


Design Package # (Colors correspond with map)

	1	2	3/4A
Segment	Segment 1A	Segment 4	Segment 1A
Station #	N/A	N/A	HSC STA 138+369 TO 73+476
Package Name	Bolivar Roads to Redfish Reef Dollar Reef Oyster Mitigation	Boggy Bayou to Sims Bayou	Bolivar Roads to Redfish STA 138+369 TO HSC 73+476
Description	<ul style="list-style-type: none"> Traditional oyster pad (rock only) using 279,000 tons of crushed limestone No dredging activities 	Beltway 8 Site Preparation <ul style="list-style-type: none"> Clearing & grubbing and concrete removal (roadway and bunkers) Temporary access road development/construction No dredging activities	<ul style="list-style-type: none"> Widen the channel from 530 to 700 ft wide From STA 138+369 to 98+000 Dredging 1.7 MCY to Long Bird Island Beneficial Use Placement for construction of new » Long Bird Island Mechanical dredging and offshore disposal to Ocean Dredged Material Site (ODMDS) 1.9 MCY from STA 98+000 to 73+476 Relocate barge lanes
Activities	<ul style="list-style-type: none"> Oyster mitigation 	<ul style="list-style-type: none"> Site preparation of dredged material placement area 	<ul style="list-style-type: none"> Channel widening (hydraulic dredging) Shoreline protection Bird island construction Oyster mitigation Channel widening (mechanical dredging) Relocation of barge lanes
Initial Channel Width	N/A	N/A	530 ft
New Channel Width	N/A	N/A	700 ft and 235-ft barge lanes
Initial Channel Depth	N/A	N/A	-46.0' MLLW
New Channel Depth	N/A	N/A	N/A
Lead Construction	USACE	PHA	PHA
Type/Volume Dredged Material	N/A	N/A	3.6 MCY of dredged material
Shoreline Protection AND Bulkhead Construction	N/A	N/A	<ul style="list-style-type: none"> 40,000 tons of rip rap for shore protection 18,500 tons of crushed limestone for oyster reef wave trips
Ocean Dredged Materials Disposal Site (ODMDS) OR DMPAs OR Placement Areas	No dredging activities	No dredging activities	<ul style="list-style-type: none"> Beneficial Use Placement for construction of new Long Bird Island 1.9 MCY to ODMDS
Flare Expansion	N/A	N/A	N/A
Utilities Relocation	N/A	N/A	N/A
Marsh Construction	N/A	N/A	N/A
Bird Island Construction	N/A	N/A	Long Bird Island
Oyster Mitigation	Construction of 45 acres of oyster mitigation pads using 279,000 tons of crushed limestone	N/A	See Package 1 description regarding Oyster Mitigation

Abbreviations and Acronyms

BCC - Barbours Cut Channel
 BSC - Bayport Ship Channel
 BWY 8 - Beltway 8
 CY - Cubic yards
 DMPA - Dredged Material Placement Areas

HSC - Houston Ship Channel
 MCY - million cubic yards
 MLLW - Mean Lower Low Water
 NW - Northwest
 ODMDS - Ocean Dredged Material Disposal Site

PA - Placement Area
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Design Package # (Colors correspond with map)
4B/5
6

Segment	Segment 1B Segment 2	Segment 1C
Station #	HSC STA 78+844 TO HSC STA 15+500 & BSC STA 24+187.21 TO BSC STA 42+07.8	HSC STA 15+500 TO HSC STA -0+003.94
Package Name	Redfish to Bayport (Beacon 76) HSC STA 78+844 TO HSC STA 15+500 & BSC STA 24+187.21 TO BSC STA 42+07.8	Bayport (Beacon 76) to Morgans Point HSC STA 15+500 TO HSC STA 27+48.18
Description	<ul style="list-style-type: none"> Widen the HSC from 530 to 700 ft wide Widen the BSC from 350/400 to 455 ft wide Hydraulic Pipeline Dredging 7.9 MCY (5.0 MCY HSC, 2.9 MCY BSC) Beneficial Use Placement for construction of <ul style="list-style-type: none"> » 240 acre Marsh/Bird Island Complex » 15 oyster mitigation pads Shore Protection 146,000 tons rip rap Oyster bed cap 425,000 tons of crushed limestone Hydraulic dredge to 700-ft wide and relocate barge lanes in HSC and dredge BSC up to 455-ft wide Use material to construct Bird Island Marsh Complex Use material to construct oyster mitigation beds. Mechanical dredging and offshore disposal to Ocean Dredged Materials Disposal site (ODMDS). 3.8 MCY (2) Mechanical dredging to oyster mitigation. 1.5 MCY 	<ul style="list-style-type: none"> Hydraulic dredge to 700-ft wide and relocate barge lanes Use material to construct Marsh 11 Bayport to Barbour's Cut HSC STA 15+500 to STA -0+003.94 (Segment 1C) Widen the HSC from 530 to 700 ft Dredging 3.0 MCY Beneficial Use Placement for Construction of <ul style="list-style-type: none"> » Atkinson Island Marsh Cell M11 » Repairs to existing Marsh Dikes M789 and M10 Shore Protection <ul style="list-style-type: none"> » 131,000 tons rip rap
Activities	<ul style="list-style-type: none"> Channel widening (hydraulic dredging) Shoreline protection Marsh/Island construction Oyster mitigation 	<ul style="list-style-type: none"> Channel widening Shoreline protection Marsh construction
Initial Channel Width	HSC - 530 ft BSC - 350 to 400 ft	530 ft
New Channel Width	HSC - 700 ft and 235-ft barge lanes BSC - 455 ft	700 ft and 235-ft barge lanes
Initial Channel Depth	-46' & -46.5' MLLW	-46.5 MLLW
New Channel Depth	N/A	N/A
Lead Construction	PHA	PHA
Type/Volume Dredged Material	13.2 MCY (10.3 MCY HSC & 2.9 BSC) of dredged material	~4.0 MCY
Shoreline Protection AND Bulkhead Construction	146,000 tons of material to construct rip rap	• 131,000 total tons of rip rap
Ocean Dredged Materials Disposal Site (ODMDS) OR DMPAs OR Placement Areas	Beneficial Use Placement for construction of <ul style="list-style-type: none"> • 240 acre Marsh/Bird Island Complex • 15 oyster mitigation pads 	Beneficial Use Placement for Construction of <ul style="list-style-type: none"> • Atkinson Island Marsh Cell M11 • Repairs to existing Marsh Dikes M789 and M10
Flare Expansion	N/A	N/A
Utilities Relocation	N/A	N/A
Marsh Construction	Beneficial use placement for construction of 240-acre marsh and bird Island complex	Construction of Marsh Cell 11 (Atkinson Island Marsh) Repairs to existing Marsh Dikes
Bird Island Construction		N/A
Oyster Mitigation	Construction of 260 AC mitigation pads using 425,000 tons of crushed limestone placed as a veneer on a raised bed constructed with dredged material	N/A

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Design Package # (Colors correspond with map)

	7	8	9
Segment	Segment 3	Segment 4	Segment 4
Station #	BCC 10+00 TO BCC 67+10.85	HSC STA 684+03.19 TO 930+00	HSC STA 684+03.19 TO 930+00
Package Name	Barbours Cut Ship Channel BCC 10+00 TO BCC 67+10.85	Boggy Bayou to Hunting Bayou Turning Basin	Boggy Bayou to Hunting Bayou Turning Basin
Description	<p>Hydraulic dredge BCC up to 455 ft wide and place in newly constructed Marsh Cell 12</p> <ul style="list-style-type: none"> Widening channel to 455 ft from STA 25+00 to 67+11 at a depth of -46.5 ft MLLW (required depth -49.5 ft MLLW) Expanding North Flare (15+28 to STA 23+87) and South Flare (STA 8+77 to STA 31+98) to accommodate a 1,800 ft diameter turning basin. Length of Dredge – 5,800 ft <ul style="list-style-type: none"> Volume of Dredge – 2.8 MCY Demolition of structures may be required. 	<ul style="list-style-type: none"> Construct placement area 8 for one time use and East 2 Clinton for long-term maintenance 	<ul style="list-style-type: none"> Widening channel to 530 ft from STA 684+03 to 823+35.359 at -46.5 ft MLLW (required depth -49.5 ft MLLW) Deepening channel from -41.5 to -46.5 ft MLLW from STA 684+03.19 to 930+00 Length of Dredge – 4.7 miles Volume of Dredge – 4.7 MCY (including maintenance material and an allowance for 1 year of shoaling) <ul style="list-style-type: none"> 2.5 MCY to E/W Clinton, 2.2 MCY to BW8 DMPAs If needed, upgrade of docks by Private Owners outside scope.
Activities	<ul style="list-style-type: none"> Channel widening (hydraulic dredging) Flare expansion Marsh construction Demolition of existing structures (as needed) 	<ul style="list-style-type: none"> Construction of dredged material placement area 	<ul style="list-style-type: none"> Channel widening (hydraulic dredging) Channel deepening (hydraulic dredging)
Initial Channel Width	300 ft	N/A	300 ft
New Channel Width	BCC - up to 455 ft wide	N/A	530 ft (STA 684+03 to 823+35.359)
Initial Channel Depth	-46.5 ft MLLW	N/A	-41.5 ft MLLW (STA 684+03.19 to 930+00)
New Channel Depth	-46.5 ft MLLW	N/A	-46.5 ft MLLW (STA 684+03.19 to 930+00)
Lead Construction	PHA	PHA	PHA
Type/Volume Dredged Material	2.8 MCY	N/A	4.7 MCY (over a length of 4.7 miles)
Shoreline Protection AND Bulkhead Construction	<ul style="list-style-type: none"> Spilman Island Bulkhead <ul style="list-style-type: none"> 950 linear foot cantilevered NZ 38 steel sheet piles, -58ft tip elevation 2,630 Cantilevered PAZ 48 / NZ 38 Combi-wall, -58 ft tip elevation Steel pile cap Morgan's Point Bulkhead: <ul style="list-style-type: none"> 395' NZ40 steel sheet piles & HP14x102 battered pile. 	N/A	N/A
Ocean Dredged Materials Disposal Site (ODMDS) OR DMPAs OR Placement Areas	Placement of 2.8 MCY of material to construct Marsh Cell 12	East Clinton 2 (EC2) <ul style="list-style-type: none"> DMPA construction (220,000 cy) Capacity of 500,000 CY Beltway 8 (BW8) <ul style="list-style-type: none"> DMPA Construction (477,000 CY) Capacity of 2.2 MCY 	<ul style="list-style-type: none"> Beltway 8 (BW8): 2.2 MCY E/W Clinton: 2.5 MCY
Flare Expansion	Expanding North Flare (STA 15+28 to STA 23+87) and South Flare (STA 8+77 to STA 31+98) to accommodate a 1,800-ft diameter turning basin	N/A	N/A
Utilities Relocation	Minor utility accommodations in new wall	N/A	N/A
Marsh Construction	Construction of Marsh Cell 12	N/A	N/A
Bird Island Construction	N/A	N/A	N/A
Oyster Mitigation	N/A	N/A	N/A

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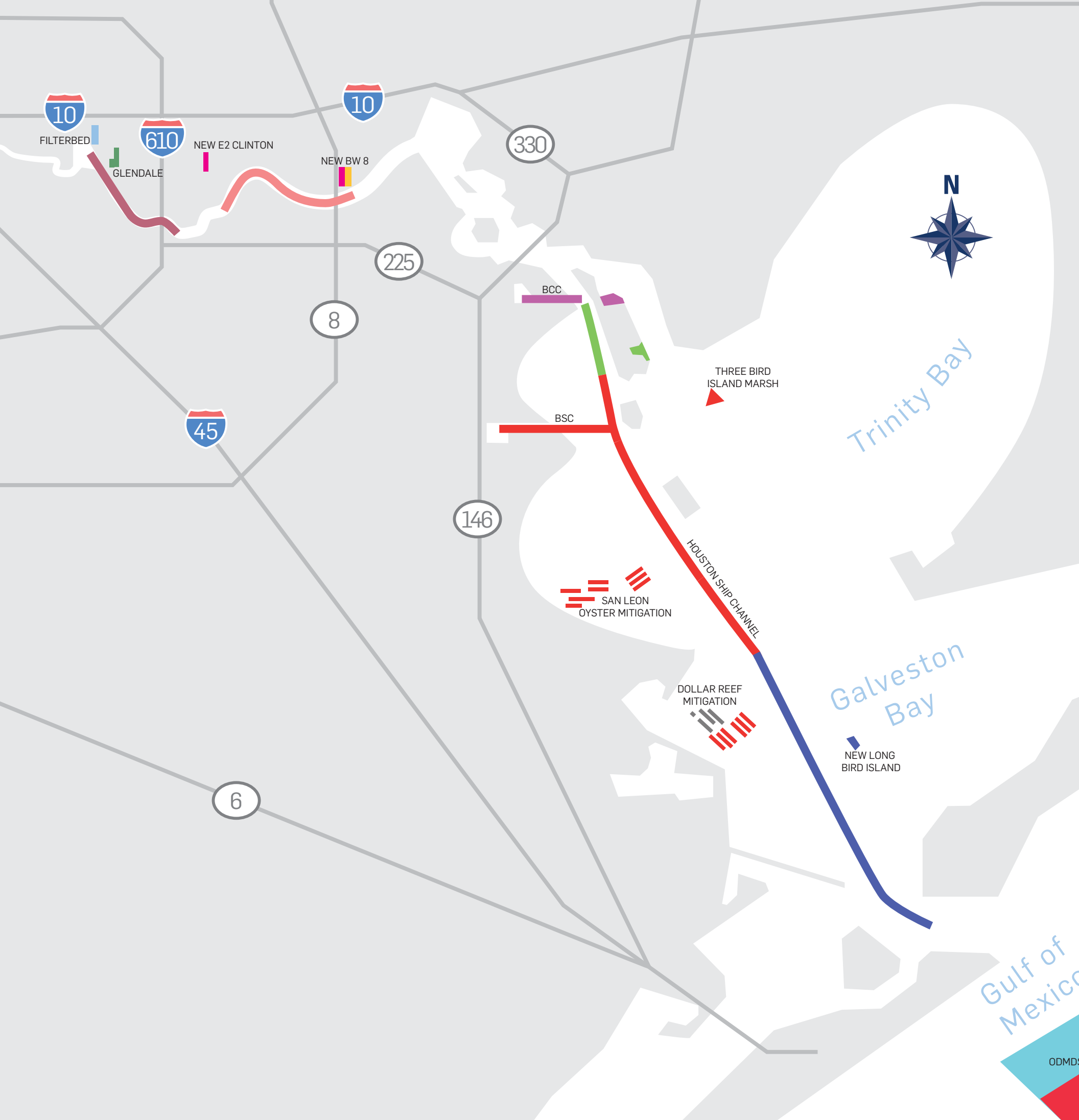
	10 (Future Work)	11 (Future Work)	12 (Future Work)
Segment	Segment 5	Segment 6	Segment 5 Segment 6
Station #	N/A	N/A	HSC STA 1110+77.54 TO 1266+48 AND MAIN TB STA 00+00 TO 30+95.06
Package Name	Sims to Turning Basin	Sims to Turning Basin	Sims to Turning Basin
Description	Site Preparation to raise dikes at Glendale PA to receive new work material from Segment 5	Site Preparation to raise dikes at Filterbed PA to receive new work material from Segment 6	HSC hydraulic new work dredging to deepen the channel from Sims Bayou to the Main Turning Basin as follows: <ul style="list-style-type: none"> • Segment 5 HSC hydraulic NW Dredging to deepen channel from Sims Bayou to I-610 Bridge with placement into Glendale PA • Segment 6 HSC hydraulic NW Dredging to deepen channel from I-610 Bridge to Main Turning Basin with placement into Beltway 8 PA
Activities	• Construction of dredged material placement area	• Construction of dredged material placement area	• Construction of dredged material placement area
Initial Channel Width	N/A	N/A	Varies along channel length
New Channel Width	N/A	N/A	N/A
Initial Channel Depth	N/A	N/A	-37.5 ft MLLW
New Channel Depth	N/A	N/A	-41.5 ft MLLW
Lead Construction	USACE	USACE	USACE
Type/Volume Dredged Material	N/A	N/A	1,176,000 CY
Shoreline Protection AND Bulkhead Construction	N/A	N/A	N/A
Ocean Dredged Materials Disposal Site (ODMDS) OR DMPAs OR Placement Areas	N/A	N/A	Filterbed and Glendale (volume to each to be determined)
Flare Expansion	N/A	N/A	N/A
Utilities Relocation	N/A	N/A	N/A
Marsh Construction	N/A	N/A	N/A
Bird Island Construction	N/A	N/A	N/A
Oyster Mitigation	N/A	N/A	N/A

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Project 11 Design Packages

NOTE: Map is not to scale and is purely representational

- 1.** BOLIVAR ROADS TO REDFISH REEF - DOLLAR REEF MITIGATION
- 2.** BOGGY BAYOU TO SIMS BAYOU - BELTWAY 8 PREPARATION
- 3/4A.** BOLIVAR ROADS TO REDFISH REEF HSC STA 138+369 TO 73+476
- 4B/5.** REDFISH TO BAYPORT (BEACON 76) HSC STA 78+844 TO HSC STA 15+500 & BSC STA 241+87.21 TO BSC STA 42+07.8
- 6.** BAYPORT (BEACON 76) TO MORGANS POINT HSC STA 15+500 TO 0-0+003.94
- 7.** BARBOURS CUT STA 10+00 TO 67+10.85
- 8.** BOGGY BAYOU TO HUNTING BAYOU TURNING BASIN CONSTRUCT PLACEMENT AREAS
- 9.** BOGGY BAYOU TO HUNTING BAYOU TURNING BASIN HSC STA 684+03.19 TO 930+00
- 10.** SIMS TO TURNING BASIN - GLENDALE PA PREPARATION
- 11.** SIMS TO TURNING BASIN - FILTERBED PA PREPARATION
- 12.** SIMS TO TURNING BASIN HSC STA 1110+77.54 TO 1266+48 AND MAIN TB STA 00+00 TO 30+95.06