

Matagorda Ship Channel Deepening

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11 March 2021

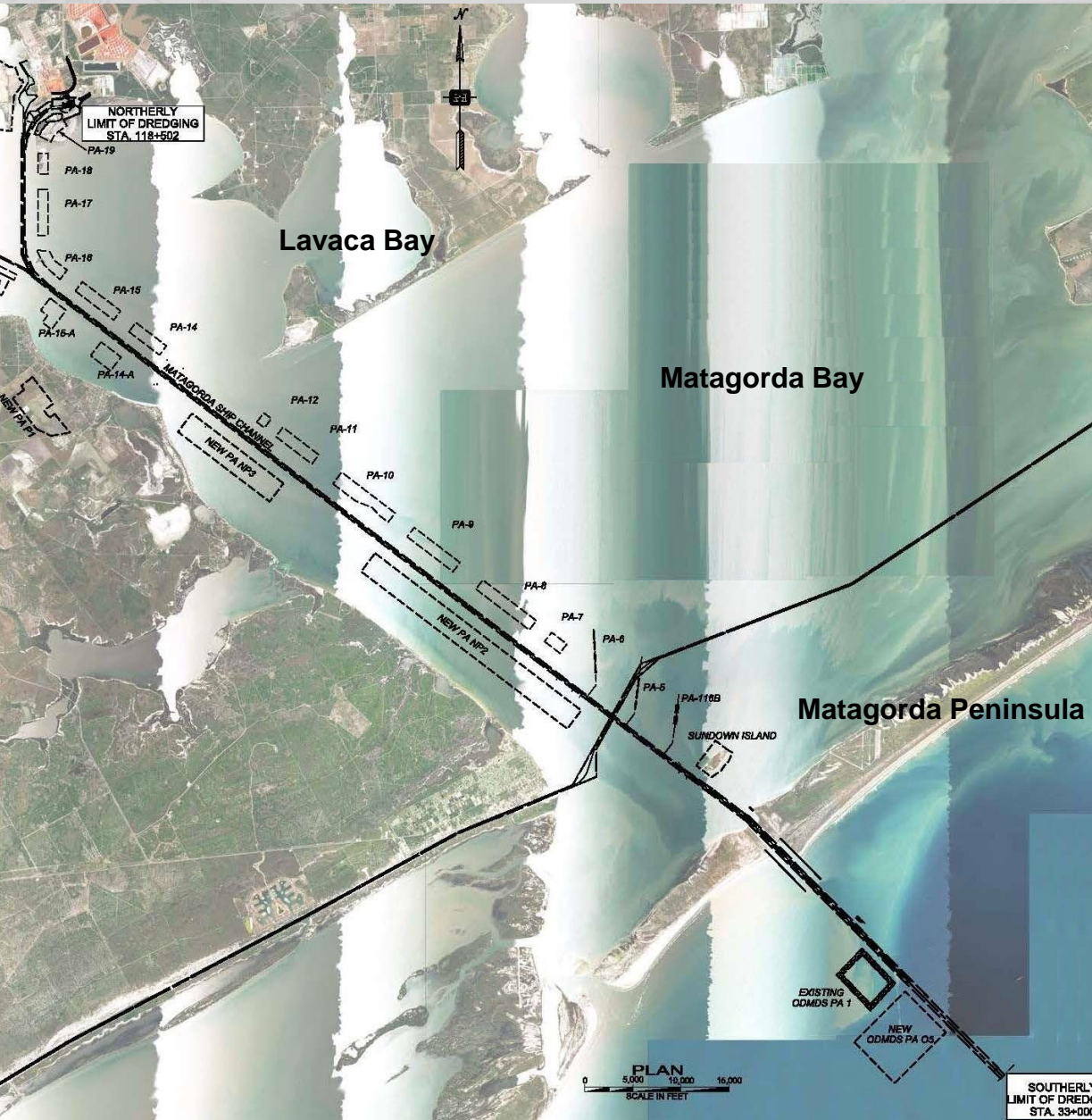


Authorization

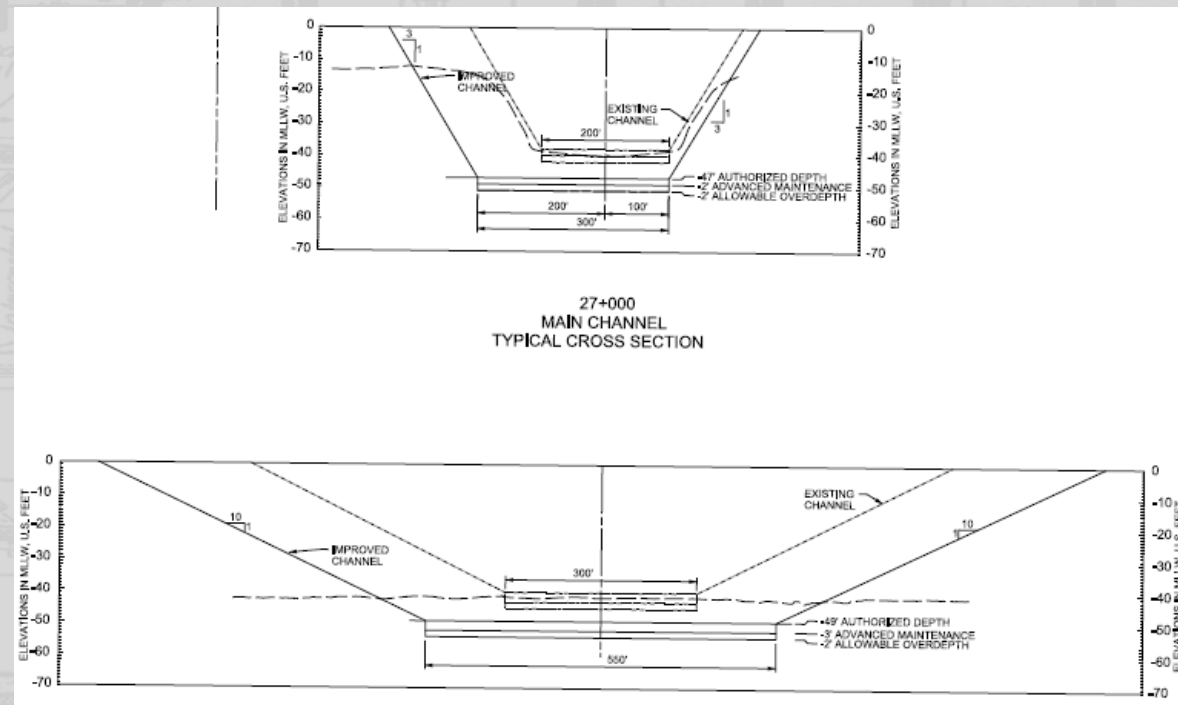
2. The reporting officers recommend authorizing a plan to modify the Matagorda Ship Channel in the vicinity of Port Lavaca, Texas. The recommended plan is the National Economic Development (NED) Plan which includes: addition of a new 1,200 foot turning basin in the Lavaca Bay reach to accommodate the larger vessels; extending the entrance channel 13,000 feet to allow for deepening to -49 feet Mean Lower Low Water (MLLW); dredging of a 1,600 foot long sediment trap in the area of the offshore bar; widening the entrance channel from 300 to 550 feet, and the Main channel from 200 to 300 feet; deepening the Entrance Channel from -40 to -49 feet, and the Main Channel from -38 to -47 feet MLLW; relocating 16 pipelines; a 165 acre sand engine as Beneficial Use of dredged material; and modifications to aids to navigation. Unavoidable environmental impacts would be fully compensated for by the creation of approximately 130 acres of oyster reef habitat, and approximately 2 acres of marsh. These mitigation features would be monitored for up to five years to ensure their performance. The recommended plan also includes a Dredged Material Management Plan to address Operations and Maintenance materials for the designed life of the project to ensure project performance.

3. The Calhoun Port Authority, Calhoun County, Texas, is the non-federal cost-sharing sponsor

MSC Existing and New



- Extend entrance channel by 13,000'
- Deepen entrance channel from 40' to 49' MLLW
- Widen entrance channel from 300' to 550' bottom width
- Deepen bay-side channel from 38' to 47'
- Widen bay-side channel from 200' to 300' bottom width
- New 1,200' diameter turning basin





Strategic Enabler: Regional Sediment Management (RSM)

...Managing sediment regionally has potential to save money, allow use of natural processes to solve engineering problems, and improve the environment.

Key Elements:

- Uses a river watershed and coastal basin systems approach
- Incorporates physical processes and effects of anthropogenic influences
- Supports stewardship of natural resources in balance with economic development and national security needs



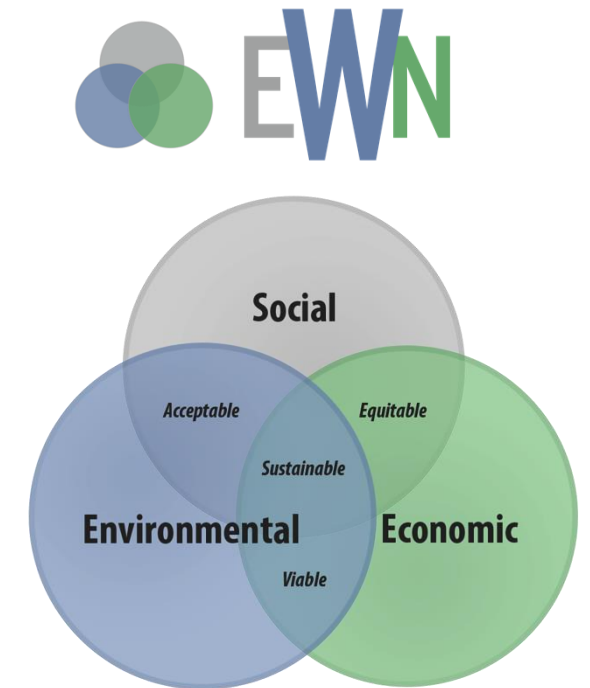


Strategic Enabler: Engineering with Nature (EWN)

...the intentional alignment of natural and engineering processes to efficiently and sustainably deliver economic, environmental and social benefits through collaborative processes.

Key Elements:

- Science and engineering that produces operational efficiencies
- Use of natural processes to maximum benefit
- Broadening and extending benefits provided by projects
- Science-based collaborative processes to organize and focus interests, stakeholders, and partners





Strategic Enabler: Natural and Nature Based Features (NNBFs)

Water Infrastructure Improvements for the Nation (WIIN) Act

- SEC. 1184. CONSIDERATION OF MEASURES.
- (a) DEFINITIONS.—In this section, the following definitions apply:
 - (1) NATURAL FEATURE.—The term “natural feature” means a feature that is created through the action of physical, geological, biological, and chemical processes over time.
 - (2) NATURE-BASED FEATURE.—The term “nature-based feature” means a feature that is created by human design, engineering, and construction to provide risk reduction in coastal areas by acting in concert with natural processes.



North Padre Island



Galveston Island



New Work Volumes

Table 4-1. New Work Volumes

Start Station	End Station	Distance Interval (ft)	Volume w/Advanced Maintenance (CY)	Allowable Overdepth (CY)	Total Volume (CY)	PAs	Method
-33+000	-16+000	17,000	2,606,681	634,436	3,241,117	O5	Hopper
-16+000	-6+000	10,000	1,115,407	292,354	1,407,760	SE	Pipeline
-6+000	20+000	26,000	1,886,389	419,862	2,306,250	Sundown Island	Pipeline
20+000	25+000	5,000	577,757	29,262	607,019	NP1	Pipeline
25+000	55+000	30,000	3,557,723	222,288	3,780,011	NP2	Pipeline
55+000	80+000	25,000	2,918,279	228,873	3,147,152	NP3	Pipeline
80+000	85+000	5,000	525,600	71,559	597,159	NP4	Pipeline
85+000	98+400	13,400	1,534,157	66,864	1,601,021	NP5	Pipeline
98+400	113+300	14,900	2,415,745	151,401	2,567,146	NP6	Pipeline
113+300	118+502	5,202	1,519,876	188,887	1,708,763	NP7	Pipeline
				TOTAL:	20,963,397		

Offshore

Nearshore

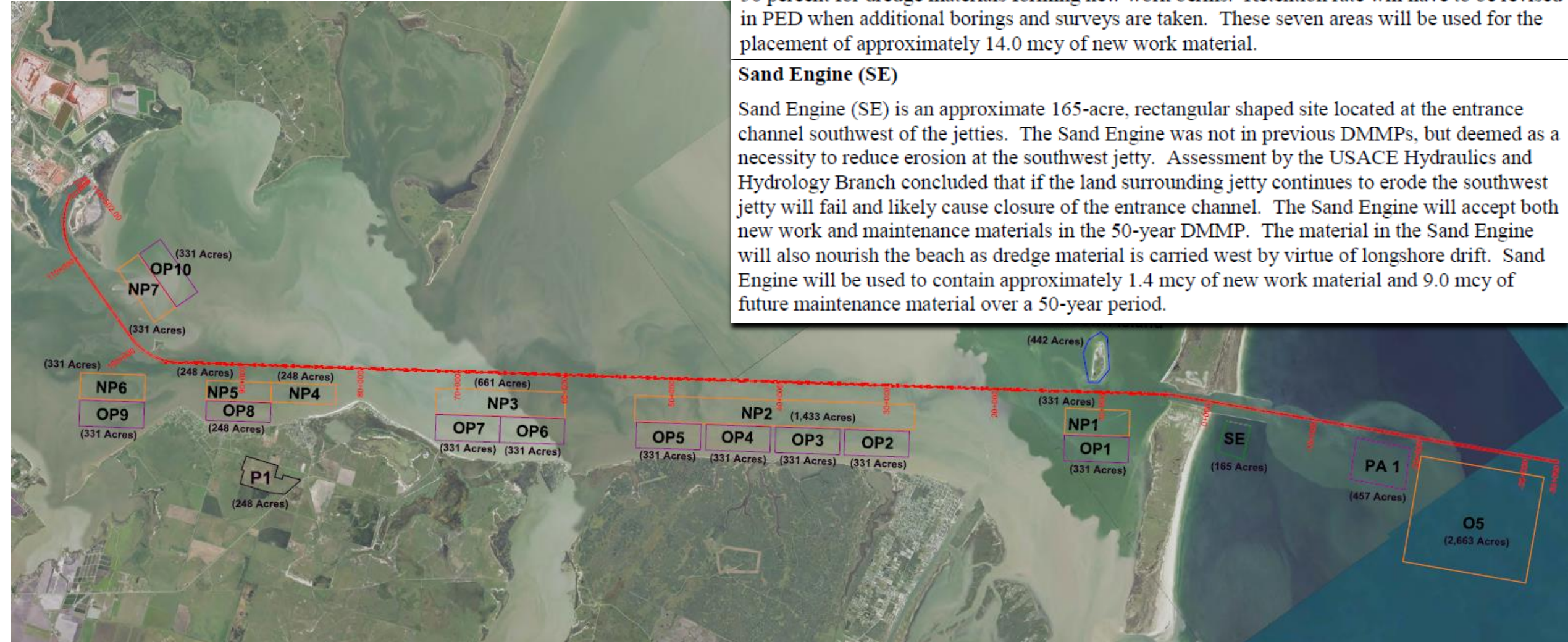
Placement Plan

New Unconfined Open-Water Placement Areas (NP 1, NP 2, NP 3, NP 4, NP 5, NP 6, and NP7)

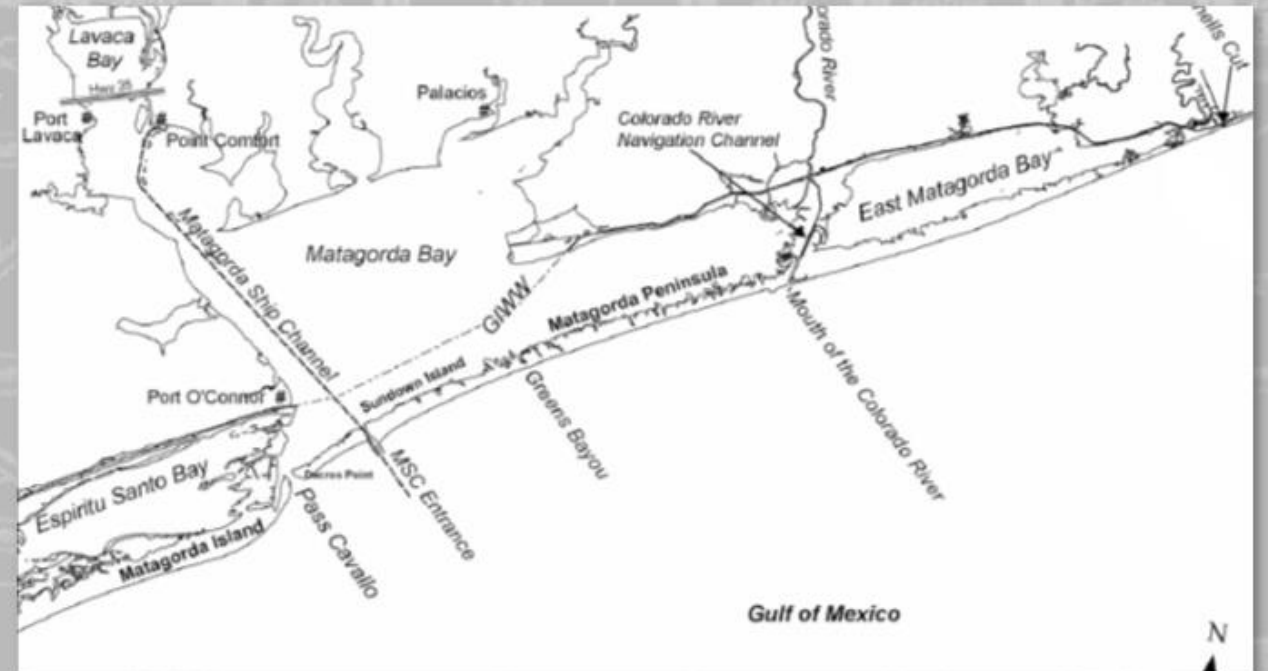
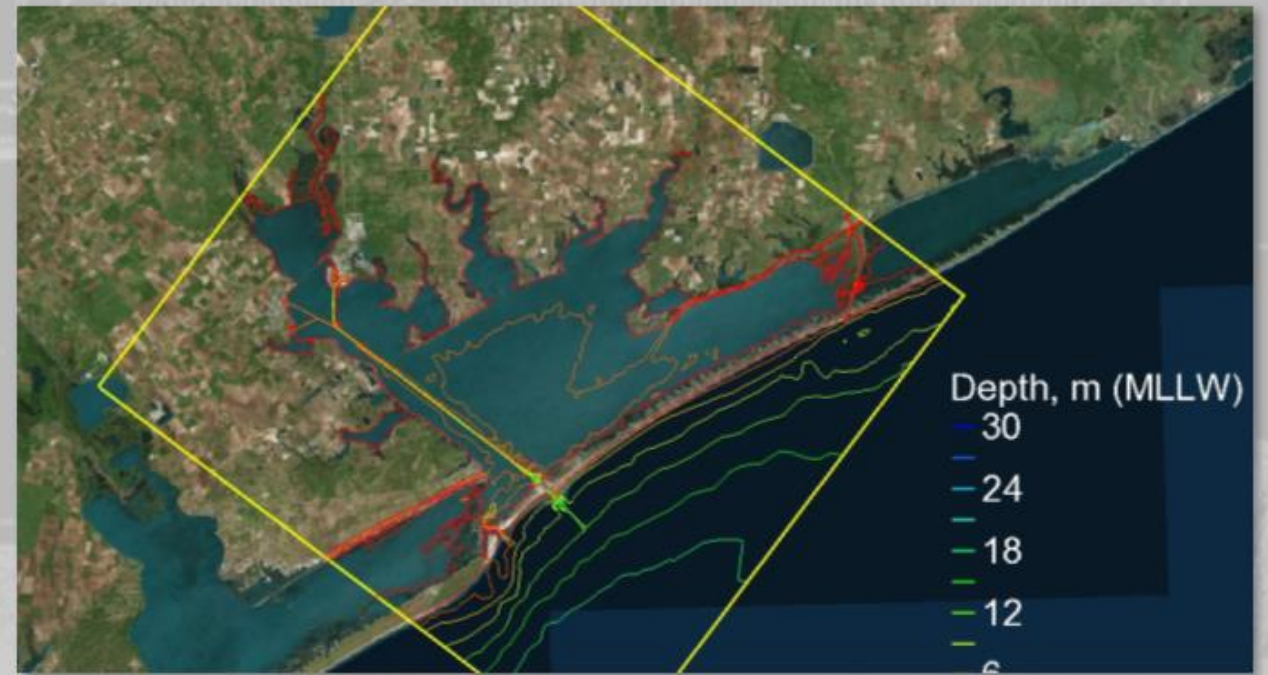
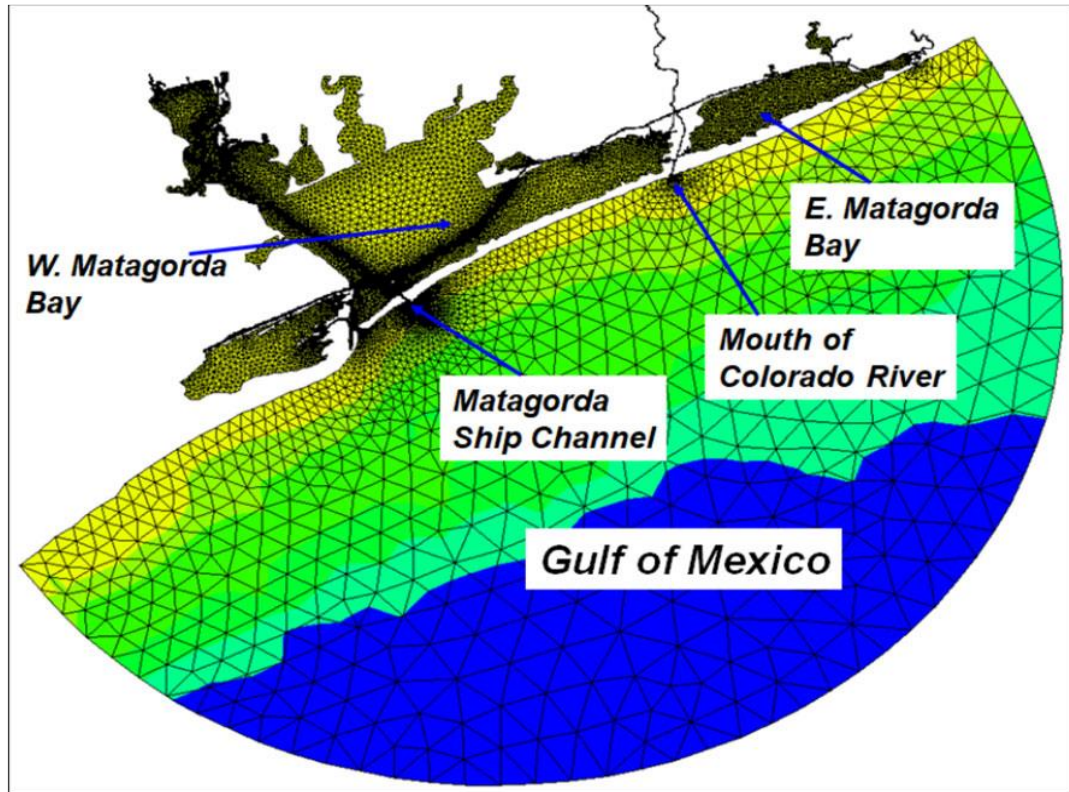
These new PAs are located southwest of the ship channel in Matagorda Bay. Regarding the island height and water depth of the new PAs, the top surface of the new PAs is 2 feet below the water (mean lower low water) and the height is estimated utilizing NOAA Sounding Chart as a reference for bathymetry. The areas of NP1, NP6 and NP7 is estimated at 331 acres. The areas of NP 2 and NP 3 are estimated at 1,433 acres and 661 acres. The areas of NP4, NP5, are estimated at 248 acres. Capacity of these open-water placement areas utilizes a retention rate of 50 percent for dredge materials forming new work berms. Retention rate will have to be revised in PED when additional borings and surveys are taken. These seven areas will be used for the placement of approximately 14.0 mcy of new work material.

Sand Engine (SE)

Sand Engine (SE) is an approximate 165-acre, rectangular shaped site located at the entrance channel southwest of the jetties. The Sand Engine was not in previous DMMPs, but deemed as a necessity to reduce erosion at the southwest jetty. Assessment by the USACE Hydraulics and Hydrology Branch concluded that if the land surrounding jetty continues to erode the southwest jetty will fail and likely cause closure of the entrance channel. The Sand Engine will accept both new work and maintenance materials in the 50-year DMMP. The material in the Sand Engine will also nourish the beach as dredge material is carried west by virtue of longshore drift. Sand Engine will be used to contain approximately 1.4 mcy of new work material and 9.0 mcy of future maintenance material over a 50-year period.



ERDC CMS & ADCIRC Grid



Engineering Design Work

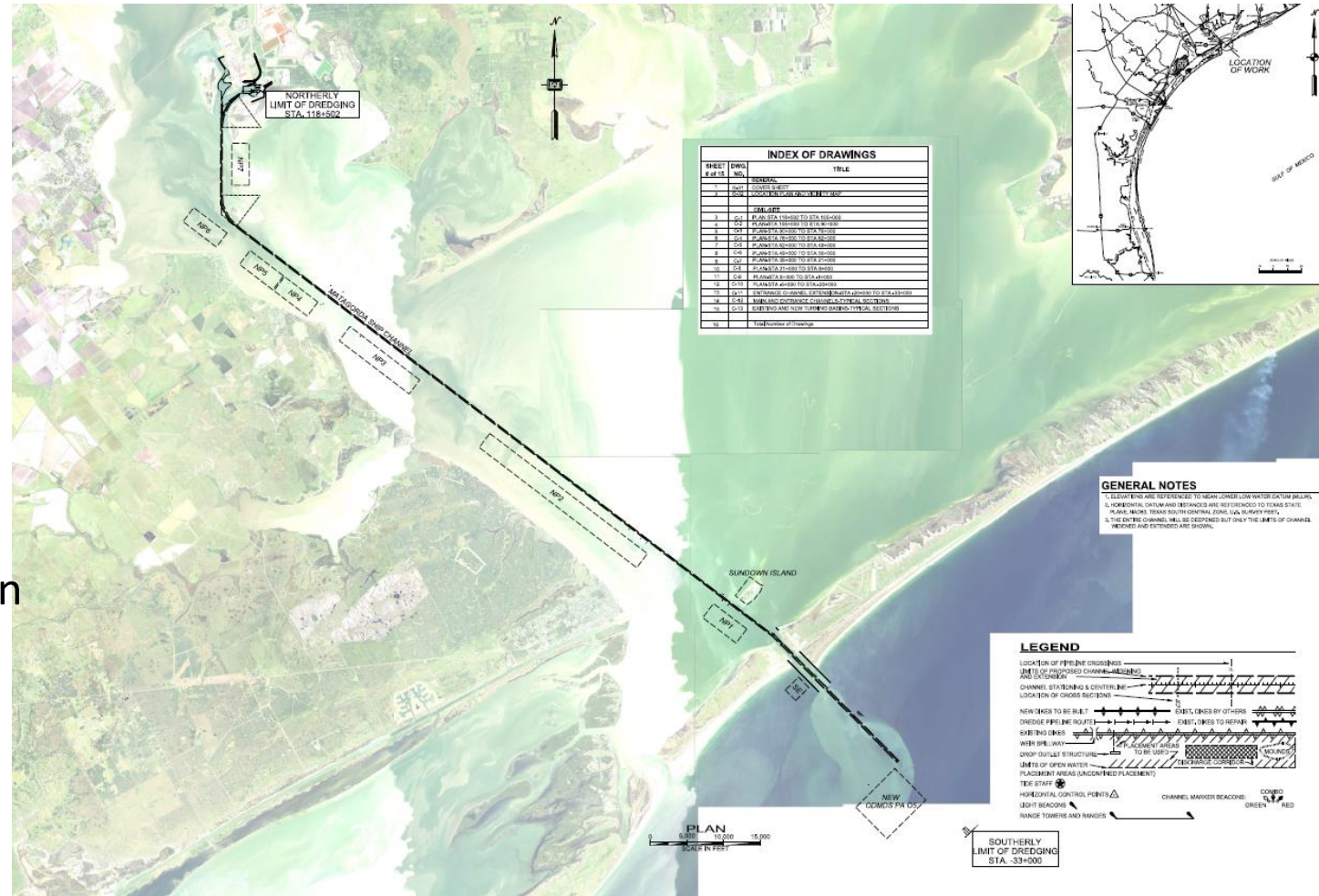
1. Detailed 2D/3D hydro+morpho modeling of the channel including offshore bar (CMS and DELFT3D)

- Accurate representation of wave climate for PA's – Placement location optimization - BU
 1. Beach/nearshore
 2. Sundown Island
 3. In bay
- Accurate Shoaling, dredging estimate (Compared to CSAT)
- Accurate currents to feed into Ship sim
- Vertical movement of the offshore bar (vessel crossing the Bypass Bar)
- Sediment trap design

2. PED level ship simulation

- Guidance on design ship, safe condition

3. Advanced and periodic maintenance



Sundown Island EIS - MSC Appendix E DMMP

Sundown Island as Open-Water Unconfined Placement Area (BU Site as Bird Island)

Sundown Island periodically had received material from maintenance dredging of the Gulf Intracoastal Waterway and Matagorda Ship Channel, but was not previously used to develop the 50-year DMMP. Sundown Island is approximately 442-acres and located southeast of the GIWW. This Island periodically receives material from maintenance dredging of the GIWW and Matagorda Ship Channel. This island will expand to accept both new work and maintenance materials in the 50-year DMMP.

This PA will be used to contain approximately 2.3 mcy of new work material and 12.9 mcy of future maintenance material. Any material placed on this PA will be done in accordance with the current placement limitations followed by the USACE, and utilize the existing authorized footprints. Local coordination, if necessary, will be done prior to placing material on the island to determine the Resource Agency's preferred timeframe for placement. Current guidelines dictate that material will be placed on Sundown Island only between September and February in order to avoid disturbing nesting birds.

Seasonal placement restrictions exist as well and may be able to be overcome by strategic adjacent placement



Mitigation

3.0 RESOURCE AGENCY COORDINATION

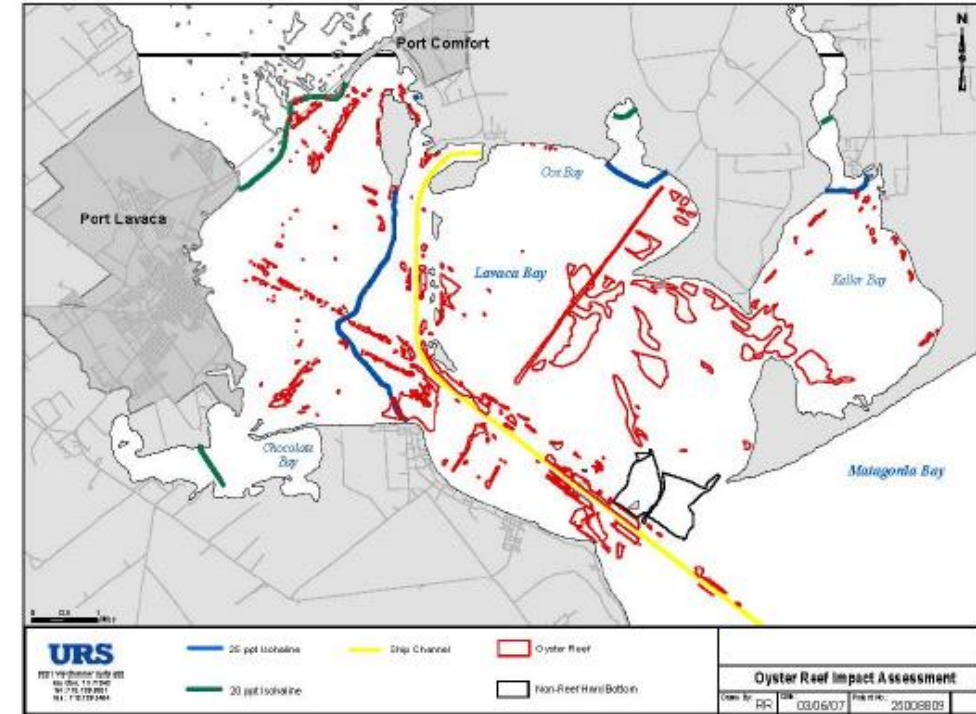
The agency coordination began at the initial Scoping meeting and continued through regularly scheduled resource agency meetings. Representatives from USFWS, National Marine Fisheries Service (NMFS), the Environmental Protection Agency (EPA), Texas Parks and Wildlife Department (TPWD), and Texas General Land Office (GLO), and Texas Commission on Environmental Quality (TCEQ) were all invited to attend the meetings. Initial meetings focused on the development of the alternatives of the project. Later meetings discussed the DMMP and the needs for mitigation of unavoidable impacts. The proposed models were agreed to by the resource agencies, as was the approach to propose a conceptualized mitigation plan with further refinements in the planning and construction phase. Locations of mitigation sites were discussed but not finalized. Further discussion of locations will be included in section 5.

EIS - MSC Appendix B Environmental

Table 1. Acreages of habitats impacted and mitigation

Habitat Type	Acreage Impacted	Acreage Created	Responsible Action
Oyster Reef	129.2		Dredging/Placement
Bay Bottom	3927		Placement
Offshore Bottom	2053		Placement
Oyster Reef		130	Mitigation

Figure 2. Oyster reefs within Lavaca Bay.





Continuously Growing Collaboration Network!



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