



Louisiana Coastal Protection
and Restoration Authority



Project Completion Report

Caminada Headland Back Barrier

Marsh Creation Project

(BA-0171)

Lafourche and Jefferson Parishes, Louisiana



A WAGGONER COMPANY

10305 Airline Highway
Baton Rouge, LA 70816

August 2023

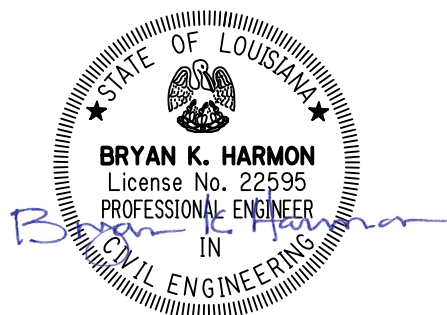


Table of Contents

1. Project Managers/Contracting Officer ...	1
2. Location and Description of Projects as Approved for Construction by Task Force.....	1
3. Features, Boundaries and Resulting Acreage	2
4. Key Project Cost Elements	4
5. Items of Work.....	5
6. Construction and Construction Oversight	6
7. Major Equipment Used	6
8. Construction Sequences and Activities.....	7
9. Construction Change Orders, Field Changes, and RFI's	23
10. Pipeline and Other Utility Crossings	25
11. Safety and Accidents	26
12. Project Issues and Discussion	29
13. Significant Construction Dates	30

Appendices

Appendix A – Project Data & Fact Sheet

Appendix B – Pre-Construction Conference PPT and Meeting Minutes

Appendix C – Contractors Construction Progress Schedules

Appendix D – Survey Methodology

Appendix E – Surveys (As-Built or Final Process)

Appendix F – Construction Change Orders, RFI's, and Work Directives

Appendix G – Final Inspection & Acceptance

Appendix H – Permits

Appendix I – Geotechnical Instrumentation and Monitoring Report

Appendix J – As-Built Drawings

Appendix K – (BA-0171) Vegetative Planting Project

1.0 Project Managers / Contracting Officer¹

CPRA Construction Manager

CPRA Project Engineer

CPRA Project Manager

Federal Agency Project Manager (USEPA)

Construction Administration/Inspection

Adam Ledet, P.E.²

Shannon Haynes, P.E.

Renee Bennett, P.M.P.

Patricia Taylor, P.E.

Josh Renard, P.E.

985 449-5105

225 342-9424

225 342-4592

214 310-6217

225 298-0800

¹ For the (BA-0171) Vegetative Planting Project which was constructed under a separate contract please refer to Appendix K

² Brian Babin, P.E. stepped in as the CPRA Construction Manager after the Project final inspection and acceptance.

2.0 Location and Description of Projects as Approved for Construction by Task Force

The Caminada Headlands Back Barrier Marsh Creation Area Project (BA-171) was designed to create back barrier intertidal marsh and nourish emergent marsh behind approximately 8 miles of the Caminada beach using material dredged from the Gulf of Mexico (see Figure 1). The goals of the project were to: 1) create and/or nourish approximately 900 acres of back barrier marsh using sediments pumped from offshore borrow sites in the Gulf of Mexico; 2) create a platform upon which the beach and dune can migrate, reduce the likelihood of breaching, improve the longevity of the barrier shoreline, and protect wetlands and infrastructure to the north and west. The project is expected to slow the current trend of degradation on the Caminada Headland. Over its 20-year life, the project is expected to result in approximately 329 acres of net benefit. This marsh creation and restoration project is being created in Lafourche and Jefferson Parishes. This project works synergistically with the Caminada Headland dune and beach habitat projects (BA-0045 and BA-0143).

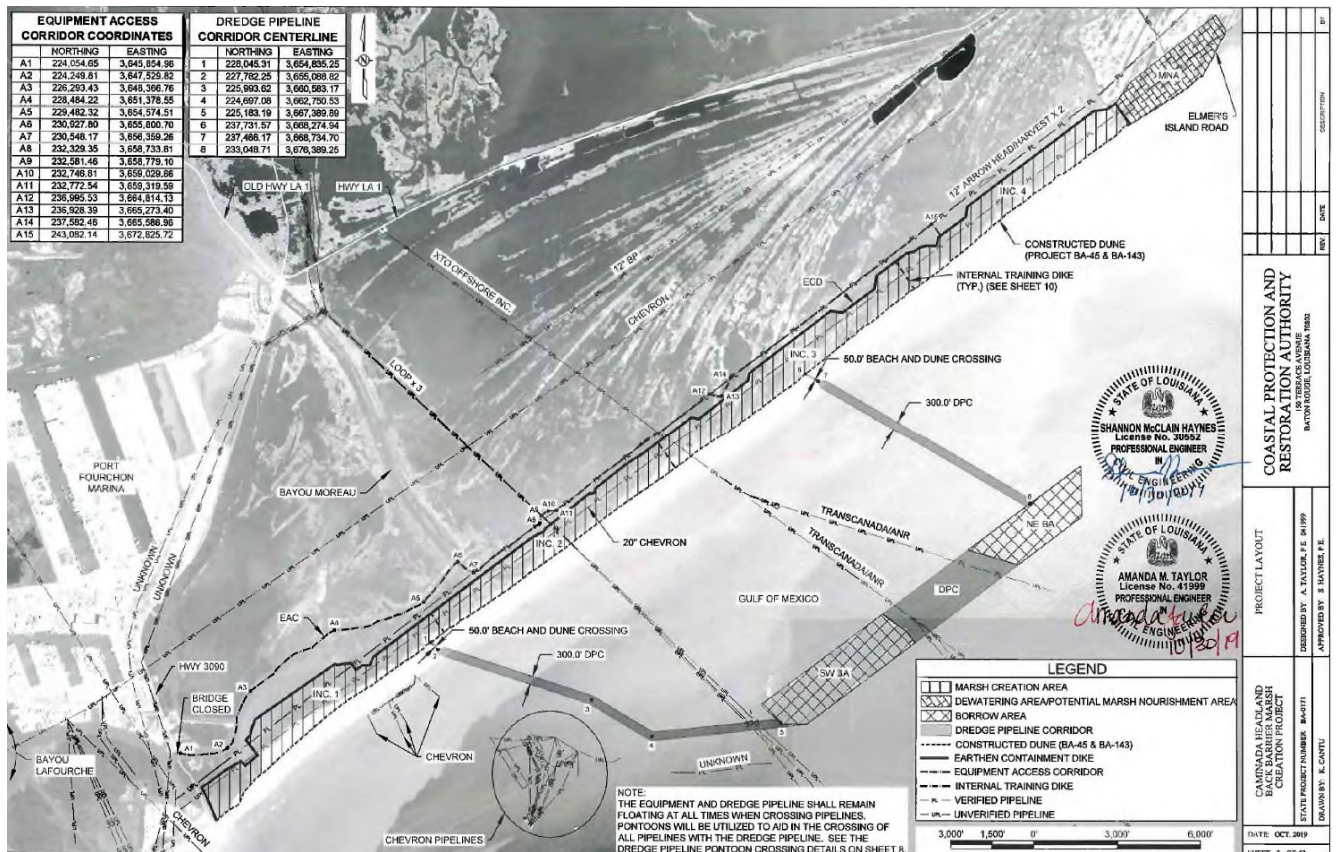


Figure 1: BA-171 Project Layout/Vicinity Map

The Louisiana Coastal Wetlands Planning, Protection and Restoration Task Force designated BA-171 as part of the 23rd Priority Project List (PPL). The United States Environmental Protection Agency (USEPA) was designated as the lead federal sponsor with funding approved through the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) of 1990 by the United States Congress and the Wetlands Conservation Trust Fund by the State of Louisiana. The Louisiana Coastal Protection and Restoration Authority (CPRA) served as the local sponsor and performed the project planning, program management, engineering design and overall project administration.

The Barataria Basin Barrier Shoreline (BBBS) Restoration Study (SJB, USACE 2011) was completed in 2011 to evaluate alternatives for the Barataria Basin Shoreline, including the Caminada Headland. The alternative proposals included shoreline and marsh restoration to address severe erosion and land loss and to ensure the Headland's continuing geomorphic and ecological form and function. Due to the Caminada Headland's transgressive system, the BBBS study developed and analyzed many dune and beach templates, and evaluated the marsh platform for over wash. The BA-171 project, along with subsequent back barrier marsh creation projects and the Caminada Headland Beach and Dune I and II Projects (BA-45 and BA-143), aim to achieve goals for the Caminada Headland set forth by the BBBS study.

Project Data and Fact Sheet are included in Appendix A.

3.0 Features, Boundaries and Resulting Acreage

The primary original design features of BA-171 included the Southwest and Northeast Dredge Borrow Areas and their pipeline corridors, Marsh Creation Area (MCA), Earthen Containment Dike (ECD), Priority Earthen Containment Dike (Priority ECD), Internal Training Dikes and Primary and Secondary Weirs. Except for the Priority ECD, each of these original design features were constructed. Based on the results from the data collection from the sampling and instrumentation the Priority ECD was deemed unnecessary and the standard ECD's could be utilized.

Internal Training Dikes divide the MCA into four increments of similar design acreage and fill capacity. The ECD provides fill material containment for the MCA on its north, west and east sides. Initially southern containment for the MCA was provided by the sand dune constructed under Projects BA-45 and BA-143. A portion of the beach containment dune had to be reconstructed due to the damage sustained from Hurricane Zeta in 2020. This reconstructed dune had to again be rebuilt as a result of the direct hit it sustained from Hurricane Ida in 2021. A marsh nourishment area was anticipated and developed east of the four Primary Weir discharges. Gaps were excavated in the western, northern, and eastern ECD at viable locations coordinated with CPRA and the Contractor along the MCA to ensure tidal connectivity and prevent long term ponding.

The MCA and ECD's are depicted in Figure 1. The dredge material for the MCA was obtained from two borrow areas, Southwest and Northeast, located in the Gulf of Mexico. Dredged material was pumped via the cutter suction dredge "Alaska" owned and operated by Great Lakes Dredge and Dock Co. (GLDD), into the MCA. The MCA was divided into 4 increments to better control and contain the hydraulic fill material. This hydraulic fill material was placed sequentially by increment, beginning in Increment 1, and progressing east to Increment 4.

As-built quantities of select project features are provided in Table 1 below.

Table 1
SELECT AS-BUILT FEATURE QUANTITIES

BORROW			SOUTH DUNE		
BORROW AREA	VOLUME (Cy.)	AREA (Ac.)	SOUTH DUNE	VOLUME (Cy.)	LENGTH (Ft.)
Southwest	999,579	190.0	Post Zeta Rebuild	44,461 ²	31,526
Northeast	1,461,534	136.4	Post Ida Rebuild	92,906 ³	41,696
BA Summary	2,453,113¹	326.4	SD Summary	137,367	73,222

MARSH CREATION			EARTHEN CONTAINMENT DIKES		
MARSH CREATION AREA	VOLUME (Cy.)	AREA (Ac.)	ECD	VOLUME (Cy.)	LENGTH (Ft.)
Increment 1	546,074	197.4	Increment 1	N/A	12,150
Increment 2	511,182	232.8	Increment 2	N/A	10,287
Increment 3	809,334	273.8	Increment 3	N/A	11,153
Increment 4	583,098	238.5	Increment 4	N/A	10,852
MCA Summary	2,449,688¹	942.5	ECD Summary	N/A	44,442⁴

¹ There was a 3,425 cubic yard deduct applied to the borrow area pay quantity to account for a shoreline pipe leakage that occurred during the initial dredge pumping startup activity into the Marsh Creation Area.

² The As-bid project was utilizing the existing south beach as the containment dike. As a result of Hurricane Zeta, approximately 60,000 Cy of beach restoration was identified under Change Order #5 to re-establish the MCA containment.

³ Hurricane Ida hit before all the South Dune Beach restoration could be completed. Pre and Post storm assessments indicated that approximately 44,461 Cy of dune restoration had been constructed prior to the Ida impact. Change Order 10 and 11 were then processed which reduced the CO #5 quantity by 15,539 Cy and added a new restorative quantity at 92,906 Cys. These adjustments were necessary to restore the beach as the southern containment dike for the MCA had been damaged as a direct result from the Hurricane Ida landfall at the project site.

⁴ The Earth Containment Dike quantity excludes approximately 2,868 lf of constructed training dikes utilized to maintain containment within each MCA increment consistent with the requirement to construct the MCA per each increment running from west to east. No direct payment for these dike elements was included as a bid item; however, compensation was provided based on the hydraulic fill volume required to fill the borrow trenches within the MCA.

Project As-Built Drawings are included in Appendix J and refer to Appendix K for Vegetative Plantings.

4.0 Key Project Cost Elements

Table 2

Cost Element	CPRA Project Cost Estimates	Cost Incurred as of Construction Completion
	Marsh Creation Project	
Construction	\$24,151,099 ¹	\$37,117,035
E & D	\$2,147,688 ²	\$2,147,688 ²
Land Rights	\$124,244	\$124,244
Construction Administration	\$256,313 ³	\$1,053,482 ⁵
Resident Project Administration	\$584,840 ⁴	\$849,018 ⁶
Monitoring	\$2,429,475 ⁷	\$0 ⁷
O & M	\$3,419,784 ⁷	\$0 ⁷
Sub Total	\$33,113,443	\$41,291,467
	Vegetative Plantings Project⁸	
Sand Fencing and Planting	\$399,350	\$399,350
Total	\$33,512,793	\$33,512,793

¹ Cost from BA - 171 Construction Cost Estimate from the original Phase II grant was \$20,125,916 with an additional \$4,025,183 in contingency included.

² E & D includes composite cost from both State and sub-contracting vendors including Geotech, environmental and survey.

³ Construction Administration includes estimates for both Contract Services and State Cost

⁴ RPA Based on 333-day Construction Supervision Period (As bid Contract time was set at 548 days)

⁵ Construction Admin includes Project Management and Geotechnical, Excludes State and Federal. The geotechnical cost alone represents \$542,605 which includes the replacement and re-installation of numerous instrumented settlement plates damaged by Hurricane Ida.

⁶ RPA Based on actual 680-day Construction Supervision Period with the significant time increase based on impacts from Hurricane Zeta and then Hurricane Ida (i.e., 398 calendar days added to contract for Total Contract time of 946 Calendar Days)

⁷ The Monitoring and O&M cost are \$2,429,475 and \$3,419,784 respectively based on the estimated 20-year cost as contained in the Coastal Wetlands Planning, Protection and Restoration Act Project Status Report Last Updated Feb 6, 2020.

⁸ The Vegetative Planting Project Cost did not include Federal Sponsor nor CPRA Administrative Cost.

5.0 Items of Work

Table 3

ITEM No.	Description	UNIT	Contract Quantity	Unit Price Bid	Bid Amount	Revised Contract Quantity	Unit Price Bid	Revised Contract Value
1	Hydraulic Dredge Mobilization and Demobilization (TS-100)	LS	1	\$ 3,000,000.00	\$ 3,000,000.00	1	\$ 3,000,000.00	\$ 3,000,000.00
2	Dredge Pipeline Mobilization, Installation and Demobilization (TS-101)	LS	1	\$ 4,500,000.00	\$ 4,500,000.00	1	\$ 4,500,000.00	\$ 4,500,000.00
3	General Mobilization and Demobilization (TS-102)	LS	1	\$ 600,000.00	\$ 600,000.00	1	\$ 600,000.00	\$ 600,000.00
4	Surveys (TS-210) CO#4	LS	1	\$ 285,000.00	\$ 285,000.00	1	\$ 289,117.60	\$ 289,117.60
5	Daily Bird Abatement (TS-211) CO#9 , CO#11	Day	136	\$ 1,329.41	\$ 180,800.00	136	\$ 800.00	\$ 108,800.00
6	Grade Stakes (TS-220)	EA	50	\$ 105.00	\$ 5,250.00	50	\$ 105.00	\$ 5,250.00
7	Instrumental Settlement Plates (TS-251)	EA	17	\$ 5,000.00	\$ 85,000.00	17	\$ 5,000.00	\$ 85,000.00
8	Earthen Containment Dikes (TS-300) CO#1, CO#3, CO#10 (Removal of 350 LF)	LF	48,138	\$ 142.00	\$ 6,835,596.00	44,092	\$ 142.00	\$ 6,261,064.00
9	Priority Earthen Dike (TS-301) CO#3 (Eliminated Priority Dikes)	LS	1	\$ 350,000.00	\$ 350,000.00	0	\$ 350,000.00	\$ -
10	Hydraulic Dredging and Marsh Creation (TS-400) CO#1, CO#11 (Removal of 20,512 CY)	CY	2,624,810	\$ 6.00	\$ 15,748,860.00	2,449,688	\$ 6.00	\$ 14,698,128.00
Additional Contract Items (Change Orders)								
11	No Work Zone (TS-511) CO#2, CO#4	LS				1	\$ 121,045.00	\$ 121,045.00
12	South Dune Mob/Demob CO#5	LS				1	\$ 23,550.00	\$ 23,550.00
13	South Dune Construction CO#5, CO#10 (Removal of 15,539 CY)	CY				44,461	\$ 6.85	\$ 304,557.85
14	South Dune Equipment Access Canal Dredging CO#5	LS				1	\$ 18,330.00	\$ 18,330.00
15	South Dune Sand Fence Installation CO#5, CO#10 (Removal of 34,560 LF)	LF				12,670	\$ 9.70	\$ 122,899.00
16	South Dune Surveys CO#5	LS				1	\$ 122,570.00	\$ 122,570.00
17	South Dune Airboat w/Operator CO#5, CO#10 (Removal of 10 Days)	EA				80	\$ 1,055.56	\$ 84,444.80
18	Caillouet Road Construction: Mob/Demob via Elmer's Rd CO#6, CO#10 (Removal of Remaining 50%)	LS				0.5	\$ 44,950.00	\$ 22,475.00
19	Caillouet Road Construction: Haul and Build Rd up to 1,275 CY CO#6	CY				1,275	\$ 62.24	\$ 79,356.00
20	Caillouet Road Construction: Haul and Build Rd over 1,275 CY CO#6, CO#10 (Removal of 342 CY)	CY				58	\$ 49.50	\$ 2,871.00
21	Caillouet Road Construction: Additional Airboat CO#6, CO#10 (Removal of 9 Days)	DAY				5	\$ 1,042.00	\$ 5,210.00
22	Caillouet Road Construction: Site Overhead CO#6, CO#10 (Removal of 9 Days)	DAY				5	\$ 2,259.00	\$ 11,295.00
23	Post Storm Zeta Damages CO#7	LS				1	\$ 837,855.80	\$ 837,855.80
24	Post Storm Ida LiDar Survey CO#8	LS				1	\$ 26,737.76	\$ 26,737.76
25	Post Storm Ida RTK Survey CO#8	LS				1	\$ 7,009.26	\$ 7,009.26
26	Enhanced Bird Abatement Effort for Southern Containment Dike CO#9	LS				1	\$ 62,026.36	\$ 62,026.36
27	Post Ida Pre-con Survey of MCA CO#10	LS				1	\$ 55,735.90	\$ 55,735.90
28	Post Ida South Dune Mobilization CO#10	LS				1	\$ 51,092.93	\$ 51,092.93
29	Post Ida South Dune Construction Rebuild CO#10, CO#11 (Increase of 8,455 CY)	CY				92,906	\$ 7.06	\$ 656,353.94
30	Post Ida Earthen Containment Dike (ECD) Mobilization CO#10	LS				1	\$ 156,314.49	\$ 156,314.49
31	Post Ida Earthen Containment Dike (ECD) Construction Rebuild CO#10	LF				44,442	\$ 49.19	\$ 2,186,187.95
32	Post Ida Earthen Containment Dike (ECD) Maintenance CO#10	LS				1	\$ 174,576.20	\$ 174,576.20
33	Post Ida Internal Training Dike Construction Rebuild CO#10, CO#11 (Removal of 382 LF)	LF				2,918	\$ 13.74	\$ 40,085.29
34	Post Ida Caillouet Road Construction Mobilization CO#10	LS				1	\$ 15,693.21	\$ 15,693.21
35	Post Ida Caillouet Road Construction Road Improvements CO#10, CO#11 (Increase of 28 CY)	CY				705	\$ 62.53	\$ 44,083.62
36	Post Ida Re-installation No Work Zone CO#10	LS				1	\$ 60,927.54	\$ 60,927.54
37	Post Ida Re-Adjustment of Primary Weirs CO#10	EA				4	\$ 6,611.38	\$ 26,445.51
38	Post Ida Re-Adjustment of Secondary Weirs CO#10	EA				16	\$ 2,486.84	\$ 39,789.45
39	Post Ida Re-Installation of Filters/Boards CO#10	LS				1	\$ 37,302.61	\$ 37,302.61
40	Post Ida Sand Fence Installation along South Dune CO#10, CO#11 (Removal of 2,671 LF)	LF				44,559	\$ 11.19	\$ 498,650.07
41	Post Ida ISP Replacement CO#10, CO#11 (Increase of 2)	EA				7	\$ 5,350.00	\$ 37,450.01
42	Post Ida ISP Re-Adjustment CO#10, CO#11 (Decrease of 2)	EA				10	\$ 1,318.03	\$ 13,180.25
43	Post Ida Grade Stakes Replacement CO#10, CO#11 (Decrease of 3)	EA				47	\$ 112.35	\$ 5,280.41
44	Post Ida Combined Surveying CO#10	LS				1	\$ 539,843.60	\$ 539,843.60
45	Post Ida Bird Abatement - Tier 1 Effort CO#10, CO#11 (Increase of 22 Days)	DAY				28	\$ 856.00	\$ 23,967.87
46	Post Ida Bird Abatement - Tier 2 Effort CO#10, CO#11 (Increase of 10 Days)	DAY				117	\$ 1,498.00	\$ 175,265.78
47	Post Ida Bird Abatement - Tier 3 Effort CO#10, CO#11 (Removal of 21 Days)	DAY				1	\$ 1,712.00	\$ 1,712.00
48	Post Ida Air Boats, UTV's and GLDD Site Personnel CO#10	DAY				120	\$ 3,403.36	\$ 408,403.22
49	Post Ida Repair Support- 966 FEL & 4x4 Pick-up w/Operators CO#10	DAY				120	\$ 1,955.95	\$ 234,714.49
50	Post Ida Security and Escort for Elmer's Island Rd. CO#10, CO#11 (Removal of 101 Days)	DAY				19	\$ 280.53	\$ 5,330.02
51	Post Ida Elmer's Island Rd. Improvements CO#10, CO#11 (Decrease in \$89,062.12)	LS				1	\$ 19,602.00	\$ 19,602.00
52	Post Ida Shore Pipeline Repairs / Re-Installation CO#10	DAY				10	\$ 8,072.33	\$ 80,723.27
53	Post Ida Submerged Pipeline Repairs / Re-Installation CO#10	DAY				6	\$ 14,007.78	\$ 84,046.70
54	Post Ida Pre-Con Survey of ECD CO#11 (Increase of \$44,684.00)	LS				1	\$ 44,684.00	\$ 44,684.00
				As-Bid Value	\$ 31,590,506.00	As-Built Final Value		\$ 37,117,034.77

For Vegetative Plantings Refer to Appendix K

6.0 Construction and Construction Oversight

Table 4

Prime Construction Contractor	Great Lakes Dredge and Dock Co., LLC
Sub-Contractor (Survey)	Hydro Terra Technologies, LLC
Sub-Contractor (Earthwork)	Wilco Marsh Buggies and Draglines, Inc.
Sub-Contractor (Bird Monitoring and Abatement)	Norman Wildlife Consulting
Original Construction Contract (As-Bid Value)	\$31,590,506
Change Orders	\$5,526,528
Final Contract (As-Built Value)	\$37,117,035
Construction Admin & Resident Inspection	Sigma Consulting Group, Inc.
Geotechnical Sub Consultant	S&ME
Geotechnical Secondary Sub Consultant	Adaptive Management and Engineering, LLC
Construction Admin W/Geotech & Resident Inspection Fee Including Monitoring Instrumentation Equip.& Software	\$1,902,500

7.0 Major Equipment Used

Table 5

Equip. No.	Equip. Type	Use	Equip. No.	Equip. Type	Use
Alaska	Cutter Suction Dredge	MCA Fill	W45	Marsh Buggy	ECD Construction
1002	Fuel Barge	Dredge Fuel Storage	W74	Marsh Buggy	ECD Construction
Derrick 60	Crane Barge	Dredge Support	K330	Marsh Buggy	ECD Construction
AB 118	Anchor Barge	Dredge Support	JD3	Marsh Buggy	ECD Construction
AB 113	Anchor Barge	Dredge Support	W177	Marsh Buggy	ECD Construction
AB 119	Anchor Barge	Dredge Support	W390	Excavator (Barge Mounted)	ECD Construction
TK 985	Ramp Barge	Dredge Support	W330	Excavator (Barge Mounted)	ECD Construction
TK 001	Ramp Barge	Dredge Support		D6N Bulldozers (3)	South Dune Construction
	Air Compressor Barge	Dredge Support		D6T Bulldozer	South Dune Construction
RJ Eymard	Tug Boat	Dredge Support		Yanmar Fuel Buggies (2)	Bulldozer Fueling
Mr. Dean	Tug Boat	Dredge Support		Airboats (4)	Crew Transport/Surveying
KJ Leboeuf	Tug Boat	Dredge Support		Airboat	Marsh Buggy Fueling
Miss Becky	Tug Boat	Subline Recovery		ATVs	Crew Transport
Miss Emma	Crew Boat	Crew Transport		Scully Cabin/Skiff	Crew Transport
Ohio River	Crew Boat	Crew Transport		Mudboat	Crew Transport/Fueling
M 246	Equipment Barge	Equipment Transport		Lull Loader	Supply/Equipment Handling
DB 187	Equipment Barge	Equipment Laydown/Transport		Conex Boxes (5)	Supply Storage/Beach Office
KS 368	Spud Barge	Equipment Laydown/Transport		ATVs (3)	Sand Fence Installation
GL966	Front End Loader	Shore Pipe Install/Recovery		Material Trailer/Pickup Truck	Sand Fence Installation
GL336	Excavators (2)	Shore Pipe Install/Recovery		Ford Tractor	Sand Fence Installation
	Bulldozer	Shore Pipe Install/Recovery		Skid Steer (Auger Mounted)	Sand Fence Installation
W 142	Marsh Buggy	ISP Install/Recovery			

For Vegetative Plantings Refer to Appendix K

8.0 Construction Sequences and Activities

The following table lists various project work activities and their respective start dates. Additional details are included in the Contractors Construction Progress Schedules in Appendix C.

Table 6

Activity Description	Date	Comments
Notice to Proceed	4/20/2020	Five-Hundred-Forty-Eight (548) Calendar Day Contract 10/20/21 Contract End Date
One Call	5/22/2020	ECD Construction
Pre-Construction Submittals	May/June 2020	Project Work and Safety Plans
Pre-Construction Conference	6/9/2020	Conducted online via Microsoft Teams
Notice to Mariners	4/22/2020	
ECD Survey	5/12/2020	Pre-Construction (Topographic, Bathymetric and Magnetometer)
Bird Nesting Survey	6/1/2020	2020 Nesting Season
Mobilization - Wilco	6/23/2020	ECD Construction Equipment
Mobilization - GLDD	6/27/2020	Project Team to Site/Office Setup
Timber Mat Install	6/28/2020	Mat Installation @ Pipeline Crossings
RPRs Onsite	6/30/2020	P. Schneider and T. Raborn
ECD Construction	6/30/2020	Initial ECD Construction Start
Bird Nesting Abatement	6/30/2020	2020 Nesting Season
ECD Survey	7/1/2020	Process Survey
Hurricane Zeta Landfall	10/28/2020	Significant Storm Impacts to Project resulting in the issuance of Change Orders 4, 5, 7 and 9
Pre-Construction South Dune Survey	11/23/2020	Topographic Survey required to address loss of containment due to Zeta impacts
MCA Survey	11/23/2020	Pre-Construction (Topographic)
ECD Construction Rework Post Zeta	See Comments	Original Construction Began 6/30/2020
One Call	1/11/2021	Dredging
Pipeline Corridors Survey	1/15/2021	Pre-Construction (Topographic, Bathymetric and Magnetometer)
ISP Install	1/20/2021	
Dredge Pipeline Install	2/10/2021	
Bird Nesting Abatement	2/15/2021	2021 Nesting Season
Secondary Weir Install	3/15/2021	
South Dune Survey	4/19/2021	Pre-Construction Survey
ECD Survey	4/27/2021	As-Built Survey
South Dune Mobilization	4/30/2021	
South Dune Construction	5/4/2021	
South Dune Survey	5/5/2021	Progress Survey
SW Borrow Area Survey	5/26/2021	Magnetometer Survey
NE Borrow Area Survey	5/27/2021	Magnetometer Survey
MCA Survey	6/1/2021	Magnetometer Survey
Secondary Weir Survey	6/4/2021	

Activity Description	Date	Comments
South Dune Demobilization	6/22/2021	
South Dune Sand Fence Install	6/28/2021	
Caillouet Road Containment Mobilization	8/10/2021	
Caillouet Road Containment Construction	8/11/2021	Caillouet Road Containment Construction
Caillouet Road Containment Demobilization	8/19/2021	
Hurricane Ida Landfall	8/29/2021	2nd Major Hurricane to make landfall significantly impacting Project resulting in issuance of Change Orders 8, and 10
Post Ida Repairs Notice to Proceed	2/7/2022	Project activity was shut down for approximately 5 months required for the area to recover from the direct hit associated with Hurricane Ida
South Dune Rebuild	3/2/2022	Increment 1 and 2 Rebuild Ends 3/27/22 Increment 3 and 4 Rebuild Ends 5/16/22
Internal Training Dike Rebuild	7/5/2022	1/2,2/3, and 3/4 Rebuild Completed 7/25/22
ECD Rebuild and Completion	3/18/2022	ECD rebuild and construction Ends 8/4/22
Bird Nesting Abatement	3/15/2022	2022 Nesting Season Ended 8/6/22
Shore Pipe Recovery/Repair/Reinstall	4/8/2022	Repair and Reinstallation Completed 7/31/22
Submerged Pipeline Recovery/Repair/Reinstall	4/21/2022	Repair and Reinstallation Completed 7/26/22
Caillouet Road Rebuild	5/17/2022	
South Dune Sand Fence Reinstall	6/8/2022	
Primary Weir Adjustments	6/11/2022	
Secondary Weir Adjustments	6/19/2022	
Primary Weir Filter/ Control Slat Install	6/26/2022	
ISP Reinstall	6/27/2022	
Grade Stake Install	7/1/2022	
Dredge Mobilization to Southwest Borrow Area	8/15/2022	
Dredge and Fill Increments 1 & a portion of 2 (West Corridor Pipeline)	8/15/2022	Fill Placement Increment 1 began 8/15/22 Ends 8/30/22 Fill Placement Increment 2 began 8/30/22 Ends 9/8/22
Dredge Mobilization to Northeast Borrow Area	9/8/2022	
Dredge and Fill Increments 2, 3, & 4 (East Corridor Pipeline)	9/13/2022	Fill Placement Increment 2 began 9/13/22 Ends 9/15/22 Fill Placement Increment 3 began 9/15/22 Ends 10/1/22 Fill Placement Increment 4 began 10/1/22 Ends 10/15/22
Waterside Demobilization	10/15/2022	
Shore Demobilization	10/15/2022	
ECD Gapping	10/16/2022	ECD Gapping Completed 10/31/22
Punch List Work	11/1/2022	

Activity Description	Date	Comments
Final Inspection	11/9/2022	
Caillouet Road/Dredge Pipe Corridors Sand Fence Install	11/15/2022	
As-Built Surveys	11/30/2022	Equipment Access Corridors: 11/30 thru 12/13 ECD's: 11/7 thru 12/09 MCA Increments 1 thru 4: 10/1 thru 10/5 Dredge Pipeline Corridors: 11/17 thru 12/22
Final Acceptance	12/9/2022	

For Vegetative Plantings Refer to Appendix K

Bids were received by CPRA on January 9, 2020. Great Lakes Dredge & Dock Company, LLC (GLDD) was the apparent low bidder. The bid was verified, and a contract issued for a \$31,590,506.00 contract amount, a 548-calendar day construction period, and \$5,470/day for any assessed liquidated damages. The project Notice to Proceed was issued with the transmittal of the fully executed contract with an effective date of April 20, 2020. Changes in scope and days were provided under Change Orders 1-11. Under these change orders a final contract price of \$37,177,034.76 was established with a total of 398 additional calendar days being added to the contract. The amended contract time based on the 946-calendar day contract period resulted in a revised completion date of November 22, 2022.

The Pre-Construction Conference was held on 6/09/2020 by Video Conference due to COVID compliance controls. After this meeting, but prior to mobilization, several administrative level activities occurred including but not limited to: Notice to Mariners, LA One Call; and submittal of the Environmental and Health/Safety/Hurricane/Severe Weather Plans.

On-site work activities started with the initiation of the Pre-Construction Surveys on 5/12/2020. Equipment and resource mobilization started 6/23/2020 and construction of the earthen containment dike started on 6/30/2020. The authorized Resident Project Representative (RPR) mobilized to the project site on 6/30/2020.

The primary elements of work included the Southwest and Northeast Dredge Borrow Areas and their pipeline corridors, Marsh Creation Area (MCA)(increments 1-4), Earthen Containment Dikes (ECD's), Internal Training Dikes and Primary and Secondary Weirs.

Primary access to the Project and its adjacent waterways was by airboat or boat, and/or by vehicle from the east end of the project via Elmer's Road onto designated corridors along the beach. Crew transport, and the majority of materials, equipment, and supplies were staged out of GLDD's yard located at the end of AO Rappelet Road (LA Highway 3090) with waterfront access on Pass Fourchon providing direct water-based access to the project. Equipment and materials were also mobilized from the east end of Elmer's Island via LA Highway 1 with beach access via Elmer's Island Road on Cheniere Caminada. GLDD's dredge *Alaska* and subline were staged in Bayou Lafourche at Belle Pass. Dredge support equipment (e.g., anchor barges, crane barge, ramp barge, etc.) were staged at GLDD's yard on Pass Fourchon and in Bayou Lafourche at Belle Pass.

On-shore topographic, bathymetric and magnetometer preconstruction surveying was performed by HydroTerra Technologies with assistance from Wilco. The offshore bathymetric and magnetometer surveys of the Southwest and Northeast Borrow Areas and their respective pipeline corridors surveys were performed by GLDD. Preconstruction survey efforts extended over a period of 432 days from 5/12/2017 to 7/18/21. This effort included the following:

- Pre-Construction Submittals
- Mobilization, Project Setup, Project Control
- Topographic, Bathymetric and Magnetometer Surveys of Increment Nos. 1 through 4 (includes ECD layout)
- Existing Dune Topographic Survey
- Topographic and Bathymetric Survey of Dredge Pipeline Corridor (Beach and Dune Crossing)
- Pipeline Corridor Magnetometer Surveys
- Borrow Area Magnetometer and Bathymetric Surveys
- Dewatering Weir Surveys
- MCA Magnetometer Survey
- MCA Topographic Survey

Before any dredge activity could be initiated the marsh creation area ECD's had to be constructed to provide the necessary containment. The four marsh creation increments required a total of approximately 44,500 feet of ECD and 2,900 feet of Internal Training Dikes. Due to poor/weak underlying soil conditions most of the dikes were constructed in a minimum of two lifts with periodic maintenance. Some areas of the ECD required several lifts to achieve the design template and grades. As noted previously, southern containment for the MCA was provided by the sand dune along Elmers Island beach constructed under BA-45 and BA-143. However, portions of these dunes had to be reconstructed under a Change Order due to the storm impacts from Hurricane Zeta and then reconstructed again from the direct hit that they sustained from Hurricane Ida.

Geotechnical instrumentation deployed on the Project was able to transmit data real-time, enabling Adaptive Management and Engineering, LLC (AME) and the Project Team to monitor the construction activities for the duration of the project; from the construction of the earthen containment dikes (ECDs) through the completion of filling operations. This was accomplished by installing four drive point piezometers, seventeen instrumented settlement plates (ISPs), and multiple cameras. This instrumentation provided the opportunity to:

- Monitor pore water pressures to estimate strength gains in the foundation materials reducing wait time between lifts on the ECD's.
- Remotely monitor slurry levels within the MCA to help the contractor to regulate dredge flow rates to minimize potential overtopping of the containment.
- Monitor density of the placed fill material to better control material coverage and thickness.
- Utilize the cameras placed within each increment providing live monitoring to support the RPR inspections.

Initial installation of the instrumentation began in January 2020, and was completed in March 2020. However, multiple hurricanes and tropical storm events led to numerous removals and damage of the equipment culminating with Hurricane Ida in August 2021.

The following figures provide examples of the type of data collected utilizing this equipment with the full Geotechnical Instrumentation and Monitoring Report included in Appendix I.

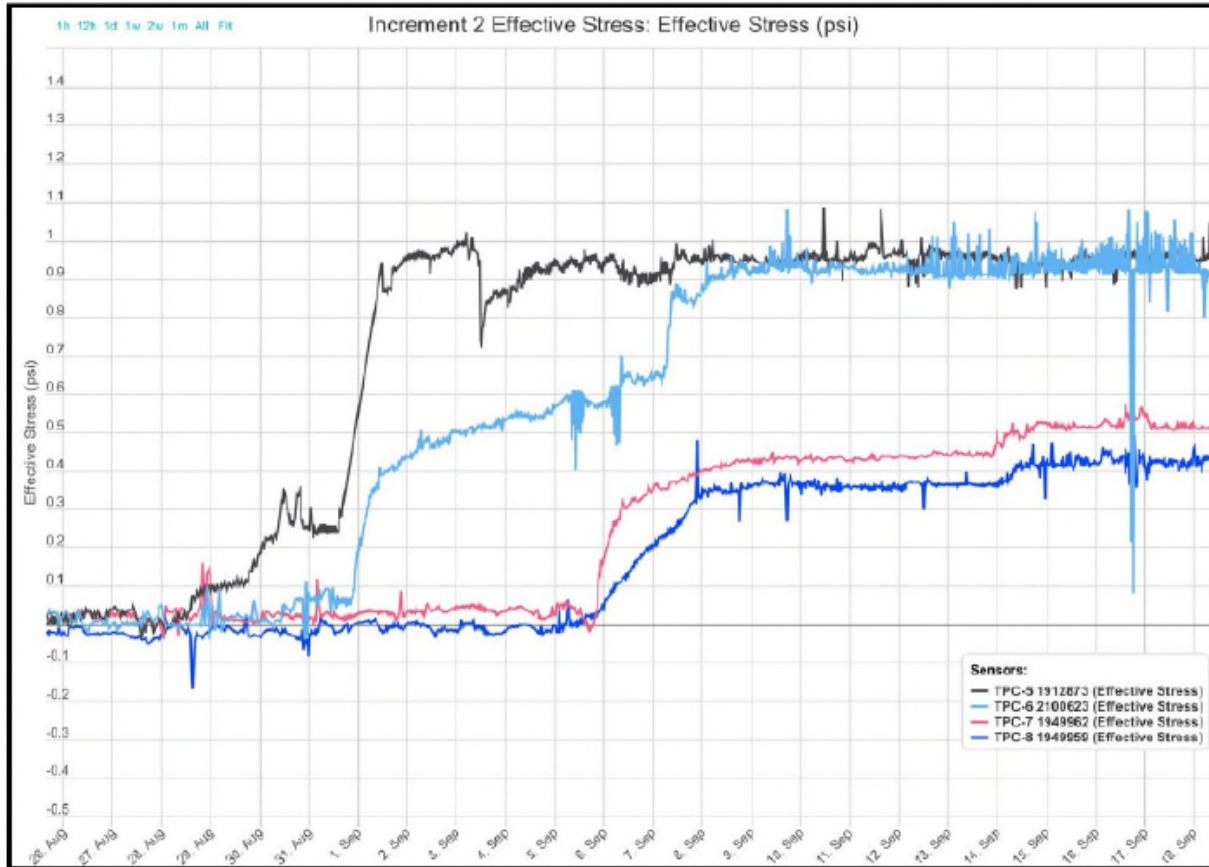


Figure 2: Increment 2, Effective Stress (y-axis) vs. Time (x-axis)



Figure 3: Snapshot from Field Camera in Increment 1 Showing Material near top of ECD



Figure 4: Snapshot from Field Camera in Increment 1 Showing Material Being Placed

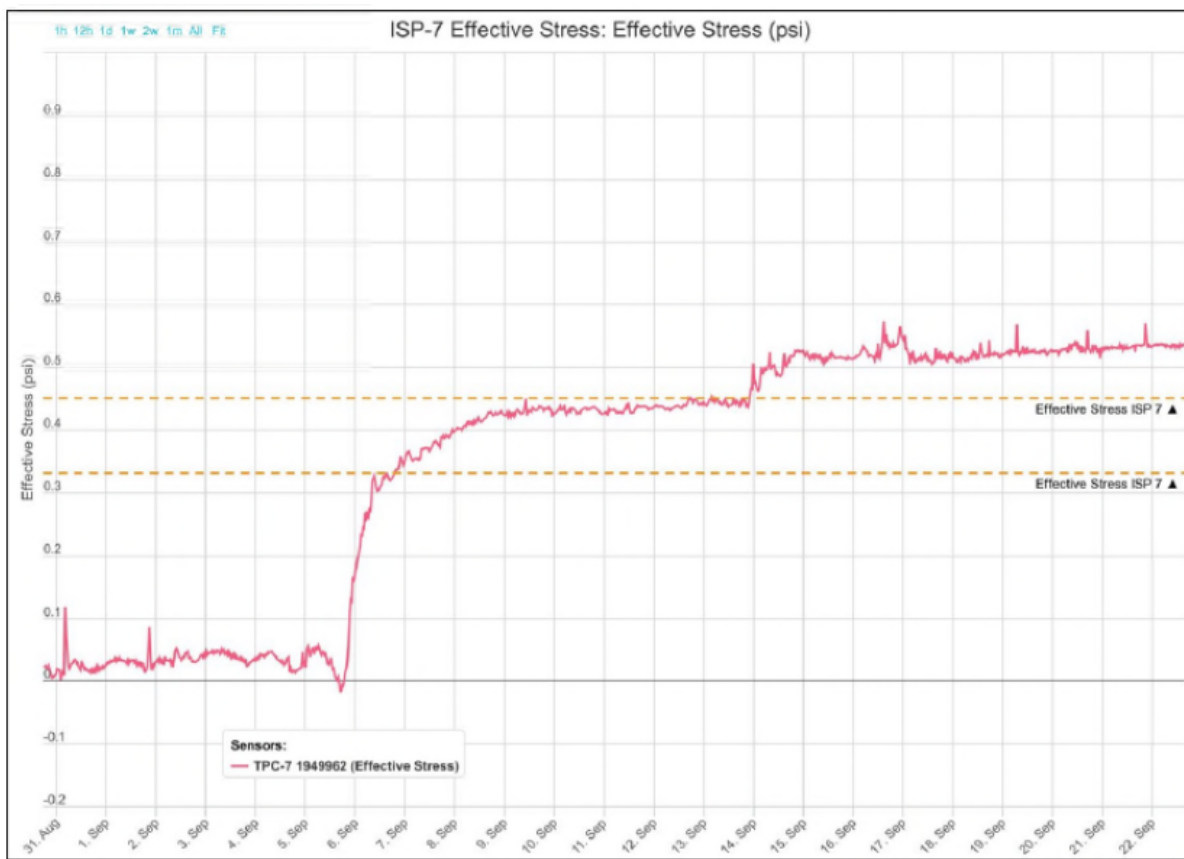


Figure 5: ISP-7, Effective Stress (y-axis) vs. Time (x-axis)

The project had two identified borrow areas in the Gulf of Mexico; Southwest with an area of approximately 190 acres and an estimated maximum available borrow volume of 3,596,000 cy, and Northeast with an area of approximately 136 acres and an estimated maximum available borrow volume of 2,546,400 cy.

Construction of the ECD's began on 6/30/2020 but was interrupted on 10/28/20 with the landfall of Hurricane Zeta. Work at the site resumed on 11/23/20 with surveying of the existing South



Dune that was leveled into the area of the MCA. The original contract quantity for the ECD construction was approximately 44,440 lf which required stage construction consisting of a minimum of 2 separate lifts. Following Hurricane Zeta approximately 16,000 lf of the ECD's that were already in place had to be re-worked and 41,700 lf of the South

Figure 6: Sand Dune Reconstruction and Sand Fence Installation

Dune reconstructed. After Hurricane Ida the entirety of the 44,440 lf of ECD required some level of rework most of which was in the lift 2 zone above the waterline. Additionally, 41,700 lf of the South Dune had to again be reconstructed to provide the necessary southern containment for the MCA. This ECD construction extended over a period from 6/30/20 to 8/4/22.

As noted above, work resumed at the site after Hurricane Zeta on 11/23/20 and progressed until the landfall of Hurricane Ida on 8/29/21. Construction activities undertaken between the landfall of these hurricanes are listed in Table 6. Following Hurricane Ida, construction at the site resumed on 3/2/22 with the 2nd rebuilding of the South Dune. Work to repair and build the remaining components of the MCA, except for a portion of the South Dune sand fence, was completed on 8/15/22. On this date GLDD's dredge was mobilized to the Southwest Borrow Area to start the dredge and hydraulic activities.



Figure 7: Hydraulic Fill Placement Increment 3 Looking West

Dredge material for the MCA was designated to be obtained from two borrow areas, Southwest and Northeast, located in the Gulf of Mexico. Dredged material was pumped via the cutter suction dredge “*Alaska*” which is owned and operated by the Great Lakes Dredge and Dock Company. As stipulated in the Contract Documents the hydraulically dredged material was placed sequentially by MCA increment, beginning in Increment 1, and progressing east to Increment 4. Dredge and fill activities of the MCA began 8/15/22 in Increment 1 using the West Corridor pipeline. Dredge and fill using the West Corridor pipeline was completed in Increment 2 on 9/8/22. An interim mobilization to the East Corridor pipeline was completed on 9/13/22. Dredge and fill operations using the East Corridor pipeline resumed on 9/13/22 completing the work in Increment 2 on 9/15/22.

Dredge and fill operations in Increments 3 and 4 using the East Corridor pipeline began on 9/15/22 and were completed on 10/15/22. With 2,449,688 Cy of material having been placed within the MCA. The hydraulic dredge activities associated with marsh creation had been completed and the waterside and shore demobilization began on 10/15/22. Where stable locations had been identified the Gapping of the ECD began on 10/16/22.

The remaining construction activities at the site including Punch List work began on 11/1/22 and included: the re-grading of a portion of the southern containment dike (also referred to as Caillouet Road), the sand fence placement at each pipe corridor that had been excluded, and the spot rehabilitation of Elmer’s Island Road upon completing demobilization. The Final Inspection was held 11/9/2022 and the Final Acceptance of the project was acknowledged by CPRA on 12/9/22. Documentation of the Final Inspection and Final Acceptance is included in Appendix G.



Figure 8: Dewatering Weirs at Eastern Limit of Increment 4

After the completion of the Marsh Creation Project an initial vegetative plantings project was initiated which included the installation 54,900 Bitter Panicum plants, 29,600 Seashore Paspalum plants, and 29,600 Smooth Cordgrass plants. These plants were installed along the sand fencing to help expedite plant growth and improve sand retention. Vegetation was also planted along the earth containment dike to help establish a root system for improved dike stabilization from surface erosion. Bids for this vegetation project were opened on January 17, 2023, with the Contract award going to Ecological Restoration Services, LLC. The Notice to Proceed was issued March 1, 2023, a Pre-Construction Conference held March 6, 2023, a Construction Start on April 17, 2023, and Construction Completion May 10, 2023. The Project Final Acceptance was issued May 15, 2023. For additional details related to the Vegetation Plants Project please refer to Appendix K.



Figure 9: MCA Increment 1 Looking West During Fill Operation

Photo Taken 8/16/22 Patrick Quigley, Gulf Coast Air Photo



Figure 10: MCA Increment 1 Looking West Post Fill Operation (Still Dewatering)

Photo Taken 10/18/22 Patrick Quigley, Gulf Coast Air Photo



Figure 11: MCA Increment 2 Looking West Pre-Fill Operation

Photo Taken 8/16/22 Patrick Quigley, Gulf Coast Air Photo



Figure 12: MCA Increment 2 Looking West Post Fill Operation (Still Dewatering)

Photo Taken 10/18/22 Patrick Quigley, Gulf Coast Air Photo



Figure 13: MCA Increment 3 Looking West Pre-Fill Operation

Photo Taken 8/16/22 Patrick Quigley, Gulf Coast Air Photo



Figure 14: MCA Increment 3 Looking West Post Fill Operation (Still Dewatering)

Photo Taken 10/18/22 Patrick Quigley, Gulf Coast Air Photo



Figure 15: MCA Increment 4 Looking West Pre-Fill Operation

Photo Taken 8/16/22 Patrick Quigley, Gulf Coast Air Photo



Figure 16: MCA Increment 4 Looking West Post Fill Operation (Still Dewatering)

Photo Taken 10/18/22 Patrick Quigley, Gulf Coast Air Photo

9.0 Construction Change Orders, RFI's and Work Directives

Eleven (11) Change Orders, sixty-two (62) contractor Request For Information (RFI's) and five (5) Work Directives were issued on this project. The following provides a summary of the Change Orders issued:

1. The purpose of Change Order No. 1 was to decrease the Contract Quantities for Bid Items No. 8, Earthen Containment Dikes (ECD) and Bid Item No. 10, Hydraulic Dredging and Marsh Creation. The reduction in ECD and marsh fill quantities was due to realignment of the earthen containment dike (ECD) near Bay Champagne. The Contract Price was decreased by \$1,502,334. The Contract Time was not revised for this Change Order.
2. The purpose of Change Order No. 2 was to add Bid Item No. 11, No-Work Zone, requiring the Contractor to install sand fencing and an oil containment boom to delineate this area of restricted work/access. The Contract Price was increased by \$63,000 for this Change Order. The Contract Time was not revised.
3. The purpose of Change Order No. 3 was to remove Bid Item No. 09, Priority Earthen Dike. Removal of the Priority Earthen Dike required an increase in the ECD quantity. These changes resulted in a net Contract Price reduction of \$300,158. The Contract Time was not revised.
4. The purpose of Change Order No. 4 was to increase the Contract Price to reinstall the No Work Zone sand fencing and oil containment boom following Hurricane Zeta and add survey points to the southwest end of the Marsh Creation Area for the Preconstruction Survey. The Contract Price was increased by \$61,262.60. The Contract Time was not revised.
5. The purpose of Change Order No. 5 was to increase the Contract Price for construction of a southern containment dike feature since the Caminada beach and dune no longer contained the elevation needed to contain the dredge slurry due to the impacts from Hurricane Zeta. Work items included equipment mobilization/demobilization, Bayou Moreau dredging to construct an equipment access corridor, sand fence installation, preconstruction and process surveying, additional airboat operations and reconstruction of the dune. The Contract Price was increased by \$1,128,581.40. The Contract Time was not revised.
6. The purpose of Change Order No. 6 was to increase the Contract Price for work to raise the elevation of the Caillouet Road sand dune to + 5-feet NGVD. Sand in this area was reworked to achieve the line and grade needed for adequate containment in this location of Increment 1. The Contract Price increase included mobilization/demobilization, earthwork to regrade sand, additional airboat operations and overhead. The Contract Price was increased by \$190,320. The Contract Time was not revised.
7. The purpose of Change Order No. 7 was to increase the Contract Price for the associated surveying and repairs to the ECD damaged by Hurricane Zeta. The Contract Price was increased by \$837,855.80. The Contract Time was not revised.

8. The purpose of Change Order No. 8 was to increase the Contract Price for RTK and LIDAR surveying of the entire project area including the entire perimeter of the marsh creation area, the internal training dikes, and the “no work zone”, to assess the damage caused by Hurricane Ida. The Contract Price was increased by \$33,747.02. The Contract Time was not revised.
9. The purpose of Change Order No. 9 was to adjust the Contract Price by accounting for the decrease in Daily Bird Abatement and coincident addition of Enhanced Bird Abatement caused by Hurricane Zeta. The net change to the Contract Price was a decrease of \$373.64. The Contract Time was not revised.
10. The purpose of Change Order No. 10 was to adjust the Contract Price by accounting for 8 decreases and 27 increases in the project's Pay Items due to substantial damages at the site caused by Hurricane Ida and increase the Contract Time. The Contract Price was increased by \$5,187,179.50. The largest increases included the cost to repair/rebuild the ECD and South Dune, reinstall the South Dune sand fence, surveying, and additional personnel transportation including equipment (airboats, ATVs) and operators. The Contract Time was increased from 548 days to 937 days.
11. The purpose of Change Order No. 11 was final reconciliation of the Contract Price and Contract Time since construction activities had been completed. Accounting for all final contract quantities results in a Contract Price reduction of \$173,451.92. The Contract Time was increased by nine days, from 937 to 946 days.

Complete details for the above are provided in Appendix F “Construction Change Orders, RFI's and Work Directives”.

10.0 Pipeline and Other Utility Crossings

Table 7

Pipeline or Utility Structure	Owner	Representative to Contact
Chevron Pipeline	Chevron USA, Inc.	Todd Dore 2710 North Highway 190 Covington, LA 70433 (985) 893-3660
Harvest Pipeline	Arrowhead/Harvest Pipeline	Tony Arelland 1901 Engineers Road Belle Chasse, LA 70037 (504) 912-4426
LOOP Pipelines	LOOP, LLC	Cindy Gardner-LeBlanc 137 Northpark Blvd. Covington, LA 70433 (985) 276-6299
XTO Pipeline	XTO Offshore, Inc./ XTO Energy, Inc.	David Dufour 810 Houston Street Fort Worth, TX 76102 (817) 870-2800
ANR Pipeline	TransCanada/ANR Pipeline Co.	Ricardo "Rick" Lopez Grant Smith 700 Louisiana St. Houston, TX 77002 (337) 266-4695

11.0 Safety and Accidents

GLDD retained a daily Safety and Inspection Log with a daily Site Safety & Health Officer (SSHO) and a Resident Project Representative assigned. A summary of significant weather events, safety incidents and accidents are provided below.

Table 8

Incident	Date	Description and Action
Tropical Storm Cristobal	6/7/2020	Tropical Storm Cristobal made landfall in Plaquemines Parish just east of Grand Isle on 6/7/2020. The only work underway at this time was surveying which was temporarily suspended on 6/6/2020.
CALCO Pipeline Discovery	6/30/2020	A marsh buggy unearthed an unmarked 6-inch pipeline near ± STA 97+00 of the ECD. All excavation work was immediately suspended. There was no evidence of a leak or damage to the line. Information obtained by GLDD identified it as an abandoned CALCO pipeline. It was noted on the HydroTerra survey by magnetometer anomalies and pipeline probes. Before resuming work all magnetometer anomalies and pipeline probes were marked in the field and explored. All anomalies/probes were assumed to be pipelines and provided a 50' buffer zone until determined otherwise. Excavation work resumed on 7/2/2020.
Hurricane Marco	8/25/2020	Marco passed just south of the mouth of the Mississippi River on 8/24/2020 and meandered westward in the Gulf weakening to a remnant low on 8/25/2020 south of Morgan City never officially making landfall. Precautionary preparations at the site included staging marsh buggies atop the ECD and securing other equipment at the GLDD Pass Fourchon yard. All project personnel evacuated Port Fourchon. Preparations were completed on 8/23/2020. Work did not resume at the site until after Hurricane Laura.
Hurricane Laura	8/27/2020	Hurricane Laura made landfall at Cameron, LA on 8/27/2020. Remobilization to the site began on 8/28/2020. Damage at the site due to Hurricanes Marco and Laura was minimal with some erosion of the ECD's south slope in the vicinity of STA 70+00 and displacement of the No Work Zone oil boom. Work resumed on 8/31/2020.

Hurricane Sally	9/16/2020	Hurricane Sally made landfall near Gulf Shores, AL on 9/16/2020. Precautionary preparations at the site included demobilizing some marsh buggies to GLDD's yard on Pass Fourchon beginning on 9/13/2020. Other marsh buggies were staged atop the ECD. Equipment remobilization to the site began on 9/18/2020 and work resumed that day.
Hurricane Delta	10/9/2020	Hurricane Delta made landfall near Creole, LA on 10/9/2020. Precautionary preparations at the site included demobilizing marsh buggies and other equipment north of the Golden Meadow floodgate beginning on 10/5/2020. Equipment remobilization to the site began on 10/12/2020. Work at the site resumed on 10/13/2020.
Hurricane Zeta	10/28/2020	Hurricane Zeta made landfill at Cocodrie, LA on 10/28/2020. Precautionary preparations included demobilizing marsh buggies to GLDD's yard on Pass Fourchon on 10/27/2020. Service boats were moved north of the Golden Meadow floodgate. All project personnel evacuated Port Fourchon. Damage to the project was significant requiring a Post-Zeta Damage Assessment. The South Dune was leveled into the MCA requiring a rebuild. Some reconstruction of the ECD was also required. Equipment remobilization to the project area began on 11/4/2020. Construction at the site resumed 11/17/2020 with regrading of the ECD.
Oil Spill	11/19/2020	A hose ruptured on marsh buggy JD-2 releasing hydraulic oil creating a sheen on the waterway in the project area. A containment boom was deployed to contain the spill. Absorbent pads were used to remove excess oil on the undercarriage. The hose was repaired onsite. GLDD reported the spill to National Response Center. NRC Incident Report No. 1292628
Capsize of JD-2	11/25/2020	Marsh buggy JD-2 capsized in the Increment 2 borrow area channel. No evidence of a spill was present (i.e. odor, sheen). GLDD did notify the National Response Center and Coast Guard. The operator was not injured. Marsh buggy was righted the same day. GLDD prepared a Multiple Cause Incident Analysis. NRC Incident Report No. 1292984
Anti-Freeze Spill	3/10/2021	A coolant leak was observed in the Chevron Pipeline Canal. The leak was due to a loose hose clamp on marsh buggy W-177. Absorbent pads were used to remove coolant from the canal and the buggy's undercarriage. The leak was repaired onsite. GLDD reported a one-half gallon spill to the National Response Center, NRC Incident Report No. 1299970.

Oil Spill	4/9/2021	Lubricating oil spilled from a bucket on marsh buggy W-34 into the borrow area channel near the LOOP Pipeline. A containment boom was deployed to contain the spill. Absorbent pads were used to remove excess oil from the marsh buggy. GLDD reported a four-gallon spill to the National Response Center. The spill is documented in NRC Incident Report No. 1302334
Equipment Theft	4/23/2021	An airboat was stolen from the GLDD yard driven to the project area and lodged atop the ECD. Using a stolen marsh buggy, the suspect dislodged the airboat and drove it to a local bar. After finishing at the bar, the suspect was unable to start the airboat. The suspect was later arrested at Galliano Airport attempting to steal a helicopter. Some damage to the airboat hull. No damage to marsh buggy. Airboat remained in service.
Oil Spill	4/24/2021	Hydraulic oil leaked from marsh buggy JD's damaged hose and spilled into the waterway near the LOOP Pipeline. A containment boom was deployed to contain the spill. Absorbent pads were used to remove excess oil on the undercarriage. The marsh buggy was moved onto a barge and repaired. Wilco reported a twelve- ounce spill to the National Response Center. The spill is documented in NRC Incident Report No. 1303408
Hurricane Ida	8/29/2021	Hurricane Ida made landfall near Port Fourchon with sustained winds of 150 mph on 8/29/2021. Precautionary preparations began on 8/27/2021 and included removing ISP instrumentation, demobilizing marsh buggies and other Wilco equipment to their yard in Harvey, LA, and demobilizing GLDD and Soil Erosion Services (SES) equipment offsite. All project personnel evacuated Port Fourchon. Damage to the project was significant and a thorough damage assessment was completed. The assessment resulted in 28 new Items of Work for post Ida restoration. The new Items of Work included Nos. 27 through 54 listed in Table 3. Equipment remobilization began on 3/2/2022. Construction at the site resumed 3/3/2022 with the 2nd reconstruction of the South Dune.
Oil Spill	8/21/2022	Hydraulic oil leaked from marsh buggy W-142 creating a sheen in Increment 1 MCA. A containment boom was deployed to contain the spill. Spill volume was one quart according to Wilco Oiler on the scene. GLDD reportedly notified the USCG. NRC Incident Report No. 1345133

S Hurricane Ian	9/28/2022	Hurricane Ian made its second landfall near Punta Gorda, FL on 9/28/2022. Precautionary preparations included demobilizing Dredge <i>Alaska</i> from the Northeast Borrow Area on 9/27/2022 for staging at Belle Pass. Dredge remobilized to borrow area on 9/30/2022. Dredge was repositioned and initiated startup procedures on 10/1/2022.
Slip and Fall	10/30/2022	RPR slipped and fell on ECD side slope that resulted in a fractured fibula. RPR did not return for the remainder of the project as healing was expected to take 3 months followed by rehabilitation. RPR made complete recovery.

12.0 Project Issues and Discussion

The project construction was completed consistent with the program goals and expectations. Project issues were limited and typical of coastal restoration work in poor soils and erosive wave action. The most significant impact to the project was the track of one tropical storm and seven hurricanes into the Gulf of Mexico during construction. Hurricanes Zeta and Ida were major storms that caused significant damage to the project area. Although the remaining named storms did not impact the project area directly, they did cause demobilization and remobilization of equipment and coincident delays in construction.

Earthen containment dike stability was problematic due to the poor quality of the borrow material used for construction. Due to the depth of Bayou Moreau, and the need to rehandle material on several occasions from the storm impacts, the ECD construction at this location was particularly challenging. The original construction plans included a Priority Dike at this location that was eliminated under Change Order 3; however, this would not have been as problematic without the material rehandling needs. The option of sheet piling at this location was presented by GLDD but was not needed since the dike was ultimately constructed using in-situ material. Problems areas along the ECD, including the Bayou Moreau location, were constructed successfully by placing smaller lifts, extending consolidation intervals and dry stacking (i.e., dewatering) material before placement.

The loss of the southern sand dune containment resulted in a significant increase in disturbance and construction activity along the beach. This increased activity resulted in the need to exercise extensive bird monitoring and abatement measures. During the nesting season, daily assessments by trained biologist were required looking to identify nest and nesting activity along with establishing buffer zones and designating access paths in advance of equipment accessing the site and performing the restorative work. Constant communications with the Louisiana Department of Wildlife and Fisheries (LDWF) and United States Fish and Wildlife Service (USFWS) regarding reductions of the 1000ft buffer was required.



Figure 12: Common Nighthawk on Beach

The first recorded case of COVID-19 in the United States was reported on January 20, 2020. On March 11, 2020, the World Health Organization declared COVID-19, the disease caused by the SARS-CoV-2 coronavirus, a pandemic. The immediate impact on the project was to teleconference all Bi-Weekly Meetings. GLDD instituted basic health and hygiene practices like handwashing, social distancing, body temperature measurement and masking in certain settings such as meetings. Overall, the pandemic's impact on the project, while cumbersome, was not significant.

13.0 Significant Construction Dates

Table 9

Activity Description	Date	Comments
Bid Opening	1/9/2020	CPRA Baton Rouge
Contract Execution	4/16/2020	Contract Value \$31,590,506.00
Notice to Proceed	4/20/2020	Five-Hundred-Forty-Eight (548) Calendar Day Contract 10/20/21 Contract End Date
Pre-Construction Conference	6/9/2020	Online Video Conference via Microsoft Teams
Mobilization	6/23/2020	Construction Equipment
Construction Start	6/30/2020	Containment Dikes
Project Demobilization	10/15/2022	Initiated Full Water Based Demobilization from Project
Final Inspection	11/9/2022	A few minor issues and closeout work elements were noted, however CPRA considered the Project Substantially Complete at this Date
Construction Completion	12/6/2022	MCA Dike Gapping, and both Caillouet Road and Elmers Island Beach Road repair/restoration was Completed
Final Acceptance	12/9/2022	Final As-Builts Approved, Outstanding Items Addressed Final Quantities and Contract Time established with Change Order 11. Contract Time Stopped 11/12/22 at Day 936
Recordation of: Notice by Owner of Acceptance of Work	2/24/2023	Jefferson Parish: Instrument: 12307741, Mortgage Bk: 5016, Pg: 523 Lafourche Parish: Instrument: 1352354, Mortgage Bk: 2279, Pg:375

For Vegetative Plantings Refer to Appendix K

References

The Caminada Headland Back Barrier Marsh Creation Project BA-0171 Plans and Technical Specifications signed and sealed by Shannon M. Haynes, P.E. and Amanda M. Taylor, P.E. dated October 29, 2019, were the governing documents utilized for the construction of this project.

Appendix A

Project Data & Fact Sheet

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix B

Pre-Construction Conference PPT and Meeting Minutes

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix C

Contractors Construction Progress Schedules

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix D

Survey Methodology

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix E

As-Built or Final Process Surveys

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix F

Construction Change Orders RFI's and Work Directives

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix G

Final Inspection & Acceptance

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix H

Permits

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix I

Geotechnical Instrumentation and Monitoring Report

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix J

As-Built Drawings

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”

Appendix K

(BA-0171) Vegetative Plantings Project

“Appendices for the Caminada Headland Back Barrier Marsh Creation Project (BA-0171) can be found on the CPRA website (<http://coastal.la.gov/>) under the Coastal Information Management System (CIMS) - Document Library.”