EAST TIMBALIER ISLAND

RESTORATION PROJECT

LAFOURCHE PARISH, LOUISIANA

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Contract File, 435CW-97-10

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I. GENERAL REQUIREMENTS

A. General Information

The East Timbalier Island is a coastal barrier island located in the southern end of Timbalier Bay just west of Port Fourchon in Lafourche Parish, Louisiana. The main objective of the project was to restore the eroded island, which encountered extensive damage by Hurricane Andrew in 1992.and other storms.

B. Scope

The work consisted of building a 200ft ± dune to a +5.0 NGVD (National Geodetic Vertical Datum) from Baseline (B/L) Sta. –4+00 to Sta. 160+00 with the exception of a mitigation area from 8+00 to 29+00. On the north or bay side of dune, a +2.0 marsh platform was also constructed for a width of approximately 500ft ±. The contractor was required to fabricate retaining dikes, however, only a portion could be fabricated due to the numerous pipelines and also the change in site conditions. The contractor was also to install a rubble mound revetment along the dune at Sta. –4+00 to 8+00 and from Sta. 97+00 to 160+00. The tolerance as specified for the elevations was defined as ± 0.75 ft.

C. Sponsors

The East Timbalier Island Restoration Project (ETIRP) was sponsored by the Louisiana Department of Natural Resources – Coastal Restoration Division (DNR/CRD) and the Federal sponsor was the National Marine Fisheries Services (NMFS). The ETIRP was funded as two separate projects - one being the TE-25 Sector which included the western end of the Island up to the TE-30 Sector. The break point between the two projects is at approximately Sta. 80+00. The NMFS Project numbers were XTE-67 and XTE-45/67B.

DNR awarded a contract to Picciola & Associates, Inc of Cut Off, Louisiana for the engineering and design of the project. The State Purchase Order No. was 33133456.

After the solicited bids were received and reviewed, the project was awarded to WEEKS MARINE, Inc. of New Jersey with LUHR BROTHERS Inc. and DEAN EQUIPMENT, Inc. as the subcontractors for the stone and retaining dikes respectively.

The original project duration was bid for 240 days (commencing 13 April 99 and ending 8 Dec 99). The project lasted a total of 273 days, ending 10 January 2000. The original value of the contract was for a lump sum of $8,878,000.00 with an allocation of $2,979,705.00 for TE-25 Sector and $5,898,295.00 for the TE-30 Sector.

II. SIGNIFICANT DATES/NUMBERS

A. Contract Award	**5 MARCH 1999**
B. Notice to Proceed	**13 APRIL 1999**
C. Pre-construction Conference	**07 APRIL 1999**
D. Start of Work	**3 APRIL 1999**
E. Date Set for Completion (240 Days)	**08 DECEMBER 1999**
F. Revised Date Completed	**10 JANUARY 2000**
G. Number of Days Pass Completion Date	**33 DAYS**

	TE-25	$2,979,705.00
	TE-30	$5,898,295.00
Original Value of Contract		**$ 8,878,000.00**
	TE-25	$ 77,500.00
	TE-30	$ 124,500.00
Revised Contract Amount Change Order #1		**$ 201,500.00**
New Contract Amount with Change Order		**$ 9,079,500.00**

III. EQUIPMENT USED ON THE PROJECT:

A. PRIME CONTRACTOR - WEEKS MARINE, Inc. was the prime contractor for this project. Their mailing address is - P.O. Box 339 Kenner, LA 70063-0339. They were responsible for the dredging operations and construction of the dune and marsh platform. The following is a list of equipment the contractor utilized throughout the project duration:

EQUIPMENT	STARTING	ENDING	AREAS WORKED
BEACH BUILDER (Dustpan Dredge)	29 June 99	5 Aug 99	Dredged in Borrow Area C-3
(9400 HP)	6 Aug 99	24 Nov 99	Used as a Booster or Dredges KANSAS and TOM JAMES
ARKANSAS (24-Inch Cutter head) (3,750 HP)	6 Aug 99	13 Oct 99	Used in Borrow Area C-3
TOM JAMES (30-Inch Cutter head) (9,000 HP)	3 Nov 25	25 Nov 99	Used in Borrow Area C-3
Quarter Boat (BT-105)	19 June 99	12 Jan 00	Used as Galley & Quarters
Tug **SHA JAMES** (400 HP)(Tender)	25 June 99 19 Sept 99	01 Aug 99 12 Jan 00	Used around Dredges and Quarter Boat
Tug **RUTH** (400 HP)(Dredge Tender)	25 June 99	25 Sept 99	Used around Dredges
Tug **LOIS J** (800 HP)	19 June 99	03 Oct 99	Used around Dredges
Crane Barge w/Lima Crane #262	19 June 99	22 July 99	Used for Handing Pipeline
Crane Barge w/American #BT-110	26 July 99 1 Dec 99	12 Aug 99 12 Jan 00	Used throughout the site Used to load Shore pipe
Crane Barge w/Link belt	12 Aug 99	14 Oct 99	Used for Pipe & Anchors
Anchor Barge (Skaggit) #841	19June 99	27 June99	Used in Submerge Line

EQUIPMENT	STARTING	ENDING	AREAS WORKED
Anchor Barge (Skaggit) #585	23June 99	12 Jan 00	Assist Dredges with Anchors & Line
Anchor Barge (Skaggit) #805	25 June 99	12 Jan 00	Assist Dredges with Anchors & Pipeline Assembly
D-6 Caterpillar Dozer #8821	26 June 99 3 Sept 99	12 Aug 99 03 Jan 00	Used on Fill Shaping & Grading
D-6 Caterpillar Dozer #8810	4 July 99	24 Aug 99	Used on Fill
D-6 Caterpillar Dozer #8820	24 July 99 03 Jan 00	24 Aug 99 12 Jan 00	Used on Fill (Replaced #8810) Replaced #8821, Shaping & Grading
D-6 Caterpillar Dozer #8819	20 Aug 99	10 Dec 99	Used on Fill
D-6 Caterpillar Dozer #8825	11 Sept 99	11 Jan 00	Used on Fill/Shaping & Grading
D-4 Caterpillar Dozer #8822	8 July 99	16 Sept 99	Used on Fill
D-7 Caterpillar Dozer #8801	26 Aug 99	16 Sept 99	Too Poor Condition to Be Used
Water Barge BT-841	19 June 99 03 Dec 99	26 Nov 99 12 Jan 00	Water Supply for Quarter Boats
Welding Barge #780	6 Aug 99	14 Oct 99	Used with the Tom James
Supply Barge BT-214	6 Aug 99	16 Sept 99	Used for Storage of Equipment
Fuel Barge BT-790	22 July 99 1 Dec 99	14 Oct 99 21 Dec 99	Used for Fueling Equipment

EQUIPMENT	STARTING	ENDING	AREAS WORKED
SURVEY BOAT **CAPT. TOM**	30 June 99 14 Aug 99	31 July 99 7 Sept 99	Used for surveys around the Dredges with surveys (GPS)
SURVEY BOAT **TRINITY**	8 Aug 99	10 Aug 99	Used for Surveys (GPS)
Survey Skiff w/100 HP	10 July 99 12 Aug 99	3 Aug 99 10 Sept 99	Used for surveys on the Island
Survey Skiff w/ 2 – 115 HP "Survey 4"	19 June 99	10 July 99	Used on Island (GPS)
Survey Skiff w/75 HP	28 April 99 4 Nov 99	9 Sept 99 12 Jan 00	Used as Transportation to Island
Survey Skiff w/90 HP	3 Aug 99 10 Sept 99	12 Aug 99 11 Nov 99	Used as Transportation to Island
Work Skiff w/75 HP (MERCURY)	27 Aug 99	3 Nov 99	Used for Transportation
SURVEY BOAT **SABINE**	7 Sept 99	12 Jan 00	Used for Surveys (GPS) & Transportation
BUCKET DREDGE # 646	15 Sept 99	30 Sept 99	Used to dig Floatation Cuts
BUCKET DREDGE "Week's 542"	13 April 99 01 Nov 99	21 June 99 7 Nov 99	Used to dig Floatation Cuts
Welding Machine #256	30 June 99	7 Jan 00	Used on the Fill
Light Plant # L-145	30 June 99	3 Jan 00	Used on the Fill
Dump Shack (on Skids)	30 June 99	8 Jan 00	Used on Fill
Front End Loader (Cat) #966F)	4 July 99	11 Jan 00	Used to handle pipe on Fill

EQUIPMENT	STARTING	ENDING	AREAS WORKED
Diesel Tank #132 (1000 Gal. on Skids)	30 June 99	11 Jan 00	Used on the Fill
Diesel Tank #295 (2000 Gal. on Skids)	23 Sept 99	3 Jan 00	Used on Fill
ATV #484	30 June 99	21 Dec 99	Used for Transportation on Fill
Tug MARIE (400 HP)(Tender)	1 Oct 99	12 Jan 00	Replaced the Tug "Ruth" Used around Quarter Boat
98 Link belt Dragline	16 Oct 99	3 Jan 00	Used to work with rock Trenching and Flotation Cut
Supply Barge BT-171	30 Oct 99	25 Nov 99	Part of Tom James Equipment
Water Barge BT-785	1 Nov 99	25 Nov 99	Part of Tom James' Equipment
TUG KATHY PAWG	3 Nov 99	25 Nov 99	Part of T.J. Attendant Plant
TUG JEANNE JAMES	3 Nov 99	25 Nov 99	Part of T.J. Attendant Plant
TUG CAPT. JOHN	3 Nov 99	25 Nov 99	Part of Tom James A. Plant
Derrick Barge BT-160	3 Nov 99	25 Nov 99	Part of Tom James A. Plant
Compressor Barge BT-194	1 Nov 99	25 Nov 99	Part of T. James Attendant Pt
Welding Barge BT-207	1 Nov 99	25 Nov 99	Part of Dredge TJ Att. Plant

EQUIPMENT	STARTING	ENDING	AREAS WORKED
Skagit Barge BT-237	1 Nov 99	25 Nov 99	Part of Dredge TJ Att. Plant
Skidder Barge BT-240	12 Nov 99	25 Nov 99	Part of Dredge TJ Attendant P
Survey Skiff w/Twin 75 HP	13 Nov 99	15 Nov 99	Used for Hydro Surveys
Skidder Barge BT-152	3 Dec 99	12 Jan 00	Used for picking up Sub line
Four (4) Overflow Weir Boxes	3 July 99	7 Sept 99	Never Used
Supply Barge W-295	16 Dec 99	21 Dec 99	Used to transport Shore pipe
Water Tank on Skidds/550 Gallons	29 Aug 99	8 Jan 00	Used to wash equipment

B. SUBCONTRACTOR – DEAN EQUIPMENT RENTALS. This subcontractor was responsible for building rear containment dikes. Their address is 3636 Peterson Road, Harvey, and LA 70058. Listed below is the equipment that the subcontractor used in performing his work.

1 - 325 Caterpillar Marsh Buggy with a 1.5 cubic Yard Bucket (Used for a short reach)
1 - 3400 Linkbelt Marsh Buggy with 1 cubic Yard Bucket (Used for a long reach)
1 - Work Skiff with 25 HP Outboard
1 - 1000 Gallon Fuel Tank & 1 – 500 Gallon Fuel Tank on Skids
1 – Supt, 2 Operators, and 2 Oilers were used on the project to perform the work
(Sub contractor worked 12 Hrs per day, 7 days per week)

C. SUBCONTRACTOR - LUHR BROTHERS, Inc. was the subcontractor responsible for the rubble mound construction in the placement of 440 Rip Rap and filter fabric. Their address is: P. O. Box 50, Columbia, IL 62236. Listed below is the sub contractor's equipment used on the site to perform the work.

EQUIPMENT	DATE USED	DEPARTED	PURPOSE
Tug **CHARLIE B** (460 HP)	11 Oct 99	17 Nov 99	Used as a Switch Boat to move Partial Barges to Site
Spud Barge L-1101 w/88 B Bucyrus	11 Oct 99	17 Nov 99	Used to unload partial barges on On the Island & Stock Pile
Spud Barge L-892 w/4600 Manitowoc	11 Oct 99	13 Oct 99	Used at Load site for Partials
2- Cat. D-400 Trucks (#9863 & 11333)	11 Oct 99	18 Dec 99	Used to Haul Stone
1 – 330 Cat. Track hoe Excavator #14435	11 Oct 99	27 Oct 99	Used to place rock
1 – D-4 Caterpillar Dozer	11 Oct 99	18 Dec 99	Used for Sloping and Grading
1 – Office Barge #L-700	11 Oct 99	17 Nov 99	Used for Supplies & Office
1 – Work Skiff with 90 HP OB)	11 Oct 99	17 Nov 99	Used for transportation
1- Work Skiff with 225 HP OB	11 Oct 99	18 Dec 99	Used for Transportation
1 – 33/ Cat. Track hoe Excavator #14575	20 Oct 99	18 Dec 99	Used to Load Partial & work on Land with trucks
1 – Crew Boat **MISS BERNICE**	16 Oct	22 Oct	Used for transportation

(1 Supt. – 4 Operators, 1 Winchman, and l Laborer was used to do the work)
(The subcontractor worked 7 days a week, 12 Hrs per day)

D. VENDORS - The prime contractor rented the following equipment from these vendors in order to perform the work. They are as follows:

NAME OF VENDER	EQUIPMENT	DATES USED	USE
Glenn Thibodeaux Houma , La. (Privately Owned)	Crew Boat **CAPT. TIBB**	9/13/99 – 6/30/99	For Transportation
Diamond B. Rentals Post Office Box 10310 New Iberia, LA 70562	Crew Boat **DIAMOND JIM** Crew Boat **MISS BERNICE**	6/30/99 – 10/8/99 7/31/99 – 8/14/99	Transportation to and from Landing
Chien Rouge Rentals Houma, LA.	Quarter Boat **BEAU CHIEN**	4/22/99 – 6/19/99	Quarters for Crew
Magnolia Quarter Boats River Ridge, LA 70123	Quarter Boat MAG I	6/29/99 – 10/23/99	Galley & Quarters for Crew
Essex Crane Rental P.O. Box 286 Fort Lee, NJ 07024	Crane Barge 4507 with 3900 Manitowoc	6/26/99 – 7/22/99	On jobsite to unload pipe, equip. & submerged P/L
Central Gulf Towing Co. Houma, LA	Tug **JANE** Tug SUSAN **G.**	6/19/99 – 6/26/99 12/16/99 – 1/12/00 6/2699 – 7/8/99	Towing and on pipeline Towing & Pipeline
McDonough Marine 1750 Clearview Parkway Metairie, LA 70001	Supply Barge OU-147 Hopper Barge #3560	6/29/99 – 9/15/99 8/14/99 – 9/15/99	Hauling Equipment Hauling Equipment
Double Eagle Marine Morgan City, LA	Tug **COASTAL** EAGLE (1500 HP) Tug CAJUN EAGLE (1200 HP)	6/29/99 – 12/16/99 10/8/99 – 10/14/99	Assist Dredges Relieved Coastal Eagle for Repair
Central Barge Rental Houma, LA	Supply Barge BLMS #1	7/1/99 – 7/5/99 8/12/99 – 1/12/00	Hauling Equipment an Supplies

NAME OF VENDER	EQUIPMENT	DATES USED	USE
Wilco Marsh Buggies Inc. P.O. Box 710 Marrero, LA	225 Cat. w/1 Cyd Bucket (#W-21)	6/19/99 – 8/14/99	Used on Fill (Dikes)
	325 Cat. w/2 Cyd Bucket (#W-49)	7/03/99 – 11/30/99	Used on Fill (Dikes)
	Kobelco w/2 Cyd Bucket7	7/03/99 – 9/03/99	Used on Fill (Dikes
	325 Cat. w/4 Cyd Bucket (# W-50)	8/20/99 – 11/30/99	Used on Fill (Dikes)
	325L Cat. w/4 Cyd Bucket (# W-11)	9/3/99 – 11/12/99	Used on Fill (Dikes)
	Rolligon ATV	10/4/99 – 11/30/99	Transportation
	Mechanic Shack	10/4/99 – 11/30/99	Repairing M. Buggies
Grand Rental Station New Orleans, LA	Light Plant #6	7/24/99 – 8/20/99	For Lighting on Fill

IV. PROJECT DESCRIPTION & COST

ITEM NO.	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
1	MOB/DEMOB (TE – 25 $ 352,800.00)	LUMP SUM (TE-30 $697,200.00)	$1,050,000.00	**$ 1,050,000.00**
2	HYDRAULIC FILL (TE –25 $2,040,995.00)	2,574,276 cu.yds (TE-30 $ 3,607,302.25)	$2.15 / cu. yd.	**$ 5,648,297.25**
3	CONTAINMENT DIKES (TE-25 $ 209,650.00)	5,990 Lin. Ft. (TE-30 $ 0.00)	$35.00 / ft.	**$ 209,650.00**
4	RUBBLE MOUND REVETMENT	26,978 Tons	$52.50/ton	**$ 1,416,345.00**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
	(TE – 25 $ 605,062.50) (TE-30 $811,282.50)			
5	GRADING & SHAPING (TE-25 $ 62,000.00) (TE –30 $34,000.00)	96 Stations	$1000.00 / 100 ft	**$ 96,000.00**
6	ALTERNATE #1 HYDRAULIC FILL (TE-25 117,605.00) (TE – 30 $ 31,091.15)	69,161 Cys	$ 2.15 / cu yd	**$ 148,696.15**
7	ALTERNATE #2 RUBBLE MOUND REVETMENT (WEST CELL, TE-25 $ 262,710.00)	5,000 Tons	$ 52.50/ton	**$ 262,710.00**
8	CHANGE ORDER #1 FRONT CONTAINMENT DIKES (TE-25 $93,000.00) (TE-30 $ 37,200.00)	8,400 Ft	$ 15.50 P/Ft	**$ 130,200.00**
TOTAL CONTRACT AMOUNT EARNED BY PRIME CONTRACTOR				**$ 8,961,898.40**
TOTAL AMOUNT SPENT IN TE-25			$ 3,743,822.50	
TOTAL AMOUNT SPENT IN TE-30			$ 5,218,075.90	

V. ITEMS OF WORK/CONSTRUCTION ACTIVITIES

A. ITEM 01 – MOBILIZATION/DEMOBILIZATION

The bucket dredge WEEKS 542 mobilized on the project and commenced work on 13 April 1999. A floatation channel was excavated at B/L Station 86+00 heading in a southerly direction. The contractor was paid certain percentages for each phase of the mobilization. For mobilization of the dike equipment, the contractor was paid 30%. Upon mobilization of the dredge **BEACHBUILDER,** the contractor was paid an

additional 20% and the remaining 10% was paid for the mobilization of the rock contractor's equipment for the rubble mound revetment. This correlated to a total of 60% of the mobilization/demobilization cost. Once the contractor completed 50% of the work; an additional 20% of the original mobilization price was paid. ($210,000.00) Once the prime contractor was over 75% complete, he was paid the remaining 20%. ($ 210,000.00) The total amount paid for mobilization and demobilization was $ 1,050,000.00. The contractor removed all equipment off of the island on 11 January 2000. The only thing he had left to remove from the project was approximately 1,400 feet of submersible line.

B. ITEM 02. – HYDRAULIC FILL

The dredge **BEACHBUILDER** (Dustpan dredge) arrived on the project 29 June 1999. Prior to commencement of work on the project, a submerged pipeline was laid approximately 15,000 ft in length from the Borrow Area C-3 to the western end of the island near B/L Sta. 21+00. At this point on the Gulf side, a y-valve was installed on the beach leading to the West Cell at B/L Station 8+00 and the other side leading to the east side to Station 30+00. There was no pumping between Station 8+75 to Station 30+00, because of it being a mitigation area. The pipeline was laid adjacent to the mitigation area along the beach.

The dredge **BEACHBUILDER** began pumping on the west cell (Station 8+00 to –4+00) on the 8th of July 99. The dredge started working on the southwest side of the borrow area, heading in a northerly direction. The dredge excavated material from Range 10+00 to Range 26+00. Being a Dustpan dredge, 15 cuts at a width of 35 ft were excavated. Some cuts had two passes. The dredge encountered clay at different areas; which was just enough to hinder production to some extent. The dredge completed pumping material on the west fill area of the TE-25 sector on 13 July 99, totaling to approximately 107,100 cubic yards. That same date, the dredge began pumping at the east sector of the TE-25 cell, Station 30+00. The dredge's production continued to be low at this point. On 5 Aug 99, the dredge ceased dredging operations after making various cuts from Ranges 0+00 to –16+00, heading in an easterly direction. A total of 254,000 cubic yards were pumped in the east fill from Sta 30+00 to Sta 54+00. The dredge used approximately 21,000 ft of pipeline during its period of operation.

On the 6th of August, the contractor began preparations for the arrival of the Dredge **ARKANSAS**. It arrived on the site to replace the **BEACHBUILDER**. The Dredge **ARKANSAS** began pumping on 7Aug 99, with the Dredge **BEACHBUILDER** being utilized as a booster pumping on approximately 24,000 ft of pipeline. The dredge started making cuts at Sta 16+00 heading north as far as the rubber-line would reach. The dredge

ARKANSAS was making a cut 300 ft wide, however, reduced its width to 250 feet. The Dredge **ARKANSAS** worked until 5 Oct 99 then was hindered with rough seas. Due to the low freeboard; the Dredge had to demobilize on 13 Oct 99 and never returned to the area. During its times of operations, the Dredge pumped 1,621,145 cubic yards of fine silty sand mixed with clay.

The Dredge **TOM JAMES** arrived on the project on 3 November 99. It began operations on 4 Nov 99. It also used the Dredge **BEACHBUILDER** as a booster using 28,750 feet of pipeline. The Dredge **TOM JAMES** completed pumping operations on 24 Nov 99 removing approximately 719,034 cubic yards from the designated Borrow Area C-3. The dredges **TOM JAMES** and **BEACHBUILDER** were demobilized off of the projected on 24 November 99.

The following information outlines the Dredge's statistics:

DREDGE BEACH BUILDER (Dustpan Dredge – 9,400 HP)
(No Booster Pump)
Dates of Work: 7 July thru 5 August 99
Total Operating Time: 406:30 Hrs
Areas Pumped:
Dune: Sta. 8+00 to Sta –4+35 (West Cell) 48,860 Cys (TE-25)
Marsh Platform: Sta. 8+00 to –4+35 (W. Cell) 58,240 Cys (TE-25)
Dune: Sta. 30+00 to 53+50 (TE-25) 151,610 Cys
Marsh Platform: Sta. 30+00 to 56+00 (TE-25) 102,390 Cys
Total Cys Pumped: 361,100 Cys
Total Days Worked: 30 days
Total Weather Days: 0 days
Average Hourly Production: 888 Cys per Hr
Average Daily Production: 12,036 Cys per Day

DREDGE ARKANSAS (Hydraulic 24 Inch Cutter head with 3,750 HP)
(Using the Beach Builder as a booster pump)
Dates of Work: 7 Aug 99 thru 13 Oct 99
Total Operating Time: 863:50 Hrs
Areas Pumped:
Dune: Sta. 53+50 to Sta. 80+00 (TE-25) 580,400 Cys
Marsh Platform: Sta. 56+00 to Sta. 80+00 (TE-25) 139,600 Cys

Dune: Sta. 80 +00 to Sta. 103+00 (TE-30) 675,645 Cys
Marsh Platform: Sta. 80+00 to Sta, 111+00 (TE-30) 225,500 Cys
Total Cys Pumped: 1,621,145 Cys
Total Days Worked: 53 Days (Not Incl Weather)
Total Weather Days: 15 Days
Average Hourly Production: 1,877 Cys per Hr
Average Daily Production: 30,588 Cys (Not Including Weather Days)
Daily Production with Weather: 23, 840 Cys per Day

DREDGE TOM JAMES (Hydraulic 30 Inch Cutter head with 9000 HP)
(Using the Beach Builder as a booster pump)
Dates of Work: 4 Nov thru 24 Nov 99
Total Operating Time: 295:00 Hrs
Areas Pumped:
Dune: Sta. 103+00 to 114+00 (TE-30) 525,434 Cys
Marsh Platform: Sta. 80+00 to 114+00 (TE-30) 193,600 Cys
(Filled in areas from 80+00 to 111+00)
Total Cys Pumped: 719,034 Cys
Total Days Worked: 18 Days (Not Including Weather)
Total Weather Days: 3 Days
Average Hourly Production: 2,437 Cys per Hour
Average Daily Production: 39,946 Cys per Day (Not Including Weather Days)
Daily Production with Weather: 34,240 Cys per Day

A total of approximately 216.70 acres of newly established land was created on the Island. In the TE-25 (western cell) 14.40 acres of marsh and 5.70 acres of dune was created. On the big island (TE-25 & TE-30) 146.80 acres of marsh and 49.80 acres of dune was created. This is 96% of the original design projection.

The 3 Dredges pumped a total of 2,701,279 Cubic Yards; this is what the contractor claimed to have removed. (There was a Deduction of 5,003 cubic yards of material pumped on the dune and not credited for pay due to erosion before inspection). After the deduction the prime contractor was left with a total pay volume of 2,696,276 cubic yards. The engineering firm, Picciola & Associates, took surveys of the Borrow area confirming these computations. The sum of $ 5,534,693.40 was paid at a cost of $ 2.15 per yard under this item. The TE-25 total was 1,004,000 cubic yards and the TE-30 total was 1,692,276 cubic yards.

C. ITEM 03 – CONTAINMENT DIKES

The subcontractor Dean Equipment mobilized two marsh buggy excavators on 4 May 1999 and began building retaining dikes in the west sector of TE-25. A 325 Caterpillar Marsh Buggy with a 1.5 cubic yard bucket built the base of the dike. A 3400 Linkbelt with a 1 cubic yard bucket and a longer reach completed the dike to grade from station 0+00 to 33+70 (3,370 feet) commencing on the northwest corner. The west sector (TE-25) was completed on 22 May 99. The two marsh buggies then moved to B/L Station 30+00 on the eastern end of TE-25 and resumed building rear-retaining dikes.

The subcontractor built approximately 5990 ft of retaining dikes. Of this total 4,950 feet were built to grade of +5.0' and 1,040 feet was partially built and later completed by the prime contractor prior to pumping in the areas. Due to excessive amounts of unmarked shallow pipelines, the dike construction was discontinued on the bay side of the project. Also with the marsh grass used as a border, it was decided by DNR & NMFS that the dikes were not needed. The dike construction was eliminated on the gulf side due to the increased depth of water. The prime contractor was paid $35.00 per linear foot amounting to $ 209,650.00, and totaling to 5,990 linear feet of retaining dikes. Dean Equipment demobilized all of its equipment off the site on 7 June 99.

D. ITEM 04 – RUBBLE MOUND REVETMENT

The subcontractor LUHR BROTHERS, INC. was the subcontractor involved in the construction of the Rubble Mound using 440 riprap Stone and Filter Fabric. The subcontractor mobilized his equipment on the site on 11 Oct 99 and began placing filter fabric and stone in the TE-25 Sector, the extreme West End of the island. The subcontractor began unloading and placing stone in the TE-25 Sector on 13 October 1999.

On 19 October 1999, the west cell was completed using a total of 5,004 tons of stone placed from B/L Station +8+70 to Station –4+45, including an additional 420 feet for the west wrap. The total length of rubble mound placed in the West cell was 1,735 feet, averaging 2.88 tons per foot.

On 11 November 1999, the subcontractor began placing rock and fabric at Station 96+92 heading east. The contractor had to wait on the prime contractor to complete the dune prior to building the rubble mound revetment. Due to plans changing and the contract ending at Station 114+00, the contractor started at Station 96+00 heading west. The subcontractor, Luhr Bros., completed the reach to Station 114+00, including a 600 feet wrap on 19

November 1999. The subcontractor built a rubble mound revetment heading west up to Station 46+00 at a height of +5.0. (No lower than +5.0) All rockwork was completed on the Island on 17 December 1999 by Luhr Bros.

The original contract amount was for 31,700 tons of stone. The actual tonnage received on the project was 31,982 tons. From Station 46+00 to Station 80+00 plus the West Cell (Station -4+35 to Station 8+70) (TE-25), a total of 11,525 tons of stone was used. From Station 80+00 to Station 114+00, including the wrap, a total of 15,453 tons of stone was used.

The Stone source was from one of the subcontractor's rock quarries located in St. Genieve, Missouri. The Rock Barges were brought to Port Fourchon, La. from the contractor's quarry and divided into partial loads in smaller barges. Due to the shallow water in the bay, it was impossible to reach the island with the fully loaded barges; therefore, loads had to be cut in half for a shallower draft. Once the partial loads reached the island, the stone was loaded on trucks and dumped on location. Due to the slow progress of the project, some rock had to be stock piled prior to placement. Full barges were measured by DNR Reps on the site prior to being cut. The partial barges were also measured full and empty. The following table shows a list of the full and partial barges delivered to the project, including the dates measured.

BARGE #	No.	DATE MEASURED		TONNAGE	CUT BARGES
		LOADED	EMPTY		
L-1032	1	11 Oct 991	3 Oct 99	1497 Tons	L-1048/L1044
GD-201	2	12 Oct 99	14 Oct 99	1500 Tons	GD-201/L-1032/L-1046
L-1017	3	15 Oct 99	16 Oct 99	598 Tons	L-1044/L-1017
L-979	4	12 Oct 99	19 Oct 99	1395 Tons	L-1032/L-1044/L-979
L-985	5	12 Oct 99	22 Oct 99	1565 Tons	L-1032/L-1046
GD-217	6	19 Oct 99	26 Oct 99	1456 Tons	GD-217/L-985
L-1043	7	20 Oct 99	27 Oct 99	1496 Tons	L-985/GD-217
GD-218	8	21 Oct 99	29 Oct 99	1489 Tons	L-985/GD-218
L-1027	9	22 Oct 99	31 Oct 99	1531 Tons	L-1032/L-1027
GD-205	10	31 Oct 99	1 Nov 99	1496 Tons	L-1046/GD-218
L-1018	11	3 Nov 99	7 Nov 99	1595 Tons	L-1018/GD-205
GD-206	12	1 Nov 99	8 Nov 99	1479 Tons	GD-218/L-1027
GD-202	13	5 Nov 99	8 Nov 99	1552 Tons	GD-205/GD-205/GD-202
GD-204	14	7 Nov 99	9 Nov 99	1549 Tons	GD-205/GD-206
L-1003	15	7 Nov 99	10 Nov 99	1535 Tons	GD-206/L-1003
L-1001	16	7 Nov 99	10 Nov 99	1436 Tons	L-1001/GD-206
L-1038	17	10 Nov 99	12 Nov 99	1545 Tons	GD-204/GD-206/GD-204

BARGE #	No.	DATE MEASURED		TONNAGE	CUT BARGES
		LOADED	EMPTY		
GD-215	18	19 Oct 99	12 Nov 99	1563 Tons	GD-215/GD-204
GD-213	19	11 Nov 99	13 Nov 99	1568 Tons	GD-213/L-1038
GD-209	20	12 Nov 99	14 Nov 99	1600 Tons	GD-209/L-1038/L-1001
L-997	21	13 Nov 99	15 Nov 99	1537 Tons	L-997/L-1038

21 Loads **31,982 Tons** **21 Full Loads/ 47 Partial Loads**

E. ITEM 05 – GRADING & SHAPING

The contractor graded and shaped the first area in the TE-25 West cell on 24 Aug 1999. The contractor was paid $1000.00 per 100 ft Stations. The West Cell was finally completed with the Shaping and Grading on 28 Oct 99. After degrading material placed on the island by Pioneer Natural Resources during a dredging project and removing some stockpiled discharge pipe; the work was substantially completed and accepted on January 12, 2000. The Contractor was paid 12 stations for a total of $12,000.00 from –4+00 to +8+00 in the TE-25 sector.

The prime contractor completed Grading and Shaping the dune and marsh platform from Station 30+00 to Station 80+00 (TE-25 Sector) on 26 Sept 99. The prime contractor agreed with the DNR that the dune would be regraded and shaped once the shore pipeline was removed. This was completed around 8 January 2000.

Grading and Shaping of the Dune and Marsh Platform from Station 90+00 to Station 106+00 was done in December 1999. However, the last section from Station 106+00 to 114+00 was finally accepted on 6 January 2000. The remaining area from station 80+00 to station 90+00 was accepted on 11 January 2000.

F. ITEM 06 – ALTERNATE #1/HYDRAULIC FILL

The prime contractor dredged a total 69,161 cubic yards by the Dredge BEACHBUILDER. In the West Cell, (TE-25 Sector). The contractor was paid a price of $ 2.15 per cubic yard amounting to $ 148,696.15.

G. ITEM 07-ALTERNATE #2/RUBBLE MOUND REVETMENT

The contractor was paid a total of $ 262,710.00 for 5,004 Tons of 440 riprap (52.50 per Ton) plus the fabric for the West Cell (TE-25). The Stone and fabric was placed from Station

8+70 to Station –4+45 and 420 feet on a wrap on the extreme west end of the Fill area. Average tons per foot was 2.9 Tons. Due to existing rocks on the front side of the rubble mound, less stone was required to be at Elevation +5.0

H. ITEM 08 - CHANGE ORDER #1/CONTAINMENT DIKES

Front Containment dikes were constructed at a cost of $ 15.50 per foot from Station 30+00 to Station 114+00. A total of 8,400 feet was constructed amounting to $ 130,200.00.

VI. ADDDITIONAL DREDGING ACTIVITIES PERFORMED ON THE PROJECT

A. WEEK'S BUCKET DREDGE 542

The Bucket Dredge was the first equipment to be mobilized on the project, which was 13 April 99. The dredge's primary purpose was to dig a floatation cut in order to reach the island to mobilize other equipment on the Fill area. The Dredge began excavating a 60 x – 7.0' floatation cut at Station 86+50, heading south towards the Gulf of Mexico in the TE-30 Sector. (This was the Chevron Slip where the old Headquarters building was located.) The bucket dredge started about 100 feet north of the Chevron pipeline, running parallel to the existing island. The dredge excavated the cut up to an existing rock dike on 22 April 99. It then continued south penetrating the rock dike meeting the Gulf of Mexico. Due to the seas from the Gulf averaging about 2 to 3 feet; the dredge didn't go any further. It was actually too rough for that type of rig. The spud barge then started resweeping the channel placing all of the excavated material on the East Side of the floatation channel.

On 27 April, the bucket dredge moved to an easterly direction along the existing rock dike, just past the old headquarters location. Due to the strong currents going through the cut and after removing the rock dike, the dredge closed the cut with the excavated rock. The currents going through the cut caused rapid siltation in the newly excavated cut. The dredge started casting material over the rock dike at Station 87+00 attempting to build the front dike. The operations were unsuccessful due to the seas washing the material away as fast as it was casted. The prime contractor made no headway as he advanced to about Station 88+00.

On 1 May 99, the bucket dredge was shut down by Week's main office until further notice. The machine remained idle for ten days. Then on 11 May, the crew on the bucket dredge got orders to go head the opposite way; going west along the backside of the existing rock dike. The spud barge went to about Station 78+00 and was still unable to do anything with the Gulf waters. After the contractor started stating that it was a site condition change and was unable to work in the rough seas (2-3 feet) he started sweeping out the floatation channel on 19 May 99. The bucket dredge swept the old existing Chevron channel, heading back north

towards the Bay. On 23 May, the bucket dredge demobilized off the project and went on another job not associated with this one.

On 31 May 99, the Bucket Dredge 542, returned to the project in the TE-25 Sector, and started excavating a floatation cut to reach the west end of the island. The dredge excavated a floatation cut –7 x 60' heading south at Station 0+00 for about 2500 feet. Work was completed on the west end of the island on 13 June 99.

On 14 May 99, the bucket dredge moved back to the floatation cut on the east side in the TE-30 Sector at Station 86+00. The dredge completed re-sweeping the floatation channels on 21 June 99 and then demobilized off of the project.

During the Bucket Dredge 542's operations, it encountered 3 pipelines in TE-30. A two-inch water line was ruptured and two abandoned lines were also picked up. In the TE-25 Sector, 4 Lines were hit; 3 Abandon Lines, and 1 active 2 ½ inch high pressure gas line. All 6 lines encountered were unmarked and were not shown on any maps. There were no oil spills and Pioneer personnel were immediately on the site to close the valves on the active line. The dredge operates with a crew of 4 to 5 people, working 24 hours per day.

B. WEEK'S BUCKET DREDGE 646

The Bucket Dredge 646 mobilized on the project on 19 Sept 99. Its main purpose was to resweep the two floatation channels previously dredged by the Bucket Dredge 542. This was required due to the channel silting up since the previous dredging. The bucket dredge re-swept the TE-25 floatation channel and completed it on 24 Sept 99. Then it moved to the TE-30 Sector floatation channel and completed the resweeping on 29 Sept 99 and was demobilized off of the project on 30 Sept 99.

The bucket dredge also ruptured an abandoned oil line causing no damage in TE-25 Sector. The two floatation channels were re-swept at 70 feet wide at an elevation of –7.0' to provide enough flotation for the rock barges. This bucket dredge also had a crew of 5 people working 24 hours per day.

C. Y-VALVE LOCATIONS ON THE FILL

Y-Valves were used on the fill area of the island in order to relay the dredged material at different locations on the marsh platform and the dune. The Y-valves were also used to control the velocity of the fill material being distributed. They were also very effective when adding pipeline. One valve was closed in order to add more shore pipe on the other section. It was also used to convey the lighter types of sand with organic matter into the marsh

platform area. The better sand was used as much as possible on the dune because of it stacking to an elevation of +5.0 much more efficiently. The Y-Vales are two 30-inch pipes which have manual and automatic gates that can be opened and closed in the pipeline conveying the dredge material to the different locations. The prime contractor used three Y-Valves on the project.

D. DIFFERENT CUTTER DEPTHS

The dredges working in the designated borrow area kept constant contact with the shore crew by way of radio. If the Fill crew reported that the material was too silty, the operators would adjust the ladder and cutter to different depths. The depths ranged from 20 to 16 feet in order to try to get a better grade of sand. It was very important to have a fair sand quality in the dune construction. In the marsh, the finer sand was better especially near the existing marsh grass. The sand quality varied at different depths throughout the project. The sand quality was not as good as expected. It was much less than a 70% by volume concentration of sand.

E. BORINGS

The prime contractor hired an engineering firm, Eustis Engineering from Metairie, LA, to take more borings of the Borrow Area (C-3). This was done on 19 and 20 July 99. A total of 21 borings were taken throughout the designated borrow area. The main purpose was to try to find where the best sands were located in the Borrow Area. The results were consistent with the original borings done by Gore Engineering.

VII. MODIFICATIONS/CHANGES

A change Order was issued for the payment of a Front Retaining Dike. The total cost was $130,200.00 consisting of 8400 feet at $ 15.50 per feet. Front retaining dikes were built from Station 30+00 to Station 114+00 between the dune and the Gulf after a platform was pumped in by the dredge.

VIII. SURVEYS

Surveys were taken using GPS (Global Position System) by the prime contractor's survey party. The Engineering Firm, Picciola & Associates also used GPS.

Original X-sections were taken prior to any commencement of work in the designated Borrow Area C-3. Once per month, or when ever necessary,; the Picciola Survey Party took after-Dredging sections to verify the contractor 's surveys.

All elevations on the island were verified by the DNR inspectors on the site. The staff gages and the Bench Marks were verified by the DNR Rep. on the site. The contractor established the points from the established baseline.

IX. BORROW AREA.

The Borrow Area used was C-3, located near Little Pass approximately 3 miles southwest of the East Timbalier Island. A total of 2,701,279 cubic yards were removed from the designated borrow area. There were three Borrow areas available however, since this one had the most sand, it was chosen by the prime contractor. A Total of 17,000 feet of submersible pipeline with 2,000 feet of floating rubber line was used to reach the island with a shore connection around B/L Station 21+00. Then from that point another 10,000 feet of shoreline was used to reach the stooping point on the island at Station 114+00.

Three Dredges were used in the removal of 2,701,279 cubic yards of material. The Dredge **BEACH BUILDER** (A Dustpan) removed approximately 361,100 cubic yards in the lower and east end of the borrow area. The Dredge made numerous cuts about 35 feet wide. The Dredge **ARKANSAS (**A 24"Cutterhead) removed approximately 1,621,145 cubic yards making a 250-foot wide cut. The Dredge made 7 cuts mostly in the middle and from the east to the west in the borrow area. The Dredge **TOM JAMES** (A 30"Cutterhead) also made 250 foot wide cuts and removed approximately 719,034 cubic yards from the designated area. The dredge excavated 6 cuts on the northern half of the designated borrow area.

X. PROBLEMS ENCOUNTERED

There were numerous problems on the project. The following list made a great impact in the adding of more funds to complete the project

A. Due to Site condition changes, the entire island had to be resurveyed for computations which was due to site condition changes. In areas where there was once land was now water. The original drawings showed depths of 4 to 6 feet but had changed to 6 to 8 feet at the time of construction.

B. When the job first started, the Bucket Dredge "WEEKS 542" started digging a floatation cut in order to reach the island with equipment. The plans were that the Dredge would build the front retaining dike but with the strong seas of the Gulf it was impossible. The permits for excavation of the floatation cuts were not in order and the excavation was delayed until the permit was modified.

C. The project got started with a lot of difficulty re-establishing the baseline. There were 4 existing points on the island. The other points were in the Gulf of Mexico. The site conditions had changed drastically.

D. T. Baker Smith & Sons (Survey Co.) was called in to re-establish the benchmark Elevations. T. Baker Smith was not prepared to perform hydrographic surveys around the island in areas that were once land. Picciola & Associates had to do the hydrographic surveys to determine how much of a change occurred.

E. Pipelines were a major problem. Three pipelines were encountered in TE-30. A two-inch water line was ruptured and two abandoned lines were also picked up. In the TE-25 Sector, 4 Lines were hit; 3 Abandon Lines, and 1 active 2 ½ inch high pressure gas line. All 6 lines encountered were unmarked and were not shown on any maps. There were no oil spills and Pioneer personnel were immediately on the site to close the valves on the active line. There were many shallow lines pointed out to us by Pioneer, both unmarked in the field and not on the field map, that it prevented the rear retaining dikes from being constructed. The project drawings only showed about 6 known lines.

F. Rough Seas played an important Role in the Dredge's operations in the Borrow area and the construction of the front retaining dikes on the dune. Rough seas also hindered dredging operations to some extent especially with the Dredge **ARKANSAS.**

G. Shallow water for the Rock Contractor made it very hard to get barges to and from the Island. It also hindered the prime contractors activities in reaching the island. All rock barges had to be partially loaded with a high tide in order to reach the island.

H. Hard-packed Sand Mixed with clay hindered the dredge **BEACH BUILDER'S** operation. The contractor's first plan was to bring the dredge **TOM JAMES**, (a cutter head) on the site. Due to commitments to the Corps of Engineers on other projects; the prime contractor brought the dredge **BEACH BUILDER**, a dustpan dredge. Due to the material, hard packed sand mixed with clay as shown in the borings, the prime contractor still brought in the **BEACH BUILDER**. There was enough clay in the borrow area to hinder the dustpan's operation. The production was very low causing the contractor to get behind schedule.

I. The contractor's Progress was very slow. The BEACH BUILDER started 1 month late and the contractor waited another month before bringing in the ARKANSAS. The dredge BEACH BUILDER's production was so low that it would have taken 6 months to do the entire project. This would put the prime contractor far past his schedule. The prime contractor's progress chart was revised three times. All indications showed that the prime

was not actually sure when the project would end. This played an important role in the rock contractor's schedule. The rock had to be stock piled until the prime contractor completed the dune.

J. Poor Sand quality was found in the designated borrow area C-3. According to the specifications the material in the upper half of the borrow area should have been greater than 70% by volume. The material was actually 50% or less by volume. The fine silty sand was ideal for the marsh platform however; the material was hard to stack to an elevation higher than plus 3 feet on the dune. A lot more pumping was involved to achieve an elevation of plus 5 feet, which contributed to the increase in the fill ratio.

XI. SOLUTIONS

A. More accurate surveys should be taken just prior to awarding any contract. In this case surveys were taken about 2 years before the actual work began. This could result in a drastic change in site conditions. Mainly from the weather which occurred within those past 2 years. On this project a site condition change caused the project to end at Station 114+00 instead of Station 159+00.

B. Surveys should be re-established just prior to releasing a contract. New points might have to be re-established in the event that old ones got washed away. This occurred on this project.

C. Prior to awarding any contract, a field trip with NMFS, DNR, the contractors, and any other firm associated with the project should be conducted. This would possibly determine any problems prior to starting the work. This would eliminate any claims by a contractor. Solve the problem before it starts.

D. Pipelines on the island were extremely plentiful. The use of a magnetometer survey should be stressed on this particular project. The cost should be in the contractor's bid.

E. The designated dredge to be used on the project should be reviewed from all angles prior to commencing work. In this particular case, the Dredge **BEACH BUILDER** was never used on a project of this type in the Gulf of Mexico. The right dredge could have ended the project much sooner, especially since there was no Hurricanes in the vicinity of the island.

F. The borings for any project should be carefully studied in regards to the correct percentage of sand available in a designated borrow area.

G. The project was ended at station 114+00 instead of station 159+00. Due to the contractors late start and slow progress the completion of the project was unachievable due to the time of year. It would have made a major difference if we had reached station 114+00 in September rather than December in reference to completing the project. The ordering and installation of additional rock would have been much more feasible in September and the project could have been completed with the 6 million additional dollars.

XII. QUALITY CONTROL AND ASSURANCE

Quality Control representatives on the project were Mr. Gary Johnson, Project Manager for Weeks Marine Inc.; Mr. Arnold Tassin, captain and supt. Of the Dredge **BEACH** BUILDER, Mr. Clydle Wyble, captain of the Dredge **ARKANSAS**, and Mr. Frank Gill, captain of the Dredge **TOM JAMES**. Quality Control Reports with production records were submitted on a daily basis, in which the site inspector used to develop the DAILY LOGS OF CONSTRUCTION.

The Quality Assurance reports were administered by the DNR site inspector, Al Mistrot. Also three site inspectors throughout the duration of the project was supplied by the engineering firm associated with the Project, Picciola & Associates. Mr. Craig Gross, Mr. Jerry Simpson, and Mr. Tim Pasquette were the Picciola inspectors who worked at different times during the project. The project engineer for the project was Mr. David Rabalais, from Picciola and Associates. Mr. David Burkholder from DNR was the project manager. Weekly meetings (Usually on Thursday) were conducted with different visitors throughout the duration of the project.

The Three Phase inspection was conducted throughout the duration of the project. A Preparatory meeting prior to each phase of work (Dikes-Stone-Dredging) was conducted, followed by an Initial and Follow-up inspections.

The operations were monitored 24 Hrs per day, especially during the Dredging operations. Inspections monitoring the Fill was conducted day and night. There was at least one inspector present on the project at all times.

XIII. PAYROLLS

The prime contractor, Weeks Marine Inc., worked a total of 90,814.50 Man-hours on the project. A Total of 41 Certified Payrolls were checked by the site inspector. There were no Labor violations noted during the checking of the submitted payrolls.

The two subcontractors on the project, Dean Equipment Rentals and Luhr Bros. Inc. also didn't have any reportable labor violations or disputes. For Dean Equipment Rental, a total of 5 Payrolls were checked amounting to 1,028.50 Man-hours used on the project. Luhr Bros. Inc. worked a total of 3,194 Man-hours, with a total of 10 Payrolls submitted and checked.

XIV. ENVIRONMENTAL QUALITY CONTROL:

The contractor's concern towards Environmental Quality Control was Satisfactory. The site inspectors and the contractor made daily inspections of the island and all floating plants. In the Fill area (Shore), the prime and subcontractors were constantly reminded about preservation of the vegetation and pollution on the project. This policy was stressed throughout the duration of the project.

During the dredging operations of the floatation channels, Pioneer personnel were very co-operative in monitoring dredging operations over pipelines crossing the cuts. Magnetometer readings were taken throughout the project, including the Borrow Area C-3 by John Chance. There was no oil spills from the ruptured abandoned lines during the excavation of the floatation cuts.

XV. SAFETY

The contractor's efforts towards Safety was Marginal. A Total of **95,037** Man-hours was worked on the project with No Lost Time Injuries reported. However, there were 6 mishaps (Strains and finger injuries) at which time these individuals were placed on Light Duty.

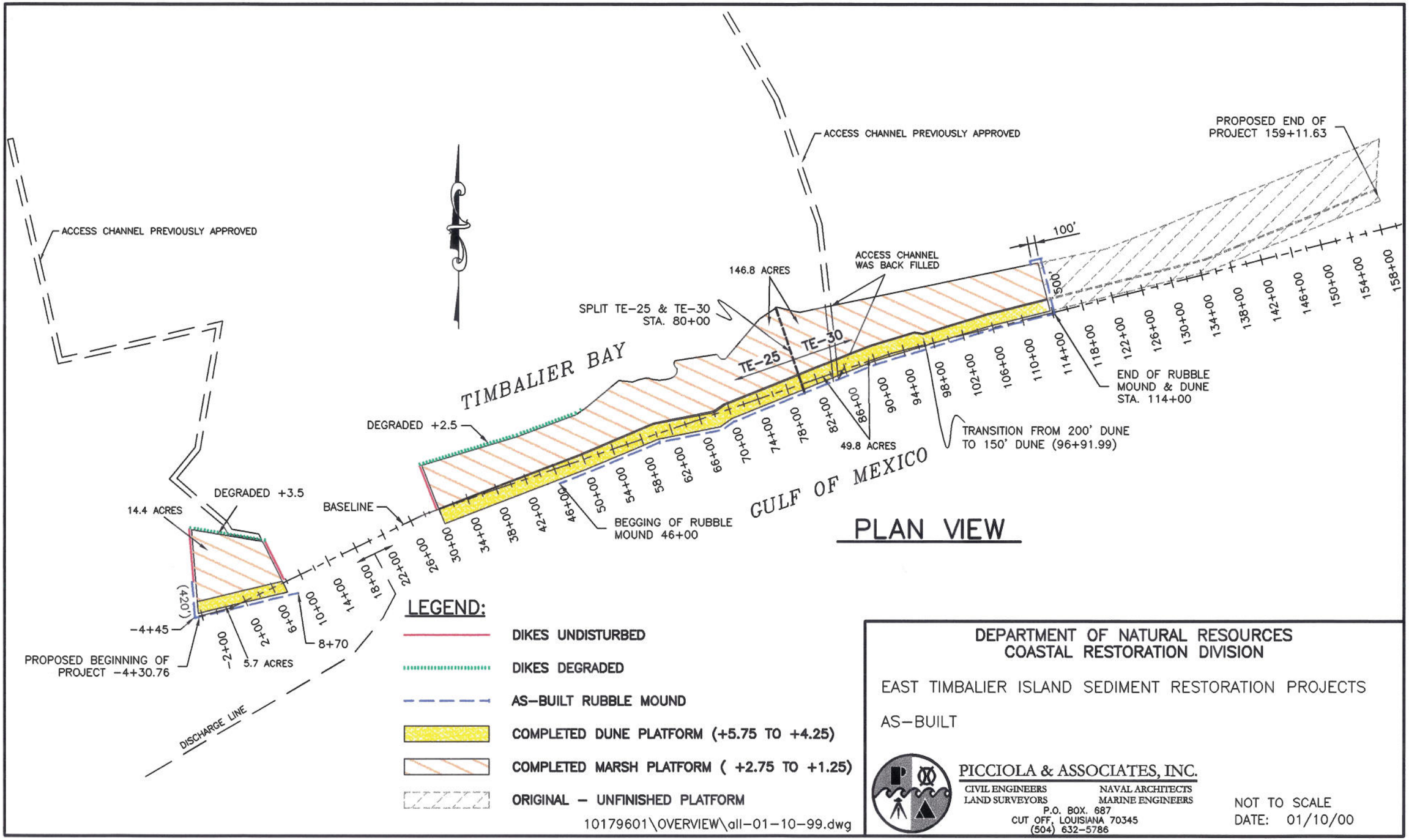
XVI. FINAL ACCEPTANCE

After all surveys have been taken and the punch list items were corrected, a final Walk-Through of the entire project for Final Acceptance was conducted on 11 January 2000. The

contractor was completely finished with the island, however, the prime contractor had a remaining 13,500 feet of submersible line to remove. As of 11 Jan 00, the contractor was substantially completed and all equipment was removed off of the island. A Walk through was conducted on 12 January 99 by Picciola, DNR, and NMFS personnel. The letter of acceptance from the state would be sent as soon as the contractor removed all of the remaining submersible line.

AL MISTROT
U.S. Army Corps of Engineers
DNR Onsite Rep.

Cc: La. Department of Natural Resources
National Marine Fisheries Services
La. Department of Wildlife & Fisheries
Picciola & Associates, Inc.
US Army Corps of Engineers



PLAN VIEW

LEGEND:

- DIKES UNDISTURBED
- DIKES DEGRADED
- AS-BUILT RUBBLE MOUND
- COMPLETED DUNE PLATFORM (+5.75 TO +4.25)
- COMPLETED MARSH PLATFORM (+2.75 TO +1.25)
- ORIGINAL - UNFINISHED PLATFORM

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DEPARTMENT OF NATURAL RESOURCES
COASTAL RESTORATION DIVISION

EAST TIMBALIER ISLAND SEDIMENT RESTORATION PROJECTS

AS-BUILT

PICCIOLA & ASSOCIATES, INC.
CIVIL ENGINEERS NAVAL ARCHITECTS
LAND SURVEYORS MARINE ENGINEERS
P.O. BOX. 687
CUT OFF, LOUISIANA 70345
(504) 632-5786

NOT TO SCALE
DATE: 01/10/00