divided into three reaches: 1) Inland reach Mile 36 to Mile 12, 2) Terrebonne Bay reach Mile 12 to Mile 0, and 3) bar channel/Cat Island Pass, Mile 0 to Mile -5.

1991

INLAND REACH (Mile 36.0 to Mile 12.0)

Prior to FY 1991, material dredged from the inland reach had been deposited confined in upland disposal areas located on the east and west bank of the HNC.

Background:

During the 1991 maintenance of the HNC Mile 36.0 to Mile -3.7 reach (contract DACW29-91-C-0030: 8 March 1991 – 24 July 1991), dredged material removed from the HNC Mile 26.0 to Mile 20.0 inland reach was placed into 4 marsh creation disposal sites. The cutterhead dredge LOUISIANA performed all maintenance dredging for this contract.

Dredged Material Placement Event:

From 7 April 1991 to 28 April 1991, the LOUISIANA placed approximately 398,068 cubic yards of dredged material into 4 confined marsh creation disposal sites. The maximum elevation of dredged material placement in the marsh creation disposal sites was +3.8 feet mean low gulf (MLG). Discharge of dredged material was restricted to shallow open water areas located within these disposal sites with no dredged material discharge directly onto existing marsh vegetation being allowed.

1. Marsh creation disposal site “23”: about 40,392 cubic yards were placed into this site.
2. Marsh creation disposal site “21”: about 130,162 cubic yards were placed into the northernmost portion of this site.
3. Marsh creation disposal site “20”: about 122,872 cubic yards were placed into this site.
4. Marsh creation disposal site “16”: about 104,642 cubic yards were placed into this site.

Containment and Access:

Earthen retention dikes were constructed as necessary around the perimeters of the 4 marsh creation disposal areas to a height sufficient to prevent dredged material from escaping these sites. Silt curtains were utilized along the western and southern boundaries of marsh creation disposal site “23”

Result:

1. Marsh creation disposal site “23”: about 18 acres of marsh and mud flats were created at this site as a result of using about 40,392 cubic yards of dredged material.
2. Marsh creation disposal site “21”: about 80 acres of marsh and mud flats were created at this site as a result of using about 130,162 cubic yards of dredged material.
3. Marsh creation disposal site “20”: about 46 acres of marsh and mud flats were created at this site as a result of using about 122,872 cubic yards of dredged material.
4. Marsh creation disposal site “16”: about 88 acres of marsh and mud flats were created at this site as a result of using about 104,642 cubic yards of dredged material.

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Prior to FY 1991, dredged material removed from this reach was placed either into confined disposal areas or into an open water disposal site located 1000 feet west of, and parallel to, the Terrebonne Bay navigation channel.

Background:

During the 1991 maintenance of the HNC Mile 36.0 to Mile -3.7 reach (contract DACW29-91-C-0030: 8 March 1991 – 24 July 1991), maintenance dredging of the HNC Terrebonne Bay reach was performed by the cutterhead dredge LOUISIANA.

Dredged Material Placement Event:

From 8 March 1991 through 6 April 1991, the cutterhead dredge LOUISIANA pumped a total of about 137,351 cubic yards of shoal material into three BU disposal sites:

1. Bay Chaland Marsh Creation Disposal Site: about 88,000 cubic yards of dredged material removed from the Terrebonne Bay Mile 7.4 to Mile 7.8 reach were placed into shallow open water areas located within this site located at approximate Mile 7.1 on the east side of the channel. Dredged material was placed to an elevation of no higher than about +3.8 feet MLG.
2. Bay Welsh Marsh Creation Site: about 34,471 cubic yards of dredged material removed from the Terrebonne Bay Mile 10.2 to Mile 10.5 reach were placed confined at this site located on the east side of the channel. Dredged material was placed to an elevation of no higher than about +3.8 feet MLG.
3. 35-R Marsh Creation Site: about 14,880 cubic yards of dredged material removed from the Terrebonne Bay Mile 10.5 to Mile 10.9 reach were placed at this site located opposite Mile 11.3 on the east side of the channel. Dredged material was placed to an elevation of no higher than about +3.8 feet MLG

Containment and Access:

Approximately 30 acres of primarily shallow open water were confined within the Bay Chaland earthen containment dikes. Containment dikes were constructed along the north and channel sides of the Bay Chaland site to a height sufficient to prevent dredged material slurry from escaping the site and re-entering the navigation channel.

Earthen containment dikes were constructed and/or refurbished around the perimeter of the Bay Welsh and 35-R marsh creation sites.

Result:

1. Bay Chaland Marsh Creation Disposal Site: about 7 acres of marsh and mud flats were created at this site as a result of using about 88,000 cubic yards of dredged material.
2. Bay Welsh Marsh Creation Site: about 13 acres of marsh were created at this site as a result of using about 34,471 cubic yards of dredged material.
3. 35-R Marsh Creation Site: about 17 acres of marsh were created at this site as a result of using about 14,880 cubic yards of dredged material.

Notes:

1. The presence of numerous oyster leases in Terrebonne Bay required construction of retention dikes, or refurbishment of existing retention dikes, around BU disposal sites to prevent dredged material from escaping the disposal site and migrating onto any oyster leases and potentially causing adverse impacts.
2. Dredged material from the Terrebonne Bay Mile 1.0 to Mile 7.4 and Mile 7.8 to Mile 10.2 reaches was placed unconfined into the open water disposal area located approximately 1000 feet west of, and parallel to, the channel.

BAR CHANNEL/CAT ISLAND PASS REACH (Mile 0.0 to -5.0)

In the bar channel/Cat Island Pass reach, dredged material removed during routine maintenance between FY 1976 and FY 1990 was placed in the ocean dredged material disposal site (ODMDS) located on the east side of the channel.

Background:

During FY 1991, the New Orleans District obtained special funding and authority pursuant to Section 1135 of the Water Resources Development Act of 1986 to construct a rock retention/erosion control structure around the approximately 23-acre Wine Island Shoal site, to place dredged material removed from Cat Island Pass within this rock structure, and to plant appropriate vegetation following consolidation of the dredged material to help stabilize island sediments. The total cost of this project was \$1,007,000 (\$607,000 for the rock structure, and \$400,000 for pumping dredged material to this site). The State of Louisiana and South Terrebonne Tidewater District jointly funded the full construction cost for the rock retention/protection dike.

During the 1991 maintenance of the HNC Cat Island Pass reach (contract DACW29-91-C-0030: 8 March 1991 – 24 July 1991), dredged material from the Mile -0.8 to Mile -2.2 reach was placed at the Wine Island site.

Dredged Material Placement Event:

From 6 July 1991 through 24 July 1991, the cutterhead dredge ALASKA placed approximately 600,000 cubic yards of dredged material at the Wine Island site. Following completion of dredged material discharge at this site, elevations within the rock dike ranged from about +2.8 feet MLG to +8.0 feet MLG.

Containment and Access:

The Wine Island rock dike construction was completed by 2 February 1991. Approximately 3,819 linear feet of rock was built in a ring structure around the Wine Island site. The Wine Island rock dike was constructed to a maximum elevation of about +2.8 feet MLG, with a crown width of about 5 feet, and side slopes of about 1V on 1.5H.

Result:

About 18 acres of barrier island habitat were created at the Wine Island site as a result of using about 600,000 cubic yards of dredged material.

Notes:

1. High winds and rough seas during this work made pumping material to Wine Island on about 22,980 feet of pipeline difficult.
2. Vegetative plantings were completed in October 1991 (primarily black mangrove, *Spartina alterniflora*, and rye grass). The passage of Hurricane Andrew during August 1992 resulted in the loss of most of the vegetative plantings as well as a significant loss of sediments within the protective rock dike.

1993-1994

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Background:

During the 1993 maintenance of the HNC Terrebonne Bay reach (contract DACW29-93-C-0098: 27 August 1993 - 11 October 1994), the cutterhead dredge LOUISIANA placed dredged material confined at the Bay Chaland, Bay Welsh, and 35-R marsh creation disposal areas.

Dredged Material Placement Event:

1. Bay Chaland Marsh Creation Site: about 187,961 cubic yards of dredged material into shallow open water areas within this site. Dredged material was placed to an elevation of no higher than about +3.5 feet MLG.
2. Bay Welsh Marsh Creation Site: about 60,375 cubic yards of dredged material were placed at this site. Dredged material was placed to an elevation of no higher than about +5.0 feet MLG.
3. 35-R Marsh Creation Site: about 90,575 cubic yards of dredged material were placed at this site. Dredged material was placed to an elevation of no higher than about +5.0 feet MLG.

Containment and Access:

Earthen closure dikes were constructed along the northern and channel sides of the Bay Chaland site. Perimeter earthen retention dikes around the Bay Welsh and 35-R sites were refurbished prior to discharge of dredged material into these sites.

Perimeter earthen containment dikes around the 35-R marsh creation site was breached on the channel side of the site at some point following completion of disposal activities.

Result:

1. Bay Chaland Marsh Creation Site: about 10 acres of marsh and mud flats were created at this site as a result of using about 187,961 cubic yards of dredged material.
2. Bay Welsh Marsh Creation Site: about 8 acres of wetlands were created at this site as a result of using about 60,375 cubic yards of dredged material.
3. 35-R Marsh Creation Site: about 15 acres of wetlands were created at this site as a result of using about 90,575 cubic yards of dredged material.
 - a. September 1996 site monitoring efforts revealed that this site had an average elevation of about +2.1 feet MLG and could be characterized as a mud flat colonized by saltmarsh (dominated by *Spartina alterniflora*).

Notes:

Dredged material also was placed in open water approximately 1000 feet west of, and parallel to, the HNC centerline.

BAR CHANNEL/CAT ISLAND PASS REACH (Mile 0.0 to -5.0)

Background:

During August 1992, Hurricane Andrew made landfall on the Louisiana coast causing significant property damage. State and Terrebonne Parish Governments supplied Federal Emergency Management Act funds to pay the costs of pumping dredged material to the Wine Island placement site. Dredged material from this reach also was placed in the ODMDS during 1993. A portion of the Cat Island Pass channel was also realigned in a westerly direction.

Dredged Material Placement Event:

From 31 October 1993 to 11 October 1994, the cutterhead dredges DREDGE 32 and MISSOURI H (working under contract DACW29-93-C-0098) placed a total of approximately 756,189 cubic yards of shoal material removed from the Mile -1.2 to Mile -2.5 Cat Island Pass dredging reach at the Wine Island site. Dredged material was allowed to overflow the southern portion of the rock dike to help protect the site from wave-induced erosion.

1. The DREDGE 32 placed approximately 233,184 cubic yards of dredged material at the Wine Island site. The DREDGE 32 began pumping to Wine Island on 31 October 1993 but had to stop work on 6 January 1994 due to severe weather experienced in this area of the Gulf of Mexico. A Y-valve was used by the contractor to facilitate a more even spreading of the dredged material slurry within the site. A maximum of 27,360 feet of pipeline was used during this Wine Island placement effort.

2. Due to the lingering presence of nesting terns on the subaerial portion of Wine Island created by the DREDGE 32's efforts, on 29 August 1994, the MISSOURI H pumped approximately 9,450 cubic yards of dredged material removed from the Cat Island Pass channel reach to an open water discharge site (Wine Island Shoal) located approximately 1,000 feet northeast of the Wine Island site to avoid disturbing these birds. It was anticipated that sediments placed at this site would likely remain in the Wine Island vicinity rather than disperse randomly into the surrounding gulf bottoms.
3. From 30 August 1994 through 11 October 1994, the MISSOURI H placed approximately 513,555 cubic yards of dredged material within the Wine Island site. Discharge location was in the southern portion of this placement site. The MISSOURI H encountered mostly hard-packed sand and oyster shell in the Cat Island Pass dredging reach. Installation of a Y-valve at the end of the discharge line became necessary as the dredged material was not spreading throughout the disposal site as uniformly as anticipated (due to the dredged material composition). Dredged material placed at Wine Island site by the MISSOURI H reached a maximum height of about 6 feet above the top of the rock dike surrounding the site. A maximum of 22,520 feet of pipeline was used during this Wine Island placement effort.

Containment and Access:

No repairs/refurbishments were made to the existing protective rock dike surrounding the Wine Island site.

Result:

Portions of Wine Island lost to the passage of Hurricane Andrew were restored by the 1993 placement of dredging material at this site. By 1995, Wine Island occupied approximately 23 subaerial acres within the rock dikes.

Notes:

1. The MISSOURI H experienced about 50% down time due to high winds and rough seas.
2. On 18 May 1994, an aerial survey of the Wine Island site revealed the presence of approximately 3,400 nesting least terns and black skimmers on this reformed island.

1995

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Background:

During the 1995 maintenance of the HNC Terrebonne Bay reach (contract DACW29-95-C-0097: 29 September 1995 - 18 November 1995), the cutterhead dredge BLACKBURN performed all maintenance dredging work.

Dredged Material Placement Event:

1. Bay Welsh Marsh Creation Site: from 16 October 1995 through 17 October 1995, the BLACKBURN placed approximately 66,340 cubic yards removed from the Terrebonne Bay Mile 10.1 to Mile 8.5 reach into this site. Dredged material slurry was placed to an elevation no higher than about +6.5 feet MLG.
2. Bay Chaland Marsh Creation Site: from 11 November 1995 through 18 November 1995, the BLACKBURN placed approximately 392,107 cubic yards of dredged material removed from the Terrebonne Bay Mile 8.5 to Mile 6.5 reach into this site. Dredged material slurry was discharged into shallow open water portions of this site to an elevation no higher than about +3.5 feet MLG.

Containment and Access:

1. Prior to placing dredged material at the Bay Welsh site, existing earthen retention dikes were refurbished around the perimeter.
2. Prior to placing dredged material at the Bay Chaland site, retention dikes were constructed along the -1.0 foot MLG contour around the disposal site and capped with limestone to an elevation of about +5.0 feet MLG. The poor quality of borrow material available for dike building at the Bay Chaland site made perimeter dike construction very difficult. Continued settlement of earthen dikes to below grade and wave-induced erosion at this site greatly hampered perimeter dike construction efforts.

Result:

Neither the Bay Welsh nor the Bay Chaland marsh creation sites showed any additional acres of marsh created by this placement effort.

Notes:

1. Hurricane Roxanne's passage in the southern portion of the Gulf of Mexico in mid-October 1995 caused increased winds and wave action that affected maintenance dredging and disposal work on the HNC Terrebonne Bay channel.
2. The remainder of Terrebonne Bay dredged material not used beneficially was placed unconfined in the open water disposal area located approximately 1000 feet west of, and parallel to, the HNC centerline.
3. A September 1996 monitoring effort at the Bay Chaland site revealed that the surrounding perimeter rock dike was breached in two locations as a result of wave and tidal action.
 - a. The average elevation within the rock dike was about +1.7 feet MLG and was characterized as low relief saltmarsh (dominated by *Spartina alterniflora*).

BAR CHANNEL/CAT ISLAND PASS REACH (Mile 0.0 to -5.0)

Contract DACW29-95-C-0030

Background:

During the FY 1995 maintenance of Mile 0.0 to -3.5 of the HNC Cat Island Pass bar channel (contract DACW29-95-C-0030: 6 May 1995 – 10 June 1995), all dredged material was placed at the 2 single point discharge (SPD) sites located in the open water west of the bar channel opposite miles -1.7 and -2.5.

Dredged Material Placement Event:

From 6 May 1995 through 10 June 1995, the cutterhead dredge ALASKA placed approximately 484,759 cubic yards of material at the Mile -1.7 SPD site, and approximately 531,633 cubic yards of material at the Mile -2.5 SPD site. A maximum of about 6,000 feet of dredge pipeline was used during this maintenance effort.

Containment and Access:

All dredged material was placed unconfined at the 2 SPD disposal sites.

Result:

No subaerial land was developed by this placement effort at the 2 SPDs.

Notes:

Prior to FY 1995, the New Orleans District designated two SPD sites at two existing shoals for placement of dredged material. The two shoals are located within the ODMD S approximately 2,500 feet west of the channel opposite about Miles -1.7 and -2.5. The purpose of placing dredged material on the two shoals was twofold: 1) to concentrate material on the shoals; and 2) to monitor the natural transport of the material. If monitoring indicated dredged material placed on the shoals is transported or feeds sediments to barrier islands to the west of the channel, the New Orleans District would modify disposal operations to continue concentrating material at the shoals.

Results of monitoring, along with the hydrodynamic study of this project vicinity by Rosati and Lawton (2011), have confirmed that sediments placed at these SPD sites are generally transported to the west and northwest by littoral drift characteristic of this area. Precise volumetric estimates of the amount of dredged material placed at these SPD sites that reach the barrier islands to the west remain unknown.

ROSATI, J.D. and LAWTON, C., 2011. Channel Shoaling with Deepening of Houma Navigation Channel at Cat Island Pass, Louisiana. *In: Roberts, T.M., Rosati, J.D., and Wang, P. (eds.), Proceedings, Symposium to Honor Dr. Nicholas C. Kraus, Journal of Coastal Research, Special Issue, No. 59, pp. 256-265.*

Contract DACW29-95-C-0097

Background:

During the FY 1995 maintenance of Mile 0.0 to -3.5 of the HNC Cat Island Pass bar channel (contract DACW29-95-C-0097: 29 September 1995 – 18 November 1995), all dredged material was placed at the 2 SPD sites located in the open water west of the bar channel opposite miles -1.7 and -2.5.

Dredged Material Placement Event:

From 29 September 1995 through 5 October 1995, the cutterhead dredge BLACKBURN placed approximately 479,749 cubic yards of material at the Mile -1.7 SPD site, and approximately 536,643 cubic yards of material at the Mile -2.5 SPD site.

Containment and Access:

All dredged material was placed unconfined at the 2 SPD disposal sites.

Result:

No subaerial land was developed by this placement effort at the 2 SPDs.

1999

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Background:

During the FY 1999 maintenance event (contract DACW29-98-C-0058: 1 October 1998 – 26 May 1999), approximately 1,130,884 cubic yards of dredged material were removed from the Terrebonne Bay reach (Mile 10.7 to Mile 1.0). The cutterhead dredges ARKANSAS and MERIDIAN performed all maintenance dredging under this contract. Dredged material was placed within the Bay Chaland marsh creation disposal site, and at a shallow open water disposal site located just outside of the Bay Chaland rock cell on its southeast side.

Dredged Material Placement Event:

1. From 1 October 1998 through 22 October 1998, the cutterhead dredge ARKANSAS placed approximately 890,500 cubic yards of material removed from the Mile 10.7 to Mile 5.0 reach into the Bay Chaland site for wetlands development. Dredged material was placed within the existing rock containment/protection dikes to a maximum initial elevation of +4.0 feet MLG. Dredged material was allowed to overflow the subsided rock dikes along the south and east site boundaries.
2. From 23 October 1998 through 31 October 1998, the ARKANSAS placed approximately 239,894 cubic yards at the Bay Chaland open water disposal site, located on the southeast side of the rock dikes, for wetlands development. Dredged material was discharged unconfined at this site to a maximum initial elevation of about +4.0 feet MLG.

Containment and Access:

The existing rock containment/protection rock dikes surrounding the Bay Chaland site were not refurbished or repaired for this dredged material placement effort. Subsidence and erosion had reduced rock dike elevations along the southwestern, southern, and eastern boundaries of this site.

Result:

About 11 acres of marsh and mud flats were created at the Bay Chaland marsh creation disposal site as a result of this BU effort using about 1,130,394 cubic yards of dredged material.

Notes:

The decision to utilize the shallow open water area adjacent to the southeastern portion of the existing Bay Chaland rock dike for dredged material placement came about as dredged material began escaping this site from its southwestern boundary, where rock dikes had lost elevation due to subsidence since its initial construction. Rather than placing remaining Terrebonne Bay channel dredged material into the non-beneficial use open water disposal area located west of the channel, it was proposed that dredged material be placed unconfined on the eastern side of the Bay Chaland site, outside of the rock dike, to elevations conducive to marsh development. However, this BU placement proposal would have required the dredge pipeline to traverse the existing marsh located within the Bay Chaland disposal site. In order to avoid damaging the existing marsh, an open water disposal site located on the southeastern side of the Bay Chaland site was chosen, with the agreement of the Louisiana Department of Natural Resources, to use dredged material beneficially while minimizing return of dredged material to the navigation channel.

BAR CHANNEL/CAT ISLAND PASS REACH (Mile 0.0 to -5.0)

Background:

In FY 1999 (contract DACW29-98-C-0058: 1 October 1998 – 26 May 1999), during a realignment of the Cat Island Pass bar channel, approximately 608,810 cubic yards of dredged material were removed from the bar channel by the cutterhead dredges ARKANSAS and MERIDIAN.

Dredged Material Placement Event:

1. From 31 October 1998 through 19 November 1998, the cutterhead dredge ARKANSAS placed approximately 90,700 cubic yards (removed from the Cat Island Pass Mile -1.7 to Mile -2.8 reach) unconfined at the Mile -2.5 SPD site located approximately 2,500 feet west of the channel.
2. From 29 April 1999 through 26 May 1999, the cutterhead dredge MERIDIAN placed approximately 326,545 cubic yards (removed from the Cat Island Pass Mile -2.8 to Mile -3.6 reach) unconfined at the Mile -2.5 SPD site. The MERIDIAN also placed approximately 191,565 cubic yards (removed from the Cat Island Pass Mile -1.1 to Mile -2.8 reach) unconfined at the Mile -1.7 SPD site.

Containment and Access:

All dredged material removed from the Cat Island Pass bar channel was placed unconfined at the SPD sites.

Result:

No subaerial land was developed by this placement effort at the 2 SPDs.

Notes:

Rough sea conditions experienced in the Cat Island Pass bar channel vicinity caused cutterhead dredges to lose about 22 days of work due to seas ranging from 4 to 8 feet.

2003

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Background:

During the FY 2003 maintenance event (contract DACW29-02-C-0063: 19 October 2002 – 19 January 2003), approximately 1,875,256 cubic yards of dredged material were removed from the Terrebonne Bay reach (Mile 10.8 to Mile 1.0). The cutterhead dredge STROUD performed all maintenance dredging under this contract. The existing Bay Chaland marsh creation placement site was expanded in a northwesterly direction by construction of a new 17.2-acre disposal cell surrounded by a rock dike. The rock dike provided containment to prevent dredged material from escaping the placement site while also providing protection from wave-induced erosion characteristic of the project vicinity.

Dredged Material Placement Event:

From 5 December 2002 to 7 January 2003, the STROUD placed approximately 607,095 cubic yards of dredged material removed from the Terrebonne Bay Mile 9.2 to Mile 6.2 reach into the new Bay Chaland cell. All dredged material was placed into the new disposal cell to a maximum initial elevation of about +5.0 feet MLG. Following dewatering and compaction, the final elevation of dredged material placed at this disposal cell is expected to be about +2.0 feet MLG.

About 3,500 feet of submerged pipeline and 4,000 feet of floating pipeline were used to reach the Bay Chaland site from the location of the working dredge. Effluent discharge was directed to the eastern side of the new disposal cell, away from the navigation channel.

Containment and Access:

Construction of the rock containment/protection dike around the new Bay Chaland cell began on 19 October 2002 and was completed on 4 December 2002. Approximately 14,174 tons of rock was placed on core material (composed of 4 inch stone) and geotextile fabric over a total length of approximately 2,800 feet. The rock dike was constructed to elevations of +5.0 feet MLG on the channel (northwestern) side, +4.5 feet MLG on the northern side, and +4.0 feet MLG on the back (northeastern) side of this site. Rock was also placed along the channel side alignment of the original disposal cell to match rock dike dimensions for the new disposal cell where the rock dike had settled to near water level elevations. An earthen dike was constructed between the new dredged material placement cell and the original Bay Chaland cell to prevent dredged material from flowing over, and overtopping, the existing marsh vegetation. This earthen dike was constructed to an elevation of about +6.0 to +6.5 feet MLG to account for erosion and compaction forces experienced at this site.

Result:

About 20 acres of marsh and mud flats were created at the Bay Chaland site as a result of this BU effort using about 607,095 cubic yards of dredged material.

Notes:

1. The passages of Hurricane Isidore (26 September 2002) and Hurricane Lili (3 October 2002) resulted in additional shoaling of the channel that necessitated an extension of the original

northern dredging limit from Mile 9.3 to Mile 10.8, and the dredging of the entire Terrebonne Bay channel between Mile 10.8 and Mile 1.0 (original plans called for discontinuous dredging of this channel segment between Mile 9.3 and Mile 1.0).

2. Due to recurring rough sea conditions, the dredge was frequently moved between working the lower dredging reaches (where the seas tended to be rougher) and the upper dredging reaches. This frequent moving of the dredge allowed the Bay Chaland site to dewater more efficiently between work intervals than typically experienced at BU disposal sites.
3. Approximately 1,268,161 cubic yards of dredged material removed from the Mile 10.8 to Mile 9.2 and Mile 6.2 to Mile 1.0 reaches was placed into the open water disposal site located west of, and parallel to, the navigation channel.

2005

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Background:

During the FY 2005 maintenance event (contract W912P8-05-C-0030: 25 May 2005 – 4 September 2005), approximately 2,207,798 cubic yards of dredged material were removed from the Terrebonne Bay reach (Mile 10.1 to Mile 1.1). The cutterhead dredges WEEKS VENTURE and TOM JAMES performed all maintenance dredging under this contract.

Dredged Material Placement Event:

From 4 July 2005 through 3 August 2005, the WEEKS VENTURE and TOM JAMES removed approximately 1,123,642 cubic yards from the Terrebonne Bay Mile 10.1 to Mile 6.0 reach and placed it into the expanded Bay Chaland cell constructed in 2003. Dredged material was pumped to a maximum initial elevation of +4.0 feet MLG. It was anticipated that the maximum final elevation of dredged material placed into the 2003-expanded Bay Chaland site would be about +2.0 feet MLG following dewatering and compaction. A maximum of 14,500 feet of pipeline was used to reach this disposal site.

Containment and Access:

Surveys conducted just prior to the start of dredging operations, revealed that there was more shoal material in the Terrebonne Bay Mile 10.1 to Mile 6.0 dredging reach than could be accommodated by the existing Bay Chaland cell. Rather than placing this additional dredged material into the open water non-beneficial use disposal area located on the west side of the channel, the Bay Chaland site was expanded.

A new Bay Chaland disposal area cell was constructed along the northeastern side of the existing rock cells that make up the disposal area. Earthen retention dikes were constructed to a maximum elevation of about +4.0 feet MLG to contain the dredged material within the approximately 20-acre cell. Dredged material was discharged into the existing Bay Chaland cell and allowed to overflow across the subsided section of rock dike along the cell's northeastern boundary into the new disposal cell. An approximately 100-foot wide breach in the earthen dike

near its southeastern corner allowed dredged material effluent to exit the new disposal cell. It was anticipated that the maximum final elevation of dredged material placed into the expansion cell would be about +2.0 feet MLG following dewatering and compaction.

Result:

About 15 acres of subaerial land were created in a new placement cell at the Bay Chaland site as a result of this BU effort using about 1,123,642 cubic yards of dredged material. However, due to the passages of two hurricanes following this placement effort, no new acreage of coastal habitat was developed by this dredged material placement effort.

Notes:

The expanded earthen dike cell and all the dredged material placed in it eroded away due to the passage of hurricanes Katrina and Rita on 29 August 2005 and 24 September 2005, respectively.

BAR CHANNEL/CAT ISLAND PASS REACH (Mile 0.0 to -5.0)

Background:

During the FY 2005 maintenance event (contract W912P8-05-C-0030: 25 May 2005 – 4 September 2005), approximately 770,741 cubic yards of dredged material was removed from the Cat Island Pass reach (Mile 0.0 to Mile -4.1). The cutterhead dredge TOM JAMES performed all Cat Island Pass maintenance dredging under this contract.

Dredged Material Placement Event:

From 4 August 2005 through 4 September 2005, the cutterhead dredge TOM JAMES placed approximately 258,336 cubic yards of material at the Mile -1.7 SPD site, and approximately 512,405 cubic yards of material at the Mile -2.5 SPD site. A maximum of about 6,680 feet of dredge pipeline was used during this maintenance effort. The majority of shoal material in the Cat Island Pass channel was composed of hard-packed sand.

Containment and Access:

All dredged material removed from the Cat Island Pass bar channel was placed unconfined at the SPD sites.

Result:

Dredged material placed at the 2 SPD sites created 2 small mounds that broke the water surface. However, these subaerial mounds were eroded away by the passage of Hurricane Katrina. Prior to Hurricane Katrina, the elevations at the SPD sites ranged from +0.5 feet MLG to +2.0 feet MLG. After the passage of Hurricane Katrina, the elevations of the two SPD sites were at -4.0 feet MLG to -6.0 feet MLG. The two newly created islands were completely washed away by the storm surge.

Notes:

The passage of Hurricane Katrina resulted in the TOM JAMES leaving the Cat Island Pass work site on 26 August 2005 and returning on 2 September 2005.

2006

INLAND REACH (Mile 36.0 to Mile 12.0)

Background:

During the FY 2006 maintenance event (contract W912P8-06-C-0138: 9 May 2006 – 1 October 2006), approximately 725,290 cubic yards of dredged material were removed from the HNC Inland reach (Mile 36.0 to Mile 12.6). The cutterhead dredge MIKE HOOKS performed all maintenance dredging under this contract.

Dredged Material Placement Event:

From 11 August 2006 through 26 August 2006, the MIKE HOOKS placed approximately 67,450 cubic yards of material removed from the HNC Mile 21.5 to Mile 20.0 inland dredging reach into Marsh Creation Placement Site 21, and approximately 93,615 cubic yards of material into Marsh Creation Placement Site 23. These marsh creation placement sites are located on the HNC west bank between channels Mile 23.0 and 21.0

Dredged material slurry was discharged into the shallow open water areas of these disposal sites to an initial height that did not exceed +3.0 feet NAVD88. The anticipated target elevation following dewatering and compaction is about +1.5 to +1.0 feet NAVD88. Dredged material slurry was allowed to overflow over existing emergent marsh vegetation, but was not allowed to exceed a height of about one-foot above the existing marsh elevation to prevent excessive smothering of existing marsh vegetation by the dredged material slurry at these disposal sites.

About 5,400 feet of dredge pipeline was used to reach Marsh Creation Placement Site 21, and about 2,200 feet of dredge pipeline was used to reach Marsh Creation Placement Site 23

Containment and Access:

Channel-side earthen levees were refurbished as needed, with borrow material obtained from the channel bottom, to prevent dredged material from re-entering the channel. Construction equipment access to the marsh restoration disposal areas was limited to channel and canal banklines. No construction equipment was allowed to operate on existing marsh.

Result:

A total of about 22 acres of marsh and mud flats were created at the 2 HNC marsh creation placement sites (21 and 23) as a result of this BU effort using about 161,065 cubic yards of dredged material.

Notes:

The remaining 564,225 cubic yards of dredged material removed from the HNC Mile 36.0 to Mile 21.5 reach was placed into existing upland, confined disposal areas located adjacent to the banklines of this channel.

BAR CHANNEL/CAT ISLAND PASS REACH (Mile 0.0 to -5.0)

Background:

During the FY 2006 maintenance event (contract W912P8-06-D-0001: 29 November 2005 – 1 February 2006), approximately 567,045 cubic yards of dredged material were removed from the HNC Cat Island Pass reach (Mile 0.0 to Mile -3.2). The cutterhead dredge TOM JAMES performed all maintenance dredging under this contract.

Dredged Material Placement Event:

From 26 December 2005 through 1 February 2006, the cutterhead dredge TOM JAMES placed approximately 136,380 cubic yards of material at the Mile -1.7 SPD site, and approximately 430,665 cubic yards of material at the Mile -2.5 SPD site.

Containment and Access:

All dredged material removed from the Cat Island Pass bar channel was placed unconfined at the SPD sites.

Result:

No subaerial land was developed by this placement effort at the 2 SPDs

Notes:

About 19 days of dredging were lost during this contract due to rough sea/wind conditions in the Cat Island Pass channel.

2007

TERREBONNE BAY REACH (Mile 12.0 to Mile 0.0)

Background:

During the 2007 maintenance event (contract W912P8-07-C-0071: 14 July 2007 - 19 August 2007), approximately 442,856 cubic yards of dredged material were removed from the HNC Terrebonne Bay dredging reach and placed at the Wine Island placement site. This placement action resulted from a request by the Louisiana Department of Natural Resources to use Terrebonne Bay dredged material beneficially (this shoal material would have otherwise been discharged into the non-beneficial use open water disposal area located parallel to, and west of, the HNC Terrebonne Bay navigation channel). The state of Louisiana provided the incremental cost to utilize the Wine Island site for this maintenance dredging effort. The cutterhead dredge MISSOURI H performed all maintenance dredging under this contract.

Dredged Material Placement Event:

From 14 July 2007 through 19 August 2007, the MISSOURI H placed shoal material removed from the Houma Navigation Canal, Terrebonne Bay Mile 6.0 to Mile 1.0 dredging reach at the Wine Island placement site. Approximately 282,573 cubic yards of shoal material was placed within the rock retention dike encircling Wine Island, and approximately 160,283 cubic yards of shoal material were placed at an open water discharge site located adjacent to Wine Island.

Dredged material placed at Wine Island was visually classified as 90% silt and 10% sand. A maximum of about 31,400 feet of dredge pipeline was used for this maintenance effort.

Containment and Access:

No refurbishment/repair work was performed on the Wine Island encircling rock dike. Dredged material was allowed to filter through openings in the rock dike into the surrounding water.

Result:

Approximately 10 acres of subaerial barrier island habitat was initially formed by this placement of Terrebonne Bay dredged material. However, soon after placement, a majority of the dredged material placed at this site had been eroded away and the area contained within the rock dike had reverted back to primarily shallow open water habitat.

Notes:

1. Placement of this material at Wine Island was paid for by state surplus funds (about \$1.3 million).
2. The high silt and low sand content of shoal material removed from the Terrebonne Bay Mile 6.0 to Mile 1.0 dredging reach was not appropriate material for restoring barrier islands along coastal Louisiana (sediments characterized by a higher sand content is preferred for such barrier island restoration efforts). The loss of the majority of these Terrebonne Bay sediments placed at the Wine Island site within a year following completion of disposal operations is a direct result of the high silt content characterizing this material.