

## Appendix I

### Fish and Wildlife Coordination Act Report

**FISH AND WILDLIFE  
COORDINATION ACT REPORT**  
for an  
**Environmental Impact Statement**  
on the  
**Laguna Madre, Texas  
Gulf Intracoastal Waterway  
Dredge Material Management Plan**

By

Tom Shearer

U.S. Fish and Wildlife Service  
Corpus Christi Ecological Services Field Office  
Corpus Christi, Texas

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**Table of Contents**

**EXECUTIVE SUMMARY -----7**

**INTRODUCTION----- 11**

REGULATORY BACKGROUND: ----- 11

**DESCRIPTION OF STUDY AREA ----- 13**

PROJECT BACKGROUND:----- 13

PROJECT AREA DESCRIPTION: ----- 14

FISH AND WILDLIFE RESOURCES: ----- 15

FEDERALLY REGULATED SPECIES: ----- 16

*West Indian (=Florida) Manatee Trichechus manatus*----- 17

*Piping plover Charadrius melodus*----- 17

*Brown Pelican Pelecanus occidentalis* ----- 18

*Hawksbill sea turtle Eretmochelys imbricata*----- 19

*Kemp’s Ridley sea turtle Lepidochelys kempii* ----- 19

*Leatherback sea turtle Dermochelys coriacea* ----- 20

*Green Sea turtle Chelonia mydas* ----- 21

*Loggerhead sea turtle Caretta caretta*----- 22

COLONIAL WATERBIRDS:----- 22

**FISH AND WILDLIFE CONCERNS AND PLANNING OBJECTIVES ----- 25**

CONTAMINANT ASSESSMENT: ----- 25

SEAGRASSES, BAY SEDIMENTATION AND PLACEMENT AREA EROSION: ----- 26

LIFE EXPECTANCY OF DREDGE MATERIAL PLACEMENT AREAS: ----- 27

OTHER ISSUES:----- 27

**APPENDIX A SPECIES LISTS----- 29**

**APPENDIX B BIRDS OF CONSERVATION CONCERN ----- 37**

TAMAULIPAN BRUSHLANDS----- 39

GULF COASTAL PRAIRIE----- 40

**APPENDIX C: NESTING COLONIAL WATERBIRDS ----- 43**

**APPENDIX D: PA MANAGEMENT PLANS ----- 51**

Figure 1. Placement Areas 175 to 178 ----- 52

Figure 2. Colonial Waterbird Rookeries adjacent to Placement Areas 175 to 177 ----- 53

Figure 3. Colonial Waterbird Rookeries on and adjacent to Placement Areas 177 to 179  
----- 54

Figure 4. Placement Areas 179 to 182 ----- 59

Figure 5. Colonial Waterbird Rookeries on and adjacent to Placement Areas 180,  
Proposed 180A, 181 and 182----- 60

Figure 6. Placement Areas 183 to 185 ----- 69

Figure 7. Colonial Waterbird Colonies on and adjacent to Placement Area 183 ----- 70

Figure 8. Colonial Waterbird Rookeries on and adjacent to Placement Area 185----- 78

Figure 9. Placement Areas 186, 187 and 188 -----	88
Figure 10. Colonial Waterbird Rookeries on and adjacent to Placement Area 187 -----	89
Figure 11. Colonial Waterbird Colonies on and adjacent to Placement Area 188-----	94
Figure 12. Placement Areas 189 to 191-----	98
Figure 13. Colonial Waterbird Rookeries on and adjacent to Placement Area 189 -----	99
Figure 14. Colonial Waterbird Rookeries on or adjacent to Placement Area 190-----	103
Figure 15. Colonial Waterbird Rookeries on or adjacent to Placement Area 191 -----	107
Figure 16. Placement Areas 192 to 195 -----	112
Figure 17. Colonial Waterbird Rookeries on or adjacent to Placement Area 192-----	113
Figure 18. Colonial Waterbird Rookeries on or adjacent to Placement Area 193-----	117
Figure 19. Colonial Waterbird Rookeries on or adjacent to Placement Area 194-----	119
Figure 20. Colonial Waterbird Rookeries on and adjacent to Placement Area 195 and Proposed Extension-----	123
Figure 21. Placement Areas 196 and 197-----	127
Figure 22. Colonial Waterbird Rookeries on and adjacent to Placement Area 197 -----	129
Figure 23. Placement Areas 198 and 199-----	139
Figure 24. Colonial Waterbird Colonies on or adjacent to Placement Area 199 -----	141
Figure 25. Colonial Waterbird Rookeries on or adjacent to Placement Area 200-----	149
Figure 26. Colonial Waterbird Rookeries on or adjacent to Placement Area 201 -----	156
Figure 27. Placement Area 202 -----	163
Figure 28. Placement Areas 203, 204, 205 and 206.-----	165
Figure 29. Placement Area 207 -----	168
Figure 30. Northern half of Placement Area 208-----	170
Figure 31. Southern half of Placement Area 208-----	171
Figure 32. Placement Area 209 and 210-----	173
Figure 33. Placement Areas 211 and 212-----	175
Figure 34. Colonial Waterbird Colonies on and adjacent to Placement Areas 211 and 212 -----	176
Figure 35. Placement Areas 213 and 214-----	179
Figure 36. Colonial Waterbird Rookeries on and adjacent to Placement Areas 213 and 214 -----	180
Figure 37. Placement Areas 215 and 216-----	181
Figure 38. Colonial Waterbird Rookeries adjacent to Placement Areas 215 and 216 --	182
Figure 39. Placement Areas 217 and 218-----	183
Figure 40. Colonial Waterbird Rookeries adjacent to Placement Areas 217 and 218 --	184
Figure 41. Placement Areas 219, 220 and 8 (Upland Confined)-----	185
Figure 42. Colonial Waterbird Colonies on and adjacent to Placement Areas 219 and 220 -----	186
Figure 43. Placement Area 221 -----	189
Figure 44. Colonial Waterbird Colonies on or adjacent to Placement Area 221 -----	190
Figure 45. Placement Area 222 -----	192
Figure 46. Colonial Waterbird Rookery on and adjacent to Placement Area 222-----	193
Figure 47. Placement Area 223 -----	195
Figure 48. Colonial Water Bird Rookery adjacent to Placement Area 223-----	196
Figure 49. Placement Areas 224 and 225-----	198
Figure 50. Colonial Waterbird Rookeries adjacent to Placement Areas 224 and 225 --	199

Figure 51. Placement Areas 226 and 227-----	201
Figure 52. Placement Area 228 -----	203
Figure 53. Colonial Waterbird Rookeries on and adjacent to Placement Area 228 -----	204
Figure 54. Placement Areas 229 and 230-----	206
Figure 55. Colonial Waterbird Rookeries on and adjacent to Placement Areas 229 and 230 -----	207
Figure 56. Placement Areas 231 and 232-----	209
Figure 57. Colonial Waterbird Rookeries on and adjacent to Placement Areas 231 and 232 -----	210
Figure 58. Placement Area 233 -----	212
Figure 59. Colonial Waterbird Rookery on and adjacent to Placement Area 233-----	213
Figure 60. Placement Area 234 -----	215
Figure 61. Colonial Waterbird Rookeries on and adjacent to Placement Area 234 -----	216
Figure 62. Placement Areas 235 - 239-----	218
Figure 63. Colonial Waterbird Rookeries on and adjacent to Placement Areas 235 – 239 -----	219
Figure 64. Placement Area 240 -----	222
Figure 65. Colonial Waterbird Rookery adjacent to Placement Area 240-----	223
<b>LITERATURE CITED -----</b>	<b>227</b>
<b>ADDITIONAL REFERENCES -----</b>	<b>233</b>



## **Executive Summary**

Under the Fish and Wildlife Coordination Act, the U.S. Fish and Wildlife Service provides conservation measures that Federal and Federally-permitted or licensed water development projects are required to consider. To satisfy concerns from the Interagency Coordination Team, several studies were commissioned to determine possible impacts to the Laguna Madre from the dredging of the Intracoastal Waterway. As the funding for this CAR was not available until FY 2001, well after work had begun by the U. S. Army Corps of Engineers (USACE) and the other members of the Interagency Coordination Team (ICT), on planning and various investigations relative to the preparation of the Environmental Impact Statement (EIS) for the maintenance dredging of the Laguna Madre portion of the Gulf Intracoastal Waterway (GIWW), the Service was able to focus the topics in this report. The Service has a number of concerns regarding the on-going maintenance dredging of the Laguna Madre including impacts to nesting colonial waterbirds, to seagrasses, impacts from contaminants, sedimentation, and threatened and endangered species. These are issues that have been, and will continue to be, addressed throughout the life of the project. Although the completed studies deal with the Laguna Madre as a system, impacts may occur on a much finer scale. Therefore, the focus of this report is the management of the colonial waterbird islands and placement of dredged disposal to benefit colonial waterbird species and/or minimize impacts to nesting birds. The Appendix D includes the recommendations from the Corps Dredged Material Maintenance Plan, the Padre Island National Seashore draft Spoil Island Management Plan, and the Corpus Christi Bays and Estuaries Program draft Colonial Waterbird Rookery Island Management Plan. As an additional tool, this appendix includes overlays of each dredged material placement area with the colonial waterbird rookeries.



## **Acknowledgements**

In addition to all of the resource agency representatives of the Interagency Coordination Team, as well as consultants, researchers, and modelers, the Service recognizes all of the participants of the annual colonial waterbird nesting census. Every spring, for over a quarter century, resource agencies and volunteers have fanned out to get an index of nesting birds in Texas. In the Laguna Madre, Dr. Allen Chaney, Lloyd Mullins, Gene Blacklock and many others have documented the numbers and kinds of nesting birds. Management plans evolve out of knowledge gained over time, and because of these dedicated people, we are able attempt to manage our natural wildlife resources. In addition this report was supplemented with information provided by Mr. Johnny French, USFWS (ret), Dr. Chris Onuf and Dr. Donna Shaver of the U.S. Geological Service, and Dr. Wes Tunnell and Dr. Kim Withers of Texas A&M-Corpus Christi's Center for Coastal Studies, as well as Ray Allen and the staff of the Coastal Bend Bays Estuary Program. In conclusion, this report was finalized only with the support of the staff of the U.S. Fish and Wildlife Service Ecological Service's Field Office in Corpus Christi.



## **INTRODUCTION**

The U.S. Fish and Wildlife Service is mandated to provide expertise during the planning and development of major federal projects, to ensure fish and wildlife resources are conserved, and that impacts to these resources are avoided or minimized.

### **Regulatory Background:**

The Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; the Act of March 10, 1934; Ch. 55; 48 Stat. 401), requires consultation with the U.S. Fish and Wildlife Service (Service) and State fish and wildlife agencies where the "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified" by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources." Second, The Rivers and Harbors Act of 1938 (33 U.S.C. 540, and other U.S.C. sections; Chapter 535, June 20, 1938; 52 Stat. 802), provides for wildlife conservation to be given "due regard" in planning Federally authorized water resource projects.

The Fish and Wildlife Coordination Act provides a basic procedural framework for the orderly consideration of fish and wildlife conservation measures to be incorporated into Federal and Federally-permitted or licensed water development projects. The principle provisions of the Act include:

1. A statement of Congressional purpose that fish and wildlife conservation shall receive equal consideration with other project features;
2. Mandatory consultation with wildlife agencies to achieve such conservation;
3. Full consideration by action agencies of the recommendations resulting from consultations;
4. Authority for action agencies to implement such recommendations as they find acceptable.



## DESCRIPTION OF STUDY AREA

### **Project Background:**

The Texas portion of the Gulf Intracoastal Waterway (GIWW) began, in 1850, with the construction of the Galveston and Brazos canals. The Rivers and Harbors Act of 1873 appropriated funds to connect the inland waters along the margin of the Gulf of Mexico from Louisiana, to the Rio Grande of Texas. The route from Corpus Christi Bay to the Brownsville Ship Channel through the Laguna Madre was authorized by legislation passed in 1942, and the channel was finished in 1949 with cross-sectional dimensions of 125 feet wide by 12 feet deep (TXDOT, 1990). The Mansfield Channel, connecting the Laguna Madre with the Gulf of Mexico, was initially opened in 1958, but was redesigned, rebuilt, and reopened in 1962. An Environmental Impact Statement (EIS), entitled “Maintenance Dredging, Gulf Intracoastal Waterway, Texas Section - Main Channel and Tributary Channels”, was published by the U.S. Army Corps of Engineers (USACE), Galveston District in October, 1975<sup>1</sup>. The 1975 EIS identified and evaluated the environmental impacts of continued maintenance dredging of the Texas Section of the Gulf Intracoastal Waterway (GIWW) and its tributary channels. Alternatives were addressed and mitigation measures for various sections were described that would reduce environmental effects while enhancing economic and social conditions.

In the 1975 EIS, the Laguna Madre portion of the GIWW was divided into two reaches, Encinal Peninsula to Lower Laguna Madre, and Lower Laguna Madre to Port Isabel, Texas in the “Detailed Description” section of the EIS. In the “ENVIRONMENTAL SETTING” section of the EIS, these two reaches were combined and described as Reach III, the area between the Kennedy Causeway and the Texas-Mexico border. In the section describing the disposal areas and associated fish and wildlife resources, Reach III is described in two sections, Corpus Christi Bay to Mud Flats, and Port Isabel to Mud Flats. The EIS summarized the environmental impacts of the proposed action, the maintenance of the Texas Section of the GIWW and its tributary channels, as follows:

The principal beneficial effect of maintaining the channel system is that man’s social and economic well-being is enhanced. The disadvantage is that in some areas this maintenance requires a reduction in the quality of the natural environment. (USACE 1974, Vol. I)

The EIS goes on to note that the USACE in coordination with other agencies, including the Service, would review each individual disposal action, in order to develop a plan to minimize the adverse environmental impacts. The section on Adverse Effects of the proposed maintenance dredging include discussions of loss of benthic organisms in the channel due to dredging, turbidity and the resuspension of pollutants, destruction of fish and crustaceans caught in the dredge cutterhead, filling of marshes, low prairies, streams and bayous during land disposal, burial of benthic organisms, compartmentalization of bay areas, resuspension of pollutants, increased turbidity and the smothering of small fish and other marine animals, and burial of submerged aquatic vegetation during open water disposal. The adverse impacts, and potential

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<sup>1</sup> Only a draft of the EIS, Volume 1, TEXT, was available for reference (USACE, 1974, Vol I)

mitigatory responses to the adverse impacts of maintenance dredging, were not addressed reach-by-reach in the EIS.

In 1989, an Issue Paper, Evaluation of the U.S. Army Corps of Engineer's 1975 Environmental Statement on Maintenance Dredging of the Gulf Intracoastal Waterway-Texas Section (MDWG 1989), was prepared by The Maintenance Dredging Working Group. This Working Group included biologists from: National Marine Fisheries Service, Habitat Conservation Division; Texas General Land Office; Texas Parks & Wildlife Department, Resources Protection Division; U. S. Fish & Wildlife Service, Ecological Services; and National Park Service, Padre Island National Seashore. The purpose of the issue paper was to identify and address impacts and issues which the Working Group found to be inadequately addressed in the Corps' 1975 EIS, including some key information which was not available at the time of the publication of the EIS (MDWG 1989). The U.S. Army Corps of Engineers (USACE) was sued in 1994 by The National Audubon Society and other public interest groups because of concern that maintenance dredging was adversely affecting seagrasses. The legal action was dismissed by the Court in 1994, as the USACE committed to the development of a Supplemental Environmental Impact Statement (EIS). The EIS would include a 50-year Dredged Material Placement Plan (DMMP) that would incorporate site specific management techniques to avoid and minimize impacts to the project area. The USACE formed an Interagency Coordination Team (ICT) to develop the scope of studies needed to provide scientific data and assist the USACE in preparing a DMMP and EIS. The ICT is comprised of representatives from the Texas Department of Transportation (TxDOT); the Texas General Land Office (TGLO); the Texas Commission on Environmental Quality (TCEQ); the Texas Parks and Wildlife Department (TPWD); the Texas Water Development Board (TWDB); the National Marine Fisheries Service (NMFS); the U.S. Environmental Protection Agency (EPA); the U.S. Fish and Wildlife Service (Service); and the U.S. Army Corps of Engineers, Galveston District (USACE). Representatives from the Padre Island National Seashore (PINS) and the Coastal Bend Bays and Estuaries Program (CBBEP) were invited to join the team as advisory members later. The ICT has been meeting since 1995, and the EIS is due to be released in Spring 2003.

### **Project Area Description:**

The Laguna Madre is one of three hypersaline lagoons in the world. The Laguna Madre of Texas is a coastal lagoon that is unique among the estuarine systems that comprise the coast of Texas (Tunnell and Judd 2002), and is the most productive coastal ecosystem in Texas (Diaz and Kelly 1994). The Laguna Madre is divided into the Upper Laguna Madre (ULM) and the Lower Laguna Madre (LLM) by an extensive wind tidal flat. The ULM and the LLM are connected by a section of the GIWW channel known as the Land Cut, that runs through 23 miles of wind tidal flat. Construction of the Laguna Madre portion of the GIWW began in 1945 and was completed on 18 June 1949. Prior to the initial dredging of the Brazos Santiago Pass, the entrance to the Brownsville Ship Channel, in 1938 and the Mansfield Channel in 1958, mixing of waters in the Laguna Madre with waters in the Gulf of Mexico was limited primarily to a small natural pass at Boca Chica. Boca Chica Pass, before it closed in 1945, opened to the Gulf of Mexico at the southern most part of the lower Laguna Madre (Tunnel and Judd 2002). The only other mixing of Gulf and Laguna Madre waters is at temporal connections formed by storms crossing Padre Island at areas called washover passes. Freshwater inflow into the Laguna Madre is limited to

intermittent streams that empty into Baffin Bay, and the Arroyo Colorado in the Lower Laguna Madre. Rainfall in the region averages 26 inches per year; however, the timing of the rains is irregular, and intermittent. Storm events including hurricanes may contribute much of the annual precipitation in a few days. The overall shallowness of the Laguna Madre produces a high water surface to volume ratio which promotes a high evaporation rate (Lazarine 1982). This feature of the Laguna Madre combined with the lack of freshwater inflow and low average annual precipitation promotes hypersaline conditions. Salinity levels are commonly recorded above 35 parts per thousand, and sometimes exceed 60 parts per thousand (Breuer 1962).

### **Fish and Wildlife Resources:**

Extensive meadows of seagrasses and expansive wind tidal flats with algal mats provide foraging and roosting habitat for hundreds of thousands of birds, including 38 species of waterfowl and more than 32 species of shorebirds (Tunnel and Judd 2002). There are five species of seagrasses found in the Laguna Madre. Shoalgrass (*Halodule wrightii*), a salt-tolerant species of seagrass, is an important food source for several species of waterfowl including Redhead Ducks (*Aythya americana*). The Redhead Duck is a diving duck species found only in North America. This species breeds and nests throughout the northern United States and southern Canada. Redhead Duck wintering grounds are more restricted with hundreds of thousands of birds concentrating in the Laguna Madre of Texas and Tamaulipas. Redheads feed primarily on the rhizomes of Shoalgrass. The GIWW has effectively lowered the salinity of the Laguna Madre. This increased circulation of seawater through much of the Laguna Madre has contributed to the expansion of seagrass meadows (Britton and Morton 1989). This lowering of salinity has also contributed to a successional change in the seagrass meadows from primarily Shoalgrass to Manatee (*Syringodium filiforme*) and Turtle (*Thalassia testudinum*) grasses (Quammen and Onuf, 1993) in some areas. The latter species are less salt tolerant than Shoalgrass, and may be supplanting the preferred food of the Redhead Duck in some areas.

Seagrasses provide a vital link in the maintenance of species diversity and secondary production throughout the Gulf of Mexico. Seagrasses are critically important because they provide food and refuge for many species, help to remove suspended sediments from the water column, add oxygen to the water and sediments, and serve as nursery areas for juveniles of several species that ultimately migrate to the open Gulf as adults. Seagrasses are sensitive to any factor that changes light availability, particularly nutrient enrichment, eutrophication, and sedimentation. Seagrass conservation is not only a local issue, but also has national and international scope, as evidenced by increased global eutrophication problems. The Laguna Madre provides spawning habitat for several species of shrimp, blue crabs and other invertebrates. There are 79 species of fish found in the ULM and 67 in the LLM. (Tunnell and Judd 2002).

The tidal flats are a significant feature of the Laguna Madre and unique in being more affected by wind and storm tides than by astronomical tides (Tunnel and Judd 2002). Although the excavation of the GIWW through the Land Cut could have opened up large areas of sand flats to tidal inundation, the construction of placement areas immediately adjacent to the GIWW have negated that opportunity at least along the eastern side of the GIWW. Wind tidal flats have been

well documented as providing important foraging habitat for large numbers of resident and wintering shore birds, wading birds and waterfowl (Tunnel and Judd 2002).

Many of the dredged material placement areas (PAs) in the Laguna Madre have become rookeries for nesting colonial waterbirds. Colonial waterbirds and rookeries are discussed further in the following section, **Colonial Waterbirds**, and in Appendices C and D.

### **Federally Regulated Species:**

The Intracoastal Waterway of the Laguna Madre spans five counties from Nueces in the north, to Cameron in the south. The species, federally-listed as threatened or endangered, for these counties, as well as any candidates, species proposed for listing or for critical habitat and species of concern for the U. S. Fish and Wildlife Service Ecological Services Office, Corpus Christi Field Office, may be found in Appendix A. Federally-regulated species that should be considered in the decision-making process for the maintenance dredging of the GIWW include the West Indian Manatee (*Trichechus manatus*), Piping Plover (*Charadrius melodus*), Brown Pelican (*Pelecanus occidentalis*), the five species of seaturtles that occur on the Texas coast, and migratory birds. Additional information regarding the eight federally listed species is included below. Although the birds, nests and eggs of migratory birds are protected under the Migratory Bird Treaty Act of 1918 (16. U.S. C. 703-711) and Executive Order 13186, certain species need additional consideration. In a 1998 amendment to the Fish and Wildlife Coordination Act, the Service was mandated to identify species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973. (U. S. Fish and Wildlife Service 2002). Appendix B includes the bird species lists for the Bird Conservation Regions (BCRs) that are transected by the GIWW. These BCRs are the U.S. portions of the Tamaulipan Brushlands and the Gulf Coast Prairie (U.S. Fish and Wildlife Service 2002). The species listed for these two BCRs will be incorporated as Species of Concern into the Service's county lists of species federally-listed as threatened or endangered, candidate species and species of concern. (U. S. Fish and Wildlife Service. (November 2002). Updated lists for Nueces, Kleberg, Kenedy, Willacy, and Cameron Counties will be provided to the USACE as they become available. Twenty-three species of birds characterized as colonial waterbirds utilize the natural and man-made islands of the Laguna Madre for nesting (Texas Colonial Waterbird Society 1982). A list of these species can be found in Appendix C.

## **West Indian (=Florida) Manatee *Trichechus manatus***

**Description/Habitat**<sup>2</sup>: Manatees are massive gray to gray-brown, herbivorous aquatic mammals. They have fusiform seal-like bodies, tails broadened into a horizontal paddle, no hind limbs, and front limbs formed into paddle-like flippers. They are hairless except for 3-4 stiff whiskers on the snout. Manatees are docile, harmless and completely defenseless. They feed on a variety of submerged, emergent and floating aquatic and marine plants, consuming 10-15% of their body weight daily. They may be solitary or in groups of two or three in warm-water aggregations during cold spells. They prefer shallow, slow moving rivers, river mouths, estuaries, bays and other coastal ecosystems in subtropical to tropical waters. They are extremely sensitive to cold temperatures and can be found in water that is fresh, salty, turbid, clear, acidic or alkaline. Some may travel great distances (200 km or more) along the coast or when moving from one island to another. (U.S. Department of the Interior 1995)

In Texas, strandings have occurred in Galveston, Willacy, and Matagorda counties. Other live sightings have occurred along the Texas coastline with one in 1994 in the Lower Laguna Madre, Cameron County, and the most recent in the Corpus Christi Ship Channel in Nueces County in 2001. (Service communication log with the Texas Marine Mammal Stranding Network)

**Threats:** Current threats to the species include loss of habitat and human-related mortality caused primarily by water craft collisions, poaching, entanglement in fishing nets and line, and crushing or drowning in flood gates. Natural causes of mortality are related to cold temperature exposures, red tide and disease.

**Issues for GIWW maintenance dredging:** Close coordination between the Service and the USACE should be initiated when a manatee has been sighted along the Texas Gulf Coast. Experience with manatees documented on along the Texas coast is that the individuals can move over large distances, and in an unpredictable pattern. Dredging operators should be instructed to contact the Service's Manatee hotline (361-816-2483) if a manatee is sighted. If dredging operations are occurring or planned in the area of a recently sighted manatee, operators should be instructed to be cautious when operating boats to prevent a collision with a manatee.

## **Piping plover *Charadrius melodus***

**Description/Habitat:** The piping plover is a small, stocky, shorebird about 7 inches long with a wingspan of about 15 inches. Adults have a sand-colored upper body, white undersides, and orange legs. A white rump, which is visible in flight, distinguishes this species from other small plovers. During the breeding season, adults acquire a dark narrow breast band, a dark strip across the forehead and black-tipped orange bill. They breed on sandy beaches along the Atlantic Coast from Canada to North Carolina, and along the sand and gravel shores of the Lakes

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<sup>2</sup> Information for the Description/Habitat sections and Threat sections for these 8 federally listed species were taken from Campbell 1995, and U. S. Department of the Interior 1995.

Michigan and Superior. In Michigan, they nest on river sandbars and islands, barren shorelines of inland lakes, and alkali wetlands in the northern Great Plains of Canada and the United States. They spend 60-70% of the year on the wintering grounds along the coastal regions from North Carolina through Texas, adjacent barrier islands, and to the islands of the Caribbean. It is estimated that 35 percent of the known population of piping plovers winter in Texas from approximately July 15 through May 15. Piping plovers feed on organisms that live in exposed wet sand in wash zones, intertidal ocean beach, in the debris line left from high tide (wrack lines), washover passes, and mud- sand-algal wind tidal flats. The birds also forage on shorelines of freshwater streams, ephemeral ponds, lagoons and salt marshes. They use beaches adjacent to foraging areas for roosting and preening. Small sand dunes, debris, and sparse vegetation within adjacent beaches provide shelter from wind and extreme temperatures.

**Threats:** Threats to wintering populations include habitat loss and degradation due to coastal development, recreation, navigation, dredging, and shoreline stabilization and replenishment projects. Each has been a major contributor to this species decline.

**Issues for GIWW maintenance dredging:** The Service will continue to coordinate and consult with the USACE for this species on each dredging event.

### **Brown Pelican *Pelecanus occidentalis***

**Description/Habitat:** A large (up to 9 pounds), dark gray-brown waterbird with a long pouched grayish bill and wingspan of approximately 5-7 feet. Adults have white head and neck, brownish-black on their breast and belly, and silver grayish on most of the upper parts. Immature birds are grayish brown above and dull white below. The birds breed in the spring. Nesting habitat ranges from mud banks and spoil islands to offshore islands covered with mangroves and other woody vegetation where they are safe from predators such as raccoons and coyotes. Nests vary in size and structure consisting of piles of sticks, grass reeds and other available vegetation. They usually lay two to four white eggs often stained brown by nest materials. Young hatch in about 30 days and are completely blind, with black, hairless, leathery skin. They have down feathers at two weeks and adult plumage by the third year.

In Texas, they are found along the coast from Chambers County on the upper coast to Cameron County on the lower coast. Nesting populations occur in Aransas, Brazoria, Calhoun, Galveston, Matagorda, Nueces and San Patricio Counties. In Texas, most breeding birds nest on Pelican Island in Corpus Christi Bay and Sundown Island near Port O'Connor. Both islands are National Audubon Society Sanctuaries. Smaller colonies occasionally nest on Bird Island in Matagorda Bay, a series of older spoil islands in West Matagorda Bay, Dressing Point Island in East Matagorda Bay, and in Aransas Bay. Part of the Texas population spends the non-breeding season along the Texas coast while others migrate south to spend the winter on the eastern coast of Mexico.

**Threats:** In the 1920's and 30's they were killed because it was believed they competed with man for food, although their main diet consists of fish, game fish are not a typical food source. Widespread use of DDT and similar insecticides were used in the 1940s which impaired the

reproductive system of the bird, and caused a thinning of the egg shells, preventing hatching. Numbers dramatically decreased in the 1960s and 70s but rebounded in the mid-1990's with an estimated 2,400 pairs in 1995.

**Issues for GIWW maintenance dredging:** No nesting islands for this species occur in the Laguna Madre, and to date, no significant impacts to this species are anticipated as a result of the continued maintenance dredging operations. However, as with all species that forage in the Laguna Madre, the actions and decisions taken for the program need to consider the effects on the resources that this species needs.

### **Hawksbill sea turtle *Eretmochelys imbricata***

**Description/Habitat:** The Hawksbill is one of the smaller members of the Family Cheloniidae, reaching 95-165 pounds (45-75 kg). The shell is elongated and oval, and the scutes (shell plates) overlap. The carapace (top shell) is brown and strikingly patterned with yellow, orange or reddish-brown. Their beaks are relatively long and pointed like a hawk's bill. Nesting is nocturnal, occurring every 2 to 3 years, and several clutches may be laid during the season at two-week intervals. Average clutch size is 160 eggs. Hatchlings primarily eat sponges and are often found in floating masses of sea plants. Hawksbills are found in rocky areas, reefs, shallow coastal areas, and lagoons of oceanic islands, generally in waters less than 60 feet deep. They are found worldwide in subtropical and tropical seas. In the U.S. nesting is limited to Florida but maybe found along the Texas Coast from Jefferson to Cameron County.

**Threats:** Human exploitation of eggs and carapace. Predation on hatchlings by ants, crabs, birds, and mammals can be an occasional problem.

**Issues for GIWW maintenance dredging:** To date, this species has not been documented, by stranding data or sightings, within the Laguna Madre. As the ICT continues, over the next 50 years to assess and review the maintenance program, options for Gulf disposal, which currently are not proposed, may in the future become important to re-visit. At that time, impacts to this species will need consideration and consultation.

### **Kemp's Ridley sea turtle *Lepidochelys kempii***

**Description/Habitat:** This is the smallest member of the sea turtle Family Cheloniidae, reaching 75-100 pounds (35-45 kg). It has an unusually broad, heart-shaped, keeled carapace that is serrated behind the bridge. It has a triangular head and somewhat hooked beak with large crushing area. Juveniles have a dark-charcoal colored carapace and as they age this color changes to olive-green or grey. The lower shell has a light yellowish color. Diet consists primarily of crabs, shrimp, snails, sea urchins, sea stars, fish and occasionally marine plants may be consumed. A well-defined and elevated dune area is preferred for nesting. They prefer sections of beach backed up by extensive swamps, or large bodies of water having seasonal, narrow ocean connections. Average clutch size is 105 eggs with nesting taking place between

April and June, primarily during daylight hours, and often in groups called arribada. A single female is capable of nesting three times per season.

The largest nesting population is found on the Playa del Rancho Nuevo, in the State of Tamaulipas, Mexico. Solitary females occasionally nest on Padre Island National Seashore and on other locations in the western Gulf of Mexico, as far north as Galveston, Texas. Juveniles have been documented in Texas bays and estuaries, including the Laguna Madre.

**Threats:** Human exploitation of eggs and meat, mortality from incidental commercial fishing operations, primarily shrimp trawling.

**Issues for GIWW maintenance dredging:** Although Kemp's ridley sea turtles have been documented in the Laguna Madre, such occurrences are very infrequent (Manzella and Williams 1992). All sea turtles, except when on nesting beaches, are the trust resource of NMFS. As noted in the USACE's draft biological opinion for the maintenance dredging of the Laguna Madre of Texas (PBS&J 2002 Appendices):

Studies have shown that cutterhead dredges, since they act on only small areas at a time, do not impact seaturtles (NMFS 1998). Since all dredging of the project area will be performed by cutterhead dredges no impacts to Kemp's ridley seaturtles are anticipated from maintenance dredging and placement operations.

As with other sea turtle species, as the ICT continues, over the next 50 years, to assess and review the maintenance program, options for Gulf disposal which currently are not proposed, may in the future become important to re-visit. At that time, impacts to this species will need consideration and consultation.

### **Leatherback sea turtle *Dermochelys coriacea***

**Description/Habitat:** This member of the Family Dermochelyidae is the largest of all marine turtles, reaching weights between 650 and 1,200 pounds (300-550 kg) and above. This turtle has lost its shell plate and is covered with smooth, mottled brown or mottled slaty-black to dark bluish-black skin with seven longitudinal dorsal ridges. Diet may include sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed, but the principal diet component is jellyfishes. Females nest at night, at 2 to 3 year intervals with as many as 10 clutches laid in a single season. The average clutch size is 80 to 85 eggs, with maturation taking 6 to 10 years. Leatherbacks are the most pelagic (open sea) species of the sea turtles. Preferred nesting sites are sandy, sloping beaches backed-up by vegetation on mainland or islands near deep water and rough seas. In the United States, nesting is restricted to the Florida Coast. However, they have been found occasionally along the Texas coast from Jefferson to Cameron County.

**Threats:** Human exploitation of eggs and meat, destruction of nesting habitat, and predation by crabs, sharks and other fish, reptiles, and mammals on eggs and hatchlings.

**Issues for GIWW maintenance dredging:** To date, this species has not been documented, by stranding data or sightings, within the Laguna Madre. As the ICT continues, over the next 50 years to assess and review the maintenance program, options for Gulf disposal which currently are not proposed, may in the future become important to re-visit. At that time, impacts to this species will need consideration and consultation.

### **Green Sea turtle *Chelonia mydas***

**Description/Habitat:** The carapace of the adults of this member of the Family Cheloniidae can grow to a length of four feet (1.2 m) and range from 250 to 450 pounds (110 - 205 kg). The adult's carapace is smooth, lacks a keel (center ridge), and is light to dark brown with dark mottling. They are mostly herbivorous, feeding on marine algae and shallow meadows of sea grasses. Small mollusks, sponges, crustaceans and jellyfish are also often consumed. Open beaches with sloping platforms and minimal disturbance are required for nesting. A variety of sands are used for nesting, but must be friable and well drained. Clutch sizes range from 75 to 250 eggs with incubation lasting from 48 to 70 days. Nocturnal nesting occurs in 2, 3, or 4 year intervals and as many as seven clutches may be laid in one season. Renesting is usually within 1 mile (1.6 km) from the previous nesting site. They are found in shallow waters (except when migrating) in or near reefs, bays estuaries and inlets, and especially within seagrass beds. Favored habitat appears to be lagoons and shoals with an abundance of marine grass and algae.

**Threats:** Human exploitation of eggs and meat as a food source, mortality from commercial fishing operations and dredging, and habitat (nesting) disturbance (beach development).

**Issues for GIWW maintenance dredging:** All sea turtles, except when on nesting beaches, are the trust resource of NMFS. As noted in the USACE's draft biological opinion for the maintenance dredging of the Laguna Madre of Texas (PBS&J 2002 Appendices):

In areas where SAV would be covered by dredged material, the green seaturtle's foraging habitat would be reduced, but they would migrate to other feeding areas, and impacts to SAV will be reduced with the DMMP alternative. Turbidity would also increase during dredging activities, but these project impacts are temporary and local in nature and would be reduced by the DMMP alternative. Cutterhead dredges will be used which move very slowly and can be avoided by all species of seaturtles. Studies have indicated that cutterhead dredges, since they act on only small areas at a time, do not impact seaturtles (NMFS 1998). Although green seaturtles could potentially occur in the project are, for the reasons given above no effects are anticipated from maintenance dredging operations.

As with other sea turtle species, as the ICT continues, over the next 50 years, to assess and review the maintenance program, options for Gulf disposal which currently are not proposed, may in the future become important to re-visit. At that time, impacts to this species will need consideration and consultation.

## **Loggerhead sea turtle *Caretta caretta***

**Description/Habitat:** Loggerheads have characteristically large heads with powerful jaws. The carapace is brown to reddish-brown, flippers are brown to yellow, and the lower shell (plastron) is yellow. Adults weigh 170-500 pounds (75 - 225 kg), and have a carapace length of up to 45 inches (1.2 m) long. They eat a variety of marine invertebrates and plants, primarily feeding on mollusks and crustaceans. Nesting takes place from May to August, usually during the nighttime. Preferred nest sites are sloping beaches 1.5 to 2.5 feet (46-76 cm) above waterline. Nesting occurs at 2 to 3 year intervals with a clutch size of about 125 eggs and several clutches are usually laid in any given season. The species is widely distributed within its range and can be found hundreds of miles offshore. It also inhabits inshore areas such as bays, lagoons, salt marshes, ship channels and mouths of large rivers. It is found in temperate and tropical waters worldwide and occasionally nests on the Texas Gulf Coast.

**Threats:** Human exploitation of eggs and meat. Loss of nesting habitat due to housing development, fishing operations and incidental catch or mortality by fishing gear (e.g. shrimp trawls). Predation on eggs by raccoons, coyotes, and other carnivores.

**Issues for GIWW maintenance dredging:** To date, this species has not been documented, by stranding data or sightings, within the Laguna Madre. As the ICT continues, over the next 50 years to assess and review the maintenance program, options for Gulf disposal which currently are not proposed, may in the future become important to re-visit. At that time, impacts to this species will need consideration and consultation.

## **Colonial Waterbirds:**

Twenty-three species of waterbirds utilize the dredge islands in the Laguna Madre for nesting. A species list for these birds is included in Appendix C, with notes on their nesting preferences. The dredge islands provide habitat that is remote from most human disturbance, and reduced predator access to the nesting grounds. Opportunities for maintenance operations of the GIWW that can benefit rookeries, colonial waterbirds and other Laguna Madre species include the placement of new dredge material to control parasites, fire ant colonies, and the amount and types of vegetation; management of dredged material placement for seagrasses, water circulation, and predator control; vegetation planting and sign installation; predator removal; and identification of appropriate destination islands for visitor use. Although the goal for the DMMP was a 50-year plan, the Service concurs with the USACE (PBS&J 2002 Appendices) that the conditions of the PA and the recommendations included in the DMMP will have to be reviewed prior to each dredging event. The dynamic nature of the Laguna Madre, including storm events, dredging events, erosional and accretion processes, and meteorological tides, results in continuously changing acreage. Current meteorological phases, whether drought-cycle or abundant rainfall will also have to be considered in plans for a dredging event. The DMMP has incorporated many, but not all, of the recommendations included in both the draft PINS proposed Spoil Island Management Plan (SIMP) (PINS 2002 unpublished), and the draft Colonial Waterbird Rookery Island Management Plan (CWRIMP) by the Coastal Bend Bays Estuary Program (CBEP 2002). Because maintenance dredging activities will be reviewed by the ICT

and others on and event-by-event basis, the Service compiled Appendix D as a reference tool. In Appendix D, all of the USACE's DMMP placement area descriptions and management recommendations have been reproduced along with the associated rookery island recommendations from CBBEP's CWRIMP where those rookeries are within a PA, and for areas within the PINS boundary, the appropriate sections of the SIMP (PAIS 2002).

Additionally, For each PA, the Service has compiled data and presented layers using ESRI ArcView 3.2 and DeLormes X-Map. The layers include base photography from U.S. Geological Service Digital Orthophoto Quarter Quads dated 1995 and 1996, and Sat10 satellite mosaics from DeLorme, dated 2000 and 2001. Data Layers for Placement Areas and Rookery Areas were from the Texas General Land Office Geographical Information Systems (GIS) Data Layer Website (<http://www.glo.state.tx.us/gisdata/gisdata.html>).

Individual rookeries in the ULM were plotted in XMAP using locations provided in the draft Colonial Waterbird Management Plan (CBBEP unpublished) use as a visual reference for associating USACE PA's and rookery islands.



## **FISH AND WILDLIFE CONCERNS AND PLANNING OBJECTIVES**

### **Contaminant Assessment:**

The ICT requested that a review of existing data pertaining to the GIWW be completed to identify any information gaps and to determine whether additional studies would be needed in order to ascertain suitability of dredged material from the GIWW for placement. Data collected by various agencies were reviewed and summarized by (EH&A 1997). An additional study, contracted by the Environmental Protection Agency, at the request of the USACE, included sampling water and sediments from 26 stations in the Laguna Madre and two reference stations in the Gulf of Mexico (LWA 1998). Water, elutriate, and bulk sediment analyses were performed in addition to bioaccumulation studies and solid phase bioassays.

Results from past studies and the most recent sampling effort by LWA 1998 indicate that there are areas that may need further evaluation prior to placement. The area near the mouth of the North Floodway exceeded water quality screening levels for arsenic, and sediment exceeded the current sediment guidelines (Effects Range-Low (ERL) as listed given in Buchman (1998)) for p, p'-DDE by twenty three times in a 1994 study (Davis et al.1995). The ERL is a concentration above which effects to sensitive organisms begin to occur. In the LWA (1998) study, the North Floodway outlet channel sample (BA-4) failed to pass the benthic toxicity test by a small margin, indicating that the material would not be suitable for ocean placement. The average percentage survival of 36% for this site indicates a cause for concern.

The study by Davis et al. (1995), reported results from a site 2.4 km upstream of the GIWW in the Arroyo Colorado that exceeded water quality screening levels for arsenic and silver and sediment concentrations which exceeded the ERL for p,p'- DDE in by eleven times. There were no exceedances for the mouth of the Arroyo Colorado in the LWA (1998) study, but there was only one sample site near the mouth of the Arroyo Colorado (BA-5). Dredged material from the mouth of the Arroyo Colorado and in the vicinity of the North Floodway will continue to be deposited into fully confined placement areas.

In the Baffin Bay area, previous studies indicated that the ERL was exceeded for cadmium, mercury and lead in a number of sediments samples in Baffin Bay itself (Barrera et al. 1995) and a sample taken in the area just north of the land cut exceeded the ERL for arsenic, copper, mercury and lead (Barrera et al.1995). More recently highest concentrations of metals were detected between the mouth of Baffin Bay south towards the land cut with one site exceeding the ERL for mercury (LWA 1998).

There are few data points to evaluate near the Port Isabel Channel. The EH&A (1997) review noted that there were larger ranges of values for this area that may indicate a cause for concern.

Several sites that had exceptionally high concentrations in sediment for arsenic and cadmium: BA-6 near Port Isabel Channel (383 mg/kg As), LM11, south of the Land Cut (583 mg/kg As), LM-8, south of Baffin Bay (40 mg/kg Cd) and BA-4, the North Floodway outlet channel (10 mg/kg Cd).

## Recommendations:

Resample the sites that had exceedingly high levels of arsenic and cadmium. Although there is a possibility that these are lab artifacts, it is important to confirm that there are no contaminant problems prior to dredging and placement.

The area north of the Land Cut has contaminant concerns that need to be addressed prior to placement. Upland placement in a confined site may be most appropriate for this material.

The Service agrees with the USACE finding that prior to each dredging cycle the ICT should be presented with the contaminant analyses in those areas proposed to be dredged in order to evaluate suitability and options for placement.

Due to the paucity of data, greater sampling effort should be concentrated near the mouth of Baffin Bay south to the land cut, the North Floodway, the Arroyo Colorado, and the Port Isabel Channel.

## **Seagrasses, Bay Sedimentation and Placement Area Erosion:**

Since its formation in 1995, the ICT has devoted considerable effort to identifying research and study needs relative to LM maintenance dredging, and in particular, regarding the fate and effects of dredged material and the PAs (PBS&J 2002). The ICT determined that the goals of the EIS should include identifying the effects of dredging, both direct impacts by burial and indirect impacts of suspended particles, on benthos, seagrasses, and dredging frequency for the Laguna Madre system. A number of studies have been contracted by the USACE, and the results of those studies will be captured in the final EIS. The Service shares these concerns both for impacts of the maintenance dredging program at the system level and for the smaller dredging reaches. Of additional concern to the Service, and areas that the Service may be able to assist the ICT best, is in identifying specific concerns and providing guidance on the impacts of the dredging programs relative to the survival requirements of fish and wildlife resources, particularly endangered species and birds of the Laguna Madre including wintering species and nesting species such as colonial waterbirds and their rookery island.

As the ICT continues to meet and review maintenance dredging plans, the Service will be working with the other members of the team to seek answers to the following issues and concerns:

- Unconfined disposal increases turbidity, at least temporally and locally, around the PA. For rookery islands, the ICT needs additional information regarding the resource needs, including foraging requirements, of the nesting species to answer questions about the impacts of increased turbidity and local impacts to seagrass beds.
- In addressing the potential for placement of dredged material into deeper water areas, although concerns for turbidity may be reduced, the few remaining deep water areas of

the Laguna Madre provide diversity for the aquatic system. They also have become known as important refuges for fish during cold weather. The ICT needs to understand the potential to either temporarily or permanently lose these sites and the species that would be impacted.

- Aerial distribution and species shifts in the seagrass communities of Laguna Madre will be an on-going concern for the Laguna Madre system. The reasons for the shifts are probably varied, and include the impacts from a “brown tide” event in the early 1990's and increases in nutrients from runoff waters to the Laguna Madre. Some contributing factors, such as lowering of salinities and increases in turbidity, are directly related to the presence of the GIWW and its lateral channels (Quammen and Onuf 1993). The Service is committed to continue to work with the USACE and other members of the ICT as well as the seagrass specialists that are engaged by the USACE to monitor and address seagrass issues related to on-going maintenance dredging work. In addition to the status and health of seagrass resources on a system level, of particular interest to the Service will be the development of information and an understanding of the resource needs of nesting colonial waterbirds assemblages relative to the individual rookery islands.
- Erosion of dredged material (from both confined and unconfined PAs) back into the GIWW, as well as into surrounding waters, can certainly alter the dredging frequency for a given reach. The creation of a wake barrier may lower the frequency of maintenance dredging as well as reducing the amount of suspended material in surrounding waters. Proposals for wake barriers, as for construction of levees or other containment structures around PAs will need to be weighed against the impacts these structures could have if the PA is an active rookery.

### **Life Expectancy of Dredge Material Placement Areas:**

The Service recommends that alternative ways of disposing of maintenance dredge materials be researched, examined and developed. Each dredging event is an opportunity to moderate and manage the footprint of the receiving placement area and the associated impacts of the surrounding Laguna Madre system. Economic feasibility studies should include an assessment of the costs of degradation of this most productive bay system and need to be updated frequently. Natural resource trustees and public stakeholders should continue to develop contingencies and implement adaptive management techniques that retain the characteristics of this unique hypersaline lagoon.

### **Other Issues:**

In the Land Cut area, channels for oil and gas exploration were dredged with an east-west alignment have effectively reduced the inundation of some interior portions of the wind tidal flats (Drake et al. 1998). The Service recommends the USACE investigate opportunities for reestablishing these areas by using dredge materials to fill in these channels and restore the historical contours that would allow inundations of the wind tidal flats of the Land Cut area.

There do exist unresolved issues related to the USACE maintenance dredging operations for those portions of the GIWW within the PINS, and related to the King Ranch. The USACE initially placed dredge material and created islands within what is now PINS. The Superintendent and Chief Resource Manager of PINS are opposed to the placement of dredge materials within the boundaries of the PINS, stating it would constitute “impairment” as defined in the Organic Act of 1916. The USACE also considered the western shoreline as a possible site for upland disposal on land that would be made available through the condemnation power of TXDOT. A representative of the King Ranch stated at a USACE public hearing on the DMMP, that the King Ranch had a wildlife management plan in place for endangered species, and would not approve any upland placement of dredge material on the property. It is the Service’s understanding that a mutually agreed upon moratorium between TXDOT and the King Ranch prohibits upland disposal on the ranch through 2005, and that a study will be undertaken to determine the preferred means of material placement from the dredging of the GIWW in the Lower Laguna Madre. The Service is committed to working with all interested parties to identify the preferred means of disposal, minimize negative environmental impacts and maximize beneficial uses.

The Service is not opposing the dredging of the Lower Laguna Madre GIWW. The Service, however, is concerned that the limited options open to the USACE may lead to open water disposal that may continue to cause degradation of seagrasses, and of the unique ecosystem of the Lower Laguna Madre. Although various modeling efforts have suggested that impacts from dredged material to seagrasses may be limited in range, models are limited by the assumptions made, and should be verified during implementation. The Service suggests that the addition of new placements areas, the movement of the footprint of existing placement areas (e.g. PA 233) may expose previously unimpacted seagrass meadows to increased turbidity and reduced illumination. This concern is also applicable to Emmord’s Hole in the upper Laguna Madre with regards to the unresolved issues for the PINS section and the GIWW where it parallels the King Ranch.

**Appendix A Species Lists**  
**Species federally-listed as threatened or endangered,**  
**candidate species and species of concern.**

**Nueces, Kleberg, Kenedy, Willacy, and Cameron Counties**



The following lists provide updated information on federally-listed species from the five counties that the GIWW passes through. The list may include endangered and threatened species, as well as proposed species, candidate species, and species of concern. Proposed species are candidate species for which rules have been published in the Federal Register, nominating the species for threatened or endangered status. Candidate species have no protection under the Endangered Species Act; however, the Service has substantial information on candidate species to support their listing as threatened or endangered. The development and publication of proposed rules for listing candidate species are anticipated. Therefore, actions that might contribute to the listing of candidate species should be avoided. Species of Concern are species that have not yet been fully evaluated. These species could eventually be determined to be in need of listing. A letter designation following the species name represents the current federal status of that species. The letters E, T, P, C, and SOC, represent the status of Endangered, Threatened, Proposed, Candidate, and Species of Concern, respectively. The acronym CH indicates that there is Critical Habitat associated with the species, and P(CH) indicates that Critical Habitat has been Proposed for the species.

Our data indicate that the following species may occur in **Nueces County**:

Gulf Coast Jaguarundi	(E)	<i>Herpailurus yagouaroundi cacomitli</i>
Ocelot	(E)	<i>Leopardus pardalis</i>
Brown pelican	(E)	<i>Pelecanus occidentalis</i>
West Indian manatee (=Florida)	(E)	<i>Trichechus manatus</i>
Hawksbill sea turtle	(E w/CH‡)	<i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E)	<i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CH‡)	<i>Dermochelys coriacea</i>
Slender rush-pea	(E)	<i>Hoffmannseggia tenella</i>
South Texas ambrosia	(E)	<i>Ambrosia cheiranthifolia</i>
Piping plover	(T w/CH)	<i>Charadrius melodus</i>
Green sea turtle	(T)	<i>Chelonia mydas</i>
Loggerhead sea turtle	(T)	<i>Caretta caretta</i>

Mountain plover	(P/T) <i>Charadrius montanus</i>
Audubon's oriole	(SOC) <i>Icterus graduacauda audubonii</i>
Black rail	(SOC) <i>Laterallus jamaicensis</i>
Black tern	(SOC) <i>Chlidonias niger</i>
Cerulean warbler	(SOC) <i>Dendroica cerulea</i>
Ferruginous hawk	(SOC) <i>Buteo regalis</i>
Loggerhead shrike	(SOC) <i>Lanius ludovicianus</i>
Northern gray hawk	(SOC) <i>Buteo nitidus maximus</i>
Reddish egret	(SOC) <i>Egretta rufescens</i>
Sennett's hooded oriole	(SOC) <i>Icterus cucullatus sennetti</i>
Texas Botteri's sparrow	(SOC) <i>Aimophila botterii texana</i>
Texas olive sparrow	(SOC) <i>Arremonops rufivirgatus rufivirgatus</i>
White-faced ibis	(SOC) <i>Plegadis chihi</i>
Black-spotted newt	(SOC) <i>Notophthalmus meridionalis</i>
Rio Grande lesser siren	(SOC) <i>Siren intermedia texana</i>
Gulf salt marsh snake	(SOC) <i>Nerodia clarkii</i>
Texas diamondback terrapin	(SOC) <i>Malaclemys terrapin littoralis</i>
Texas horned lizard	(SOC) <i>Phrynosoma cornutum</i>
Maritime Texas pocket gopher	(SOC) <i>Geomys personatus maritimus</i>
Lilia de los llanos	(SOC) <i>Echeandia chandleri</i>
Roughseed sea-purslane	(SOC) <i>Sesuvium trianthemoides</i>
Texas windmill-grass	(SOC) <i>Chloris texensis</i>
Thieret's skullcap	(SOC) <i>Scutellaria thieretii</i>
Welder machaeranthera	(SOC) <i>Psilactis heterocarpa</i>
Maculated manfreda skipper	(SOC) <i>Stallingsia maculosus</i>

Our data indicate that the following species may occur in **Kleberg County**:

Jaguarundi	(E) <i>Herpailurus yagouaroundi cacomitli</i>
Ocelot	(E) <i>Leopardus pardalis</i>
Brown pelican	(E) <i>Pelecanus occidentalis</i>
Northern aplomado falcon	(E) <i>Falco femoralis septentrionalis</i>
Hawksbill sea turtle	(E w/CH‡) <i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E) <i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CH‡) <i>Dermochelys coriacea</i>
Black lace cactus	(E) <i>Echinocereus reichenbachii</i> var. <i>albertii</i>
Slender rush-pea	(E) <i>Hoffmannseggia tenella</i>
South Texas ambrosia	(E) <i>Ambrosia cheiranthifolia</i>
Green sea turtle	(T) <i>Chelonia mydas</i>
Loggerhead sea turtle	(T) <i>Caretta caretta</i>
Bald eagle	(T) <i>Haliaeetus leucocephalus</i>
Piping plover	(T) <i>Charadrius melodus</i>
American alligator	(TSA) <i>Alligator mississippiensis</i>

Mountain plover	(P/T) <i>Charadrius montanus</i>
Audubon's oriole	(SOC) <i>Icterus graduacauda audubonii</i>
Cerulean warbler	(SOC) <i>Dendroica cerulea</i>
Ferruginous hawk	(SOC) <i>Buteo regalis</i>
Loggerhead shrike	(SOC) <i>Lanius ludovicianus</i>
Reddish egret	(SOC) <i>Egretta rufescens</i>
Sennett's hooded oriole	(SOC) <i>Icterus cucullatus sennetti</i>
Texas Botteri's sparrow	(SOC) <i>Aimophila botterii texana</i>
Texas olive sparrow	(SOC) <i>Arremonops rufivirgatus rufivirgatus</i>
White-faced ibis	(SOC) <i>Plegadis chihi</i>
Black-spotted newt	(SOC) <i>Notophthalmus meridionalis</i>
Rio Grande lesser siren	(SOC) <i>Siren intermedia texana</i>
Texas horned lizard	(SOC) <i>Phrynosoma cornutum</i>
Bailey's ballmoss	(SOC) <i>Tillandsia baileyi</i>
Lilia de los llanos	(SOC) <i>Echeandia chandleri</i>
Welder machaeranthera	(SOC) <i>Psilactis heterocarpa</i>
Maculated manfreda skipper	(SOC) <i>Stallisia maculosus</i>

Our data indicate that the following species may occur in **Kenedy County**:

Jaguarundi	(E) <i>Herpailurus yagouaroundi cacomitli</i>
Ocelot	(E) <i>Leopardus pardalis</i>
Brown pelican	(E) <i>Pelecanus occidentalis</i>
Northern aplomado falcon	(E) <i>Falco femoralis septentrionalis</i>
Hawksbill sea turtle	(E w/CH‡) <i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E) <i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CH‡) <i>Dermochelys coriacea</i>
South Texas ambrosia	(E) <i>Ambrosia cheiranthifolia</i>
Green sea turtle	(T) <i>Chelonia mydas</i>
Loggerhead sea turtle	(T) <i>Caretta caretta</i>
Piping plover	(T) <i>Charadrius melodus</i>
Coues' rice rat	(SOC) <i>Oryzomys couesi aquaticus</i>
Audubon's oriole	(SOC) <i>Icterus graduacauda audubonii</i>
Cerulean warbler	(SOC) <i>Dendroica cerulea</i>
Ferruginous hawk	(SOC) <i>Buteo regalis</i>
Black tern	(SOC) <i>Chlidonias niger</i>
Loggerhead shrike	(SOC) <i>Lanius ludovicianus</i>
Reddish egret	(SOC) <i>Egretta rufescens</i>
Sennett's hooded oriole	(SOC) <i>Icterus cucullatus sennetti</i>
Texas Botteri's sparrow	(SOC) <i>Aimophila botterii texana</i>
Texas olive sparrow	(SOC) <i>Arremonops rufivirgatus rufivirgatus</i>
Tropical parula	(SOC) <i>Parula pitiayumi nigrilora</i>
White-faced ibis	(SOC) <i>Plegadis chihi</i>

Black-spotted newt	(SOC) <i>Notophthalmus meridionalis</i>
Rio Grande lesser siren	(SOC) <i>Siren intermedia texana</i>
Texas horned lizard	(SOC) <i>Phrynosoma cornutum</i>
Bailey's ballmoss	(SOC) <i>Tillandsia baileyi</i>
Roughseed sea-purslane	(SOC) <i>Sesuvium trianthemoides</i>
Los Olmos tiger beetle	(SOC) <i>Cicindela nevadica olmosa</i>

Our data indicate that the following species may occur in **Willacy County**:

Jaguarundi	(E) <i>Herpailurus yagouaroundi cacomitli</i>
Ocelot	(E) <i>Leopardus pardalis</i>
West Indian manatee (=Florida)	(E) <i>Trichechus manatus</i>
Brown pelican	(E) <i>Pelecanus occidentalis</i>
Northern aplomado falcon	(E) <i>Falco femoralis septentrionalis</i>
Hawksbill sea turtle	(E w/CH‡) <i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E) <i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CH‡) <i>Dermochelys coriacea</i>
Texas ayenia	(E) <i>Ayenia limitaris</i>
Green sea turtle	(T) <i>Chelonia mydas</i>
Loggerhead sea turtle	(T) <i>Caretta caretta</i>
Piping plover	(T) <i>Charadrius melodus</i>
American alligator	(TSA) <i>Alligator mississippiensis</i>
Mountain plover	(P/T) <i>Charadrius montanus</i>
Audubon's oriole	(SOC) <i>Icterus graduacauda audubonii</i>
Brownsville common yellowthroat	(SOC) <i>Geothlypis trichas insperata</i>
Cerulean warbler	(SOC) <i>Dendroica cerulea</i>
Ferruginous hawk	(SOC) <i>Buteo regalis</i>
Loggerhead shrike	(SOC) <i>Lanius ludovicianus</i>
Reddish egret	(SOC) <i>Egretta rufescens</i>
Sennett's hooded oriole	(SOC) <i>Icterus cucullatus sennetti</i>
Texas Botteri's sparrow	(SOC) <i>Aimophila botterii texana</i>
Texas olive sparrow	(SOC) <i>Arremonops rufivirgatus rufivirgatus</i>
White-faced ibis	(SOC) <i>Plegadis chihi</i>
Texas horned lizard	(SOC) <i>Phrynosoma cornutum</i>
Black-spotted newt	(SOC) <i>Notophthalmus meridionalis</i>
Rio Grande lesser siren	(SOC) <i>Siren intermedia texana</i>
Coues' rice rat	(SOC) <i>Oryzomys couesi aquaticus</i>
Bailey's ballmoss	(SOC) <i>Tillandsia baileyi</i>

Our data indicate that the following species may occur in **Cameron County**:

Jaguarundi	(E) <i>Herpailurus yagouaroundi cacomitli</i>
Ocelot	(E) <i>Leopardus pardalis</i>
West Indian manatee (=Florida)	(E) <i>Trichechus manatus</i>

Brown pelican	(E)	<i>Pelecanus occidentalis</i>
Northern aplomado falcon	(E)	<i>Falco femoralis septentrionalis</i>
Hawksbill sea turtle	(E w/CH‡)	<i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E)	<i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CH‡)	<i>Dermochelys coriacea</i>
South Texas ambrosia	(E)	<i>Ambrosia cheiranthifolia</i>
Star cactus	(E)	<i>Astrophytum asterias</i>
Texas ayenia	(E)	<i>Ayenia limitaris</i>
Bald eagle	(T)	<i>Haliaeetus leucocephalus</i>
Piping plover	(T)	<i>Charadrius melodus</i>
Green sea turtle	(T)	<i>Chelonia mydas</i>
Loggerhead sea turtle	(T)	<i>Caretta caretta</i>
American alligator	(TSA)	<i>Alligator mississippiensis</i>
Mountain plover	(P/T)	<i>Charadrius montanus</i>
Audubon's oriole	(SOC)	<i>Icterus graduacauda audubonii</i>
Black tern	(SOC)	<i>Chlidonias niger</i>
Brownsville common yellowthroat	(SOC)	<i>Geothlypis trichas insperata</i>
Cerulean warbler	(SOC)	<i>Dendroica cerulea</i>
Ferruginous hawk	(SOC)	<i>Buteo regalis</i>
Loggerhead shrike	(SOC)	<i>Lanius ludovicianus</i>
Northern gray hawk	(SOC)	<i>Buteo nitidus maximus</i>
Reddish egret	(SOC)	<i>Egretta rufescens</i>
Sennett's hooded oriole	(SOC)	<i>Icterus cucullatus sennetti</i>
Texas Botteri's sparrow	(SOC)	<i>Aimophila botterii texana</i>
Texas olive sparrow	(SOC)	<i>Arremonops rufivirgatus rufivirgatus</i>
Tropical parula	(SOC)	<i>Parula pitayumi nigrilora</i>
White-faced ibis	(SOC)	<i>Plegadis chihi</i>
Coues' rice rat	(SOC)	<i>Oryzomys couesi aquaticus</i>
Texas horned lizard	(SOC)	<i>Phrynosoma cornutum</i>
Black-spotted newt	(SOC)	<i>Notophthalmus meridionalis</i>
Rio Grande lesser siren	(SOC)	<i>Siren intermedia texana</i>
Bailey's ballmoss	(SOC)	<i>Tillandsia baileyi</i>
Lilia de los llanos	(SOC)	<i>Echeandia chandleri</i>
Marshelder (slender) dodder	(SOC)	<i>Cuscuta attenuata</i>
Runyon huaco	(SOC)	<i>Manfreda longiflora</i>
Runyon's water-willow	(SOC)	<i>Justicia runyonii</i>
Short-fruited spikerush	(SOC)	<i>Eleocharis brachycarpa</i>



**Appendix B Birds of Conservation Concern**

**Lists for the**

**Tamaulipan Brushlands and Gulf Coast Prairie Regions**



## **Tamaulipan Brushlands**

(U.S. portion only)(U.S. Fish and Wildlife Service. 2002)

Northern Harrier  
Harris's Hawk  
Swainson's Hawk  
Peregrine Falcon  
Snowy Plover  
Mountain Plover  
Long-billed Curlew  
Stilt Sandpiper  
Buff-breasted Sandpiper  
Gull-billed Tern  
Red-billed Pigeon  
Ferruginous Pygmy-Owl  
Elf Owl  
Burrowing Owl  
Buff-bellied Hummingbird  
Northern Beardless-Tyrannulet  
Rose-throated Becard  
Loggerhead Shrike  
Bell's Vireo  
Verdin  
Cactus Wren  
Curve-billed Thrasher  
Sprague's Pipit  
Tropical Parula  
Cassin's Sparrow  
Lark Bunting  
Harris's Sparrow  
McCown's Longspur  
Chestnut-collared Longspur  
Pyrrhuloxia  
Varied Bunting  
Painted Bunting  
Dickcissel  
Hooded Oriole  
Altamira Oriole  
Audubon's Oriole

## **Gulf Coastal Prairie**

(U.S. portion only)(U.S. Fish and Wildlife Service. 2002)

American Bittern  
Reddish Egret  
White Ibis  
Swallow-tailed Kite  
Northern Harrier  
White-tailed Hawk (Texas only)  
Peregrine Falcon  
Yellow Rail  
Black Rail  
American Golden-Plover  
Snowy Plover  
Wilson's Plover  
American Oystercatcher  
Whimbrel  
Long-billed Curlew  
Hudsonian Godwit  
Marbled Godwit  
Red Knot  
Stilt Sandpiper  
Buff-breasted Sandpiper  
Short-billed Dowitcher  
Gull-billed Tern  
Least Tern  
Black Tern  
Black Skimmer  
Ferruginous Pygmy-Owl (Texas only)  
Short-eared Owl  
Buff-bellied Hummingbird  
Red-headed Woodpecker  
Northern Beardless-Tyrannulet (Texas only)  
Loggerhead Shrike  
Bell's Vireo (Texas only)  
Bewick's Wren  
Sedge Wren  
Sprague's Pipit  
Tropical Parula (Texas only)  
Prothonotary Warbler  
Swainson's Warbler  
Kentucky Warbler  
Botteri's Sparrow (Texas only)  
Grasshopper Sparrow  
Henslow's Sparrow  
Le Conte's Sparrow

Nelson's Sharp-tailed Sparrow  
Seaside Sparrow  
Painted Bunting  
Hooded Oriole (Texas only)  
Audubon's Oriole (Texas only)



**Appendix C: Nesting Colonial Waterbirds**  
**of the**  
**Laguna Madre of Texas**  
**Species List and Notes on Nest Site Selection**



**American White Pelican** (*Pelecanus erythrorhynchos*)

Nest site tenacity between years is low or absent. Sub-colonies commonly shift location from year to year when habitat is available. Nests are sited on flat or moderately sloping surface for flight access and visibility. On low-lying islands, white pelicans use higher central portions that are less subject to flooding. Nesting substrates are variable and include gravel, sand or soil, as well as sparsely vegetated areas and shrubs. Although nest site and territory may support little or no vegetation, nests are commonly located adjacent to or interspersed within available cover. (Evans and Knopf 1993)

**Black-Crowned Night-Heron** (*Nycticorax nycticorax*)

This species, when nesting area is free from predators and harassment, may form breeding colonies that last for more than 30 to 50 years. A broad spectrum of habitat types is used for nesting, and nest sites are established from ground-level to 160 feet. Most colonies are on islands, probably as a response to predator avoidance. (Davis 1993)

**Brown Pelican** (*Pelecanus occidentalis*)

Nests are sited on the ground, in a tree, or in a bush. Nests made in trees are made with sticks, reeds and grass using available vegetation. Nests on the ground, the most commonly used site, are shallow scrapes with a rim of soil around them and are lined with feathers. On the Texas coasts, nesting is restricted to nine islands. The closest island to the Laguna Madre is Pelican Island in Corpus Christi Bay. (Williams 1980)

**Black Skimmer** (*Rynchops niger*)

Most colonies are established on beaches, bars, deposited dredged material, and in salt marshes. Some colonies even use rooftops. Often this species nests in areas entirely devoid of emergent vegetation, preferring open sandy substrate. Often this species nests with terns, and in Texas, only 10% of nest colonies were exclusively Black Skimmers. (Gochfeld and Burger 1994)

**Caspian Tern** (*Sterna caspia*)

Colonies and single pair nesting sites are usually near or adjoining those of other birds, especially gulls and terns. Site selection in many areas appears to be influenced by availability of highest points of an island or a dike or levee as protection from flooding. Proximity to other terns may be equally or more important than elevation. Typically, nesting occurs in open, sparsely vegetated areas, using a variety of substrate. If vegetation, small pebbles, or bits of clamshells are in the immediate vicinity, incubating terns will line nests with these materials. These liner materials may also be carried from short distances away. (Cuthbert and Wires 1999)

**Cattle Egret** (*Bubulcus ibis*)

Nesting is in multispecies colonies that have been established by herons, egrets, ibises and other species. A wide variety of sites and substrates are used including medium to tall trees, low trees or shrubs and siting nests adjacent to water or on islands in fresh, brackish or salt marsh. On coastal islands, trees, shrubs, and herbaceous vegetation are selected. This species will nest in live or dead vegetation, and may use old nest platforms from previous year. Cattle Egrets may prune terminal shoots for nest material and so stimulate some plants to produce basket-like lateral growth that provides choice nest sites in subsequent years. In dense colonies where no

vegetation sites remain, this species may nest on the ground. More nest sites were documented in colonies not adversely affected by guano-trophy (i.e. nutrient enrichment via excrement deposition). (Telfair 1994)

**Forster's Tern** (*Sterna forsteri*)

Along the Gulf coast, nesting is on islands and in coastal marshlands. This ground nester may use areas devoid of vegetation, or in salt marshes and estuarine islands, also on windrows of vegetation such as cord grass and sea oxeye. Nests on unvegetated substrate may be unlined or sparsely lined scrapes in mud or sand. Nests on floating rafts of vegetation are also used. Given the types materials and nests locations, eggs have been found to be on soggy material or directly touching water. (McNicholl et al. 2001)

**Great Blue Heron** (*Ardea herodias*)

Location of nest colony sites is dependent on distribution of foraging habitats. Like most other herons, this species generally selects nest sites difficult for mammalian predators to reach. Nest site fidelity has been shown to be weak, although fidelity to the choice of tree species within a colony can be strong. (Butler 1992)

**Great Egret** (*Ardea alba*)

Nests typically on or near the top of trees or woody vegetation. Occasionally nests on the ground or on artificial nest platforms. Nests are relatively unstable compared to other species of herons and egrets and so has comparatively poorer nesting success. Also, because of the relatively unstable nature of the nests of this species, many nests are destroyed between breeding seasons so that many new nests must be constructed each year. Nests are generally sited so that they are completely or almost completely exposed from above. (McCrimmon et al. 2001)

**Gull-Billed Tern** (*Sterna nilotic*)

Nesting is most often in small to medium-sized coastal colonies with other species of terns and Black Skimmers. Sites range from sandy areas on barrier beaches to shell banks in coastal lagoons to saltmarsh islands. This species often segregates into groups among or near nests of other species. These terns favor nest sites free from ground predators and human disturbance. Nest sites tend to be more elevated than either surrounding terrain or sites of other associated tern species. (Parnell et al. 1995).

**Laughing Gull** (*Larus atricilla*)

Nest-site substrates vary from sand and rocks to salt marshes and heavily vegetated dry land, preferably on higher areas. Vegetation is an important fact in nest placement. Laughing Gulls choose to place nests in the direction that is least visible to nest neighbors. Research showed that removal of vegetation more than doubled aggression between neighbors. Although experiments where grass was cut in salt marshes prevented nesting, creating piles of debris increased nesting. In Texas, mixed-colonies with herons and egrets, Laughing Gulls are forced to nest in less vegetated areas, and in mixed-colonies with terns, Laughing Gulls are forced to nest in vegetation as the terns use the bare substrate. (Burger 1996)

**Least Tern** (*Sterna antillarum*)

Nest sites commonly have shell, gravel, or other fragmentary material in the substrate. Substrate that has excessive silt or clay content can cause eggs to become stuck during wet weather, so the adult is unable to turn the eggs properly. Generally Least Terns favor nest sites in an open area largely free of vegetation, above high water levels, and safe from ground predators. (Thompson et al. 1997)

**Little Blue Heron** (*Egretta caerulea*)

Breeding and nesting are generally in mosaic wetland habitats. Upland vegetation on dredged-material islands is readily used. The variety of natural and human-made habitats and substrates that are used suggests that neither plant species nor the site are as important as the availability of stable plant species, protection from predators, and availability of nearby foraging habitat. Nesting is with other heron species or, mostly, with conspecifics. Nests are constructed mostly in lower shrubs, bushes, and small trees, usually in less accessible sites below the vegetation canopy. Variation in nesting substrates varies more between colonies than within each colony. As with other species that regularly prune the vegetation for nest materials, vegetation at the colony may become stunted. Guano from the colony can kill the vegetation, adding to the stresses, such as drought and high temperatures, on island vegetation in southern locations. (Rodgers and Smith 1995).

**Neotropic Cormorant** (*Phalacrocorax brasilianus*)

Nest preference is small trees (4m or less) that are live or dead. In Texas, nest plants include honey mesquite (*Prosopis glandulosa*), Texas paloverde (*Parkinsonia texana*), and huisache (*Acacia smallii*), as well as brush on duck blinds. (Telfair and Morrison 1995)

**Reddish Egret** (*Egretta rufescens*)

Nest sites vary from large mixed-species to small colonies. Occasionally, solitary pairs have been found. Island sites are selected for predator avoidance. On Texas islands, nests are in low shrubs, or trees, dry ground, in prickly pear cactus, or other low vegetation. If available, sites in trees or shrubs may be preferred because these sites offer shade, a reduced chance of flooding or infestation by ticks and fire ants. (Paul 1991)

**Roseate Spoonbill** (*Ajaia ajaia*)

Nests of this species are usually grouped together; often well inside a mixed-species rookery in the densest. Nesting is usually on an island (natural or human-man) or over standing water where access by terrestrial predators is limited. Adjacent shallows for fledglings to feed and adjacent roosting area are considered essential. Roosting is usually at the edge of the colony in larger trees and shrubs. On the Texas coast, this species nests in a variety of vegetation including trees, shrubs, prickly pear cactus, and herbaceous species, or nests on the ground. (Dumas 2000)

**Royal Tern** (*Sterna maxima*)

Royal Terns usually nest in large, dense colonies ranging from a few hundred to over 5,000 nesting pairs. This species often associates with other terns, especially Sandwich Terns. Laughing Gulls associate with Royal Terns all year, eats eggs but are ignored by terns and not viewed as predator. Nests typically on open sandy beaches of barrier islands, sandbars,

sand/shell substrates; also on newly created dredged-material islands. Colony site requirements: absence of quadruped predators; isolation from disturbance, combined with excellent visibility; proximity to areas of extensive shallows. Colony often destroyed by high tides and storms; commonly re-nest or reestablish colony, en masse, elsewhere. (Gough et al. 1998)

**Sandwich Tern** (*Sterna sandvicensis*)

Colonies are established with other species, particularly royal terns and laughing gulls. Nest sites are in open areas with little or no vegetation. Bare sand, sand-shell substrates, sandflats dredge spoil islands and coral cays are preferred. Usually level ground where high nesting density is possible. Nesting is in very dense aggregations, with individuals spaced about a bill-length apart. (Shealer 1999)

**Sooty Tern** (*Sterna fuscata*)

Nests are sited just above sea level along spoil banks and island. Terns typically nest in open areas with sparse, short vegetation. Their nests consist of shallow depressions in the sand or eggs are merely laid on the surface of more solid substrates such as rocks, crushed shells, or gravel. Sometimes plant material may be added to the nest. (Gough et al. 1998)

**Tricolored Heron** (*Egretta tricolor*)

Although this species typically nests in mixed-species colonies, nesting has been found to occur in small monospecific colonies and occasionally this species nest solitarily. Tricolored herons prefer very dense vegetation although a wide variety species are used. Nesting species include small trees, shrubs, prickly pear cactus, and in saltmarshes, flattened mats of needle rush. Nests are generally 4 meters or less above ground. (Frederick 1997)

**White Ibis** (*Eudocimus albus*)

Nests in live and dead woody vegetation, typically in branch crotches. Nests also on multiple close branches in herbaceous vegetation. As many as 47 nests have been documented in a single tree. Grasses and sedges appear to be used when higher nest sites are not present or are being used by earlier-nesting species. (Kuschlan and Bildstein 1992)

**White-Faced Ibis** (*Plegadis chihi*)

Colonies are often developed at existing roost sites, and some colonies are used repeatedly over several years. On spoil islands off the Texas coast, this species nests in low branches of sea oxeye or on ground among grasses, forbs, and *Opuntia* cactus. Elsewhere along the Texas coast, nest sites have been documented floating on water surface or up to 30 cm above water in emergent vegetation. Among and within colonies, nests that are built over land or over water of stable depth are generally placed lower in vegetation than nests where sporadic flooding occurs. All materials for the nests are found close to the nest site so that gathering trips are brief. (Ryder and Manry 1994)

**Yellow-Crowned Night-Heron** (*Nyctanassa violacea*)

Colonial nesting occurs less frequently than for most waders. More often nesting is as scattered pairs and small colonies. Larger colonies are found in areas away from predators. On barrier

islands, nests are generally constructed on available low vegetation. On islands along estuaries, nesting pairs use available shrubs and the nest height reflects the vegetation height. (Watts 1995).



**Appendix D: PA Management Plans**

**A compilation of draft dredged material management plans  
for the Placement Area islands of the Laguna Madre of Texas**

**Including:**

**U.S. Army Corps of Engineers: Interagency Coordination Team:  
Draft Dredge Material Maintenance Plan**

**National Park Service: Draft Padre Island National Seashore  
Proposed Spoil Island Management Plan**

**Coastal Bend Bays Estuary Program:  
Draft Colonial Waterbird Rookery Island Management Plan**



Figure 1. Placement Areas 175 to 178

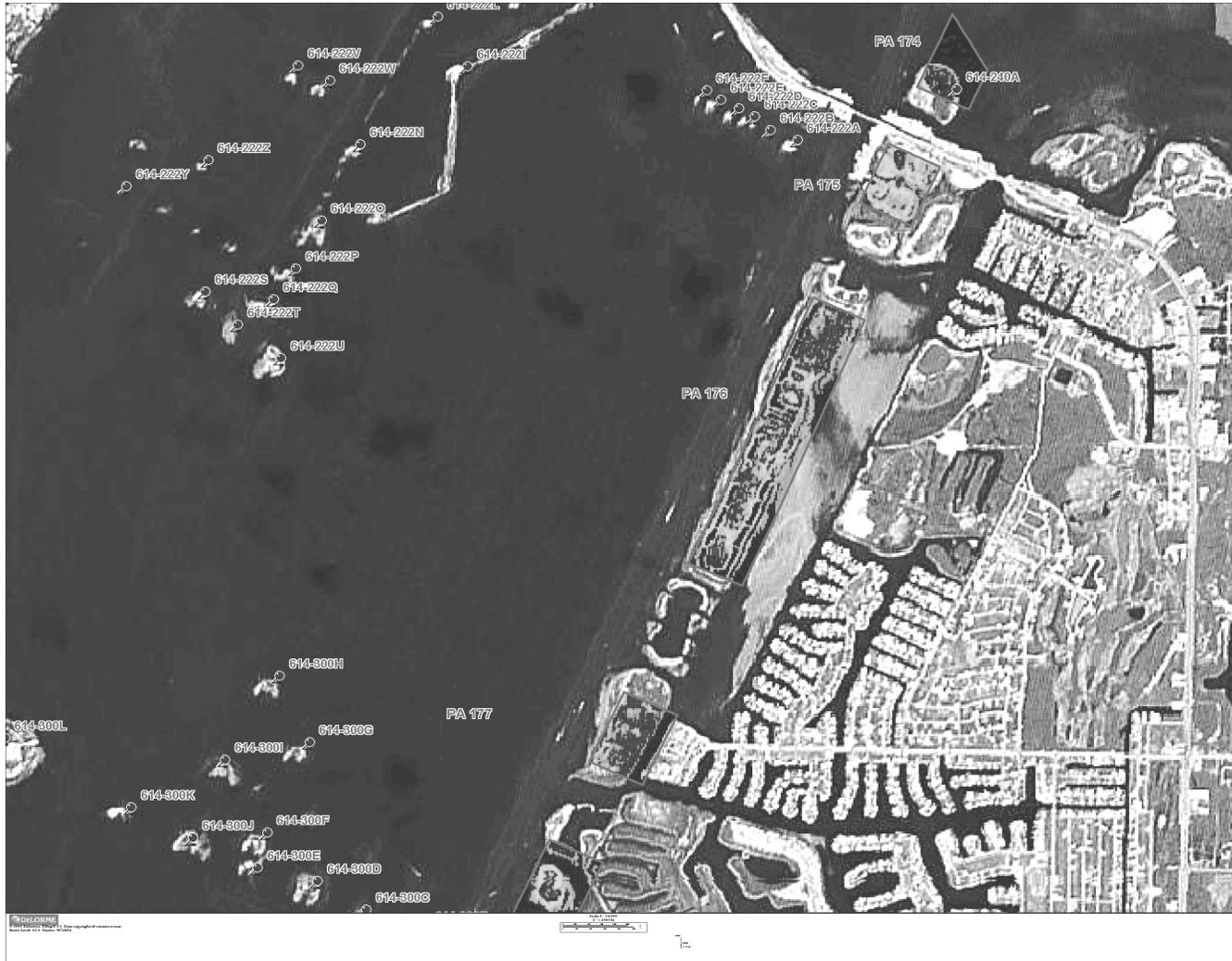


Figure 2. Colonial Waterbird Rookeries adjacent to Placement Areas 175 to 177



Figure 3. Colonial Waterbird Rookeries on and adjacent to Placement Areas 177 to 179

#### Dredged Material Management Plan

PA175 – This PA is located behind the businesses near Marker 37 on the east side of the GIWW just south of the Kenedy Causeway and has never been used. The ICT decided the best option is to continue with the current practice of not using this PA, but it will remain as an authorized PA.

#### Dredged Material Management Plan

PA176 – (30+150 – 35+700) This partially-leveed PA is located on the east side of the GIWW. The PA consists of one long island with a narrow shallow strip of water between it and a condo development on Padre Island. It was used once (1962) between 1949 and 1995, with a per-cycle discharge of 128,041 cubic yards (cy). The maintenance material consists of about 50% sand. The USACE started construction to fully confine the site in 1992, but work stopped before a 3,400-foot section in the back levee could be finished due to Section 7 consultation with the USFWS on piping plover impacts. The ICT decided the best management option is to complete the levee and use the site as an upland confined placement option. The uncompleted section will be staked according to a previous agreement with the USFWS during the consultation in 1992 and completed as part of the next dredging cycle. The USFWS will be consulted before levee construction begins to ensure there are no adverse impacts to the piping plover.

#### Dredged Material Management Plan

PA177 – (38+300 – 39+700) This PA is located on the east side of the GIWW. The PA is a small, unleveed island separated from the condo development on Padre Island by a narrow small-boat channel. It was used once (1962) between 1949 and 1995, with a per-cycle discharge of 74,691 cy. The ICT decided the best management option is to make complete levees on the east (back) north, and south sides, with a partial levee and baffles on the west side to retain as much material on the island as possible. This would partially contain the dredged material (consisting of about 72% sand) and prevent the material from flowing north, east, or south onto seagrass beds.

#### Dredged Material Management Plan

PA178 – (41+300 – 46+500) This PA is located on the east side of the GIWW. The PA consists of three small islands separated by deeper channels on the north end and one long island with three high mounds at the south end. There is another mound on the south end just outside the PA boundary. Each mound is covered with brush and two of the mounds have trees at the top. There is one cabin on the island at the south end just outside of the boundary of the PA. The PA was used twice between 1949 and 1995, with an average per-cycle discharge of 100,408 cy. There are no data on sand content. The ICT decided to protect the seagrasses to the east with a training levee. The circulation channels will be left open (through the use of training levees or other means) to allow for water

circulation, limit predator access, and provide access for marine organisms and the public. The northern islands in the chain would be avoided unless needed in the future, but the PA would be expanded to the south to include all of the southernmost island near marker buoys 63 and 65. The second island from the north is an important bird nesting island and will be avoided during disposal operations. Flow onto the emergent islands would be directed to the west, using natural contours as much as possible. The cabin at the south end will be within the new boundary and may be affected by this management plan.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-300A Old Name: (65) NM59-OM29

Ownership: GLO

Cabins remains of 1 Predators: coyotes, raccoons, fire ants and grackles

Elevation: 1.2m

Substrate types: sand shell and mud

Description: This is a large round island east of the GIWW and opposite the junction of a channel to the mainland with the GIWW at marker 59. The island has been joined with its southern neighbor through the deposition of recent spoil between them. There is a large stand of popinac (leadball) trees in the center of the island. There is a large spanish dagger that often supports a nesting platform on the eastern edge of these trees. There is a thick stand of prickly pear around the trees. The rest of the vegetation is similar to the other dredged islands along the canal. A large amount of bare area lies between and behind the island, a result of the last deposit.

Birds that have nested - pairs for last five years:

614-300A	5/19/97	5/20/98	5/18/99	5/16/00	5/30/01
GBHE			2		
BCNH			6	7	
GREG					1
REEG					
CATE					
GBTE					
LETE					

Significant History: In spite of the predators, the birds listed above have attempted to nest in the trees or in the case of the terns on the bare ground. During the early years when only coyotes were present, nesting success was probably higher for the tree nesters. With the arrival of the raccoons, nesting success is doubtful. Black crowned night-herons still roost in the leadball trees during the daylight hours.

Discussion and Management: Success for the birds on this island is dependent on the removal of the predators from the island and keeping them from it in the future. Unfortunately most of these islands are interconnected allowing free movement of predators. Additionally, as a result of the connection of this long series of islands, the water between Padre Island and this string has become shallow. Predators can easily walk and swim the short distance. It would be a monumental task to keep these islands free of predators. However, it would help to trap for several days during the winter every year. Let the island and its trees serve as a day-roost for night-herons and a fall-out re-fueling station for tropical migrants.

Draft Colonial Waterbird Management Plan (CBBEP 2002)  
 New Isl. Number: 614-301C      Old Name: (64) NM63-OM33

Ownership: GLO  
 Cabins: 1                              Predators: coyotes and fire ants  
 Elevation: 1.5m  
 Substrate types: shell and sand and silt

Description: This is a series of 4 islands, three of which have been joined by deposits between them forming a large bare area on the eastern side. There is a cabin, in disrepair, on the center of the southern joined island. These islands lie east of the GIWW near marker 63. Vegetation is typical of the other islands along the GIWW; trees, false ragweed, pigweed, camphor daisy, sea ox-eye, sea lavender, various grasses and halophytes.

Birds that have nested - pairs for last five years:

614-301C	5/19/97	5/20/98	5/18/99	5/16/00	5/30/01
GBHE					
BCNH					
GBTE					
LETE					
BLSK					

**Significant History:** Three pairs of gull-billed terns, 13 pairs of least terns and 1 pair of skimmers nested here in 1973. The next record was made in 1977 and lists least terns and skimmers on the bare ground. Eleven nests of great blue herons and 4 of black crowned night-terns were recorded in 1982. Ten least terns in 1995 were the last birds to be recorded on these islands.

**Discussion and Management:** The cabin should be removed before it is repaired. Recommendations for management could be entertained, if coyotes and raccoons could be permanently removed. Coyotes have been seen on this and the following island in the last few years.

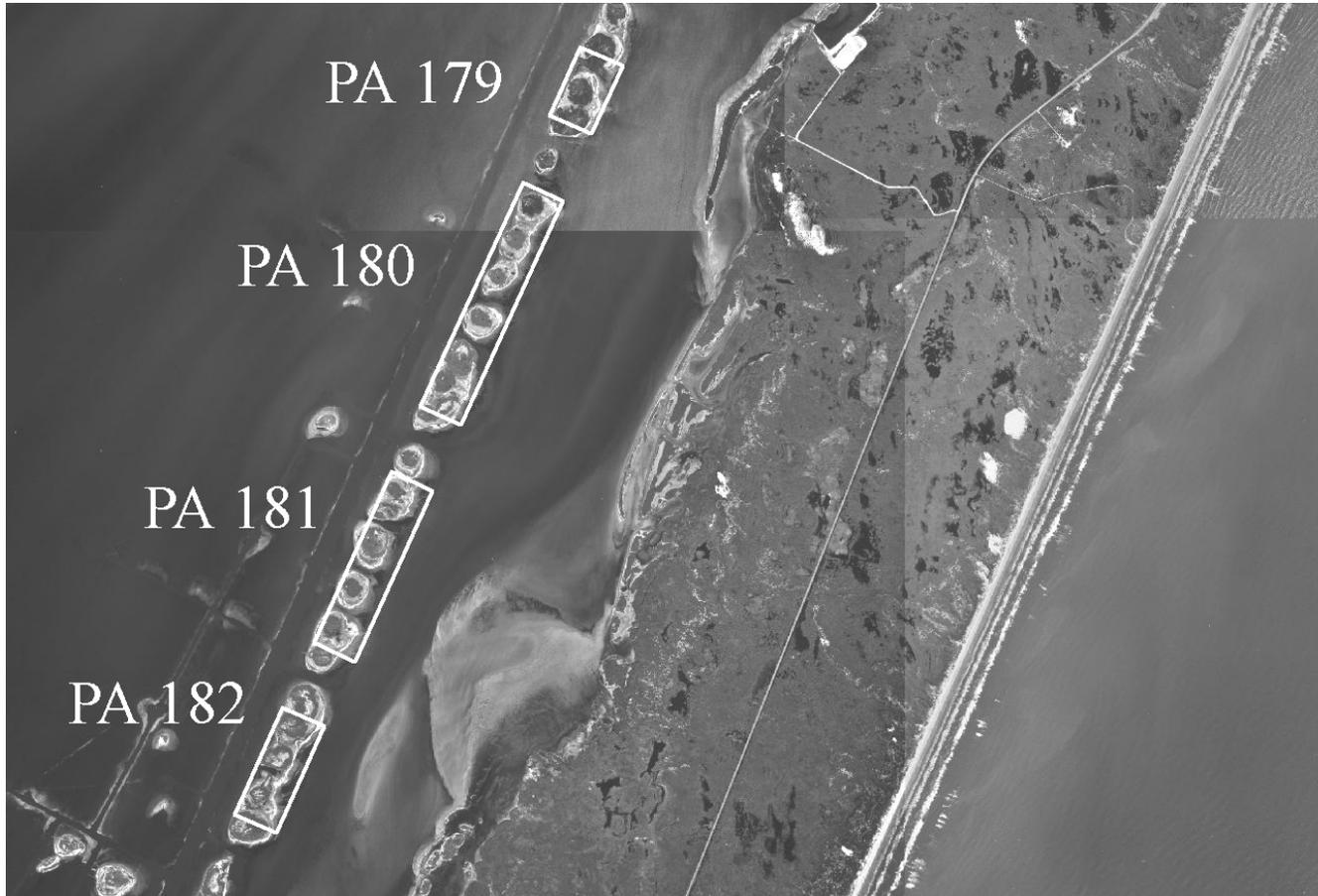


Figure 4. Placement Areas 179 to 182



Figure 5. Colonial Waterbird Rookeries on and adjacent to Placement Areas 180, Proposed 180A, 181 and 182

Dredged Material Management Plan

**PA179** – (49+500 – 51+400) This short PA is located on the east side of the GIWW. It was used twice between 1949 and 1995, with an average per-cycle discharge of 30,940 cy. The PA now includes parts of two islands. There are two mounds on each of the islands with brush and cabins. The ICT decided the best management option is to expand the PA to the north and south to include all of the islands and pump the maintenance material (consisting of an average of about 68% sand) on top of the mounds to increase the size of these islands for bird use, while avoiding runoff onto the seagrasses to the extent possible. A training levee will be placed on the south end of the PA to prevent maintenance material from filling a small boat channel. Six of the nine cabins inside the present and proposed boundaries may be affected by this management plan.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

**New Isl. Number:** 614-301A **Old Name:** (62) NM71-OM35

**Latitude: Longitude:**

**Ownership:** GLO

**Cabins:** 3

**Predators:** coyotes and fire ants

**Elevation:** 1.2m

**Substrate types:** shell, sand and silt

**Description:** This is a small round island near marker 71 that has been recently joined to its southern neighbors. A description of the island is not necessary, since it will not be considered for management.

**Birds that have nested - pairs for last five years:**

614-301A    **5/21/97**    **5/20/98**    **5/18/99**    **5/15/00**    **5/30/01**

**LETE**

**Significant History:** In spite of the presence of coyotes, 46 pair of least terns attempted to nest on the bare ground in 1996.

**Discussion and Management:** There is no way to economically manage this island for least terns or any other colonial waterbird.

Dredged Material Management Plan

**PA180** – (52+850 – 58+300) This PA is located on the east side of the GIWW. The PA consists of three islands. The northern and southern islands are the largest with three mounds each and the middle island has only one mound. Each of the mounds is covered by

brush. Channels separate the islands and provide circulation to the area on the east side. The PA was used five times between 1949 and 1995, with an average per-cycle discharge of 122,564 cy. The ICT decided the best management option is to pump the maintenance material (no data on sand content) to the east side of the mounds with a diffuser at the end of the pipe to prevent scouring and direct the flow to the east to increase the size of these islands for bird use. This technique will help reduce runoff onto the seagrasses. Care will be taken to keep circulation channels open (with some maintenance required periodically) to allow for water circulation, limit predator access, and provide access for marine organisms and the public. Eleven cabins may be affected by this management plan.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-302B Old Name: (61) NM79-OM37

Ownership: GLO

Cabins: 4 Predators: coyotes and fire ants

Elevation: 1.2m

Substrate types: shell, sand and silt

Description: The three crowns of this island were once separate and distinct islands. There is a cabin associated with each of the crowns, 2 with the northern one. A detailed description of the island is not necessary since it will not be considered for management.

Birds that have nested - pairs for last five years:

614-302B	5/21/97	5/20/98	5/18/99	5/16/00	5/30/01
GBTE					
LETE					
BLSK					

Significant History: The 2 tern species and the skimmers were recorded in 1973 when the islands were relatively new. They have not been present since. Coyote tracks and scat have been present.

Discussion and Management: There is no sense in trying to manage this island for nesting of colonial waterbirds.

Dredged Material Management Plan

**PA180A** – The USFWS noted that since there is no bird management plan for PA 180, the ICT could incorporate the bird plan to nourish and rebuild two man-made islands on the west side of the GIWW opposite from PA 180. These islands are severely eroded and bird use has declined. The ICT adopted this plan and want to establish a new PA (PA 180A) at this location and use some of the maintenance material to rebuild the islands on an “as needed” basis. Because there will be new impacts to seagrass beds around the area, the USACE agreed to this plan only if the rest of the ICT concurs and there is no mitigation required for loss of seagrass. There is one cabin on one of the islands that may be affected by this management plan.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-301B Old Name: (63) NM72 OM34

Ownership: GLO

Cabins: none Predators: fire ants

Area: Length; Width: Elevation:

Substrate types: shell, some sand and silt

Description: This is a low island west of marker 72 on the GIWW. The crown of the island is on the north end and is covered with sea ox-eye and camphor daisy. Sheets of plywood, parts of an old duck blind, are present on the crown. The sheets cover 2 large colonies of fire ants. The substrate slopes to a low area near the southern margin. This area is filled with wolfberry and the typical halophytes. The rest of the island contains camphor daisy false ragweed and some sea ox-eye. There is one small growth of prickly pear on the northwestern corner.

Birds that have nested - pairs for last five years:

614-301A	5/19/97	5/20/98	5/18/99	5/16/00	5/30/01
GBHE					
TRHE				1	2
REEG			2		
CATE				1	
GBTE	7				
BLSK	21	6	4	25	32
LAGU	56	91	88	98	210

**Significant History:** Individual records begin in 1986 when 91 pair of laughing gulls and a single pair of great blue herons and tri-colored herons nested here. reddish egrets joined the latter 2 in 1995. These three species have continued to nest here intermittently. Gull-billed terns, caspian terns and skimmers were present with the gulls in 1992. The gulls and skimmers have been persistent in using this island for nesting purposes. The former steadily increased in numbers.

**Discussion and Management:** This is a very good island for development. It is isolated from predators and humans. It has a good foundation and lots of area for planting trees and shrubs. The birds that are presently using it will attract others. The elevation of the island could be raised with the deposition of good spoil. The fire ants and the prickly pear should be removed. Signs should be erected to keep people away, especially during the nesting season. Discourage the gulls from nesting here.

#### Dredged Material Management Plan

**PA181** – (59+950 – 64+200) This PA is located on the east side of the GIWW. The PA consists of four islands separated by circulation channels. Each of the five mounds is covered with brush. It was used six times between 1949 and 1995, with an average per-cycle discharge of 73,253 cy. There is no bird management plan for this PA. The ICT decided the best management option is to pump the maintenance material (consisting of an average of about 36% sand) on top or just east of the mounds to direct the flow to the east side to increase the size of these islands for bird use. This technique will help reduce runoff onto the seagrasses. Care will be taken to keep circulation channels open to allow for water circulation, limit predator access, and provide access for marine organisms and the public. Eight permitted cabins and one cabin used by TAMU for research may be affected by this management plan.

#### Dredged Material Management Plan

**PA182** – (65+800 – 68+400) This short PA is located on the east side of the GIWW and is within the boundary of the PINS. The PA consists of one large island with four mounds. There are no cabins in this PA. There is a deep channel extending from the GIWW to the middle of the PA, almost bisecting the island. This PA was used three times between 1949 and 1995, with an average per-cycle discharge of 61,126 cy. The ICT decided the best management option is to avoid the Fina Mitigation Area (island removal and seagrass planting) located at the northern edge of the PA. There are some large trees on the northern 1/3 of the site that the ICT may want to avoid during future disposal operations. This determination will be made prior to each dredging cycle. If it is determined the trees should be avoided, the maintenance material (consisting of an average of about 4% sand) could be pumped on top or to the east side of the mounds at the southern 2/3 of the PA to direct the flow to the east side to increase the size of these islands for bird use. A diffuser will be used on the end of the dredge pipe to minimize energy and prevent scouring on the mounds. This should help maximize sediment retention on the island and minimize runoff into the surrounding water and seagrasses. The ICT determined it was necessary for proper management to extend the southern PA boundary to include all of the island for disposal use.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305G Old Name: (57) NM93-OM43

Ownership: PAIS

Cabins: none

Predators: coyotes and fire ants

Elevation: 2.5m

Substrate types: sand, shell and silt

Description: This is the most northern island of this string that belongs to PAIS. There is a deep channel that separates this island from the more northern ones. According to Chaney et al. (1978), this island was formed between 1945 and 1947. They offer more historical information on structural changes and vegetation growth until 1977. Until recently, there were tanks, pipes and items belonging to a gas and petroleum company on the northern end of the island. These have been removed. On the north end there is a large salt cedar, oleanders and 2 brasils. The central core contains other brasils and 2 large Australian pines. On the crest there are more oleanders, necklace pod, a leadball tree and a large mesquite. The rest of the island is covered with grasses, patches of prickly pear, halophytes and other forbs. There is very little bare ground other than a dry pond at the southern end and some oil spill areas near the center.

Birds that have nested - pairs for last five years:

614-305G	1997	5/20/98	5/20/99	5/15/00	5/29/01
GBHE	not surveyed				
LETE					
GBTE					
BLSK					

Significant History: The terns and skimmers were found only during the early years of the growth of vegetation on this island, 1973 and 1976. A single great blue heron nest was found in the trees along with 22 individuals in 1993. Black crowned night-herons and great egrets have also used the trees here for loafing and roosting during various years.

Discussion and Management: This island could be managed in the same fashion as 614-305B in this group. This would be an even better island to develop for recreational purposes. Landings could be made from the deep channel at the northern end of the island. Predators must be removed.

The above Island (614-305G) lies outside of the PA boundaries, but between PA s 182 and 183, and is identified as PAIS 93 in the following table.

**Dredged Material Management Plan**

**PA 182S** – As part of the PINS management plan, the PINS proposed adding a new disposal site to the DMMP. The new site would enclose a small island located between PAs 182 and 183 that was probably created during construction of the GIWW. It has been invaded by exotic, undesirable vegetation that PINS would like to control with periodic placement of maintenance material. There is a pond on the island that PINS would like to protect during disposal operations. The ICT determined the new site could be added to the DMMP to help PINS manage vegetation on the island. The new PA will be used for disposal during a dredging cycle for this reach of the GIWW when the need is determined by PINS and the ICT. Establishing this site as a new PA will incur new, additional impacts to the marine resources that will need to be addressed in the EIS.

**New Isl. Number:** 614-305F      **Old Name:** (56) NM95-OM45

**Latitude: Longitude:**

**Ownership:** PAIS

**Cabins:** none

**Predators:** coyotes and fire ants

**Substrate types:** sand, shell and silt

**Description:** This is a small completely diked island, with low areas to the south and west that lie outside the dike. There is mesquite on the northern rim, the crown of the interior and the eastern lower area on the outside of the dike. The interior of the dike contains a number of brasil shrubs. The rest of the vegetation is grasses, forbs and halophytes.

**Birds that have nested - pairs for last five years:**

	1997	5/20/98	5/20/99	5/15/00	5/29/01
614-305F					
GBTE	not surveyed				

**LETE**

**BLSK**

**Significant History:** The only birds to nest here did so in 1993. Eleven pair of gull-billed terns, 46 pair of least terns and 35 pair of black skimmers constructed nests on the barren ground inside the dike.

**Discussion and Management:** Coyote tracks have been found since 1980 and their presence influences any management suggestions for this island.

Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
3	614-305	None	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Minimally vegetated with grasses and small shrubs and trees</li> <li>• Exotic vegetation present (Oleander, <i>Tamarisk</i>, Brazilian Pepper, etc.)</li> <li>• Easily accessible to predators traveling from islands north of the park and to fire ants</li> <li>• Documented presence of predators</li> <li>• Last documented CWB nesting occurred in 1993 with little prior nesting</li> <li>• Oil production facility present until 1997</li> <li>• Vegetation restoration project located near site of oil production facility</li> <li>• Access channel located on southern and western side of island</li> <li>• Remains of cabin (large concrete pad) in center of island</li> <li>• Habitat suitable for neotropical migrants</li> <li>• Minimally productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Predator access and presence</li> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• Availability of fresh water limited to nearby island</li> <li>• Neotropical migrant use</li> <li>• Ongoing vegetation restoration project</li> <li>• Presence of exotic vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Predator control and monitoring</li> <li>• Limited manipulation for enhancement of recreational use *</li> <li>• No seasonal closures</li> <li>• Development and protection of fresh water sources</li> <li>• Protection of shrub/tree habitats</li> <li>• Development of guidelines for boat access and visitor use</li> </ul>

87-91	614-304	182	<ul style="list-style-type: none"> <li>• Man-made islands</li> <li>• Moderately vegetated with herbaceous vegetation and small trees</li> <li>• Exotic vegetation present (<i>Tamarisk</i>)</li> <li>• Easily accessible to predators traveling from islands north of the park and to fire ants</li> <li>• Documented presence of predators</li> <li>• Last documented CWB nesting occurred in late 1970's - early 1980's</li> <li>• North end of #87 removed for predator control</li> <li>• Active seagrass restoration occurring at north end of #87</li> <li>• #89 has shallow "pit" created by dredge activities that holds fresh water at least part of the year</li> <li>• Habitat suitable for neotropical migrants</li> <li>• Minimally productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Predator access and presence</li> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• Minimal availability of fresh water</li> <li>• Neotropical migrant use</li> <li>• Ongoing seagrass restoration project on island #87</li> <li>• Presence of exotic vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Predator control and monitoring</li> <li>• Limited manipulation for enhancement of recreational use *</li> <li>• No seasonal closures</li> <li>• Development and protection of fresh water sources</li> <li>• Protection of shrub/tree habitats</li> <li>• Development of guidelines for boat access and visitor use</li> </ul>
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Figure 6. Placement Areas 183 to 185



Figure 7. Colonial Waterbird Colonies on and adjacent to Placement Area 183

**Dredged Material Management Plan**

**PA 183** – (71+600 – 77+500) This PA is located on the east side of the GIWW and is within the boundary of the PINS. It consists of three islands in the middle and parts of two other islands, one at each end of the PA. The mounds are covered with brush and the island at the north end has a fringe of trees around the perimeter of the mound. PINS is doing a vegetation study at this site. There are no cabins on the islands. It was used three times between 1949 and 1995, with an average per-cycle discharge of 115,008 cy. The ICT decided the best management option is to pump some of the maintenance material (consisting of about 80% sand) over the top and to the east side of the mounds at the south end of the PA to manipulate vegetative cover and enlarge the islands to the east for bird use. It may also be desirable to pump some material to the east side of the other islands, but the timing and need for this will be determined during coordination with the ICT and PINS. Material that cannot be utilized in PA183 will be pumped to PA184. The amount of material to be used at this site will be determined during preparation of disposal plans for each dredging cycle and in coordination with the ICT and PINS.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305A      Old Name: (51) NM103-OM51

Ownership: PAIS

Cabins: none

Predators: coyotes and fire ants

Elevation: 4m

Substrate types: large shell, sand and silt

Description: This large round island was formed in 1947 and/or 48 from deposits at each end. For further information on the history of this island see Chaney et al. (1978). A large dike was constructed on the eastern side of the island around 1970 and subsequently filled with spoil. There are oleanders, false willows and salt cedars on the eastern slopes of the dike and a palm tree at the northern end. There is a pond surrounded by cattails on the southwestern corner. Other vegetation on the slopes is cord grass, false ragweed, necklace pod, sea ox-eye and various other grasses. The southern part of the interior of the dike contains a large area of rough almost bare ground. Numerous false willows dot its surface and grade into a pond at the northern end. A variety of herbaceous plants are found here.

Birds that have nested - pairs for last five years:

614-305A	1997	5/20/98	5/20/99	5/15/00	5/29/01
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CATE	not surveyed				
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Significant history: In 1977, shortly after the deposits in the dike ceased, a pair of caspian terns successfully nested on the bare ground. Least terns and skimmers attempted to nest that same year, but were not successful. Various large birds have used the trees on the island as loafing sites.

Discussion and Management: This island and its string of northern neighbors are not good islands to manage for colonial waterbirds. Coyote tracks have been seen every year on these islands since 1988. Raccoon tracks were discovered last year. Several predators were trapped and removed in past years, but did not prevent their return. Keeping these islands free of them would require too much time, effort and cost. These islands could be good for tropical migrants, if more trees and shrubs were planted. The presence of the fresh water helps.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305B Old Name: (52) NM101A-OM49A

Ownership: PAIS

Cabins: none

Predators: coyotes and fire ants

Elevation: 2.4m

Substrate types: sand, shell and silt

Description: This island is very similar to others in this group in formation and changes through the years. The eastern half of this island has been formed into a diked spoil area. There are salt cedars and oleanders surrounded by agave and prickly pear on the non-diked western portion. The rest of the vegetation is similar to that on the other islands in this group. The interior of the dike contains areas of rough bare ground dotted with false willows and herbaceous plants.

Birds that have nested - pairs for last five years:

614-305B	1997	5/19/98	5/20/99	5/15/00	5/29/01
GBHE	Not surveyed	1	1		

BCNH
CATE
FOTE
GBTE
LETE
BLSK

Significant History: In 1973 4 pair of gull-billed terns, 45 pair of least terns and 4 pair of black skimmers nested on the new spoil in the diked area. In later years the terns returned once and the skimmers twice. Caspian and forster's terns tried nesting here during 2 years, the former in 1977 and the latter in 1985. The black crowned night-herons and great blue herons that have been reported are probably loafers resting in the trees.

Discussion and Management: Again, the control of the predators would be a massive undertaking and not worth the effort. Trapping and removal should be made in the winter on a yearly basis. This might help to keep the numbers down. The oleanders should be removed and mesquites and shrubs planted. This could help the migrants. The island could be a good one for PAIS to develop into a recreational island for the public. There is a deep-water channel that ends at the shore on the southwestern corner of the island. Opportunities for camping, picnicking, bird watching, etc. would be available.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305C Old Name: (53) NM101-OM49

Ownership: PAIS

Cabins: none Predators: coyotes and fire ants

Area: Length; Width: Elevation: 2.8m

Substrate types: sand, shell and silt

Description: This is a large mostly barren island except for a large grove of leadball trees just west of the central crown. The trees are surrounded by prickly pear and there are scattered clumps of it in the higher areas. There is a salt cedar on the northwestern corner and scattered leadball trees on the eastern side. The lower areas are covered with the salt tolerant species that are characteristic of the other islands. This and the previous island are joined together by a broad band of bare sand with some scattered halophytes.

Birds that have nested - pairs for last five years:

614-305C	1997	5/20/98	5/20/99	5/15/00	5/29/01
GBTE	Nit surveyed				

LETE					
BLSK					

Significant History: The nesting history dates back to the time in the early days of its formation when there was little vegetation. The earliest records, 1973 and 1977, show gull-billed terns, least terns and skimmers nesting here in small numbers, but never in later years. Coyote tracks were present in 1980 and later surveys, but could have been overlooked on earlier surveys.

Discussion and Management: Recommendations for this island relative to colonial waterbirds are similar for this entire group of islands. Control the predators, plant more native trees and shrubs and closely monitor or do nothing.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305D Old Name: (54) NM97A-OM47A

Ownership: PAIS

Cabins: none Predators: coyotes, raccoons and fire ants

Elevation: 1.2m

Substrate types: Sand, shell and silt

Description: This is a separate island from the others in this group of islands. It was formed in 1947 and 48 as were most of the others in this area. For further early history of this and the following island see Mendoza (1974), Ortiz (1974) and Chaney et al. (1978). Presently this low island contains some salt cedars on the northern and western slopes of the central crown of the island. The rest of the vegetation is similar to that of the other islands in this group.

Birds that have nested - pairs for last five years:

614-305D	1997	5/20/98	5/20/99	5/15/00	5/29/01
GBTE	not surveyed				
LETE					
BLSK					

Significant History: The only birds to use this island for nesting purposes did so when there were large amounts of bare ground and little vegetation. Gull-billed terns, least terns and skimmers were found here in 1973, skimmers in 1976 and least terns in 1977. The

latter two were found again in 1985. With the maturation of the salt cedars, great blue herons, black crowned night-herons and great egrets have been seen resting and roosting in them.

Discussion and Management: Raccoons are a recent addition to the predator populations on these islands. Recommendations for this island are the same for all islands in this group, control the predators.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305E Old Name: (55) NM97-OM47

Ownership: PAIS

Cabins: none Predators: coyotes, raccoons and fire ants

Elevation: 1.5m

Substrate types: sand, shell and silt

Description: This island is just north of the previous one and is also separate. The western slope of the crown contain several scattered salt cedars, the northern slope a stand of leadball trees surrounded by prickly pear. There are scattered leadball trees on the eastern side and prickly pear near the central summit. The remaining vegetation is like that of other islands in this group.

Birds that have nested - pairs for last five years:

614-305E	1997	5/20/98	5/20/99	5/15/00	5/29/01
LETE	not surveyed				

Significant History: Early records for this island began in 1980 when coyote tracks were found. It was not surveyed again until 1992. Four pairs of least terns were counted on the bare ground in 1993. Subsequently, only coyote tracks were found.

Discussion and Management: The vegetation and bare ground on all of these islands is good for nesting of colonial waterbirds. Predators must be controlled before the birds will move in.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-305F Old Name: (56) NM95-OM45

Ownership: PAIS

Cabins: none Predators: coyotes and fire ants

Elevation:

Substrate types: sand, shell and silt

Description: This is a small completely diked island, with low areas to the south and west that lie outside the dike. There is mesquite on the northern rim, the crown of the interior and the eastern lower area on the outside of the dike. The interior of the dike contains a number of brasil shrubs. The rest of the vegetation is grasses, forbs and halophytes.

Birds that have nested - pairs for last five years:

614-305F	1997	5/20/98	5/20/99	5/15/00	5/29/01
GBTE	not surveyed				
LETE					
BLSK					

Significant History: The only birds to nest here did so in 1993. Eleven pair of gull-billed terns, 46 pair of least terns and 35 pair of black skimmers constructed nests on the barren ground inside the dike.

Discussion and Management: Coyote tracks have been found since 1980 and their presence influences any management suggestions for this island.

#### Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
95	None	183	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Heavily vegetated with herbaceous vegetation, grasses, shrubs and large trees</li> <li>• Exotic vegetation present (Brazilian Pepper and <i>Tamarisk</i>)</li> <li>• Easily accessible to predators traveling from islands north of the park and to fire ants</li> <li>• Documented presence of predators</li> <li>• Last documented CWB nesting occurred in 1982 with little prior nesting</li> <li>• Unique island with an 8-foot berm around 90% of island and an open edge around 10% of the island on the NE side</li> <li>• Access channel located on northern end of island</li> <li>• Areas of fresh water present most of the time</li> <li>• Habitat suitable for neotropical migrants</li> <li>• Minimally productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Predator access and presence</li> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• Neotropical migrant use</li> <li>• Hindrance of terns and skimmers by berm</li> <li>• Presence of exotic vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Predator control and monitoring</li> <li>• Limited manipulation for enhancement of recreational use *</li> <li>• No seasonal closures</li> <li>• Protection of shrub/tree habitats</li> <li>• Development and protection of fresh water sources</li> <li>• Development of guidelines for boat access and visitor use</li> </ul>

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
97-103	None	183	<ul style="list-style-type: none"> <li>• Man-made islands</li> <li>• Heavily vegetated with herbaceous vegetation, grasses, shrubs and large trees</li> <li>• Exotic vegetation present (<i>Tamarisk</i>, <i>Oleander</i>, <i>Lucina</i>, and <i>Date Palm</i>)</li> <li>• Easily accessible to predators traveling from islands north of the park and to fire ants</li> <li>• Documented presence of predators</li> <li>• Last documented CWB nesting occurred in the mid-1980's</li> <li>• Access channel located on southern end of island #101</li> <li>• Remnants of berm around W side of island #103</li> <li>• Substrate is mostly silt and won't build like sand</li> <li>• Habitat suitable for neotropical migrants</li> <li>• Minimally productive rookery islands</li> </ul>	<ul style="list-style-type: none"> <li>• Predator access and presence</li> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• Availability of fresh water limited to nearby island</li> <li>• Neotropical migrant use</li> <li>• Hindrance of tern nesting on island #103 due to partial berm and height of island</li> <li>• Presence of exotic vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Predator control and monitoring</li> <li>• Limited manipulation for enhancement of recreational use</li> <li>• No seasonal closures</li> <li>• Development and protection of fresh water sources</li> <li>• Protection of shrub/tree habitats</li> <li>• Deposition on and/or removal of dredge material from island #103 to level height of island, eliminate berm, and create gentle SE slope to the water *</li> <li>• Development of guidelines for boat access and visit or use</li> </ul>

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

**PA 184** – (79+000 – 83+000) This PA is located on the west side of the GIWW. The PA is located outside the PINS boundary and consists of three islands, the largest located at the north end of the PA. The islands consist of a mosaic of patches of vegetation and bare ground. It was used four times between 1949 and 1995, with an average per-cycle discharge of 84,640 cy. The ICT decided the best management option is to pump the maintenance material (consisting of an average of about 7% sand) over the crest to the west side of the islands to avoid coastal cabins, if possible, and avoid runoff onto seagrasses adjacent to the islands. However, since this PA will receive maintenance material from its designated reach of the GIWW, plus the overflow from the reach designated for PA183 if determined necessary by the ICT and PINS, avoidance of the coastal cabins may not be possible. Sixteen cabins inside the PA and 9 cabins outside the PA may be affected by this management plan. There is no bird management plan recommended for this PA. Emmord’s Hole, located west of the PA, will be used only if the ICT determines there is a compelling need for it.



Figure 8. Colonial Waterbird Rookeries on and adjacent to Placement Area 185

### Dredged Material Management Plan

**PA 185** – This PA is located on the east side of the GIWW roughly between Channel Stations 84+500 and 88+500 and is within the boundary of the PINS. The PA consists of four islands with the lower two almost, if not completely, coalesced into one large island. The central mound on each island is covered with brush. There are no cabins in this PA. It was used six times between 1949 and 1995, with an average per-cycle discharge of 104,431 cy. The ICT decided the best management option is to place some (if not all) of the maintenance material from the reach designated for this site on the east side of the lower two islands to build up the beach. The maintenance material consists of an average of about 58% sand. Care must be taken to avoid filling in the wide channel between the northern island and South Bird Island northeast of the PA, as well as the small boat channel connecting Bird Island Basin to the GIWW. If a levee is used to keep maintenance material out of the small boat channel, it will be flattened if it does not erode on its own after use. Material that cannot be utilized in PA185 will be pumped to PAs 184, 186, or Emmord's Hole. A determination of which disposal site or sites will be used will be made during coordination with the ICT prior to each dredging cycle. The ICT also determined it was necessary to extend the southern boundary of the PA to include all of the southernmost island to increase the size of the disposal area. The USACE will consult with the PINS and ICT about placement location and quantities for each dredging operation.

### **Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-341A Old Name: (45) NM117A-OM57A

Ownership: PAIS

Cabins: none Predators: coyotes, badgers and fire ants

Elevation: 3m

Substrate types: sand and shell

Description: This is one of four islands, that are more or less joined together by spoil deposition, located just north of the bird island basin channel. Several spoil deposits have been made on this large island. Formation and depositional history of this and the following three islands can be found in Chaney et al. (1978). Presently, there are bare areas on the northern and northeastern parts. The rest of the island is densely vegetated with sea ox-eye, prickly pear, sea lavender, pigweed, cord grass, false ragweed, saltgrass, lantana, camphor daisy, indian blanket, and scarlet pea. Around the margins of the island there is wolfberry and the typical halophytes. A line of partially dead salt cedars extends across the center of the island and another group is present on the southwestern corner. Near the latter there is a large stand of mesquite. A large mesquite and several granjenos are growing on the northwestern corner. It is

in these trees that the great blue herons, black crowned night-herons, great egrets, cattle egrets, roseate spoonbills and some snowy egrets are nesting. The other large wading birds are nesting in or on the sea ox-eye and prickly pear.

Birds that have nested - pairs for last five years:

614-341A	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
GBHE	6	8	6	12	16/8N
LBHE	8	30	30	6	16
BCNH	2	7	6	2	3
TRHE	150	174	108	40	48
GREG	2	12	14	12	5
SNEG	150	200	50	51	26
REEG	75	82	28	31	8
CAEG	102	70	50	34	
ROSP	6	6	7	12	12
WFIB	320	22	4	2	
WHIB	4	10	8	9	
GBTE					
BLSK					
LAGU	805	1260	1225	420	357

Significant History: Individual records for this island, since 1973, have shown that a great variety and number of birds have heavily occupied this island. During several different years as many as 82 reddish egrets, 200 tri-colored herons, 200 snowy egrets and 320 white-faced ibis have nested in the sea ox-eye and prickly pear. The 82 reddish egrets and 320 white-faced ibis are more than on any other island in the upper Laguna Madre. White ibis made their first appearance in this area on this island in 1977, when 3 nests were found. Their numbers have increased in more recent years. The gull-billed terns and skimmers were counted once on the bare sand at the northern end of the island in 1982. Laughing gulls have always been present in high numbers, usually more than 1000 pairs. The number of species and pairs has decreased in recent years. Most of those that were counted were either in the trees or nesting in a dense stand of sea oxeye and prickly pear on the south central part of the island. The density of the prickly pear would prevent the approach of any predator.

Discussion and Management: This island is one of the more important ones in the upper laguna. A badger and coyote tracks have been seen during census period on this island. It should be carefully monitored every year for predators before and during the nesting

season. Tracks could be easily seen on the bare moist sand between this and the adjacent northern island. If found, the predator should be captured and removed. The target species for the island should be the herons, egrets, spoonbills and ibises. Vegetation on the island suffered as a result of the drought. New trees and bushes should be planted and selective removal of some of the prickly pear should take place. Any action to discourage the nesting of laughing gulls should be taken. Signs that keep people 100m from the island year-round should replace those that are present. Disturbance, during census counts should be kept at a minimum.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-341B      Old Name: (46) NM115-OM57

Ownership: PAIS

Cabins: none                                      Predators: coyotes and fire ants

Elevation: 6.7m

Substrate types: shell and sand

Description: This is the center island of three that have been joined or almost joined by deposits between them, near marker 101. There are some bare areas at the northern edge of the island and on elevated deposit sites at the northeastern and southeastern corners. Between these 2 high points there is a low algal flat connected to the northern bare area by a narrow channel. Between this and the southern island there is a large bare area with scattered halophytes. The vegetation is very similar to that of the preceding island. The ridgeline of the original island contains a dense stand of mesquite, scattered oleanders and false willow. At the northeastern end of the island there is a large clump of salt cedars. Around these trees there are extensive growths of prickly pear that grade into sea ox-eye, shore grass, wolfberry and various halophytes.

Birds that have nested - pairs for last five years:

614-341B	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
GBHE	6	12	5	6	8
LBHE			5	2	
BCNH	10	10	10	8	1
TRHE	12	28	32		14
GREG	10	25	28	8	13
SNEG	28	45	16		40
REEG	54	35	20		10
CAEG	25	12	4		10
WHIB	20	1	1		

WFIB	130	14	1		
ROSP	15	22	30	30	22
CATE					
ROYT	830	480	700		
SATE	6	28	86		
GBTE		1	13		
SOTE		1			
BLSK					
LAGU	595	770	980	560	420

Significant History: The history of this island is similar to the preceding one, the same number of species but not as many individuals. The only differences are the greater number of black crowned night-herons, the presence of a single pair of sooty terns and the many royal and sandwich terns. The royal and sandwich terns appeared between the two islands when spoil was deposited there. In 1973, 2500 royal and 2000 sandwich terns were counted on the bare ground. In 1978, PAIS personnel counted 7000 sandwich terns, which must be the result of an extra 0 added to the 700 that were present. That many sandwich terns have never been recorded for the entire upper Laguna Madre. In later years, the terns moved to the bare areas on the summits of the 2 eastern high points. Their numbers and occurrence vacillated in later years, probably due to the presence of predators. The great blue herons, black crowned night-herons, great egrets, some snowy and cattle egrets nested in the trees, the others on the sea ox-eye, prickly pear and ground. Laughing gulls nested on the island in large numbers during every year since the beginning of individual island records in 1973. The loss of the terns and skimmers and the reduction in numbers of the other birds during the last 2 years is probably due to visits of predators.

Discussion and Management: Management practices, for this island, are almost identical to the preceding one. The island should be closely monitored for predators before and during the nesting season. The bare-ground nesters, i.e. terns and skimmers should be the target species here. The encroachment of plants onto the bare ground should be checked with Roundup or by mechanical means. If the former is used, it should be done shortly before the nesting period for the involved species. If done too early, re-growth will occur. The oleanders and false willows should be replaced with mesquites and native shrubs. The extent of the prickly pear should be reduced, leaving stands on which platforms have been erected in the past.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-341C Old Name: NM (47) 113A- OM55A

Ownership: PAIS

Cabins: none

Predators: coyotes

Elevation: 3.5m

Substrate types: shell and sand

Description: This island has not been deposited on as many times as the previous two and as a result has retained its round shape. The eastern and western sides slope up to a narrow ridge with a central summit. The summit contains dense growths of prickly pear with scattered lantana, living and dead. There is scattered false ragweed and wild indigo that grades on the slopes into more prickly pear, sea ox-eye, saltgrass, shore grass and wolfberry. There are thick stands of halophytic vegetation at the shore. On the southern lower areas there are 10 young salt cedars and one sprawling mesquite nearer the center. Fifteen meters north of this there are 4 large mesquites clumped together. There is indian blanket and primrose here and one isolated salt cedar on the north end. There is a small amount of bare ground on the northern and southern margins.

Birds that have nested - pairs for last five years:

614-341C	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
AWPE					
GBHE	7	3	4	8	7
LBHE					
BCNH	24	8	7	4	10
TRHE	6		36		25
GREG	22	16	16	4	19
SNEG	12	1	1		10
REEG	30	1	6		12
CAEG	14				2
WHIB	5				
WFIB	50		5		
ROSP	15	12	12	20	12
GBTE					
SOTE					
BLSK					
LAGU	840	630	525	175	280

Significant History: The same species that nested on island 614-341A have also nested here with two exceptions. In 1981, 98 white pelicans nested here; 25 returned the next year. A pair of sooty terns nested here in 1973. Nesting by the other species is similar to that on the other islands; great blue herons, black crowned night-herons, roseate spoonbills, great, cattle and some snowy egrets in the trees; tri-colored herons, reddish and snowy egrets, ibises and laughing gulls on the sea ox-eye, prickly pear or the ground. Black crowned night-herons nested here in greater numbers than on the other 2 islands. Tracks of a coyote were found on this island in 2000, which would explain the lower numbers of nesters during that year.

Discussion and Management: This is another good island in this area of the Laguna Madre. It must be kept free of predators by monitoring it closely prior to and during the nesting season. If tracks are found, traps should be set to remove the predator from these islands. Herons and egrets should be the target species here. More trees and shrubs should be planted. Remove most of the prickly pear and allow it to be replaced by woody herbaceous plants.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-341D      Old Name: (48) NM 113-OM55

Ownership: PAIS

Cabins: none

Predators: coyotes and fire ants

Elevation: 2.0m

Substrate types: shell, sand and silt

Description: This island, east of marker 113, is more widely separated from the other three and is not as high. There is a small bare area on the northern margin and a large one on the southern side. The latter often contains water during high tides. The center of the island contains 2 large stands of trees that blend together, the western one is a very large mesquite and the eastern one is many popinac or leadball trees. The latter are regrowing after the freeze in 1987. These trees are surrounded by very dense growths of prickly pear in which there is scattered sea ox-eye. The prickly pear and sea ox-eye patches extend to the north almost to the margin of the northern point. There is an isolated popinac tree near the southern margin of the vegetation. False ragweed and halophytes are growing around the margins of the prickly pear and sea ox-eye.

Birds that have nested - pairs for last five years:

614-341D	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
AMWP					
GBHE	22	8	10	12	7
LBHE	12	8	3		2
BCNH	6	2	14	12	2

TRHE	34	24	40		70
GREG	42	35	42	18	25
SNEG	44	6	6	2	20
REEG	52	12	9		10
CAEG	75		2		2
ROSP	33	26	16	20	12
WHIB			3		
WFIB	66	1	2		
GBTE					
BLSK					
LAGU	840	840	980	560	245

Significant History: This island was formed between April 1947 and March of 1948. For further early development of the island see Chaney et al. (1978). Examination of early PAIS records (1975) indicate that only the trees and the bare ground were being nested on. Seven great blue herons, 2 snowy egrets and 361 pair of cattle egrets were nesting in the trees and 2 pair of gull-billed terns and skimmers were nesting on the bare ground. Because of a tick infestation on white pelicans on South Bird Island or the presence of coyotes there, white pelicans moved to this island to nest on the bare ground beneath the popinac trees in 1975. Some continued to nest here in later years, 35 in 1976, 120 in 1977, none recorded by PAIS personnel in 1978, 24 in 1979, 144 in 1980 and 42 in 1990. Most had moved to island 614-345 by 1991. Cattle egrets were the first tree nesters to fill the trees in the early years, over 400 pairs at times. In 1978 PAIS recorded 1700 pairs, which is questionable since only 150 were present the preceding year and 160 the next year. Their numbers have drastically dropped in the last 5 years. Black crowned night-herons have followed the same pattern, large numbers in the early years and few numbers later due in part to the denuding of the popinac trees by the freeze of 1987. Reddish egrets and tri-colored herons have nested in goodly numbers throughout the years by nesting in the prickly pear and sea ox-eye. Nine pairs of little blue herons appeared in this area on this island in 1983. This species has continued to nest here, usually in the trees. The first gull nesting occurred in 1977 with 49 pair present. They have increased in later years to almost 1000 pairs at times. The reduction in numbers of all species in 2000 was due to the presence of coyotes on the island as evidenced by tracks. No tracks were found in 2001.

Discussion and Management: This island should be managed for the herons, egrets, ibises and spoonbills. More mesquites could be planted to replace the popinacs, if they are again frozen. Some of the prickly pear should be selectively removed. Dredged material should not be placed on this island. Large signs should be erected that would keep persons off of the island from January through

October. Above all else, the island should be systematically monitored year-round for predators, especially during the early nesting season. If found, they should be removed.

Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
111-117	614-341	185	<ul style="list-style-type: none"> <li>• Man-made islands</li> <li>• Heavily vegetated with herbaceous vegetation, grasses, shrubs, large trees, and heavy concentrations of prickly pear cactus</li> <li>• Exotic vegetation present (<i>Tamarisk</i> and <i>Lucina</i>)</li> <li>• Accessible to predators traveling from the barrier island or resident on these islands and to fire ants</li> <li>• Documented presence of predators</li> <li>• Last documented CWB nesting occurred in 2001</li> <li>• Most productive rookery islands in the park</li> <li>• Nesting habitat includes bare ground for terns and skimmers, trees and shrubs for herons, herbaceous vegetation for egrets, gulls, and some terns</li> <li>• Habitat suitable for neotropical migrants</li> <li>• Highly productive rookery islands</li> </ul>	<ul style="list-style-type: none"> <li>• Predator access and presence</li> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• No availability of fresh water</li> <li>• Neotropical migrant use</li> <li>• Presence of exotic vegetation</li> <li>• Presence of large clusters of prickly pear as obstacles for CWB nesting</li> <li>• Human disturbance</li> <li>• Impacts of deposition on existing habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Predator control and monitoring</li> <li>• Year-round closure to visitor access</li> <li>• Installation of nesting platforms</li> <li>• Development and protection of fresh water sources</li> <li>• Deposition of dredge material on E side of #113 and on center of #115 *</li> <li>• ON-SITE presence of an NPS staff member REQUIRED during ANY deposition activities</li> </ul>



Figure 9. Placement Areas 186, 187 and 188



Figure 10. Colonial Waterbird Rookeries on and adjacent to Placement Area 187

Dredged Material Management Plan

**PA 186** – (90+000 – 94+500) This PA is located on the west side of the GIWW. The PA consists of one large island on the north end with six cabins and a series of very small islands at the south end. There is a narrow submerged ridge connecting the islands with seagrass located primarily on the east side. This PA was used 10 times between 1949 and 1995, with an average per-cycle discharge of 126,495 cy. The ICT decided the best management option is to extend the PA boundary about 1,000 feet to the west to include deep water in Emmord’s Hole and pump the maintenance material (consisting of an average of about 34% sand) to the deeper water west of the PA to avoid seagrass. This also would avoid the cabins on the island in the northern portion of the PA.

Dredged Material Management Plan

**PA187** – This PA is located on the east side of the GIWW roughly between Channel Stations 95+700 and 101+300 and is within the boundary of the PINS. The PA consists of a ridge of dredged material in the northern 2/3 of the PA with small islands at each end. Several small areas of the ridge between the islands are slightly emergent. The PA is surrounded by deep water and has seagrass growing along the shallow ridge. It was used 13 times between 1949 and 1995, with an average per-cycle discharge of 183,893 cy. The ICT decided the best management option is to pump some of the maintenance material (consisting of an average of about 24% sand) on top of the emergent mounds on the south side of the north island and the north side of the south island to increase their size and enhance them for bird nesting. Dredged material will not be placed on the ridge along the middle of the PA to avoid the seagrasses and prevent the islands from coalescing. There is a Texas Parks and Wildlife Department artificial reef in PA 187 at its southeast boundary. This reef has been in place since 1962 and may no longer be present. The ICT decided to put excess material in Emmord’s Hole only if there is no other option available.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-342A Old Name: (43) NM131-OM65

Ownership: PAIS

Cabins: None Predators: fire ants

Elevation: 90cm

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is another small island that lies east of the GIWW near marker 131. Sand is being deposited on the eastern margin and each end of the vegetated portion. Sea purselane covers 90% of the island. There is pigweed around the margin and some wolfberry and sea ox-eye on the higher areas.

Birds that have nested - pairs for last five years:

614-342A	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
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TRHE		1			
SNEG					
REEG					
WFIB					
CATE	15		70	6	2
ROYT	22	4/2P	200	460	
SATE			10	180	
FOTE					
GBTE		16/11P			
BLSK		38/19P			4/2P
LAGU	14/10P	120/84P	45/32P	4/3P	6/4P

Significant History: Our records begin in 1977 with 62 nests of forster's terns, 14 nests of gull-billed terns and 30 pair of skimmers. Six pair of laughing gulls in 1979 and 12 pair of caspian terns in 1980 joined these bare-ground nesters. The number of caspian terns increased to a maximum number of 100 pairs that alternated or divided their numbers between this and the previous island. A few royal and sandwich terns nested here in later years. The first shrub nesters were 2 pair of tri-colored herons that nested in 1983. They, usually 2 or 3 pairs appeared intermittently throughout the years. One pair of white-faced ibis was present only in 1984 and a single pair of snowy egrets nested twice, once in 1989 and again in 91. One pair of reddish egrets was present in 1990 and again in 95.

Discussion and Management: This island should be maintained for nesting by the terns and skimmers. Removing some of the purselane and exposing more bare sand and shell could do this. Eliminate the fire ants on this and all of the islands on which they occur. Erect signs to keep people 100m from the shore year-round.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-342B Old Name: (44) NM127-OM63

Ownership: PAIS

Cabins: none

Predators: fire ants

Elevation: 1m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is another small island that lies east of the GIWW near marker 127. Sand is being deposited on the eastern margin and on a long spit on the south end of the island. Several large concrete blocks form the high point on the north end. Vegetation here is wolfberry and sea ox-eye. The rest of the island is covered with sea purselane, pigweed and glasswort. There are three deposit pits on the island.

Birds that have nested - pairs for last five years:

614-3343B	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
GBHE					
TRHE		1			
REEG					
CATE					
ROYT				2	
FOTE					26
GBTE	4	4		3	6
LETE					
SOTE	2				
BLSK		4	22	12	20
LAGU		70	11	6	7

Significant History: Formation and depositional history for this island can be found in Chaney (1978). A single nest of great blue herons was found in the sea ox-eye on the north end of the island and 23 scrapes of skimmers on the sand spit in 1976. The single nest was used the following year and again in 1988 and 90. A single pair of reddish egrets nested here in 1985. Single pairs of tri-colored herons used the island intermittently beginning in 1988 and ending in 1998. Small numbers of gull-billed terns nested here almost every year and skimmers in larger numbers were present every year. Thirty forster's terns were counted in the sparse vegetation at the southern end in 1989 and 26 were found there again in 2001. Small numbers of caspian terns were listed for several years beginning in 1980. Royal and least terns nested here only twice and in small numbers. The unusual birds were the sooty terns, a single pair in 1984 and 2 pair in 1998.

Discussion and Management: This island should be treated the same as the preceding one, maintained for nesting by the terns and skimmers. Removing some of the halophytes to expose more of the good shell and sand could attain this. The accretion of sand on

the southern spit should help the situation. Eliminate the fire ants on this and all of the islands on which they occur. Erect signs to keep people 200m from the shore year-round. Their tracks have been seen during censuses on several years.

Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
127, 131	614-342	187	<ul style="list-style-type: none"> <li>• Man-made islands</li> <li>• #127 is moderately vegetated with herbaceous vegetation; #131 is heavily vegetated with herbaceous vegetation</li> <li>• No exotic vegetation</li> <li>• Not accessible to predators due to isolation of islands, however fire ants are present</li> <li>• Last documented CWB nesting occurred in 2001</li> <li>• Nesting density has decreased with reduction in size of islands</li> <li>• #127 has reduced in length from over 1000 ft. to approximately 150 ft.; #131 has also been substantially reduced in size due to erosion</li> <li>• #127 has remains of cabin with concrete rubble at northern end</li> <li>• Moderately productive rookery islands</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• Human disturbance during nesting season</li> <li>• Susceptibility to erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal closure to visitor access Apr 1 – Sep 30</li> <li>• Installation of nesting platforms</li> <li>• Deposition of dredge material on S end of #127 and N end of #131 to create preferred size and shape *</li> </ul>



Figure 11. Colonial Waterbird Colonies on and adjacent to Placement Area 188

**Dredged Material Management Plan**

**PA 188** – (104+500 – 110+700) This PA is located on the east side of the GIWW and is within the boundary of the PINS. The lower 2/3 of the PA has a narrow submerged ridge of sediments in the center and a small narrow island at the north end of the ridge. The PA is surrounded by deep water with seagrass along the ridge. The island has a mosaic of brush and ponds. It was used 14 times between 1949 and 1995, with an average per-cycle discharge of 196,804 cy. The ICT decided the best management option is to pump maintenance material (consisting of an average of about 27% sand) on top of the emergent mounds on the island in the north portion of the ridge to increase the size of the island for bird use. PINS would like to see the island enlarged to about 1,200 feet in diameter. Emmord’s Hole would be used as an alternate site for excess material from this PA only if there is no other option available.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-343      Old Name: (42) NM141-OM69

Ownership: PAIS

Cabins: none                      Predators: fire ants

Elevation: 70cm

Substrate types: serpulid and coquina reef rock and cobble, sand and shell.

Description: This good long island lies east of marker 141. There is a surrounding berm and a lower area in the center. There are 4 high points on the eastern side that grade to the berm and to the low middle ground. There are 2 pits containing brackish water on the southern part of the island; a developing sand bar forms the southern tip. The vegetation consists of a lot of halophytic vegetation in the low area, mostly sea purselane that covers 30% of the island. There is saltgrass, wolfberry, false ragweed and a small amount of scattered sea ox-eye on the higher ground.

Birds that have nested - pairs for last five years:

614-343	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
GBHE					
LBHE					
TRHE		12	10	7	1
SNEG					
REEG	1	2	9	2	
WFIB					
CATE	16				

ROYT					
SATE					
FOTE	95		1	4	
GBTE	84	21	20		21
BLSK	20	12	28	2	16
LAGU	140	189	126	245	38

Significant History: Recorded occupation of this island dates to 1977 when 25 nests of gull-billed terns and 23 nests of skimmers were recorded. The number and kinds of birds increased in 1981 with the addition of the other terns and laughing gulls. Caspian terns were a fixture of this island from 1983 through 1997. More have consistently nested on this island than on any other in the upper Laguna Madre. The herons, egrets and white-faced ibis appeared in 1983 and 84. Since 1995 these shrub nesters have decreased, probably due to the increase to over 100 pair of laughing gulls each year. The lack of tri-colored herons and reddish egrets in 2001 could be the lack of rain and the death of the sea ox-eye on the higher areas.

Discussion and Management: This has been a good island for a variety of colonial waterbirds because of its isolation and protective signs. The signs should be modified to keep people 200m from the island year-round. It could be enlarged and enhanced with the deposition of good fresh dredged material. Mesquites and granjeno could be planted on the higher areas to attract the tree nesters. Fire ants on all the islands should be eliminated.

#### Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
141	614-343	188	<ul style="list-style-type: none"> <li>Man-made island</li> <li>Heavily vegetated with herbaceous vegetation</li> <li>No exotic vegetation</li> <li>Not accessible to predators due to isolation of island, however fire ants are present</li> <li>Last documented CWB nesting occurred in 2001</li> <li>Nesting density has decreased since 1997</li> <li>Remains of cabin (large concrete pad) located at center of island</li> <li>Contains two brackish ponds on south end</li> <li>Habitat suitable for neotropical migrants</li> <li>Moderately productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>Recreational access and use</li> <li>Decline in CWB nesting density</li> <li>Human disturbance during nesting season</li> <li>Susceptibility to erosion</li> <li>Lack of tree/shrub habitat</li> </ul>	<ul style="list-style-type: none"> <li>Seasonal closure to visitor access Apr 1 - Sep 30</li> <li>Installation of nesting platforms</li> <li>Deposition of dredge material on S end of island to create preferred size and shape *</li> </ul>

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
143	None	188	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Emergent with no vegetation</li> <li>• No exotic vegetation</li> <li>• Not accessible to predators due to isolation of island</li> <li>• Last documented CWB nesting occurred in 1987</li> <li>• Nesting density has decreased since 1981</li> <li>• Minimally productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity and density</li> <li>• Susceptibility to erosion</li> <li>• Lack of surface area</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal closure to visitor access Apr 1 - Sep 30</li> <li>• Deposition of dredge material to increase island to approximately 1,200 ft. in diameter to create preferred size and shape</li> </ul>

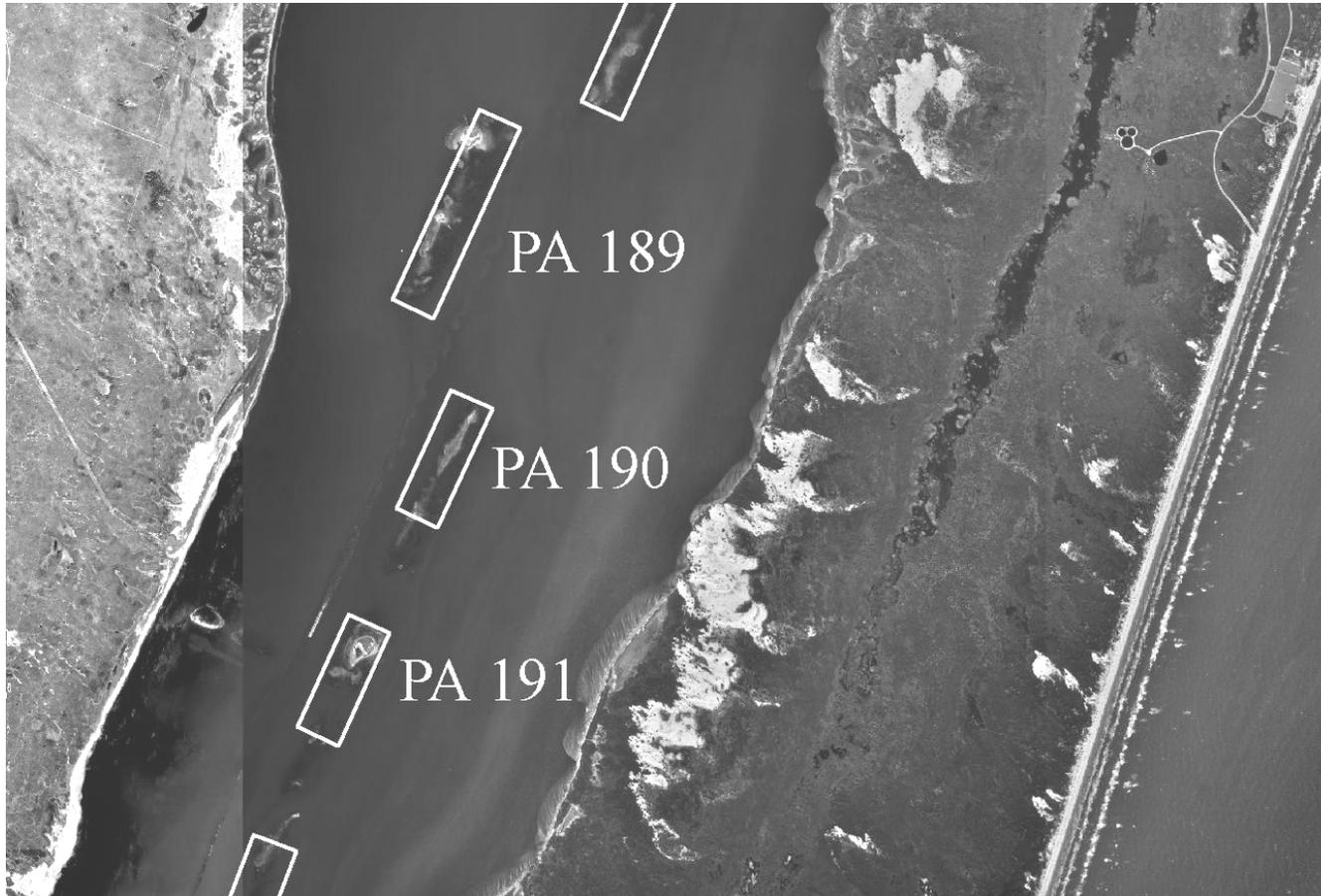


Figure 12. Placement Areas 189 to 191



Figure 13. Colonial Waterbird Rookeries on and adjacent to Placement Area 189

**Dredged Material Management Plan**

PA 189 – (111+800 – 116+500) This PA is located on the west side of the GIWW. The PA consists of a ridge of sediments with two islands, one located at the north end of the PA and a smaller island near the middle of the PA. However, the small island may have eroded away at this time. This PA is close to the mainland and is surrounded by deeper water with some areas of unvegetated bottom. Seagrass can be seen in the aerial photo along the shallow ridge, primarily on the western side of the PA. It was used 14 times between 1949 and 1995, with an average per-cycle discharge of 157,432 cy. The ICT decided the best management option is to follow the bird management plan and try to reestablish the southern island with dredged material for bird use. Because the material may not stack, the USACE will look into using a retaining system (sheetpile, geotubes, levees, etc.) to help retain material at the site. Also, because the PA receives a large amount of dredged material, especially if excess material from PA 190 is placed here, the ICT determined it may be necessary to extend the western boundary of PA 189 about 1,000 feet west at the north end and taper this new boundary back to the southwest corner of the PA, forming a triangular extension into deeper water to the west. The new area will allow the USACE to place the dredge pipe over the ridge and pump excess material to the west in deeper, unvegetated water. A diffuser will be used on the end of the pipe to prevent scour. There are two cabins on stilts in the water, one near each island, that may be impacted.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-348      Old Name: (40)-NB-NM154-  
Ownership: GLO  
Cabins:one Yellow House                      Predators: none  
Elevation: 70cm  
Substrate types: sand and shell

Description: This small island is located west of the GIWW marker 154. A large bright yellow house on pilings is situated within 30m of the eastern shore of this island. The vegetation is primarily halophytes and pigweed. There is shallow water encircling it, with deeper water toward the King Ranch shore. At the edge of this deep water there is a series of houseboats.

Birds that have nested - pairs for last five years:

614-348	5/21/97	5/19/98	5/20/99	5/15/00	6/1/01
GBTE	not			not	
BLSK	surveyed			surveyed	

Significant History: In early years there was a house on this island that affected the presence of birds. By 1988 the yellow house had replaced the one on the island and gull-billed terns and skimmers were nesting on the island. They nested here again in 1996.

Discussion and Management: This is a fairly good island except for the nearness of the house. Fresh spoil deposited in the center might attract ground nesters back to the island.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-344 Old Name: (41) NM152-OM72

Ownership: GLO

Cabins:one Predators: none

Area: Length: Width: Elevation: 1.2m

Substrate types: sand and shell

Description: This is a small island that was converted into a large one by the deposition of spoil on its northwestern side. It is on the western side of the GIWW near marker 152. The vegetation is low and dense except at the crown near the northeastern corner. There is a ring of bare ground around the southern margins of the recent spoil. The well-constructed cabin sits among the older vegetation on the eastern margin of the original island. The vegetation is typical of most of the younger islands, many halophytes, wolfberry, sea lavender, salt grass, false ragweed and pigweed.

Birds that have nested - pairs for last five years:

614-344	5/23/96	5/21/97	5/19/98	5/20/99	6/1/01
CATE			22		6
FOTE					
GBTE		11	18	9	15
LETE					
SOTE					
BLSK	21	19	34	65	32
LAGU	18	28	12	119	21

Significant History: Originally there was a commercial fisherman’s shack on the eastern margin of the island. He abandoned the shack in 1978, but left 2 house cats that kept the island free of nesting birds. The cats were removed the next year at the close of the

nesting year. In 1980 the terns and skimmers returned to the island in fair numbers. The dredged material was deposited in 1983 and the next year large numbers of each listed species nested. In the middle 1980's a new family, who had purchased the permit, were allowed to build the cabin and erect the long pier extending to the north. To reach their cabin, the occupants had to walk through the area where the birds were nesting. Fledging success was probably held to a minimum. The birds did return in 1995 and nested on the bare areas to the south, away from the cabin and the path to the pier. They continue to use this area.

Discussion and Management: This could be one of the better islands in this part of the lagoon. The cabin needs to be eliminated, trees planted and the vegetation managed. Cabin occupants should not be allowed to sell or transfer their permit to other persons. The present occupants of the island have indicated that they do stay away from the birds when they are nesting. Warning signs should be erected at the southern margin of the island.



Figure 14. Colonial Waterbird Rookeries on or adjacent to Placement Area 190

**Dredged Material Management Plan**

**PA 190 – (117+800 – 120+700)** This PA is located on the east side of the GIWW and is within the boundary of the PINS. The PA consists of a thin submerged ridge down the center of the PA with a small island at each end. Parts of the middle section of the ridge are emergent at high tide. It was used 11 times between 1949 and 1995, with an average per-cycle discharge of 114,168 cy. The ICT decided the best management option is to pump the maintenance material (consisting of an average of about 21% sand) on top of the islands at each end of the ridge to increase their size to about 1,200 feet in diameter for bird use. The PINS management plan calls for disposal on a 4-5 year or greater interval to allow seagrass to recover. The ICT decided that the 4-5 year interval between disposal operations would be accommodated in the DMMP to the extent practicable. Because past records show that dredging needs are sometimes more frequent, especially if storms pass through, the ICT will review the disposal needs for each dredging cycle to determine where and how much material to place at this site or alternate sites after taking into consideration the engineering needs as presented by the USACE. PA 189 could be an alternate site for some of the excess material. The USACE will coordinate with PINS and the ICT on vegetation manipulation once the islands are large enough to support vegetation. The unvegetated deeper water of Emmord’s Hole does not extend this far south on the west side of the GIWW, so there is no potential open water disposal area available in this reach.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-346      Old Name: (39) NM157-OM-75

Ownership: PAIS

Cabins: none

Predators: none

Elevation: 60cm

Substrate types: sand and shell

Description: This is another small island with a central core of primarily halophytic vegetation surrounded by bare sand and very little shell. It is located on the eastern side of the GIWW near buoy 157.

Birds that have nested - pairs for last five years:

614-346	1997	5/19/98	5/20/99	5/15/00	5/29/01
TRHE	not surveyed				
SNEG					
REEG					
CATE					7

ROYT			4		
FOTE					
GBTE		17		1	
BLSK		1	1	1	1
LAGU		1	3		

Significant History: Bare ground nesters were the first birds recorded here in 1981, a single pair of gull-billed terns and skimmers, 8 forster's and 44 caspian terns. These same species have continued to nest here, intermittently. The herons and egrets appeared in 1984 and 85, but rarely thereafter. This island is also slowly disappearing.

Discussion and Management: The addition of good spoil would greatly enhance this island. Enlargement would greatly benefit all the species of colonial waterbirds. A good substrate is needed as well as suitable vegetation. The island is in a good isolated location and free of predators. Signs should be erected and maintained.

Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
157-159	614-346	190	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Emergent with little vegetation</li> <li>• No exotic vegetation</li> <li>• Not accessible to predators due to isolation of island</li> <li>• Last documented CWB nesting occurred in 2001</li> <li>• Minimally productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational access and use</li> <li>• Susceptibility to erosion</li> <li>• Lack of surface area</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal closure to visitor access Apr 1 - Sep 30</li> <li>• Deposition of dredge material S of existing vegetation to increase island to approximately 1,200 ft. in diameter to create preferred size and shape</li> </ul>



Figure 15. Colonial Waterbird Rookeries on or adjacent to Placement Area 191

Dredged Material Management Plan

**PA 191** – (123+300 – 126+100) This PA is located on the east side of the GIWW and is within the boundary of the PINS. There is a large island (known as Pelican Island) at the north end with two shallow mounds of sediment immediately south of it and a small submerged mound at the south end of the PA. It was used eight times between 1949 and 1995, with an average per-cycle discharge of 95,129 cy. The ICT decided the best management option is to pump the maintenance material (consisting of about 5% sand) to the southeast side of Pelican Island in an existing small embayment to expand the southern end of the island. The intent is to expand the nesting area on the only nesting site for white pelicans in the Laguna Madre. When the island is at optimum size, future material can be pumped to PA 190 or PA 192. A training levee will be placed on the southwest and south sides of Pelican Island to retain the material in the embayment and let excess material flow out on the southeast side to form a sloping beach.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-345      Old Name: (38) NM163-OM81

Ownership: PAIS

Elevation: 1.2m

Cabins: None

Predators: fire ants

Substrate types: serpulid and coquina reef rocks, sand, shell and silt.

Description:

There is a high ridge encircling the northern end of the island. This slopes gently to sea level at the southern end, but more sharply at the northern end. The central portion of the southern bare area often contains water and blue green algae. The margins of the island contain the typical halophytic vegetation which grades into wolfberry and a narrow band of sea ox-eye.

The latter is more prominent on the northern end. There is a large patch of sunflowers on the western side of the summit. The summit is covered with an unknown plant and a patch of cowpen daisy. There is buffelgrass and 7 clumps of salt cedar each containing nesting platforms. There are 4 small mesquites 2 granjeno, several new salt cedars and 2 small rattlepod on the western slope of the island. The slope contains pigweed, cowpen daisy and Texas bermuda. Approximately 50% of the island is vegetated

Birds that have nested - pairs for last five years:

614-345	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
<b>AWPE</b>	390	470	380	470	450
<b>GBHE</b>	4	15	4	6	10
<b>LBHE</b>					

<b>BCNH</b>		1			
<b>TRHE</b>	1	3			
<b>GREG</b>	2	1			
<b>SNEG</b>					
<b>REEG</b>				1	
<b>CAEG</b>					
<b>WFIB</b>					
<b>ROSP</b>					
<b>CATE</b>				1	
<b>ROYT</b>					
<b>SATE</b>					
<b>COTE</b>					
<b>FOTE</b>	38				
<b>GBTE</b>	85	5		3	
<b>SOTE</b>					
<b>BLSK</b>	49	31	8	40	
<b>LAGU</b>	39	77	7	11	

Significant History: This island has become known as white pelican island since the pelicans moved here in 1982 from the South Bird Island vicinity. It has been one of the better islands as seen by the 20 different species of colonial waterbirds that have nested here. The hard freeze of 1987 killed most of the salt cedars and reduced the quantity and quality of the rest of the vegetation. As a result the number of herons and egrets began to decline until 1994, at which time most were gone. In addition to the freeze the number of pelicans began to increase. Their presence and activity probably drove the other birds that nested in the vegetation away. Only a few herons returned to build platforms on the skeletons of the salt cedars. The terns and black skimmers used the sand flats and sparsely vegetated ground on the southern end of the island, especially after the freeze. In 1988, 920 royal, 360 sandwich and 18 caspian terns nested here. Their numbers began to decline in later years and by 1992 all but skimmers and gull-billed terns had left the island. By this time the sandy areas in which they nested had silted in to form a hard foundation. Only the skimmers and gull-bill terns were left

to use the sandy extensions on the southern end. Only the pelicans and great blue herons nested in 2001. For information on the construction, spoil deposition and nesting see Chaney et al. (1978).

**Discussion and Management:**

The target species for this island is and should be the white pelican. During fall and winter the vegetation on the crown of the island should be removed or reduced. This is especially true for the grasses that are there. A few scattered mesquites could be planted to provide shade and serve as platforms for any returning herons and egrets. If good dredged material is available, there is no reason why it cannot be deposited on the southern slope where it meets the sand flat. This fresh material might bring back the sand nesters. PAIS needs to maintain large signs warning people not to come within 200m of this island year-round. Some effort should be made to eliminate the fire ant colonies that are on the crown of the island and into the remains of the salt cedars

**Padre Island National Seashore Draft PA Island Management Plan**

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
163 Pelican Island	614-345	191	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Heavily vegetated with herbaceous vegetation, grasses, shrubs, and small trees</li> <li>• Exotic vegetation present (<i>Tamarisk</i>)</li> <li>• Not accessible to predators due to isolation of island, however fire ants are present</li> <li>• Documented presence of fire ants</li> <li>• Last documented CWB nesting occurred in 2001</li> <li>• Used by one of only two annually-recurring nesting saltwater populations of White Pelicans in the United States</li> <li>• Importance to CWB nesting equals that of colony 614-342</li> <li>• Nesting habitat includes bare ground for terns and skimmers, small trees and shrubs for herons, herbaceous vegetation for White Pelicans, ibis, egrets, gulls, and some terns</li> <li>• Highly productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational access and use</li> <li>• Decline in CWB nesting diversity</li> <li>• Human disturbance</li> <li>• Presence of exotic vegetation</li> <li>• Impacts of deposition on existing habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Year-round closure to visitor access</li> <li>• Installation of nesting platforms</li> <li>• Deposition of dredge material on S side of island only with a gentle slope to the water *</li> <li>• ON-SITE presence of an NPS staff member REQUIRED during ANY deposition activities</li> </ul>

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
169	614-347	191	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Moderately vegetated with herbaceous vegetation</li> <li>• No exotic vegetation</li> <li>• Not accessible to predators due to isolation of island, however fire ants are present</li> <li>• Last documented CWB nesting occurred in 2001</li> <li>• Small surface area</li> <li>• Moderately productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational access and use</li> <li>• Human disturbance during nesting season</li> <li>• Lack of tree/shrub habitat</li> <li>• Susceptibility to erosion</li> <li>• Lack of surface area</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal closure to visitor access Apr 1 - Sep 30</li> <li>• Installation of nesting platforms</li> <li>• Deposition of dredge material on SW side to increase size of island to approximately 1,200 ft. in diameter</li> </ul>

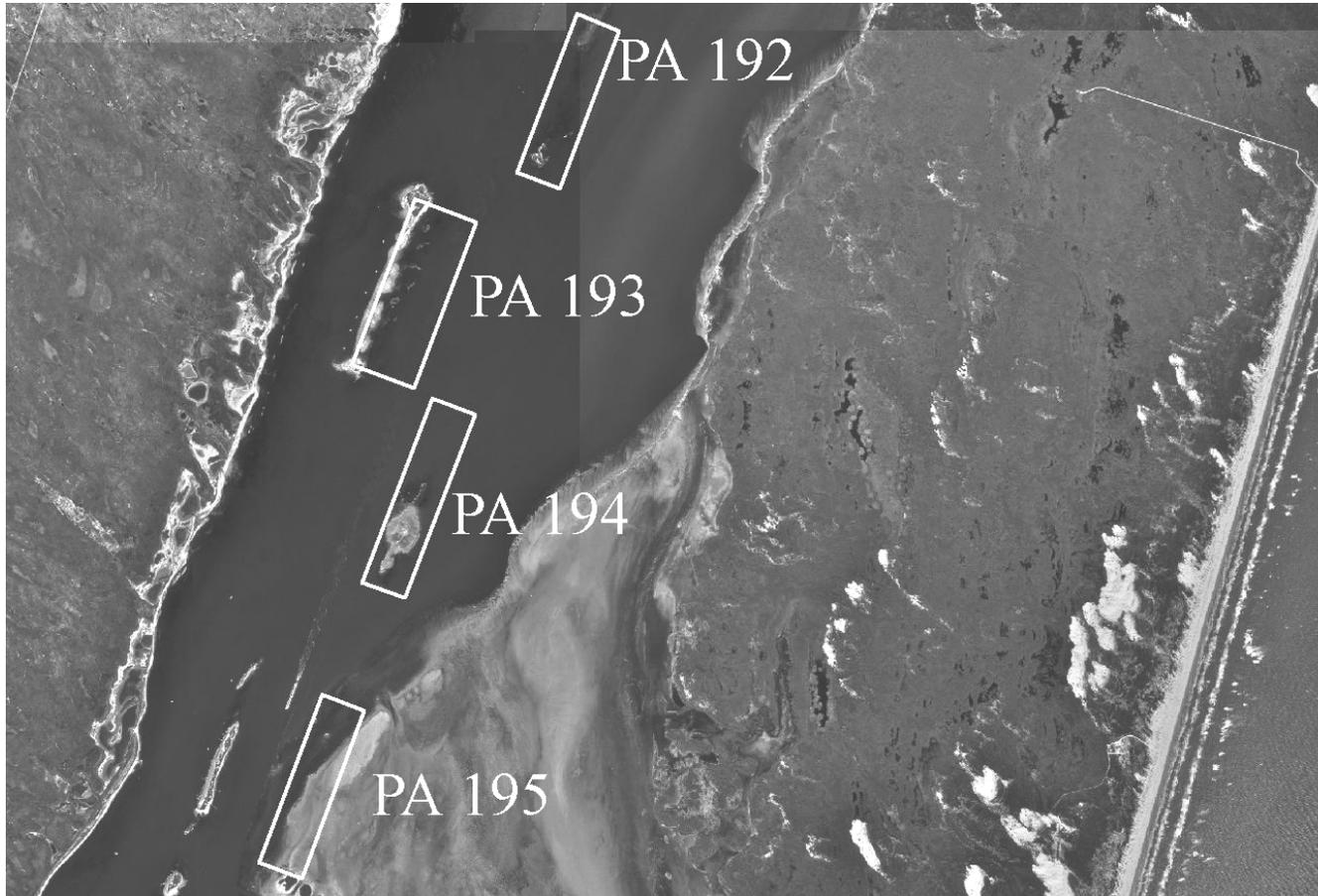


Figure 16 Placement Areas 192 to 195



Figure 17. Colonial Waterbird Rookeries on or adjacent to Placement Area 192

**Dredged Material Management Plan**

**PA 192** – (128+700 – 132+500) This PA is located on the east side of the GIWW and is within the boundary of the PINS. The PA consists of a narrow, submerged ridge of sediments in the center with several small islands at each end of the PA. The PA appears to be surrounded by deep water (probably nonvegetated) and has patches of seagrass along the shallow edge of the ridge. It was used nine times between 1949 and 1995, with an average per-cycle discharge of 80,009 cy. PINS has no management plan for this site. The ICT decided the best management option is to pump the maintenance material (consisting of an average of about 33% sand) on top of the emergent thin mounds and the shallow areas, with frequent moving of the discharge pipe to stay on top of the string to increase the size of these islands for bird use, while minimizing impacts to seagrass.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-347 Old Name: (37) NM169-OM85

Ownership: PAIS

Cabins: none

Predators: none

Elevation: 60cm

Substrate types: sand and shell

Description: This is a very small low island on the eastern side of the GIWW near marker 169. It is composed of a central area of halophytic vegetation surrounded by bare sand.

Birds that have nested - pairs for last five years:

614-347	5/23/97	5/19/98	5/20/99	5/15/00	5/29/01
GBHE					
LBHE					
TRHE					
SNEG					
REEG					
CATE					
FOTE		20	6		48
GBTE	4	42	24	2	41
BLSK	2	9	4	1	14

Significant History: This has been a perfect nesting area for the bare ground nesters throughout the years since 1983. However, herons and egrets have attempted to nest here, intermittently, but not after 1995. The island is eroding because of the lack of a good foundation and the heavy wave action from the prevailing southeast winds.

Discussion and Management: This could be made into a very good island with the deposition of serpulid and Coquina reef rocks, sand and shell. The isolated location is ideal. Signs should be erected and maintained.



Figure 18. Colonial Waterbird Rookeries on or adjacent to Placement Area 193

**Dredged Material Management Plan**

**PA193** – (133+800 – 137+800) This PA is located on the west side of the GIWW. The PA consists of a string of small islands, with the largest located at the north end. There are two cabins on the north side of the largest island just outside of the PA boundary. There are eight floating cabins or houseboats outside the western boundary of the PA. There is deep water immediately to the east and west of the PA. It was used nine times between 1949 and 1995, with an average per-cycle discharge of 87,218 cy. The ICT decided the best management option is to pump most of the maintenance material (no data on sand content) to the southeast side of the north island, gradually increasing the size of the island to the south, with the flow directed to the south. The north, west, and south boundaries of the PA will be moved out to include all of the islands for disposal use.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-363    Old Name: (36) NM178-OM86-  
 Ownership: GLO  
 Cabins: Two Diked                      Predators: fire ants  
 Elevation: 3.6m                              Substrate types: sand and shell

Description: This large diked island lies just west of the GIWW near marker 178. The two houses on the northeastern margin are well constructed and often used. The interior of the dike contains bare areas that are being covered with, grasses, false willows, camphorweed and several mesquites. The slopes of the dike contain cord grass and other grasses grading into the halophytic plants at the water’s edge. A long sandbar is being formed at the southeastern end of the island.

Birds that have nested - pairs for last five years:

614-363	5/21/97	5/19/98	5/20/99	5/15/00	6/1/01
GBHE					2N
BCNH					
LBHE					
TRHE					
REEG					
FOTE					
GBTE					

LETE					
BLSK					
LAGU					

Significant History: Use of the island dates to 1981 when several pairs of gull-billed terns, least terns and skimmers nested on the bare interior of the island. They were joined for one year by forster's terns in 1984 and for 2 years by laughing gulls in 1985. Great blue herons nested in the mesquite only during 2001. The other herons and egret tried to nest here only during 1989.

Discussion and Management: The presence of the cabins and the packing of the interior have deterred birds from reusing this island. There is little value in trying to manage this island under the present conditions. The deposition of spoil into the diked area and the elevation of the southern sand bar might bring back the ground nesters.



Figure 19. Colonial Waterbird Rookeries on or adjacent to Placement Area 194

Dredged Material Management Plan

**PA194** – (137+900 – 142+300) This PA is located on the east side of the GIWW and is within the boundary of the PINS. The lower half of the PA is shallow with one vegetated island holding a small freshwater pond. There is a small area of seagrass growing in the shallow water on the north and south ends of the island. Most of the upper half of the PA is unvegetated bottom in deep water. It was used 12 times between 1949 and 1995, with an average per-cycle discharge of 92,550 cy. The ICT decided the best management option is to pump the maintenance material (consisting of an average of about 55% sand) on top of the island to increase the size of the island for bird use and use training levees to help retain the material and prevent additional shoaling of the surrounding shallow areas. The training levees would also help minimize impacts to surrounding seagrass. The small pond could be recreated after disposal if it has filled in with sediments.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-360 Old Name: (35) NM187-OM91

Ownership: PAIS

Cabins: None

Predators: fire ants

Elevation: 90cm

Substrate types: serpulid and coquina reef rock and cobble, sand and shell.

Description: This long narrow island is the most southern nesting island that is protected by PAIS. There are several small rises formed of coquina reef rocks. Presently, the island margins and surrounding waters contain a large amount of soft sand and silt making it almost impossible to approach. The higher parts of the island contain some sea ox-eye, pigweed, wolf berry and a single patch of prickly pear. The remainder of the island is covered with halophytes, primarily sea purselane. There is a shallow sand and silt rim forming approximately 10m from the northern and eastern edge of the island.

Birds that have nested - pairs for last five years:

614-360	5/21/97	5/19/98	5/20/99	5/15/00	5/29/01
GBHE	10	14	4	6	4
LBHE					
TRHE		2	16	2	9
GREG					
SNEG		10	12	8	2
REEG		7	22	14	5

CAEG					
ROSP					2N
CATE	80	75	86	26	4
ROYT	4				60
FOTE				4	2
GBTE	97	19	6		7
BLSK	50	50		25	42
LAGU	17	49	84	28	210

Significant History: Individual records for this island date back to 1981 when 17 gull-billed tern nests and 50 pair of skimmers were counted. A single pair of reddish egrets and 14 pair of tri-colored herons used the sea ox-eye for nesting platforms the next year. Also ten pair of forster's terns joined the skimmers and gull-billed terns in the sea purselane at the southern end of the island. The kinds and numbers of herons and egrets began to increase in 1985 and remained through 1989. From 1989 until 1998 the numbers and kinds were intermittent, but resumed former numbers in 1998-2001. Caspian terns, in goodly numbers (102 in 1995) have used the island every year until 2001. The use of the low vegetation by the tree nesters (great blue herons, great egrets and spoon-bills) is unusual.

Discussion and Management: The value of this island is very evident from the number and kinds of birds that have and are nesting here. The island is isolated, free of predators, has a good foundation and contains the right kind of vegetation. The only improvement would be to enlarge it with the deposition of good contained spoil. If this were to take place, trees could be planted for the tree nesters.

Padre Island National Seashore Draft PA Island Management Plan

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			

Island ID			Island Characterization and Colonial Waterbird (CWB) Nesting History	Issues of Concern	Management Prescriptions
PAIS ID	TX Colonial Waterbird Colony	ACOE PA #			
187	614-360	194	<ul style="list-style-type: none"> <li>• Man-made island</li> <li>• Heavily vegetated with herbaceous vegetation</li> <li>• No exotic vegetation</li> <li>• Not accessible to predators due to isolation of island, however fire ants are present</li> <li>• Last documented CWB nesting occurred in 2001</li> <li>• High CWB nesting diversity</li> <li>• Large emergent area on SE corner of island</li> <li>• Contains one brackish pond at center of island</li> <li>• Potential for use by neotropical migrants</li> <li>• Highly productive rookery island</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational access and use</li> <li>• Human disturbance</li> <li>• Lack of tree/shrub habitat</li> <li>• Susceptibility to erosion</li> <li>• Impacts of deposition on existing habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Year-round closure to visitor access</li> <li>• Installation of nesting platforms</li> <li>• Deposition of dredge material on E and W edges of island, not directly on island, to avoid impacts to existing nesting habitat *</li> <li>• ON-SITE presence of an NPS staff member REQUIRED during ANY deposition activities</li> <li>• Protection and development of fresh water sources</li> </ul>



Figure 20. Colonial Waterbird Rookeries on and adjacent to Placement Area 195 and Proposed Extension

**Dredged Material Management Plan**

**PA195** – (145+000 – 149+000) This PA is located on the east side of the GIWW and half of it is within the boundary of the PINS. The site consists of shallow seagrass beds at the north end, tapering off to a thin fringe on the west side at the middle and south end of the PA. The majority of the PA is a very shallow bare sandy area that may be emergent at low tide. A series of four small, vegetated islands is located south and east of the PA along an old oil exploration canal connected to the GIWW. Two cabins are located between the islands and the canal. It was used 10 times between 1949 and 1995, with an average per-cycle discharge of 112,778 cy. The ICT decided the best management plan is to extend the boundary of the PA south to include the four islands, and the sand flat south of the oil company access channel, and east to include the turning basin since the intent is to fill the channel with dredged material. The maintenance material (consisting of an average of about 85% sand) will be pumped on top of the islands and the flow directed to the south to increase the size of the islands for bird use, while minimizing impacts to seagrass. This plan is compatible with the bird management plan which wants to build up the first, third, and fourth islands (from west to east) for bird use. Two cabins may be affected by disposal in this management plan. The ICT must determine the long-term effects of filling in the shallow area east of the PA since it may become piping plover critical habitat as it becomes emergent. This portion of the PA is outside of the PINS boundary and disposal will not affect their property.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-364A      Old Name: (32) NM199A  
Ownership: GLO  
Cabins: none                      Predators: coyotes and fire ants  
Elevation: 90cm  
Substrate types: sand, silt and shell

Description: This is one of four islands that were formed from the construction of a side channel off of the GIWW toward Padre Island. Two of the islands have since joined due to accretion. All are low round islands with similar vegetation. Sea ox-eye covers much of the surface of all three islands. There is false ragweed and croton present. Halophytes are not abundant, being replaced by shore grass. Large areas of hard sand and silt surround each of the three islands

Birds that have nested - pairs for last five years:

614-364A	1997	5/21/98	5/19/99	2000	6/1/01
GBTE	not	8	1	not	

	surveyed			surveyed	
BLSK		8	23		
LETE		4			

Significant History: These islands have not been surveyed every year because of the difficulty in traversing the silted channel. For the last five years, they were surveyed only in 1998 and 99. The earliest record is for 1973, 4 pair of gull-billed terns and 1 pair of least terns. The birds that have attempted to nest here were probably unsuccessful. Coyotes from Padre Island often visit the islands. However, they are good islands for resting on or feeding around during the day by a variety of colonial waterbirds.

Discussion and Management: If in some way the coyotes and other predators could be kept from the islands, they could be developed into good nesting islands. This would require deposition of more spoil and increasing the elevation of the islands. The introduction of trees would improve them. Predator control would require constant checks or some type of barrier between Padre Island and the islands.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-364B      Old Name: (33) NM199B

Ownership: GLO

Cabins: none                      Predators: coyotes and fire ants

Elevation: 90cm

Substrate types: sand, silt and shell

Description: This island has been formed from the union of the two central islands in the string of four. The structure and vegetation is mostly halophytes.

Birds that have nested - pairs for last five years:

614-364B	1997	5/21/98	5/19/99	2000	6/1/01
GBTE	not surveyed			not surveyed	
LETE					
BLSK					

Significant History: The same three species have attempted to nest intermittently on the bare ground around this island since 1973. Their last attempt was in 1994.

Discussion and Management: These islands are too close to Padre Island and easy predator access to be managed.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-364C      Old Name: (34) NM199C

Ownership: GLO

Cabins: none                      Predators: coyotes and fire ants

Elevation: 90cm

Substrate types: sand, silt and shell

Description: This is the island nearest the Padre Island shore. It is similar in all respects of the other two islands in this string.

Birds that have nested - pairs for last five years:

614-364C	1997	5/21/98	5/19/99	2000	6/1/01
GBTE	not surveyed		28/20P	not surveyed	
BLSK			8/4P		

Significant History: Nineteen gull-billed tern nests were counted on this island in 1979. The next records were the above ones in 1999.

Discussion and Management: The same suggestions are applicable to all three islands in this string, leave them alone unless predator access can be stopped.

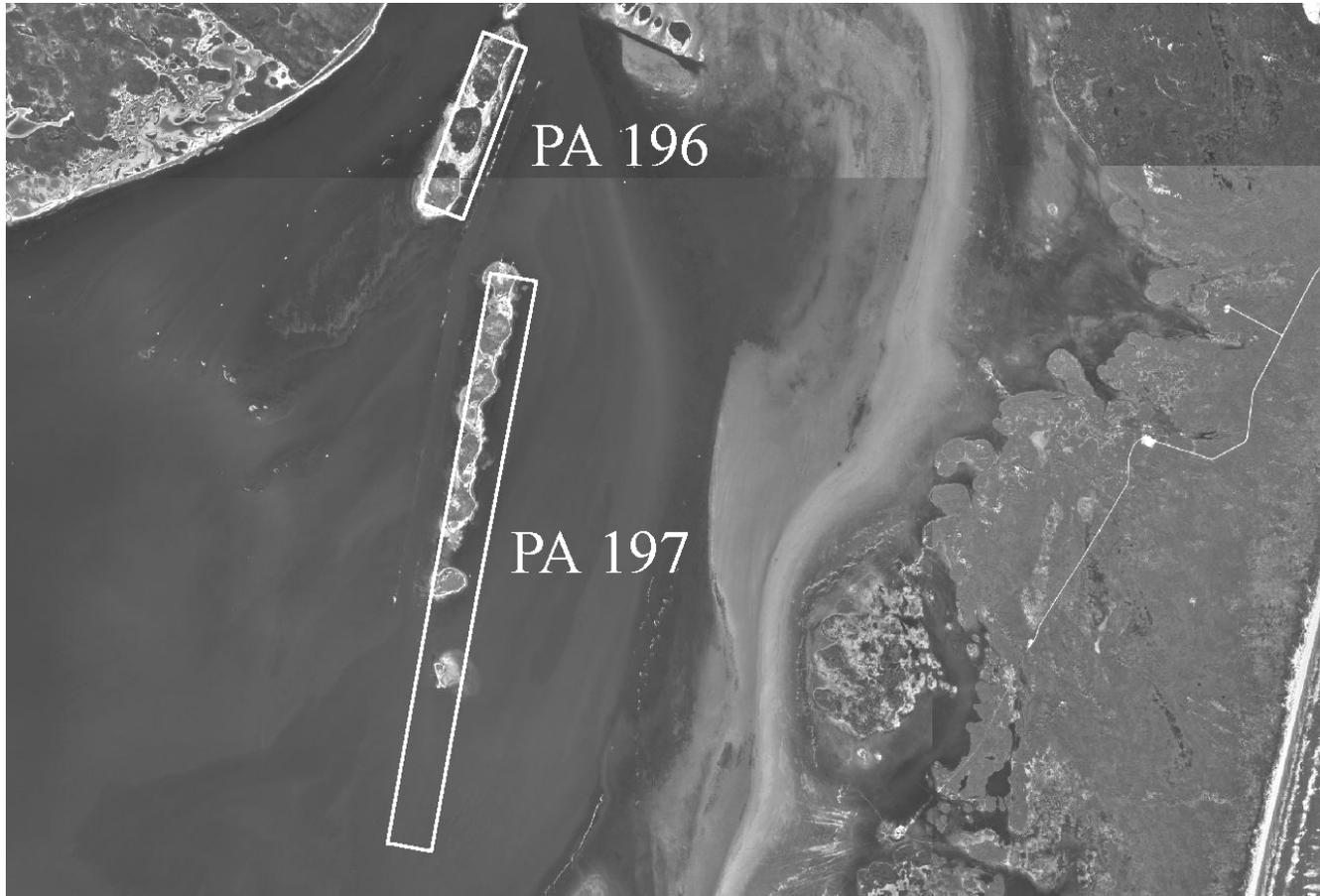


Figure 21. Placement Areas 196 and 197

### Dredged Material Management Plan

**PA 196** – (150+700 to 155+000) This is a short PA composed of one emergent area with three large mounds, which is located on the west side of the GIWW near Point of Rocks (north side of Baffin Bay). The PA was used seven times between 1949 and 1995 with a variable accumulation of 5,000 cy to 126,000 cy each dredging cycle (averaging about 103,000 cy), depending on storm activity. There is no bird use due to the large number of cabins (16) and human disturbance. There is seagrass habitat around the island that the ICT wanted to avoid. The ICT determined it would be less damaging to the resources in the area to confine the material (consisting of about 51% sand) on the island inside PA 196. However, in order to minimize short-term impacts to most of the cabins, the ICT decided it would be best to use confining levees on the north, east, and south sides to hold material on that side and prevent seagrass burial there. Low training levees will be placed on the west side to hold most of the material flowing between the mounds on the island and build up the island. The cabin owners will be notified that they either need to raise their cabins or move them off the island. Over time, as the material builds up on the island, the confining levees will be raised and extended until the entire island is completely confined. In order to maximize the size of the confined PA to provide a 50-year capacity, the north and south boundaries will be extended to enclose all of the emergent land. GLO/SLB will require cabins to be relocated or removed, as necessary, prior to placement of dredged material.



Figure 22. Colonial Waterbird Rookeries on and adjacent to Placement Area 197

Dredged Material Management Plan

**PA 197** – (156+000 to 169+000) This is a long PA located on the east side of the GIWW across from the mouth of Baffin Bay. It was used 15 times between 1949 and 1995, with an average per-cycle discharge of 318,930 cy. Most of the northern 2/3 of the PA is emergent and has numerous cabins. Even with the human disturbance, there is high black skimmer use in the area (there are seven waterbird colonies identified in this PA). The upper area is shallow and has extensive seagrass beds. The lower 1/3 of the PA is 6-foot deep or more and does not have seagrass. The ICT determined the best management practice for this site is to establish at least three corridors over the northern islands and pump some of the dredged material over the mounds to build up the northern islands for bird use. By using each corridor in alternating cycles, each area would have a 6-year interval between disposal operations for the surrounding seagrass to recover. However, most of the dredged material (consisting of about 25% sand) would need to be placed on the southernmost island during each dredging cycle to build it up for bird use. Much of the excess material will flow east into the deep, unvegetated water. The ICT decided to extend the east boundary about 500 feet to the east from the north end of the southern island to the south end of the island to provide space to place the pipe and to include the potential footprint of the material flowing into the deep water. One cabin on the southern island is occupied and another cabin is considered to be derelict by GLO.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361A Old Name: (25) NM221-OM117

Ownership: GLO

Cabins: 2

Predators: fire ants

Elevation: 1.2m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is the more southern island of 7 at the mouth of Baffin Bay and just east of the GIWW. It is isolated from the others and free of the predators who have affected the others. The northern cabin is in disrepair and the other does not appear to be used as often as the other cabins in this string of islands. The island is shaped like a fish, with the tail at the southern end and the body at the northern end. The tail contains pigweed, wolfberry, sea purselane and bare sand and shell. The main body of the island contains dense clusters of sea ox-eye, saltgrass, wolfberry, unknown grasses, prickly pear, sandbur and false ragweed.

Birds that have nested - pairs for last five years:

614-361A	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					

TRHE	35				102
GREG					
SNEG	25				40
REEG	14				11
CAEG	1				
FOTE					
GBTE		34			21
LETE					
BLSK	95	75	49	25	90
LAGU	77	8	14	49	49

Significant History: During certain years this island has been host to a great variety of colonial waterbirds, evidently dependent on the frequency of occupancy of the cabin. Since 1973, the tail of the fish has been occupied continually by skimmers and gulls and intermittently by gull-billed terns. The herons and egrets have nested in the sea ox-eye, wolfberry and a single salt cedar during 1994-97 and 2001; their occurrence is dependent on the cabin occupants and overcrowding of Rabbit Island.

Discussion and Management: This is an excellent island for all types of colonial waterbirds. It is isolated and not subject to predators: it contains the proper vegetation and bare areas for nesting; it is near another isolated island that is heavily used; the substrate is of sufficient quality to maintain the integrity of the island. The only problem is the presence of the remaining cabin and its use by the occupants. If the cabin is allowed to remain, the occupants should be made aware of their effect on nesting by these birds. One year, two boys were observed tromping on nests and throwing eggs. The island could be enhanced with the addition of trees on the eastern crown and clearing of vegetation on the southern extension.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361B      Old Name: (26) NM219-OM113

Ownership: GLO

Cabins: 6                                      Predators: raccoons and fire ants

Elevation: 2.8m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is the southern island of the 6 that are more or less united into a single unit through the deposition of dredged material between them. All 6 of these islands were originally round when first formed and because of their foundation have eroded

very little. The vegetation of this one consists of several mesquites on the eastern side, surrounded by prickly pear, some very large Australian pines and 3 palm trees near the center. The rest of the vegetation is herbaceous and good for the nesting of colonial waterbirds.

Birds that have nested - pairs for last five years:

614-361B	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBH					
TRHE					
SNEG					
REEG					
GBTE					
LETE					
BLSK					
LAGU					

Significant History: All 6 of these islands have had a similar interesting and unusual history. In 1979 or 80 the occupant of the most northern island introduced domestic hares to be used as a food supplement. By 1982, hundreds were present and they had begun to devastate the vegetation. As a result of their presence and the lack of vegetation, the birds that once nested moved to the next island to the south. This sequence of events continued through the years as the hares increased and moved to the next island. By 1985 the hares were numerous on the northern 4 islands, at which time they began to decrease as a result of the introduction of raccoons. A government trapper eliminated the rest of the hares but not the raccoons in 1986. Records for this island date from 1972 when a few herons and egrets and a higher number of terns, skimmers and gulls were recorded. The only other count of the former was in 1984 when 227 tri-colored herons, snowy egrets and reddish egrets were found. Evidently, the hares and raccoons on the other islands forced them there. In spite of the presence of a raccoon. 390 pair of laughing gulls attempted to nest that same year. During the last month of May 1995, 391 laughing gulls, 4 tri-colored herons and 2 black skimmers were counted. One week later, no birds were present, only the tracks of several raccoons. No birds have used this island for nesting since 1985.

Discussion and Management: Unless the cabins and raccoons are removed, there is little need to consider this island for management.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361C Old Name: (27) NM217-OM111

Latitude: Longitude:

Ownership: GLO

Cabins: 3

Predators: Raccoons and fire ants

Elevation: 2.8m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is the next island in the series, but this one is closely joined to its northern neighbor. Two of the cabins are located near the western shore while the other larger one is at the summit of the crown. The occupants closely mow the vegetation around each cabin. There are scattered mesquites on the eastern side of the island and a wide band of sea ox-eye around the margins inland to the halophytes. Bare sand and shell is present at the northern and southern ends.

Birds that have nested - pairs for last five years:

614-361C	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE					
SNEG					
REEG					
WFIB					
CATE					
ROYT					
LETE					
GBTE					
BLSK					
LAGU					

Significant History: The history of this island is similar to that of the preceding one. Low shrub and ground nesters used this island from 1972 until 1986. Bare ground nesters, gull-billed terns and skimmers used the islands for the same time period. Royal and least terns were present only during 1973. Laughing gulls nested here during every year until 1986. Again, there was an increased use of the island during 1982 and 1984 because of the density of rabbits on the more northern islands. The island was not surveyed in 1983. No birds attempted to nest on the island after 1985 because of the raccoons.

Discussion and Management: There is no need to develop a management plan until the raccoons are removed. Possibly, birds could be lured to return to the island in spite of the presence of the cabins. The occupants would have to be educated. Deposition of dredged material between the islands could attract bare ground nesters.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361D Old Name: (28) NM215-OM109

Ownership: GLO

Cabins: 4 Predators: raccoons and fire ants

Elevation: 1.8m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell

Description: This island is more tear-shaped than the others. The 4 cabins are very small and constructed of cemented serpulid rocks. They are located near the center of the western margin of the island. Immediately behind them is a large clump of mesquite surrounded by an increasing stand of guinea grass. This patch of mesquite has been here since the beginning of the surveys. Those on the other islands are relatively new additions. There is a large oleander just south and east of the cabins. There are dense stands of sea ox-eye on the northern end of the island. The rest of the vegetation is similar to the others in this chain.

Birds that have nested - pairs for last five years:

614-361D	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE					
BCNH					
GREG					
SNEG					
REEG					
CAEG					
WFIB					
GBTE					
SOTE					
BLSK					
LAGU					

Significant History: Prior to the advent of raccoons, this has been the most important island for the nesting of birds in this chain and in the upper Laguna Madre. Incomplete records date back to 1970, when 8 great blue herons, 12 skimmers and 148 laughing gulls nested here. Later, large numbers of herons and egrets settled onto the island. For example; in 1974, 148 great blue herons, 715 tri-colored

herons, 2 great egrets, 214 snowy egrets, 110 reddish egrets, 268 cattle egrets, 6 white-faced ibis, 183 gull-billed terns, 1 sooty tern and 199 black skimmers were estimated to be nesting on this island. With the presence of hares on the more northern islands the numbers of birds using the mesquite increased. In 1982 the big increase was due to 500 snowy egrets and 550 cattle egrets. By 1983, hares had arrived on this island and the numbers of birds began to decline. When the raccoons arrived in 1985, the birds departed. None have nested here since. The mesquites are still used as resting areas by great blue herons and black crowned night-herons. For historical information on this and/or the three more northern islands in this chain see: Barnes (1971), McMurry (1971), Simersky (1971), DePue (1974), Chaney et al. (1978).

Discussion and Management: Possibly, this island could be repopulated, if the raccoons and the guinea grass were removed. Ideally, the cabins should be abandoned or removed, however, birds did nest when the cabins were occupied. The occupants at that time were aware of the importance of the birds to the ecosystem. If these events take place, it would be necessary to use decoys to attract birds back to the island.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361E Old Name: (29) NM213-OM107

Ownership: GLO

Cabins: 1

Predators: raccoons and fire ants

Elevation: 2.8m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell

Description: The original round shape of this island has been elongated by the deposition of spoil at each end. There are several mesquites on the eastern side and near the central crown of the island. Other than the palm tree near the cabin, the vegetation is similar to that of the other islands to which it is connected.

Number of nesting pairs for last five years:

614-361E	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
BCNH					
TRHE					
SNEG					
REEG					
WFIB					
GBTE					

LETE					
BLSK					
LAGU					

Significant History: The earliest reliable count for this island was made in 1972. At that time, all but black crowned night-herons, white-faced ibis and least terns were nesting here. The first two appeared in 1977 and least terns in 1985. None of the three ever nested again. Nesting appeared to be affected by the rabbits earlier on this island rather than on the preceding ones. Numbers of herons and egrets began to decline with the appearance of the hares in 1981. All birds left the island in 1984 and never reappeared. The only exception was the pair of least terns that attempted to nest in 1985.

Discussion and Management: Again, no management unless the raccoons are removed. This could be a good island because of the ideal vegetation for the birds to nest on and under. The single cabin located near the western margin would not pose a problem.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361F Old Name: (30) NM211-OM105

Ownership: GLO

Cabins: 1 Predators: raccoons and fire ants

Elevation: 2.7m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is another tear-shaped island. The high point of the island is located at the north central end. The single cabin is located near the central part of the western shore. The northern part contains some bare areas resulting from recent deposition of spoil. There are patches of young mesquites near the crown. The rest of the vegetation is similar to that of the other islands in this group.

Birds that have nested - pairs for last five years:

614-361F	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE					
BCNH					
SNEG					
REEG					
WFIB					

GBTE					
SOTE					
BLSK					
LAGU					

Significant History: This island and its nesting birds is one of the first to be studied in the United States (Barnes, 1971 - McMurry, 1971 - Simersky, 1971). In 1970, 13 great blue heron, 145 tri-colored heron, 89 snowy egret, 33 reddish egret, 17 gull-billed tern, 1 sooty tern, 17 black skimmer and 274 laughing gull nests were counted. Black crowned night-herons and white-faced ibis appeared later. These birds continued to nest here in goodly numbers until the hares migrated to this island. By 1983, the birds were forced to leave because of the number of hares and the lack of vegetation. The addition of raccoons in 1985 and their continued presence has prevented the return of the birds.

Discussion and Management: The removal of the raccoons must take place before permanent management recommendations can be made.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-361G Old Name: (31) NM209-OM103

Ownership: GLO

Cabins: 3 Predators: raccoons and fire ants

Elevation: 3.6m

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is the last island in this series. It retains much of its original shape and is slightly higher than its neighbors. The crown of the island is bare and there is bare sand and shell at the southern end of the island. Two of the three cabins are sitting on pilings in the water at the northern end. The original house at the central margin is gone. In its place there is a newly constructed 2 storied hotel just north of the original house site. Near the summit there are some young mesquites and a single large oleander. Newly planted century plants and spanish daggers are around the large house. The rest of the island is covered with those plants that are conducive to nesting by shrub and ground nesters. There are good stands of sea ox-eye, cord grass, camphor daisy, wolfberry, wild indigo and prickly pear.

Birds that have nested - pairs for last five years:

614-361G	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
----------	---------	---------	---------	---------	--------

GBHE					
TRHE					
SNEG					
REEG					
WFIB					
GBTE					
LETE					
SOTE					
BLSK					
LAGU					

Significant History: In 1970, nest counts for great blue herons were 23, 24 for tri-colored herons, 39 for snowy egrets, 11 for reddish egrets, 24 for gull-billed terns, 1 for sooty terns, 34 for black skimmers and 274 for laughing gulls. Least terns and white-faced ibis did not appear until 1976. All continued to nest here in goodly numbers until domestic hares were released in 1980. The only birds attempting to nest after 1980 were laughing gulls. They tried to nest in 1983 and 84, but with the introduction of the raccoons in 1985, they never tried again.

Discussion and Management: Again, removal of the raccoons must precede the development of any long-term management plans. The island is a good one, as are all in this chain.

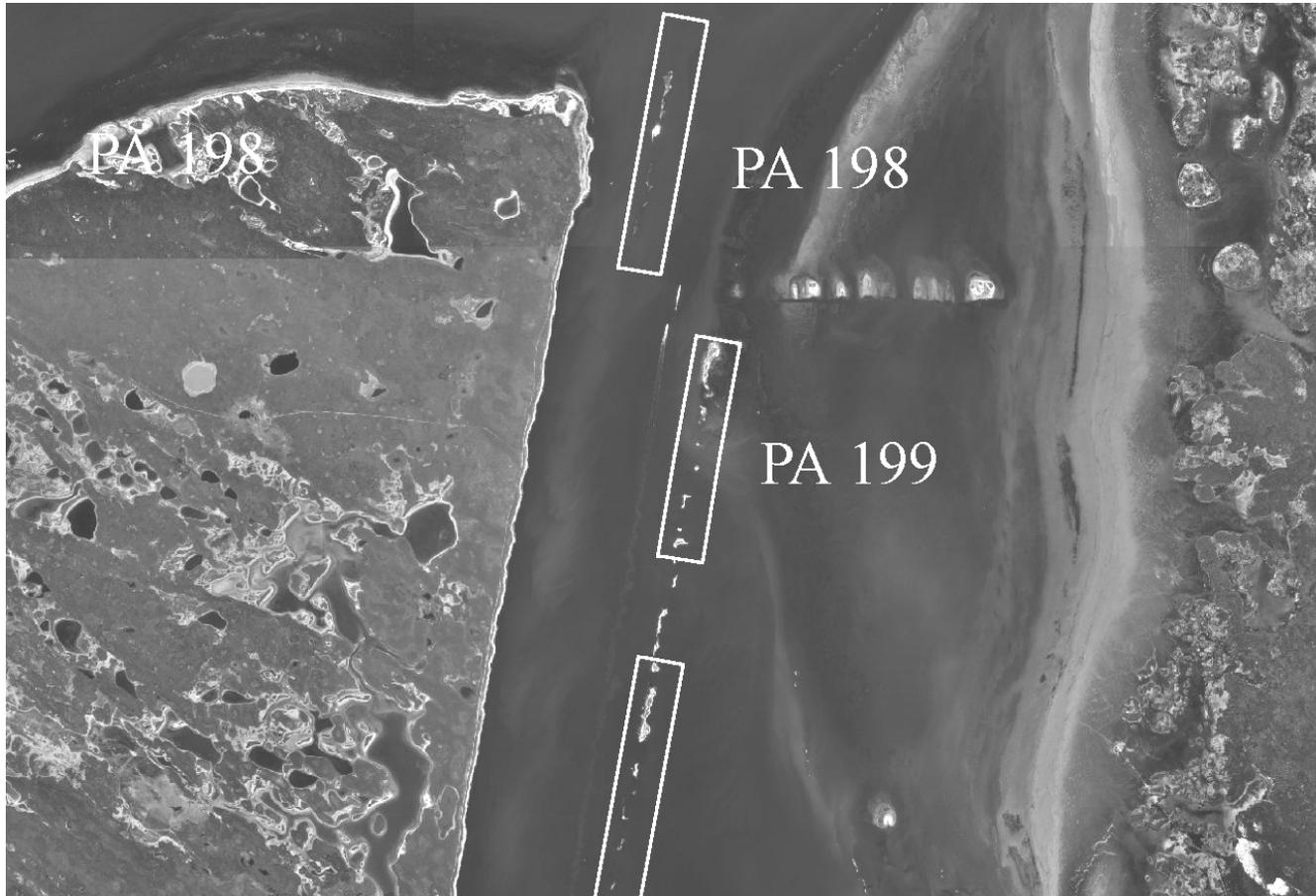


Figure 23. Placement Areas 198 and 199

#### Dredged Material Management Plan

**PA 198** – (172+000 – 177+800) This PA is located on the west side of the GIWW and close to Point Penascal (south side of Baffin Bay). It was used 18 times between 1949 and 1995, with an average per-cycle discharge of 132,755 cy. It is surrounded by deep water with no nearby seagrass habitat. The ICT did not want to pump the dredged material (consisting of an average of about 34% sand) to an upland site on the mainland, because it would permanently impact seagrass growing along the shore. The ICT decided the best management option is to continue with the current practice of unconfined disposal in the PA in deep, unvegetated water.



Figure 24. Colonial Waterbird Colonies on or adjacent to Placement Area 199

**Dredged Material Management Plan**

**PA199** – (179+000 – 183+700) This PA is located on the east side of the GIWW in shallow water with seagrass habitat along the upper half of the east side. It was used 16 times between 1949 and 1995, with an average per-cycle discharge of 140,854 cy. The ICT decided to extend the PA south to provide enough disposal area to avoid the seagrass habitat in the north and connect it to PA 200. All disposal of dredged material (consisting of an average of about 12% sand) will be in the deep water area. There is a small channel running a short distance from the GIWW to the east between PAs 199 and 200. There are no records or knowledge of who constructed the channel or the reason for its existence. Since it does not appear to function as a circulation channel, the ICT determined there would be less impact to lagoon habitat to fill it in with dredged material when the two PAs are combined than to preserve it and risk impacting the extensive seagrass beds to the north.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-380I

Old Name: (17) NM21

Ownership: GLO

Cabins: none

Predators: none

Elevation: 90cm

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is a small island oriented in an east-west direction. There is a deep pit on the southwestern corner and a higher shelf on the northern side that ends in a point on the eastern side. The shelf is loose sand and shell with scattered halophytic vegetation. There is some sea ox-eye here and more on the eastern point. The island is more or less covered with halophytes. The small exposed sandy island just to the north is considered as part of this one. There is a small amount of halophytic vegetation on its higher points.

Birds that have nested - pairs for last five years:

614-380I	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE		5	9		30
SNEG		10			3
REEG		15	8		
CAEG					
ROYT	300	230			
SATE	2				

FOTE					
GBTE	3	21		1	
BLSK	95	33	22	57	6
LAGU	7	26	27	2	21

Significant History: A large diversity of birds has nested here throughout the years. At times their numbers seemed to exceed the carrying capacity. In 1984, 460 pair of royal terns and 550 pair of sandwich terns were estimated on the sand and shell shelf. The first recorded birds were skimmers in 1977. Some have attempted to nest here in almost every year. Although the vegetation is not the preferred type for herons and egrets, they have nested here on the ground and in the sea ox-eye. They first appeared in 1984 and increased in numbers when the terns were not present. Tri-colored herons were more common, but in some years snowy and reddish egrets have exceeded their numbers. Great blue herons constructed ground nests of sticks here in 1989, 94 and 95.

Discussion and Management: This is an ideal island because of its isolated location. In its present condition it should be managed for the tern and skimmers by removing some of the vegetation on the shelf to expose more bare ground. This might also deter an increase of laughing gull occupation. The foundation is here for the construction of a larger island with trees, bushes, herbs and bare ground for all types of nesters.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-380J

Old Name: (18) NM19A

Ownership: GLO

Cabins: none

Predators: none

Elevation: 30cm

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell

Description: This is the southern island of 2 that are joined together during very low tide by a narrow strip of substrate. It is very small with a central core of halophytic vegetation. Most of the area is bare sand.

Birds that have nested - pairs for last five years:

614-380J	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
----------	---------	---------	---------	---------	--------

GBHE					
CATE					
GBTE				25	
BLSK				25	4

Significant History: Beginning in 1977, caspian terns, gull-billed terns and black skimmers have attempted to nest here. The latter have been the most persistent.

Discussion and Management: This island is slowly eroding away. The only improvement of the situation would be the addition of new contained spoil. The 2 islands could be joined together by deposition of the material between them forming a long island with a higher elevation. This would be more conducive to the growth of taller and more sturdy vegetation as platforms for herons and egrets.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-380K

Old Name: (19) NM19

Ownership: GLO

Cabins: none

Predators: none

Elevation: 45cm

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This northern island of the 2 that are almost joined is slightly larger and higher than the preceding one. In addition to the halophytic vegetation there is some sea ox-eye and grasses. There is a bare projection to the east and to the south.

Birds that have nested - pairs for last five years:

614-380K	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
CATE					
ROYT					
FOTE					
GBTE					6/4P
BLSK		100/50P			30/15P

Significant History: The nesting history on this island is similar to that of the preceding one. First records are of caspian terns, gull-billed terns and skimmers in 1977. One pair of caspian terns tried nesting here again in 1989; the other 2 species have nested here

intermittently since that time. The gull-bills have missed more years than the skimmers. A single nest of royal terns was found in 1985.

Discussion and Management: New contained spoil could stop the erosion of this island. Deposition at the junction of the 2 islands could form a good long island on which trees and shrubs could be planted. The early development with no vegetation would attract terns and skimmers, later the herons and egrets could use the vegetation for nesting.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-362A Old Name: (20) NM17A

Ownership: GLO

Cabins: one

Predators: fire ants

Elevation: 60cm

Substrate types: Serpulid and coquina reef rocks and cobble, sand and shell.

Description: This small round island lies within 6m of a small cabin on pilings. There is a short pier extending to the west. The upper part of the island contains a good stand of sea ox-eye and some patches of sea grass and pigweed. The margins are covered with the usual halophytes. There is a small extension of bare sand and shell on the southeastern corner. A permanent seat for duck hunting is in the center of the eastern side.

Birds that have nested - pairs for last five years:

614-362A	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE		10	8		10
SNEG	1	24			2
REEG	4	5	1	2	1
CAEG		8			
GBTE					6
BLSK					
LAGU	28	14	22	6	4

Significant History: In spite of the nearness of the cabin, this has been a good island for colonial waterbirds, especially the low vegetation nesters. Tri-colored herons, snowy egrets and reddish egrets have nested here in almost every year since 1983. Gull-billed

terns and skimmers have used the bare sand and shell on the southeastern corner in certain years, more so in the early years. Laughing gulls have been absent for only 3 years since 1980. A census was not made on this island when the cabin was occupied. Discussion and Management: Very little can be done to manage this island as long as the cabin is present. If it should be removed, the foundation is present for the construction of a larger island.

**Draft Colonial Waterbird Management Plan (CBBEP 2002)**

New Isl. Number: 614-362B Old Name: (21) NM17-OM135- Rabbit Island

Latitude: 27 14.397 Longitude: 97 24.528

Ownership: GLO

Cabins: none Predators: fire ants

Area: Length: Width: Elevation: 90cm

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell.

Description: This is a long low island near the mouth of Baffin Bay. The northern end is much broader than the southern one and is slightly higher. The vegetation here is halophytes at the margins, grading into wolfberry, pigweed, salt grass and sea ox-eye at the crown. This type of cover is distributed throughout the length of the island. There are bare areas in the vegetation near the southern and northern ends. The tip of the southern end is bare sand and shell and is being extended by the accretion of sand and silt. The entire eastern margin is also bare and the water here is very shallow because of the accumulation of sand and silt from Padre Island.

Birds that have nested - pairs for last five years:

614-362B	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE	6	8	4	20	20
LBHE					
TRHE	4	72	46	12	32
GREG	10	18	19	2	5N
SNEG	30	74	65	24	20
REEG	28	60	80	108	17
CAEG		4	3		3
WFIB					
ROSP	1	68L			70L
CATE	120	84	86	90	12
ROYT	58	260	280	420	1080

SATE				10	120
FOTE					
GBTE	35	32	4	45	35
BLSK	75	48	15	11	22
LAGU	21	35	12	238	105

Significant History: At one time there was a small shack near the southern end of the island inhabited by a commercial fisherman. To supplement his diet he introduced domestic hares to the island. They proliferated and eventually consumed all of the vegetation on the island. In 1977, 200 hares were counted along with skimmers and gulls that were attempting to nest here. All of the vegetation was gone by 1979 and only 4 hares remained. One was present the next year and none the next. In 1980 14 tri-colored herons tried to nest in the low sea ox-eye. Seventy-one dead gulls were found on the same survey. Since 1983, there has been a steady increase in the number and kinds of birds that have nested here; to such an extent that the island is now overcrowded. This increase is due to the movement of these birds from their original nesting grounds on the string of islands at the mouth of Baffin Bay. Skimmers, gull-billed terns and forster's terns nest on the southern tip of the island; royal terns utilize the south central part; and caspian terns use the northern bare ground areas. The herons and egrets use the ground and sea ox-eye on the higher elevations throughout the length of the island. Laughing gulls are found anywhere there is vegetation. There was a reduction in numbers of pairs of herons and egrets, but an increase in the number of terns in 2001. This could be due to the lack of rain and poor growth of the vegetation.

Discussion and Management: At this time this is probably the most important island in this section of the Laguna Madre. It should be watched over very carefully. Native trees and bushes could be planted which might increase the number of larger birds that have nested here. New good spoil could be deposited on top of the silt on the eastern side to enlarge the island. This might alleviate some of the overcrowding. Signs should be erected to keep people from the island year-round. From the number of empty shotgun shells the island is often used by duck hunters in the winter.

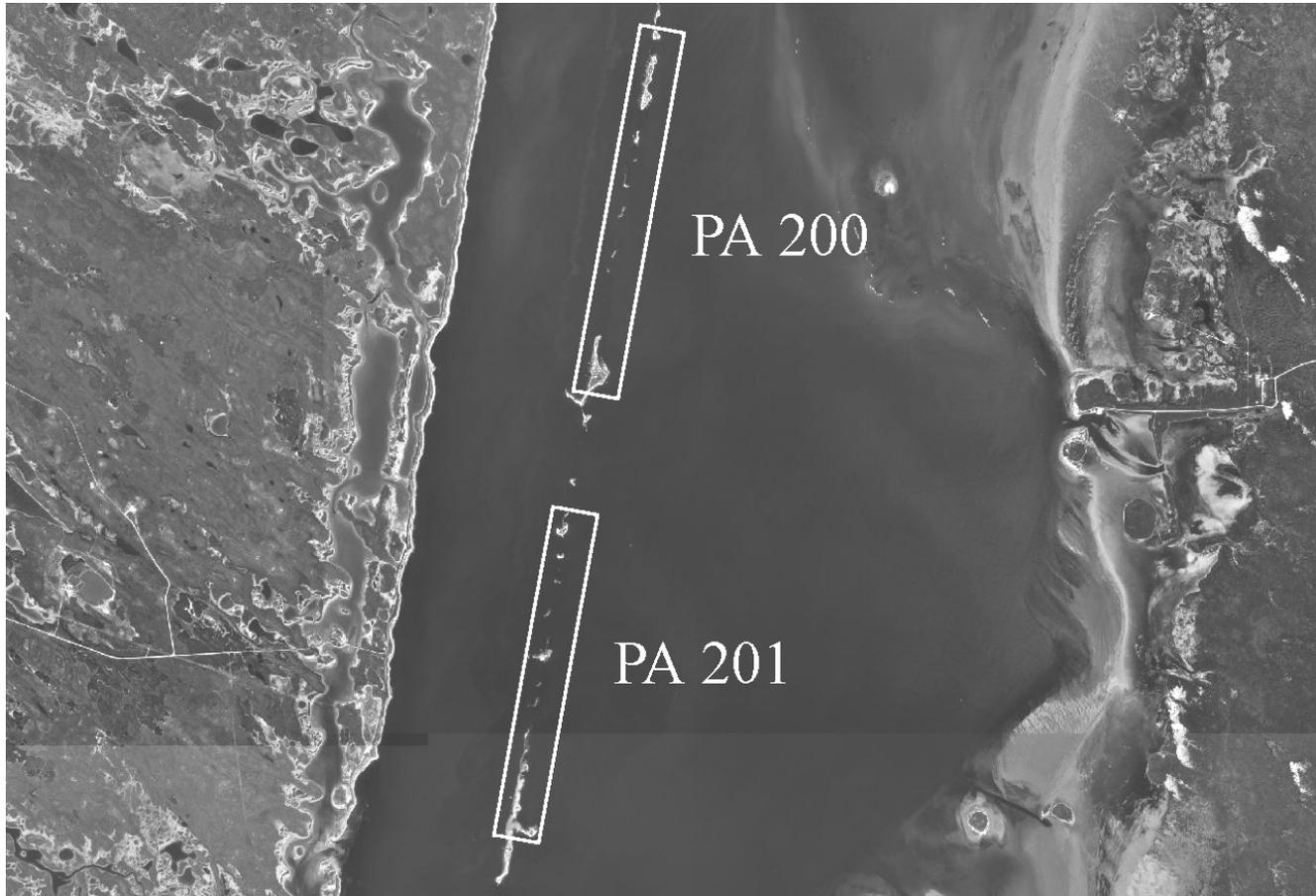


Figure 25. Placement Areas 200 and 201

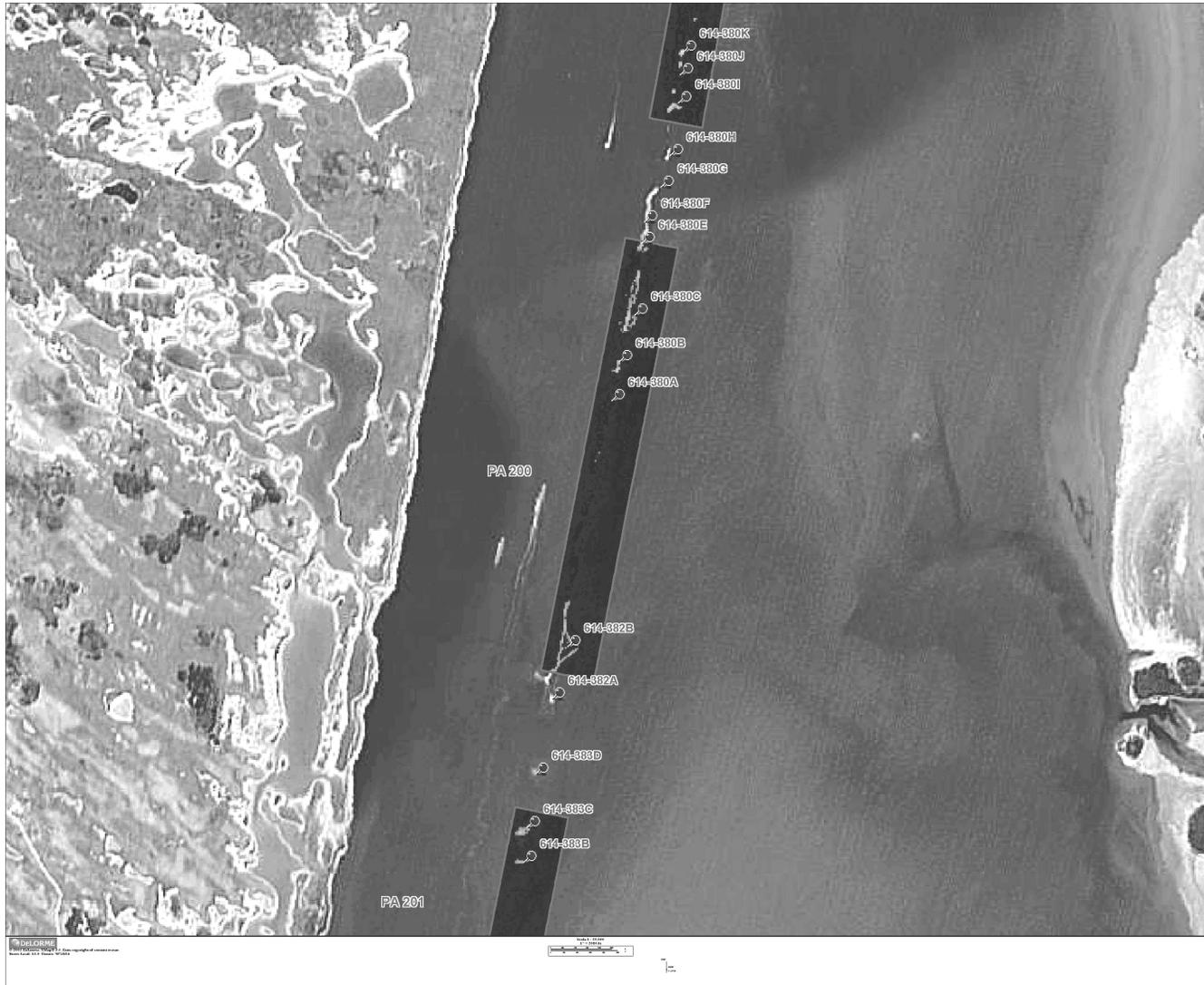


Figure 25. Colonial Waterbird Rookeries on or adjacent to Placement Area 200

Dredged Material Management Plan

PA 200 – (186+300 – 194+600) This PA has the same characteristics as PA 201. It was used 15 times between 1949 and 1995, with an average per-cycle discharge of 156,537 cy. The ICT decided that the current practice of unconfined disposal of dredged material (consisting of an average of about 27% sand) can be continued since there is no nearby seagrass habitat or bird use area to be impacted. Birds will not use the islands inside the PA due to disturbance associated with the numerous cabins on the islands.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-380F Old Name: (14) NM23A

Ownership: GLO

Cabins: Predators:

Elevation: 2 ft.

Substrate types: serpulid and coquina reef rocks and cobble, sand and shell

Description: This is even a smaller island than the previous one. The vegetation is similar, but with a little more bare area around it.

Birds that have nested - pairs for last five years:

SB-N25	5/22/96	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE						
TRHE	6	1	2	3	14	14
SNEG		12	1		6	2
REEG					4	
ROYT		74		146		
SATE				2		
FOTE						
GBTE	4					
BLSK	212		11		18	7
LAGU	24	42	210	8	14	4

Significant History: This small island has been host to a wide variety of colonial waterbirds as indicated by the individual island record beginning in 1980.

Discussion and Management:None

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-380E      Old Name: (13) NM25

Ownership: GLO

Cabins: none      Predators: fire ants

Area: Length:      Width:      Elevation: 60cm

Substrate types: serpulid and coquina reef limestone rocks, sand and shell

Description: This is a small island with a good foundation that slopes up from the water to a central crown. There is a good growth of sea ox-eye on the crown mixed with false ragweed and pigweed. The typical halophytes surround the margin.

Birds that have nested - pairs for last five years:

D614-380E	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE	1	2	3	14	14
SNEG	12	1		6	2
REEG				4	
ROYT	74		146		
SATE			2		
FOTE					
GBTE					
BLSK		11		18	7
LAGU	42	210	6	14	4

Significant History: In 1980, tri-colored herons, royal terns, gull-billed terns, skimmers and laughing gulls, occupied this island. Snowy Egrets joined the group in 1984 and reddish egrets in 1988. Reddish egrets reappeared in 1994 and 96. Two pair of forster's terns nested here in 1985, but did not return. Tri-colored herons and snowy egrets have consistently nested in the sea ox-eye throughout the years. Sandwich terns joined the royal terns in 1999. Black skimmers and gull-billed terns have used the bare marginal areas during most of the years, the former more so than the latter. Laughing gulls have missed only one year.

Discussion and Management: This is an excellent island for all but those birds that prefer to nest on higher platforms. If the island were enlarged with the deposit of good material, trees could be planted to attract them. Signs should be erected to warn people away

from the island during the spring and summer months. Wade fishermen tend to closely approach these islands during the nesting season.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-380C      Old Name: (11) NM27

Ownership: GLO

Cabins: 8

Predators: fire ants

Elevation: 90cm

Substrate types: Serpulid and coquina reef limestone rocks, sand and shell

Description: This is another larger island of this string that is well occupied by cabins. Each has its own pier with an outhouse on its end. The three cabins on the southern end have additional piers extending to the east. The island appears to have been formed by 5 or 6 original deposits. The southern part is narrowly separated from the northern part. Vegetation on the former is typical of most of these islands. There is pigweed, wolfberry, sea blite, purselane, glasswort and saltwort. The higher areas contain sea ox-eye and salt grass. There is a large hole in the northern part of this section. The narrow connection between the two parts is primarily sand and shell. The northern section contains much more sea ox-eye and salt grass. There is a mixture of grasses and false ragweed on the higher portion. There are bare areas at each end of the island.

Birds that have nested - pairs for last five years:

614-380C	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
TRHE			3	88	24
SNEG					5
REEG					
CAEG				1	
GBTE		7			
BLSK	45	42	44		
LAGU	105	7	206	210	217

Significant History: Records for nesting of tri-colored herons, snowy egrets, skimmers and laughing gulls date back to 1984.

Laughing gulls have been the most persistent through the years. Gull-billed terns were present only in 1985, 86 and 98. The return in numbers of tri-colored herons during the last two years and the 88 pair in 2000 is noteworthy. The intermittent nesting activity here is probably due to the frequency of occupation of the cabins by the lessees, an arid year, or poor growth of the vegetation, or all three.

Discussion and Management: There is little that can be done to manage this island unless the cabins are destroyed. It is in an ideal location, has the proper vegetation, and ideal feeding areas are nearby. Presently, the lessee of each cabin and their friends should be made aware of the nesting history of the island and the value of promoting successful nesting of the birds especially the tri-colored herons on this island.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-380A      Old Name: (9) NM29

Ownership: GLO

Cabins:                                      Predators:

Elevation:

Substrate types: sand

Description: This was once a narrow strip of sand and shell but now is completely submerged.

Birds that have nested - pairs for last five years:

614-380B	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBTE	submerged	submerged	submerged	submerged	submerged
BLSK					

Significant History: A few pair of skimmers have attempted to nest here beginning in 1990 and continuing through 1996 at which time the island was submerged. Gull-billed terns joined the skimmers in 1993 and 1996.

Discussion and Management: No recommendations.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-382B      Old Name: (8) SB-NM35

Ownership: GLO

Cabins: 6                                      Predators: fire ants

Area: Length: Width: Elevation: 1.8m  
 Substrate types: serpulid and coquina reef limestone rocks and cobble, shell and sand

Description: This is one of the larger islands in this string. It has changed very little since the photograph was taken in 1996. The only difference is a further extension to the west of the southern sand bar. There are 6 cabins with their outhouses and 5 piers on the western side. A single pier extends from the left side. The area to the south and west of the cabins is heavily vegetated, that to the south less. The southern area contains a dense growth of sea ox-eye, prickly pear and false ragweed. Near the cabins there is cord grass, salt grass and sandbur. The eastern higher side of the island is not as densely covered as the southern area. It contains some cord grass, sea ox-eye and scattered patches of prickly pear, camphor daisy and guinea grass. These all grade into the halophytes at the edge of the water. The northern extension is more vegetated than the southern one with good stands of pigweed, sea purselane, batis and glasswort.

Birds that have nested - pairs for last five years:

614-382B	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE	4				
TRHE	26		8	32	5
GREG	4				
SNEG	20		2	3	2
REEG	12	2	4	6	
CAEG	2				
ROYT					
GBTE		14			8
LETE		1			
BLSK	115	100	75	80	89
LAGU	245	182	206	231	217

Significant History: In spite of the presence of the cabins and the activity of the occupants, this has been a good island for nesting by a variety of colonial waterbirds. In 1984, 56 pair of tri-colored herons, 1 pair of skimmers and 56 pair of laughing gulls were recorded. Since then there has been a steady increase in the number of species and pairs until the more recent years. The latter could be due to increased human activity and the establishment of the eastern pier. Most heron and egret nesting has taken place in the dense growth to the south and southeastern part of the island. Tern and skimmers have occupied the two extensions, the southern one especially by skimmers. Laughing gull nests have been distributed throughout the vegetated areas.

Discussion and Management: The occupants of the cabins should be contacted and made aware of the nesting history of this island. The eastern pier should be abandoned and the occupants should refrain from excessive use of the southern and eastern region of the island from April through July. Also, the north and south extension should be completely avoided during those months. The houseboat anchored near the tip of the southern bar should be moved.

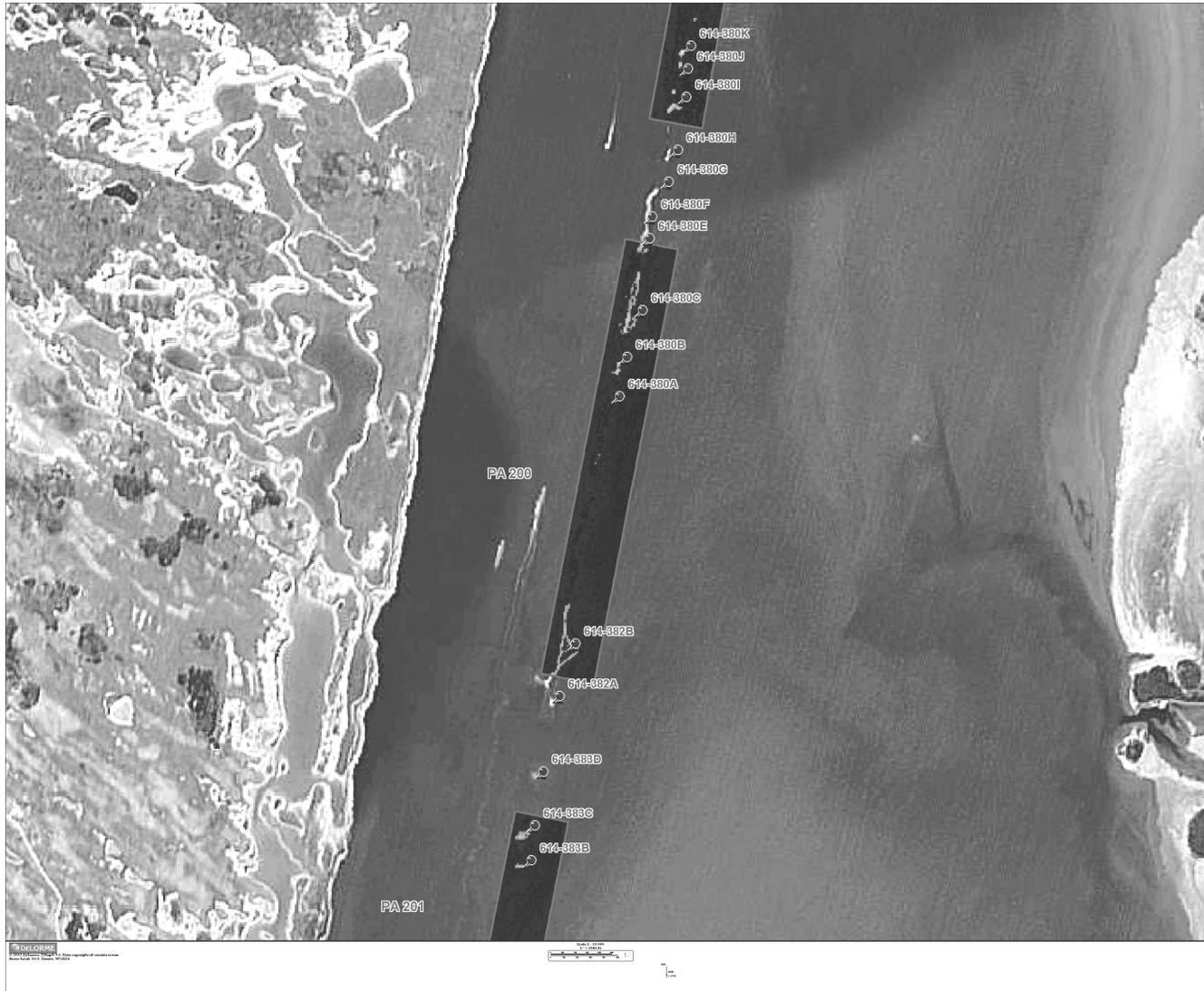


Figure 26. Colonial Waterbird Rookeries on or adjacent to Placement Area 201

Dredged Material Management Plan

PA 201 –(197+200 – 204+700) This PA is located on the east side of the GIWW and was used 14 times between 1949 and 1995 with an average per-cycle discharge of 177,145 cy. The site is located in deep water with a few islands scattered along the length of the site. There is some bird use on the islands at each end, but no seagrass habitat in the deep water on the east side of the site. Dredged sediments are too fine (consisting of an average of about 18% sand) for building any seagrass habitat. The ICT determined the best management use for the site is the present practice of unconfined disposal, but limit the disposal to the middle submerged area of the PA. This will avoid the bird islands at each end of the PA.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-384A Old Name: (1) SB-NM49

Ownership: GLO

Cabins: 3 Predators: Fire ants and humans

Elevation: 1.1m

Substrate types: Serpulid and coquina reef limestone rocks and cobble, large and small shell, sand with little silt.

Description: This is the first island north of the land cut for which there are records of nesting colonial waterbirds. It is a part of a chain of small islands on the eastern side of the Gulf Intracoastal Water Way (GIWW) that stretches from the land cut to Baffin Bay. They are all excellent for nesting because they are distantly removed from land and therefore from predators. Unfortunately most of the larger islands support cabins for human recreation. This island is a long narrow one with three vegetated areas connected by sand spits. There are three cabins on the central portion and one on the southern end. There are 2 large pits containing brackish water to the east of the cabins. In this area there is a stand of cord grass in which there are scattered clumps of prickly pear and the remains of some small spreading mesquite. Additionally there is sea ox-eye, false ragweed, salt grass, shore grass, evening primrose and pigweed on the higher slopes. These grade into the halophytes around the margins and extend out into the sand spits. The small isolated island to the east is connected to the main one by a band of rocky material, visible at low tide. The crown of this island is mostly prickly pear with some grasses and sea ox-eye.

Birds that have nested - pairs for last five years:

614-384A	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE	2			6	3
TRHE					28
SNEG				2	32
REEG	1			4	8

CAEG				1	
ROYT				26	
SATE				70	
GBTE				35	25
LETE				8	
BLSK			24	90	18
LAGU	10		28	52	41

Significant History: Individual records for this island began in 1986. No nesting pairs were reported until one pair of black skimmers nested on one of the sand spits in 1995. Two pairs of great blue herons appeared the next year and were joined by a pair of reddish egrets the following year. The great diversity of nesters did not appear until 2000 when the terns, black skimmers and laughing gulls occupied the sand spits. The herons and egrets used the vegetation on the isolated eastern island. There must not have been as much human activity on the island during this year. Tri-colored herons did not appear until 2001. They were found in the higher vegetation throughout the main island.

Discussion and Management: This is an ideal island for colonial waterbirds, if the cabins are removed and mesquite trees are planted in their place. Presently, the owners of the cabins should be notified to stay away from the sand spits and the isolated island and to restrict their activity to a minimum during the nesting season.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-384B                      Old Name: (2) SB-NM47

Ownership: GLO

Cabins: 1    Predators: fire ants

Elevation: 1m

Substrate types: serpulid and coquina reef rocks and cobble, shell and sand

Description: This island was once connected to the preceding one and still is at very low tides. The sand spit on the south end connects to 2 higher old dredged material deposits. The crown of the first deposit contains a pit surrounded by cord grass and salt grass. Prickly pear is present and sea ox-eye is distributed on the northern portion of the crown. This grades into the more halophytic species that fringe the margin of the vegetation. The more northern deposit contains the remains of a cabin and a pier that is falling apart. Abutting these remains is a plywood shack that has no number. The vegetation here consists of camphor daisy, evening primrose, sea ox-eye, saltgrass, shore grass, false ragweed, pigweed and halophytes.

Birds that have nested - pairs for last five years:

614-384B	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBTE				1	
BLSK	3		4	2	
LAGU	6			56	

Significant History: The first recorded instance of birds nesting on this island occurred in 1988 when gull-billed terns, black skimmers and laughing gulls were counted. No further nesting was recorded until 1997, again black skimmers and laughing gulls. Although the island was occupied in 2000 (mostly laughing gulls) the three species were absent in 2001.

Discussion and Management: This could be made into an excellent island for all types of birds. The remains of the cabin, evidently destroyed by the last hurricane, should be removed along with the plywood shack. There is a good foundation of rock so that dredged material could be deposited on the northern end. Some containment would be required to the east and north. With the addition of trees the island would attract the herons and egrets. Signs should be erected to keep the people on the preceding island off of this one or those that are using the shack to go to the southern island to use the piers. There were many human tracks between the two.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-383A      Old Name: (3) SB-NM43

Ownership: GLO

Cabins: 1      Predators: none

Elevation: 0.0m

Substrate types: serpulid and coquina reef limestone rocks and cobble, sand and little shell

Description: This is a very low island that is subject to flooding during high tides. There is a cabin on piers at the northern end of the island. Its roof and the fishing pier are in disrepair. Evidently the original island has slowly eroded leaving only the small remnant.

Birds that have nested - pairs for last five years:

614-383a	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBTE	21	13			
BLSK	33	30			
LAGU		4			

Significant History: Laughing gulls were found nesting here in 1992 and 1998. The only other nesting was by gull-billed terns and black skimmers in 1997 and 1998. They were probably unsuccessful if a high tide occurred.

Discussion and Management: A good foundation is present and a deposition of dredged material could be made to create a new island. The presence of the cabin would interfere with this process and the nesting of birds. The deposited material would have to be contained in some fashion. Although the island is in an ideal location, the recommendation is to let it erode away.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-383B Old Name: (4) SB-NM41A

Ownership: GLO

Cabins: none

Predators: none

Elevation: 75cm

Substrate types: serpulid and coquina reef limestone rocks and cobble, small shell and sand

Description: This is a crescent-shaped island situated in an ideal location. It is a low island surrounded by bare sand and shell with a central core of low halophytic vegetation. The high point of the island is at the northeast corner. From there it gradually slopes to the west.

Birds that have nested - pairs for last five years:

614-383B	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
REEG		1			
ROYT					
SATE					
FOTE					
GBTE	11				4
LETE					
BLSK	19	34		1	40
LAGU	35	77			

Historical Significance: As can be seen on the chart, this island has been a good one for those species that prefer to nest on bare sand or areas that are sparsely vegetated. Gull-billed terns, black skimmers and least terns were first listed here in 1984 when individual

island counts began. The latter never attempted to nest here again. Forster's terns appeared in 1987 and 88, but no later. Royal terns used it from 1991-1995 and Sandwich terns joined them during the last three of those years. Black skimmers have consistently used the island except for 1999.

Discussion and Management: The target species for this small island should be the terns and the skimmers. The island could be enhanced for them with the deposition of some fresh dredged material. Again some sort of containment must be provided to avoid run-off. Vegetation growth should be monitored and any excess removed.

Draft Colonial Waterbird Management Plan (CBBEP 2002)

New Isl. Number: 614-383C Old Name: (5) SB-NM41

Ownership: GLO

Cabins: 1 Predators: fire ants

Elevation: 1.1m

Substrate types: serpulid and coquina reef limestone rocks and cobble, small shell and sand

Description: This is a small well-vegetated island with a single cabin just southeast of the center. There is a pier that extends to the northwest toward the GIWW. The foundation of the island is very good and the bare areas of sand and shell are loose and not compacted. The vegetation on the higher points consists of salt grass, false ragweed, primroses, pigweed and sea ox-eye. There are large areas of bare sand that could support skimmers.

Birds that have nested - pairs for last five years:

614-383C	5/22/97	5/21/98	5/19/99	5/25/00	6/1/01
GBHE					
TRHE					
SNEG					
REEG					
ROYT					
SATE					
GBTE				17	
BLSK			6	6	3

LAGU				1	
------	--	--	--	---	--

Historical Significance: The first individual record for this island was in 1984. At that time, tri-colored herons, snowy egrets, gull-billed terns, black skimmers and laughing gulls, were using it. Tri-colored herons were especially abundant, 53 pair. The herons and egrets continued to occupy the island until 1992. Two pair of each appeared in 1996. Reddish egrets (5) were present in 1991 and great blue herons in 1992 and 1996. No herons or egret appeared later. Royal terns in 1990 and 1992 and sandwich terns in 1990 joined the bare ground and sparse vegetation nesters. The original three ground nesters continued to intermittently use the vegetation and bare ground until 2000. Only 3 pair of skimmers attempted to nest here in 2001. The absences of these listed species in various years could be due to the activity of the cabin owners.

Discussion and Management: The cabin is well constructed and appears to be heavily used. If the cabin were destroyed, this island with the preceding one could form the foundation for a much larger one. Fresh dredge material and a form of containment would be required. The island, in its present condition, is only good for skimmer nesting. The cabin owners should be made aware of the past history and asked to restrict their activity outside of the cabin.

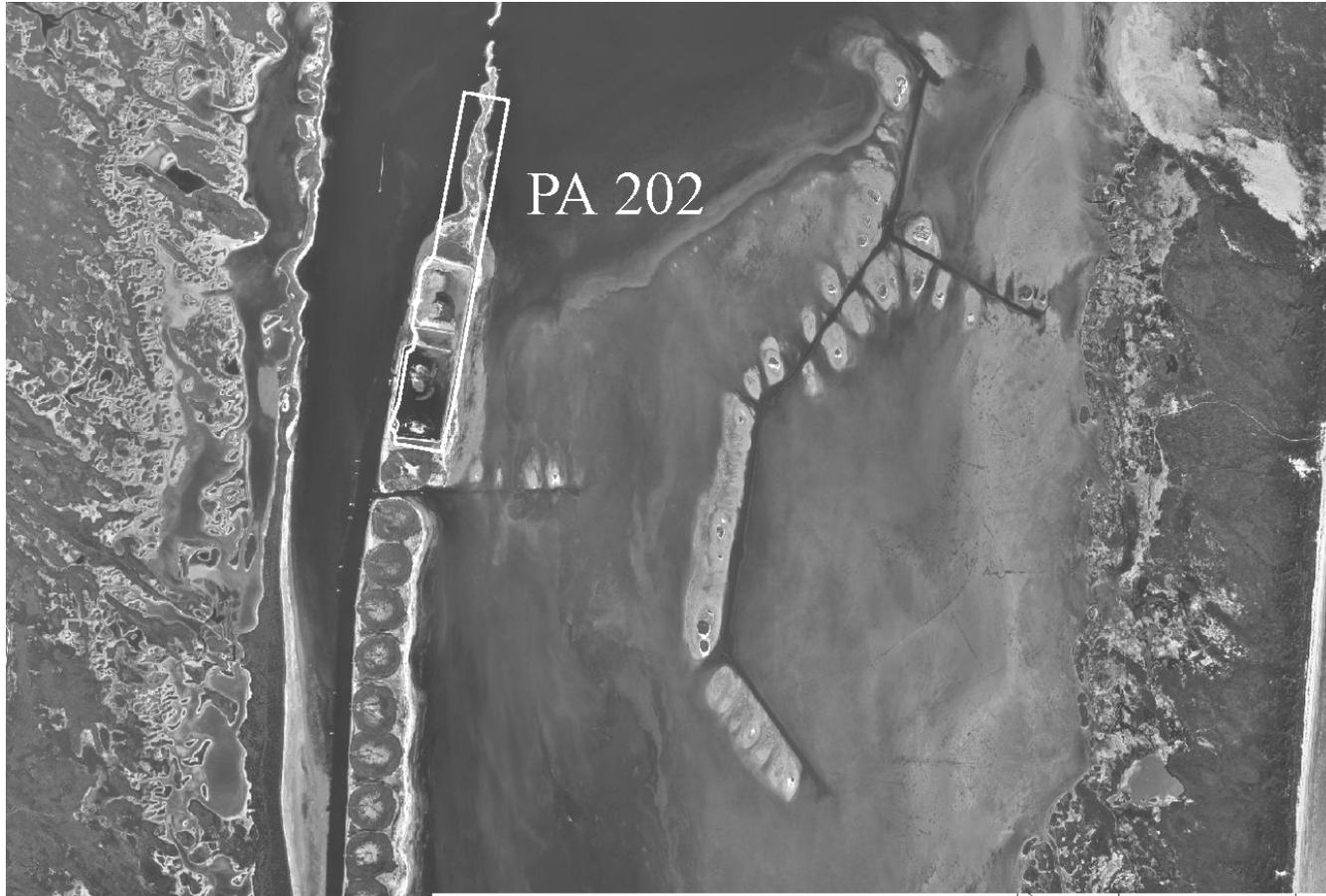


Figure 27. Placement Area 202

### Dredged Material Management Plan

PA 202 – (207+300 – 215+270) This is the southernmost PA in Reach 2 and is located at the entrance to the Land Cut. It is an emergent site located on the east side of the GIWW. The southern half of the disposal site is leveed. This PA was used 16 times between 1949 and 1995 with an average per-cycle discharge of 195,382 cy. There is no bird nesting on the site because of predator disturbance, but there are algal flats and seagrass beds along the east side of the PA. The ICT determined that the levees should be extended south to the channel between PAs 202 and 203 and north along the emergent area as far as needed to confine all the dredged material (consisting of an average of about 7% sand) over the next 50 years. The west boundary (next to the GIWW) will be moved out to enclose all of the west levee that is presently outside of the PA. The expansion of the leveed area to the north may enclose some open water to provide enough capacity for the 50-year life of the DMMP for this section of the GIWW. There is one cabin that may be affected by the northerly expansion of the leveed area.



Figure 28. Placement Areas 203, 204, 205 and 206.

### Dredged Material Management Plan

#### **Reach 3: This reach includes PAs 203-210, all located at upland sites in the Land Cut.**

The ICT considered all of the alternative dredging and placement options described in Section 5.0 of the EIS for the PAs in Reach 3. Following the criteria designed to identify fatal flaws in a disposal option, the ICT again eliminated Ocean Placement as a viable option due to the long haul distances, lack of appropriate equipment, excessive pumping distances for pipeline disposal, and the prohibition against crossing the PINS. Open-Bay Disposal was also eliminated because the closest open-bay site is The Hole, which is a shallow, vegetated area that is a popular fishing destination. The ICT did not consider taking any of the material to The Hole because of the impacts to seagrass and productive bay bottom that would accrue. Similarly, the Beach and Washover Nourishment options were eliminated for this reach because of the lack of sufficient sites to hold all of the dredged material and the prohibition against crossing PINS property with a pipeline. Thin Layer Placement was eliminated because of the lack of sufficient sites to hold all of the dredged material and it would not enhance the upland (sand/mud flat) habitat, which is a goal of this option. The only remaining option (Upland Confined Placement) was analyzed for each PA in Reach 3 before determining the best management plan, given the unique combination of habitat, dredging frequency and volume, and environmental management plans proposed for each PA. In some cases, the ICT determined it was not necessary to completely confine a PA in this reach, as described below.

### Dredged Material Management Plan

**PA 203** – (218+000 – 232+000) This upland site is located on the east side of the GIWW and is about 2 miles long. It was used six times between 1949 and 1995 with an average per-cycle discharge of 149,376 cy. The last time it was used was for emergency dredging created by Hurricane Brett in 1999. Normally, only about 5,000 cy/yr of sediments accumulate in this area. There is a narrow fringe of seagrass on the east side of the PA in The Hole. The southern end of PA 203 is fully leveed and encompasses about 108 acres. However, the front levee (nearest to the GIWW) may be outside the designated boundary of the PA. The west boundary will be moved out to enclose the levee and documented in the EIS. Since there is no bird use here, the ICT determined it would be best to move the dredge pipe frequently to deposit only a thin layer of dredged material (consisting of an average of about 27% sand) in the unconfined portion of the PA until reaching the confined area and then place the rest in the leveed section.

### Dredged Material Management Plan

**PA 204** – (234+600 – 241+700) This PA is completely leveed. However, the front levee (nearest to the GIWW) may be outside the designated boundary of the PA, so the west boundary will be moved out to enclose the levee and documented in the EIS. A 1,300-foot unleveed area at the north end is outside the PA boundary and will not be used for disposal. There is no bird use here. The site was used five times between 1949 and 1995 with an average per-cycle discharge of 100,581 cy. The maintenance material consists of about 72% sand. The ICT had no problems with continuing with the present disposal practice here.

**Dredged Material Management Plan**

**PA 205** – This PA is used only for the circulation channel connecting the GIWW to The Hole. It is seldom used and the ICT determined the present disposal practice could be continued. However, the ICT qualified this by requesting the Galveston District coordinate with GLO prior to dredging to determine if birds are using the site.

**Dredged Material Management Plan**

**PA 206** – (243+300 – 258+850) The northern third of this PA is fully confined. It has been used five times between 1949 and 1995 and has no bird use. The average per-cycle discharge is 352,592 cy. The southern end has some training levees. However, the front levee (nearest to the GIWW) and north levee (next to the circulation channel) may be outside the designated boundary of the PA. The north and west boundaries will be moved out to enclose the levees and the change documented in the EIS. The ICT agreed that it is best to continue with the current disposal practice and maintain the training levees, if they still exist, in the southern end.



Figure 29. Placement Area 207

### Dredged Material Management Plan

PA 207 – (261+450 – 274+875) This is a short PA that is fully confined in the lower 2/3 of the site. It was used five times between 1949 and 1995 and has no bird use. The average per-cycle discharge is 524,366 cy. The ICT decided to continue with the current disposal practice since there would be little impact, but to move the dredge pipe frequently to keep the dredged material run-off as thin as possible in the unleveed section.



Figure 30. Northern half of Placement Area 208



Figure 31. Southern half of Placement Area 208

### Dredged Material Management Plan

PA 208 – (277+475 – 318+900) This is a very long PA with short, leveed sections in the middle and southern end of the site. There is no bird use or nearby seagrass habitat. The site has been used nine times between 1949 and 1995 with an average per-cycle discharge of 715,043 cy. The dredged material consists of about 75% sand. The ICT recommended continuing the current disposal practice, but move the pipeline frequently to prevent excessive dredged material run-off at any one location in the unleveed sections. Several small, shallow channels were seen in the aerial photo cutting across the PA from the GIWW. The ICT recommended keeping the channels clear of any dredged material during disposal operations.

Note: The dividing line between Corpus Christi to Mud Flats and Port Isabel to Mud Flats standard dredging reaches occurs within the length of this PA, so channel numbers now decrease to the south instead of increasing to the south. The station number for the south limit of this PA is based on Corpus Christi stationing rather than Port Isabel stationing to facilitate calculation of total PA length.

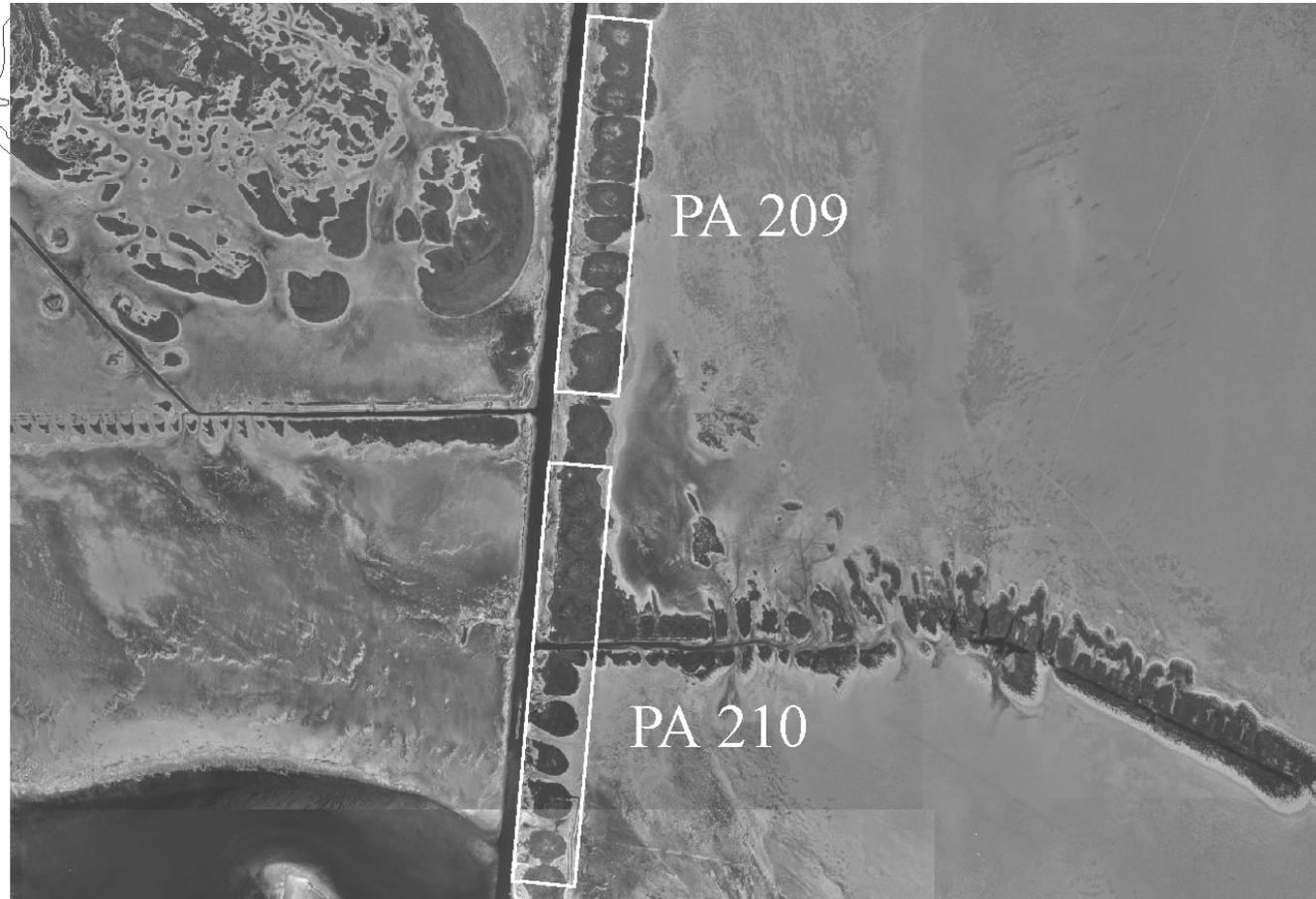


Figure 32. Placement Area 209 and 210

#### Dredged Material Management Plan

PA 209 – (319+200 – 310+800) This is a short PA without levees. There is no bird use or nearby seagrass habitat. It has been used six times between 1949 and 1995 with an average per-cycle discharge of 110,338 cy. The ICT recommended using the same management plan for this site as described for PA 208.

#### Dredged Material Management Plan

PA 210 – (309+200 – 299+800) This is a short PA with levees at the back and on the sides in the southern third of the site. The GIWW side is open. Again, there is no bird use or nearby seagrass habitat. It has been used 13 times between 1949 and 1995 with an average per-cycle discharge of 81,911 cy. The ICT recommended continuing the present disposal practice in the semi-confined area and moving the dredge pipe frequently in the unleveed section.

#### Dredged Material Management Plan

Reach 4: This reach contains PAs 211 to 222. Because several of the sites are close to the mainland or an entrance channel, are located in deep, unvegetated water, or have special requirements for environmental management, each PA or group of PAs was considered separately when determining the best dredging option for the area. A description of the ICT's reasons for selecting an option is provided for each site.



Figure 33. Placement Areas 211 and 212



Figure 34. Colonial Waterbird Colonies on and adjacent to Placement Areas 211 and 212

### Dredged Material Management Plan

PA 211 and 212 – (297+000 – 290+800; 289+200 – 280+800) These PAs are located on the east side of the GIWW. PA 211 has an earthen levee on the east side to prevent sediment flowing out into the seagrass on the backside of the site. PA 212 consists of a series of small islands paralleling the GIWW just south of PA 211. It has some bird use on the south end of the site. Both PAs have been used 15 times between 1949 and 1995 with an average per-cycle discharge of 117,247 cy and 175,985 cy, respectively. The sand content of the dredged material varies from 28% to 30%. The ICT decided that, following the criteria designed earlier to identify fatal flaws in a disposal option, Ocean Placement was not a viable option here. Neither were Upland Confined or Upland Thin Layer Placement, because the only upland sites to the west on the mainland contain sensitive wetlands and fringing seagrass in front. Another option was to pump the material to the north to existing upland disposal sites at the Land Cut. However, it was decided that these sites were needed for disposal of material from Reach 3 and should not be filled with material from Reach 4. Another problem with using the area in Reach 3 is that there are algal flats surrounding these upland disposal sites to the south that are considered to be piping plover habitat.

Elimination of these options left the three open bay disposal options (fully confined, semi-confined, and unconfined) as the only viable options. The ICT decided that confining PA 211 with earthen levees would create a problem for birds nesting at the south end of PA 212 by allowing predators easier access from the Land Cut and possibly ponding freshwater for their use. Another idea was to use low geotubes to contain most of the material on PA 211 to prevent burying any nearby seagrass beds, while preventing freshwater retention for predators. More geotubes could be added over the 50-year project life to retain sediments as the site fills. However, this would eventually raise the site high enough to allow predators easy access to PA 212.

The ICT agreed on a plan to move the existing earthen levees on PA 211 farther to the east and north to enclose all of the island (which is beyond the present PA boundary), add baffle levees across the site to slow the sediment flow (consisting of an average of about 30% sand) and allow more settling, and add earthen levees on the west side while leaving the south side open, thus creating a horseshoe-shaped disposal site. The north and east boundary of PA 211 will be extended to enclose all of the northern island.

The plan for PA 212 consists of removing the northernmost island and piling this material on the next island to the south. Precautions will be taken when placing maintenance material (consisting of an average of about 30% sand) on the islands to the south to avoid filling in the newly created gap. The purpose of the plan is to create a larger water gap between PAs 211 and 212 and make it harder for predators to reach the bird nesting site on PA 212. Another benefit is that seagrass would also be allowed to recover in the gap between the PAs between dredging cycles. The islands in PA 212 would not be leveed to contain the dredged material, but would be managed for bird nesting by alternately disposing on one island during a dredging cycle and then on another island in the next cycle. This would allow vegetation to recover on islands recently used and create a mosaic of vegetation types in various recovery stages

from unvegetated to dense cover for the nesting needs of the different species of birds using them. Seagrasses near the islands in PA 212 would recover between dredging cycles as in the past.

In summary, this plan would provide additional benefits for the seagrasses around PA 211 by protecting them from burial or high turbidity, manage the islands in PA 212 for bird nesting and create greater barriers for predators, and provide no net change in impacts to seagrass around PA 212. A small increase in seagrass habitat would be provided by widening the gap between PAs 211 and 212.



Figure 35. Placement Areas 213 and 214

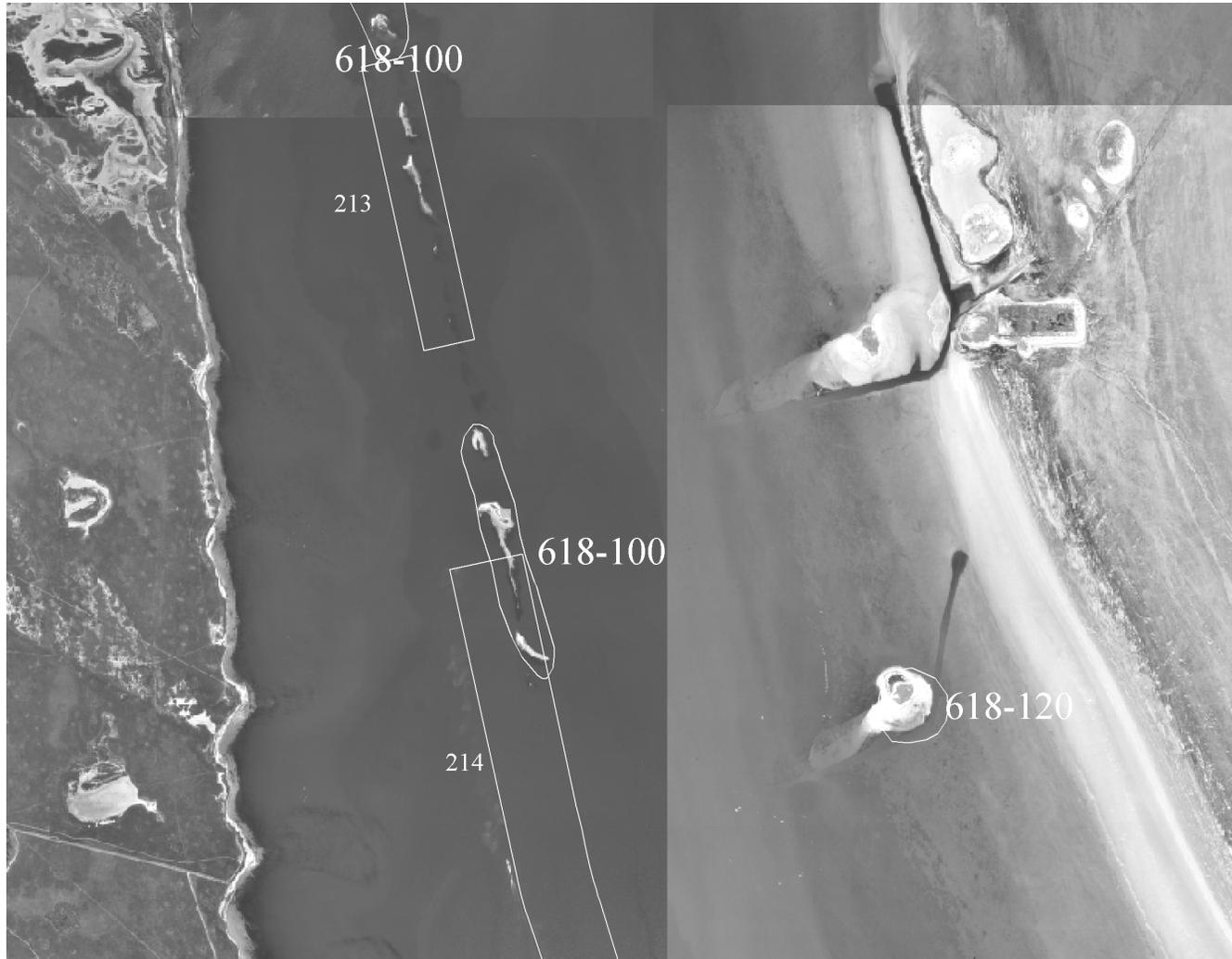


Figure 36. Colonial Waterbird Rookeries on and adjacent to Placement Areas 213 and 214

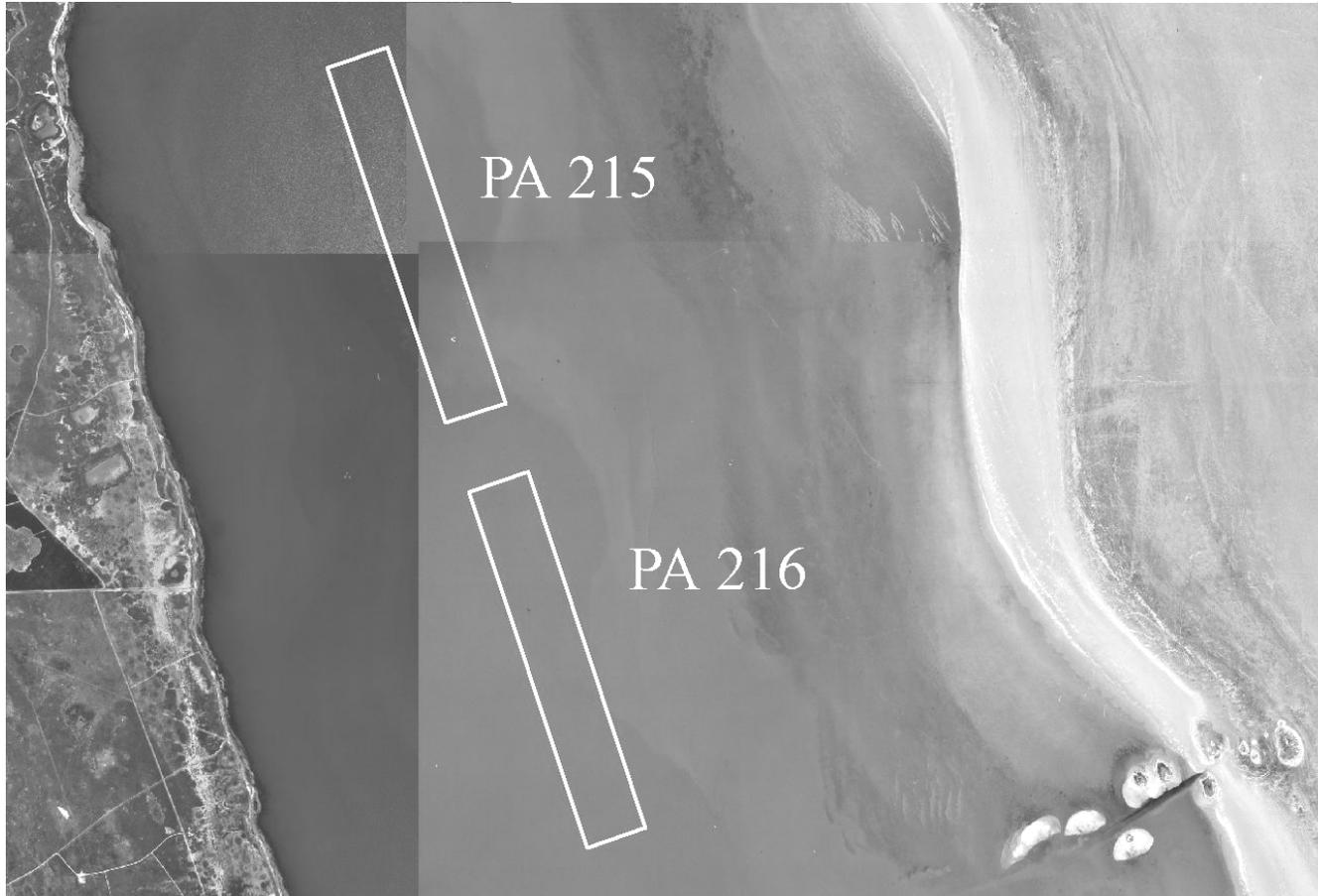


Figure 37. Placement Areas 215 and 216

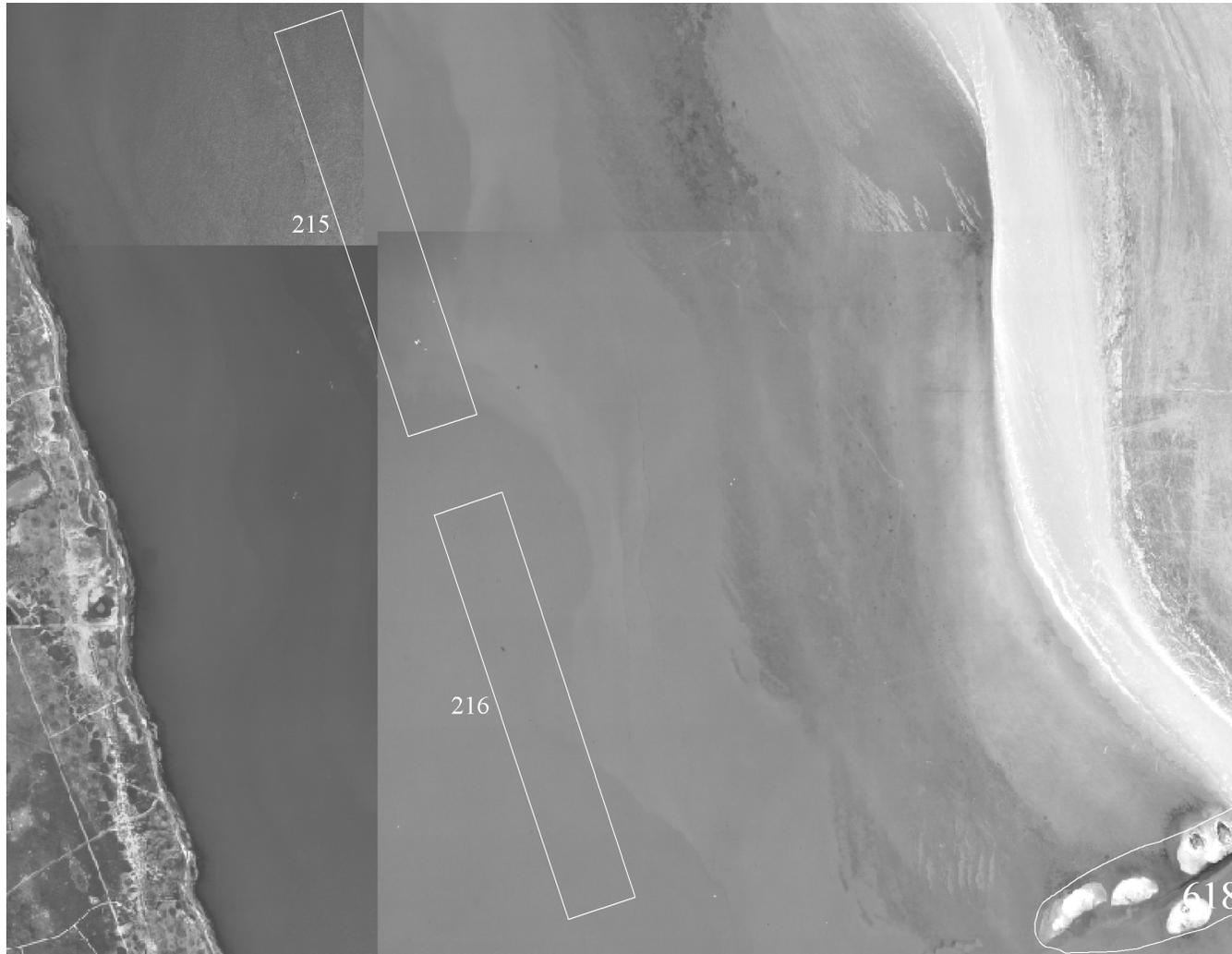


Figure 38. Colonial Waterbird Rookeries adjacent to Placement Areas 215 and 216



Figure 39. Placement Areas 217 and 218



Figure 40. Colonial Waterbird Rookeries adjacent to Placement Areas 217 and 218

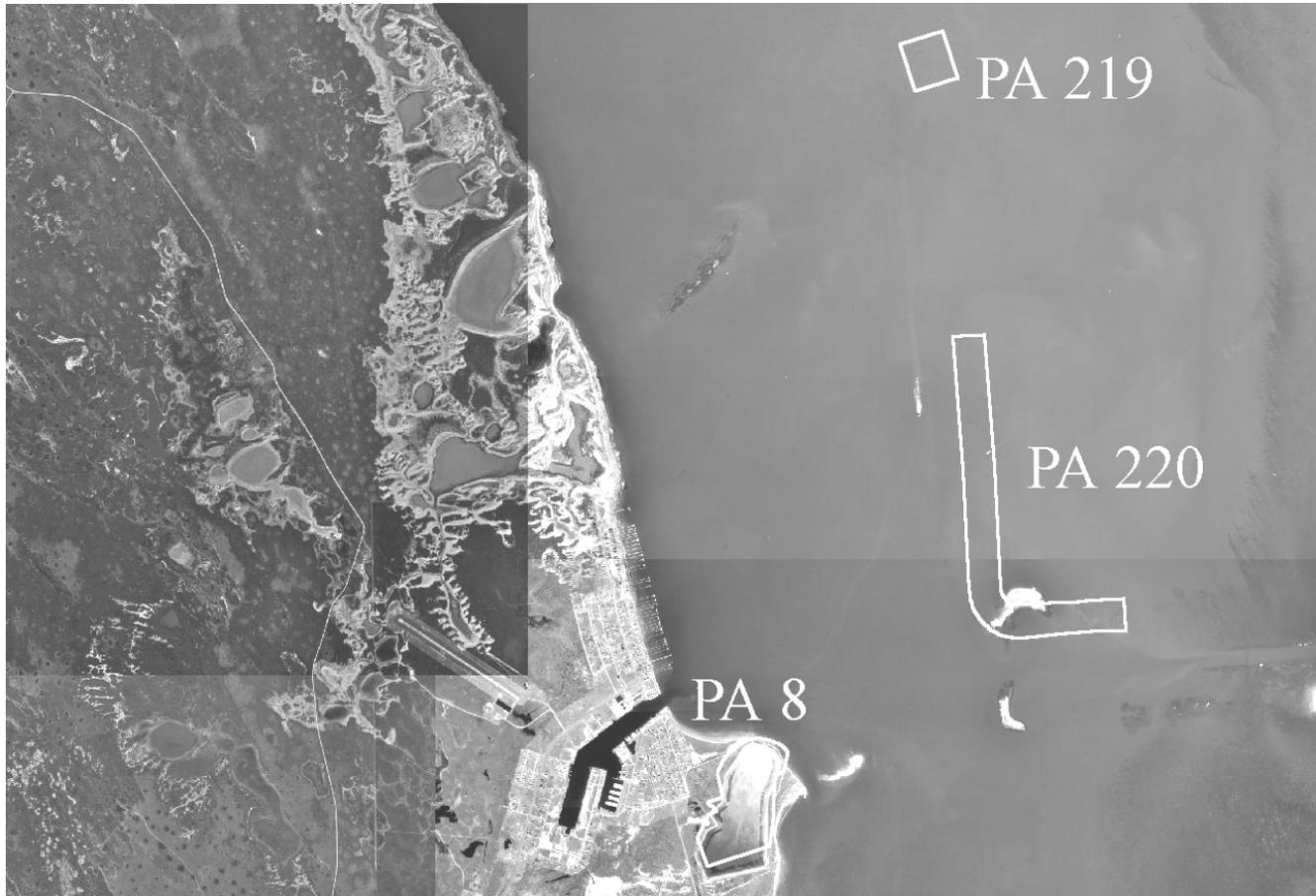


Figure 41. Placement Areas 219, 220 and 8 (Upland Confined)



Figure 42. Colonial Waterbird Colonies on and adjacent to Placement Areas 219 and 220

#### Dredged Material Management Plan

PA 213 – 219 - (279+200 – 270+800, 269+200 – 260+800, 259+200 – 250+800, 249+200 – 240+800, 239+000 – 230+800, 229+200 – 220+800, 219+200 – 214+300) These PAs are located on the east side of the GIWW in deeper water. There are no emergent islands in these PAs and the water is too deep to support seagrass. Ocean Placement was eliminated earlier as a fatal flaw. Also, there would be no other identified biological benefit in using this option. Upland Placement was not a viable option either, since the pumping distance is too great. Other objections to this option include impacts to algal flats to the east and to fringing wetlands and seagrasses on the west (mainland) side.

The ICT determined that the only viable disposal option for these PAs is one of the open bay disposal alternatives. Since there are no bird nesting sites or seagrass beds in the area, the ICT decided it would be best to continue the present practice of using unconfined disposal at these sites. The dredged material in this reach of the GIWW contains an average of about 7-23% sand. The PAs have been used 6-14 times between 1949 and 1995 with an average per-cycle discharge varying from 101,885 cy to 218,230 cy. There would be no significant biological benefits to be gained by trying to create a fully confined or semiconfined PA system in this area.

#### Dredged Material Management Plan

PA 220 – (212+700 – 207+200) This is an L-shaped disposal site used for disposal of maintenance material from the GIWW and the Channel to Port Mansfield. It is located at the northeast corner of the junction of the GIWW and Channel to Port Mansfield. It has been used 10 times for GIWW disposal between 1949 and 1995 with an average per-cycle discharge of 153,758 cy. There is an emergent island located at the bend of the site, but much of it is outside of the boundary of the PA. This island is used for nesting by birds (including pelicans), but it is eroding severely on the north side.

Because this is the closest site to an opening to the Gulf (Mansfield Pass), the ICT considered Ocean Placement with a pipeline dredge as an option. However, this option was dropped after it was determined that it would be an 8-mile pump (including the reach of the GIWW being dredged) just to reach the beach and even farther to get the material offshore. The silty material (consisting of an average of about 8% sand) is not suitable for beach nourishment. Pumping the material would require as many as two booster pumps (depending on the size of the dredge) and would not be economically viable. Upland Placement was also dropped as an option due to the pumping distances involved. In addition, there were no biological benefits to accrue under either plan.

Another ocean placement alternative was considered by the ICT for PAs 220 and 221 due to their frequent use and proximity to a pass. In this alternative, a bucket dredge and scow would be used to collect shoaled material from the GIWW near Mansfield Channel and taken offshore to a designated ocean disposal site. A cost analysis of this alternative showed it would be 3.8 times more expensive

than the present dredging and disposal method and 3.5 times more expensive than the management plan ultimately accepted by the ICT for this site. Due to the high cost of this alternative, the ICT did not select it as the management plan for this site. However, this alternative could be considered for future dredging cycles by the ICT, provided it could be done economically, equipment was available, and EPA provided the necessary clearance for ocean disposal of the dredged material under Section 102 of the Marine Protection, Research and Sanctuaries Act. EPA clearance for ocean placement will not be pursued until this alternative is identified as a viable option by the ICT.

The ICT also considered the open bay disposal alternatives. It was agreed that the greatest biological benefit of this alternative would be realized by managing the site for bird use. This would be achieved best by placing geotubes on the shallow shelf around the existing island on three sides, leaving the south end open where erosion does not appear to be a problem. Dredged sandy material from the Channel to Port Mansfield would be stockpiled on the north side of the site and used to fill the geotubes later. Silty material in the GIWW from future dredging cycles would be used to fill in the horseshoe-shaped site surrounding the bird island to enhance bird nesting habitat. This would also protect seagrass near the site from burial and high turbidity to the north. The open southern end could be closed with geotubes later, if it is determined there is more erosion occurring there than is currently believed to exist.

This alternative in the management plan, if it is used, would require expanding the boundary of PA 220 beyond what is described in the 1975 EIS to enclose the island. This task could be accomplished in the EIS being prepared by the ICT. The ICT will make a determination before each dredging cycle which alternative would be used based on ecosystem benefits and habitat needs, equipment limitations, disposal restrictions, and economics.

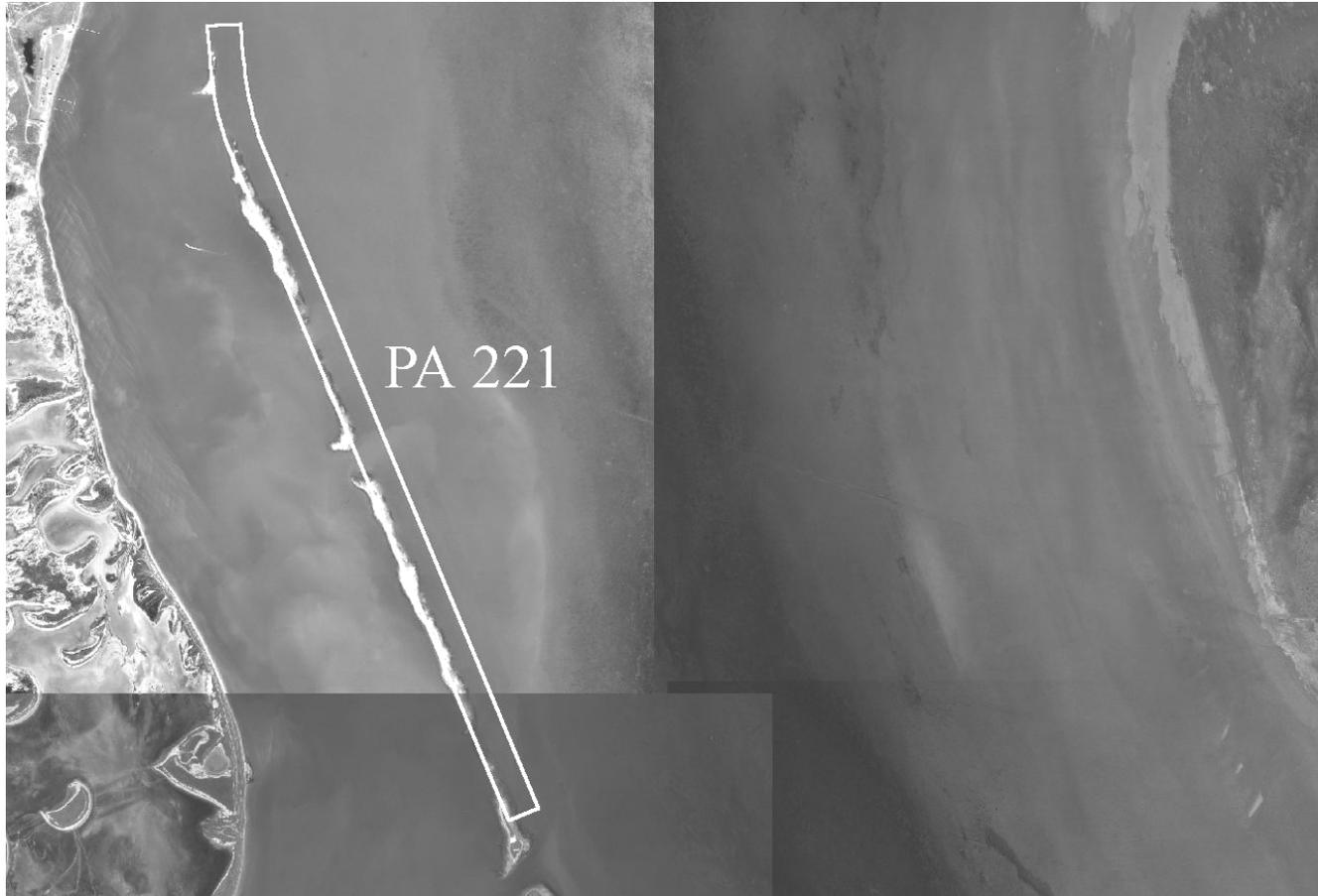


Figure 43. Placement Area 221



Figure 44. Colonial Waterbird Colonies on or adjacent to Placement Area 221

### Dredged Material Management Plan

PA 221 – (200+000 – 181+300) This PA is located on the west side of the GIWW south of the junction with the Channel to Port Mansfield. It consists of a series of small islands (some have coalesced over the years with disposal) along the GIWW that creates a small bay between the PA and the mainland. The islands protect the shallow water in the bay and allow seagrass to flourish in the area. Because there have been problems in the past with dredged material flowing into the bay, causing circulation problems and the area to shoal more with each dredging cycle, the ICT decided it would be better under the open bay disposal alternative to manage the biological resources (seagrass) by moving PA 221 to the east side of the GIWW. The new site would be known as PA 221A. The water is deeper on the east side and is devoid of seagrass in the immediate area. Moving the PA to the east side would benefit the biological resources on the west side of the GIWW by preventing further circulation and shoaling problems behind PA 221. This segment of the GIWW was dredged 17 times between 1949 and 1995 with an average per-cycle discharge of 177,214 cy. The ICT decided against using geotubes at PA 221A to confine all the material because it is a permanent removal of bay bottom with no ecological benefit. However, a linear arrangement of low geotubes or a levee created with in-situ material (both subsurface) may be needed between the GIWW and PA 221A to prevent dredged material (consisting of an average of about 6% sand) from flowing back into the GIWW. By designating PA 221A as a submerged, semi-confined, open-bay site, the bay bottom will be available for recolonization by marine organisms between dredging cycles.

An alternative consideration by the ICT would be offshore disposal using a bucket dredge and scows as described for PA 220. The ICT will make a determination before each dredging cycle which alternative would be used based on ecosystem benefits and habitat needs, equipment limitations, disposal restrictions, and economics.

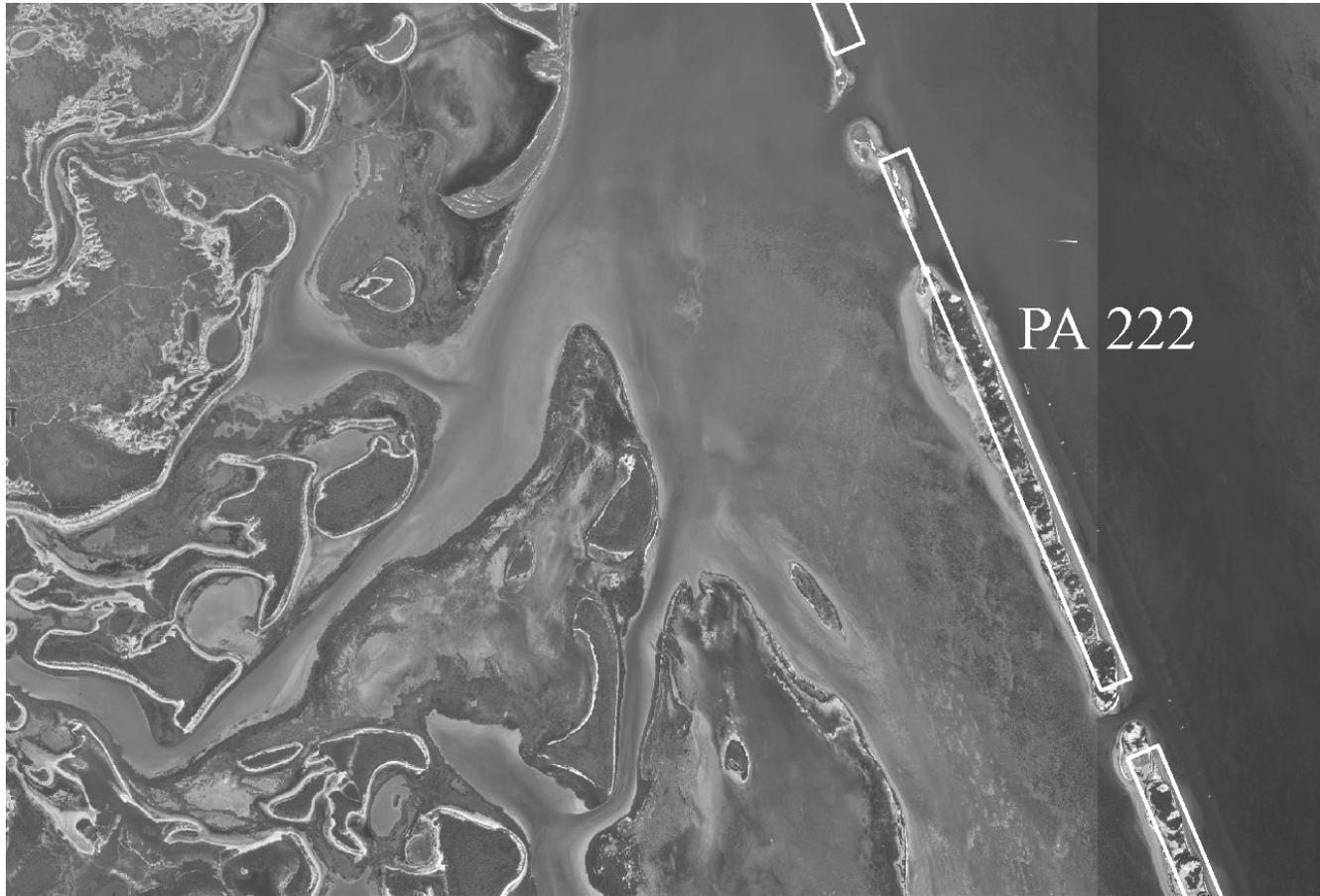


Figure 45. Placement Area 222

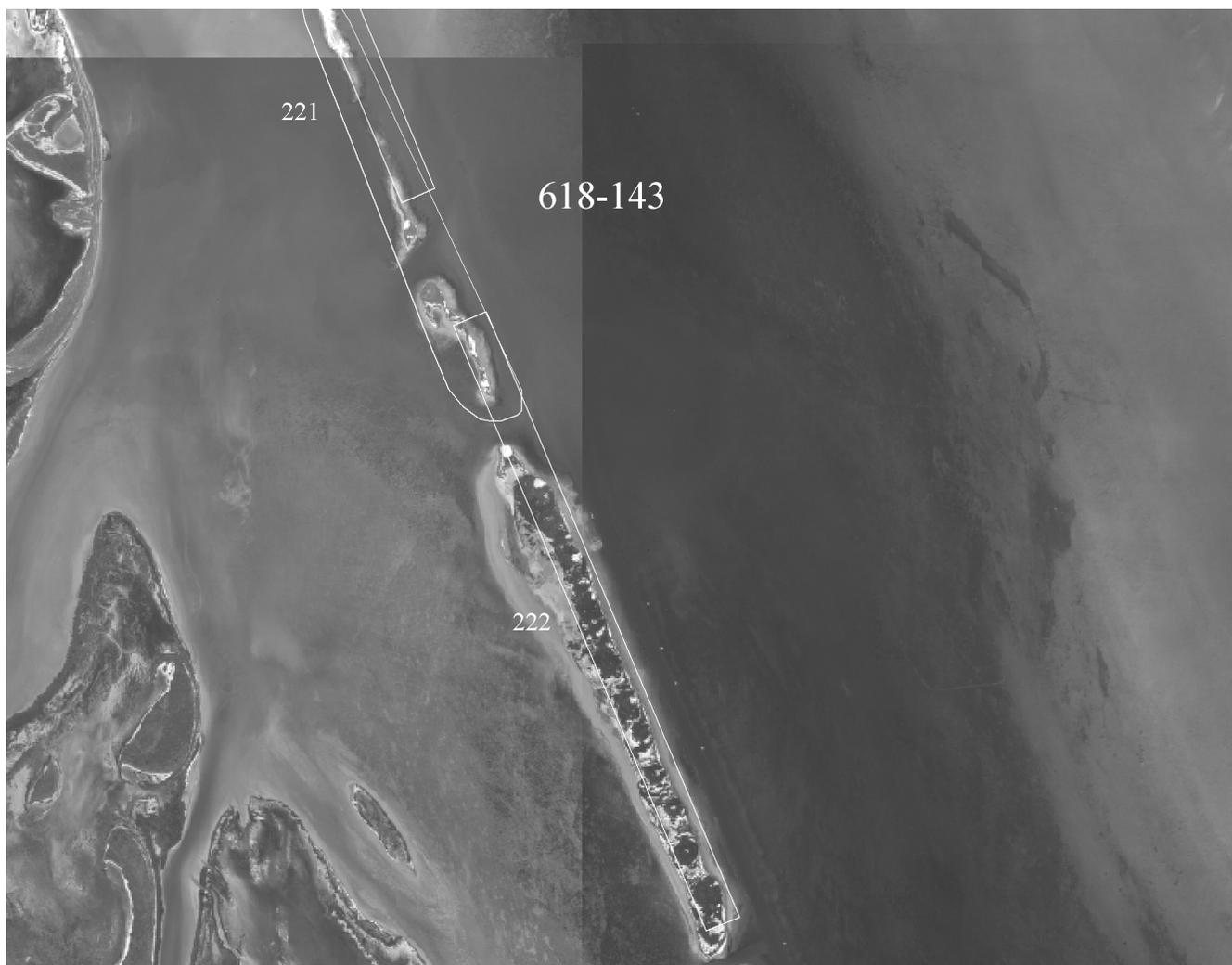


Figure 46. Colonial Waterbird Rookery on and adjacent to Placement Area 222

### Dredged Material Management Plan

**PA 222** – (178+700 – 165+800) This PA is the southernmost disposal site in Reach 4 and is located on the west side of the GIWW. It consists of one large linear island running the length of the PA. The PA has been used 10 times between 1949 and 1995 with an average per-cycle discharge of 183,776 cy. The northern 6,000 feet of the island was fully leveed in 1996. Birds use a large clump of mesquite trees inside the leveed area for nesting. In order to protect the seagrass in the area south of the leveed section, the ICT determined it would be best to extend the levees to the south and move the west levee farther out (in some areas, a short distance out into the water) to increase the size of the enclosed PA. Because the west levee is presently outside the PA, the west boundary will be moved out to enclose the levee and the islands and described in the EIS. The larger PA size would allow greater settling time for the dredged sediments (consisting of an average of about 23% sand) and create a cleaner effluent (low turbidity) release back into the bay (seagrass habitat). Since PA 222 is surrounded by seagrass, this action will permanently remove a small area of seagrass on the western side of the PA, but the larger area of seagrass surrounding the PA would be protected from turbidity or future releases of dredged material in the non-leveed section of the PA. This will remove any future temporary impacts to seagrass, prevent the shallow water between the PA and the mainland from additional shoaling, and maintain the area for bird nesting between dredging cycles. The ICT also recommended increasing the size of the gap between the large leveed island and the islands to the south (outside PA 222) by pulling in material at the gap to construct the south levee. This will make it a little more difficult for predators to cross between the islands.

### Dredged Material Management Plan

Reach 5: This is the shortest reach in the Laguna Madre and contains PAs 223 to 228.

The ICT considered all of the alternative dredging and placement options described in Section 5.0 of the EIS for these PAs. Following the criteria designed to identify fatal flaws in a disposal option, the ICT eliminated Ocean Placement as a viable option due to the long haul distances between Mansfield Pass and Brazos Santiago Pass, lack of appropriate equipment, and excessive pumping distances for pipeline disposal. One other option, piping the material across Padre Island was eliminated because of the distance involved and the unacceptable impacts to seagrass and extensive sand/mud flats between the GIWW and the barrier island. Likewise, Upland Confined and Upland Thin Layer Placement were eliminated from further consideration due to the permanent impacts to seagrass and wetland habitats that would occur in pumping the material to an upland site. Another factor affecting upland placement is that the Laguna Atascosa National Wildlife Refuge (LANWR) owns the upland area on the mainland opposite PAs 224-234 and will not accept dredged material in the Refuge. The only remaining options (fully confined, semi-confined, and unconfined open-bay placement) were analyzed for each PA in Reach 5 before determining the best option, given the unique combination of habitat, dredging frequency and volume, and environmental management plans proposed for each PA.



Figure 47. Placement Area 223



Figure 48. Colonial Water Bird Rookery adjacent to Placement Area 223

### Dredged Material Management Plan

PA 223 – (164+200 – 154+300) This PA is located on the west side of the GIWW and consists of a long island with a series of mounds separated by barely emergent areas and a small island with two mounds in the southern end. The islands do not have any birds nesting on them. The site was used six times between 1949 and 1995 with an average per-cycle discharge of 92,078 cy. There is seagrass growing around the site, as at PA 222. The ICT determined that it would be best to create a fully confined earthen levee system at this PA to protect the seagrass beds in nearby shallow water. Because the islands are so narrow, the western levee may have to be placed a short distance out into the water to create a PA with useable capacity and greater settling time for a clearer effluent. The west boundary of the PA will be moved out to enclose the west levee and all of the islands and described in the EIS. This will permanently remove a small area of seagrass, but will benefit the large area behind the PA by preventing future temporary impacts from burial and high turbidity (no data on sand content), as well as gradual shoaling in the area. The gap at the south end would be enlarged by pulling material from the narrow channel onto the island to create the south levee for the PA.



Figure 49. Placement Areas 224 and 225



Figure 50. Colonial Waterbird Rookeries adjacent to Placement Areas 224 and 225

### Dredged Material Management Plan

PAs 224 and 225 – (151+700 – 140+800, 139+200 – 135+600) These PAs are on the same long island located on the west side of the GIWW and are partially leveed. They are open on the west side. These disposal sites aren't used very often (only three times and one time, respectively, and the last use was 1989) and most of the dredged material (consisting of an average of about 15-35% sand) from this section of the GIWW goes into PA 226. The average per-cycle discharge is 58,422 cy and 83,936 cy, respectively. PA 226 is fully leveed and is used to contain material from this segment of the GIWW because it has a low shoaling rate and to prevent excessive shoaling of the small bay between the site and the mainland due to sediment runoff from the PA. The ICT determined it would be best to fully confine the two sites to form one long PA with two cells. Because the east levee of the partially confined sites in both PAs are outside of the PAs, the east boundary will be moved out to enclose the levees and all of the islands. The north boundary of PA 225 and south boundary of PA 224 will be joined, as well. The USACE may still retain the original PA numbers for each site/cell.



Figure 51. Placement Areas 226 and 227

#### Dredged Material Management Plan

PA 226 – (135+600 – 130+500) This PA is located at the northwest corner of the intersection of the GIWW and Arroyo Colorado and is already fully confined by earthen levees. Because of its location, it is used to contain maintenance material dredged from both the Arroyo Colorado and the GIWW. The site has been used 13 times between 1949 and 1995 for GIWW maintenance with an average per-cycle discharge of 84,497 cy. This site presently receives material from the GIWW segments normally designated for PAs 224, 225, and 227, as well. The USACE has determined that this PA has the capacity to hold all this material, unless a severe storm strikes the area and causes excessive shoaling. At this time, it may become necessary to divert dredged material to the other PAs to avoid depleting capacity at this site. This plan will be reviewed by the ICT prior to an emergency dredging caused by a storm. The ICT decided that the PA should be used and managed as currently done by the USACE. There are no biological benefits to be gained by modifying the present management plan.

PA 227 – (130+500 – 126+500) This PA is an unconfined site located on the east side of the GIWW opposite from the intersection with the Arroyo Colorado. This site has been used five times for disposal but not since the 1960s because birds use it for nesting. Dredged material designated for this PA is currently pumped to PA 226. Although there are no plans to use this PA now, the USACE reserves the right to use the site on an emergency basis. As part of the management plan, the USACE may also use the site if the island appears to be in danger of disappearing through erosion. The dredged sediments in this reach consist of about 23% sand and has a per-cycle discharge of 91,128 cy. The area around PA 227 is very shallow and contains seagrass. The ICT decided to leave the disposal site as it is since there are no plans to use it at this time.



Figure 52. Placement Area 228



Figure 53. Colonial Waterbird Rookeries on and adjacent to Placement Area 228

### Dredged Material Management Plan

**PA 228** – (123+250 – 105+000) This is the last disposal site in Reach 5 and consists of a very long chain of islands, extending for about 18,000 feet along the west side of the GIWW. The dredged sediments in this reach consist of an average of about 16% sand. It was used five times between 1949 and 1995 with an average per-cycle discharge of 122,115 cy. The PA is located in a very shallow area and is not experiencing much erosion. Due to the narrow gaps between the islands, there is reduced circulation between the islands and the mainland. The ICT determined that the best management plan for this disposal site would be to create a fully confined earthen levee system on 6,000 feet of the longest chain of islands at the north end and place the west levee a short distance into the water to achieve a width of at least 700 feet. This will provide a confined PA sufficiently large to allow greater settling and a clearer effluent compared to unconfined disposal. Another 5,000 feet of the island chain on the south end will also be fully leveed to provide sufficient capacity for the life of the DMMP. The west boundary of the PA will be moved out to fully enclose the islands to provide more capacity for the enclosed PA. The ICT determined the trade-off of a permanent loss of a small area of seagrass habitat to protect the much larger area of surrounding seagrass habitat from many short-term temporary impacts and prevent shoaling in the area was the best management solution for the area. The USACE will determine the proper size of the PAs to be fully leveed and the best location for the levees.

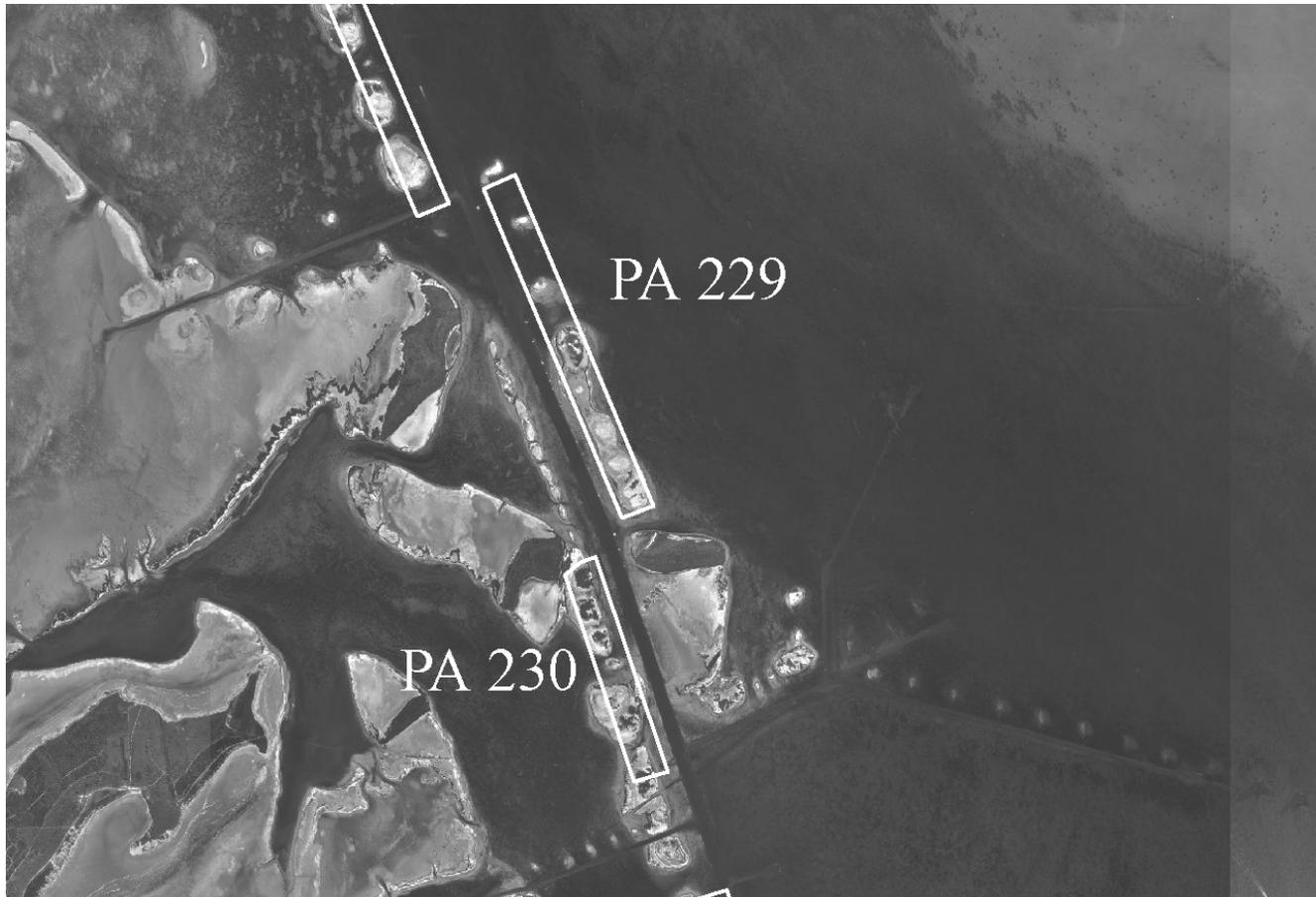


Figure 54. Placement Areas 229 and 230

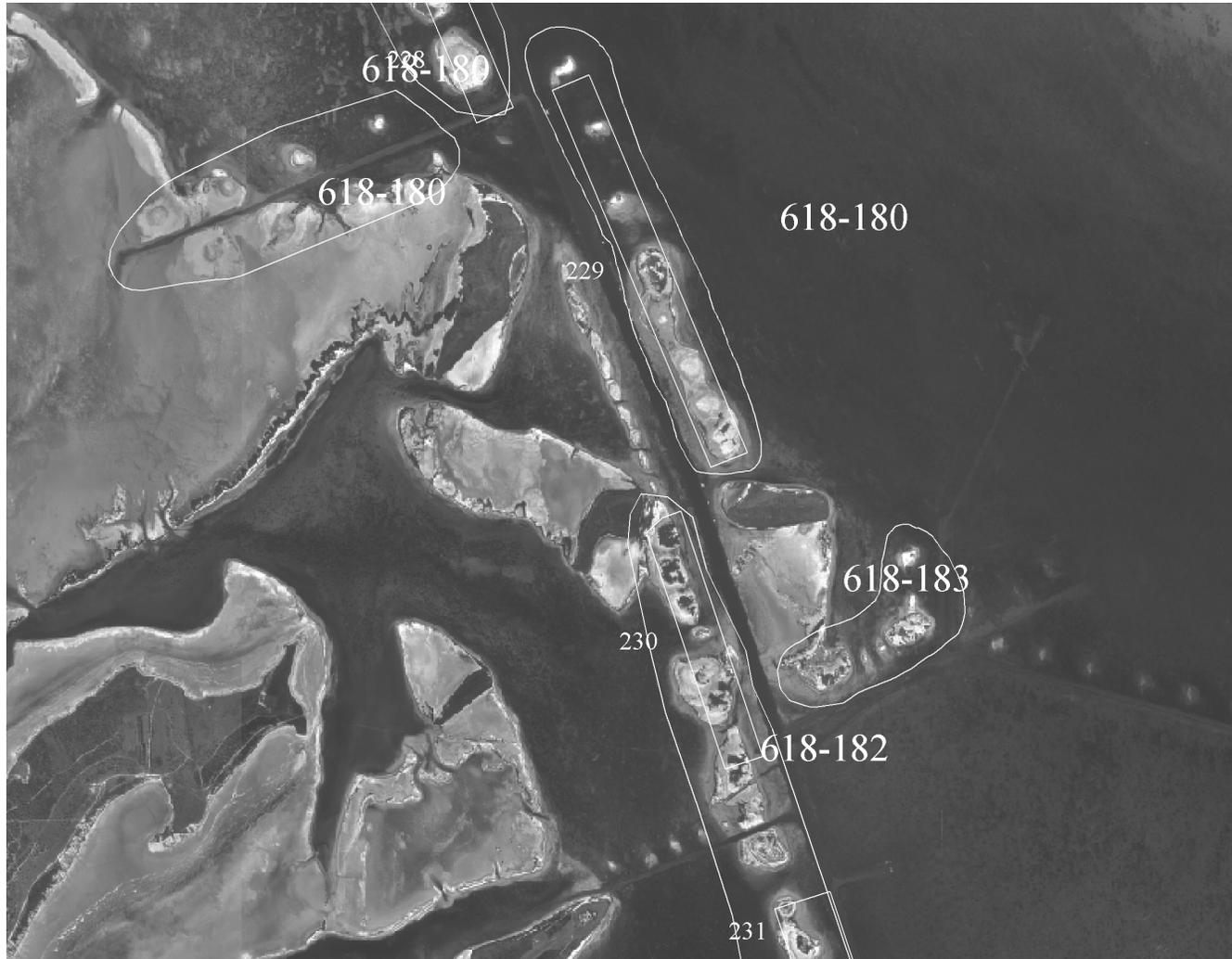


Figure 55. Colonial Waterbird Rookeries on and adjacent to Placement Areas 229 and 230

#### Dredged Material Management Plan

PA 229 – (105+000 – 97+000) This PA is located on the east side of the GIWW and consists of an unleveed series of mounds. The site was used three times between 1949 and 1995, but does not receive much dredged material each cycle (an average of about 27,740 cy). The ICT considered the option to pump the material to the Gulf, but it was eliminated because a direct pump is a minimum of 7.5 miles. This would require two booster pumps and impact seagrass, tidal flats, sand dunes, and other sensitive habitats to lay the pipeline. The pumping distance to the mainland is shorter at about 4 miles, but it will impact seagrass, sand/algal flats, and the LANWR. Offshore disposal using hopper dredges or scows was also eliminated as an option because of the fatal flaw analysis done earlier by the ICT (Section 5.0 of the EIS).

Other considerations for the site include some bird use of the site and nearby seagrass beds. The ICT decided to use the PA as in the past, but move the discharge pipe to the two or three spots available on nonvegetated mounds and let the material run out to the east. Further, the dredging and disposal operations should take place in the winter and late-spring period when seagrass is dormant and birds are not nesting. This will bury some seagrass, but the seagrass will recover between cycles (15.5 years), especially if most of the dredged material (consisting of an average of about 7% sand) is spread out over the nonvegetated mounds.

#### Dredged Material Management Plan

PA 230 – (96+465 – 91+300) This PA consists of four large mounds interspersed along a chain of small islands on the west side of the GIWW. The large mounds support dense vegetation that is used by colonial waterbirds for nesting. This site has been used only once since the GIWW was constructed, that occurring in 1974. The ICT considered options for offshore and upland disposal and dismissed them for the same reasons listed for PA 229, including increased pumping distance to the beach over that listed for PA 229. The ICT decided to use the site, if needed in the future, with seasonal restrictions for bird nesting and seagrass growth. The dredged material (no data on sand content) will be discharged over the mounds (43,260 cy during the only dredging event), but the site will be surveyed for suitable discharge points to avoid seagrass and bird use areas, as much as possible, before each use.

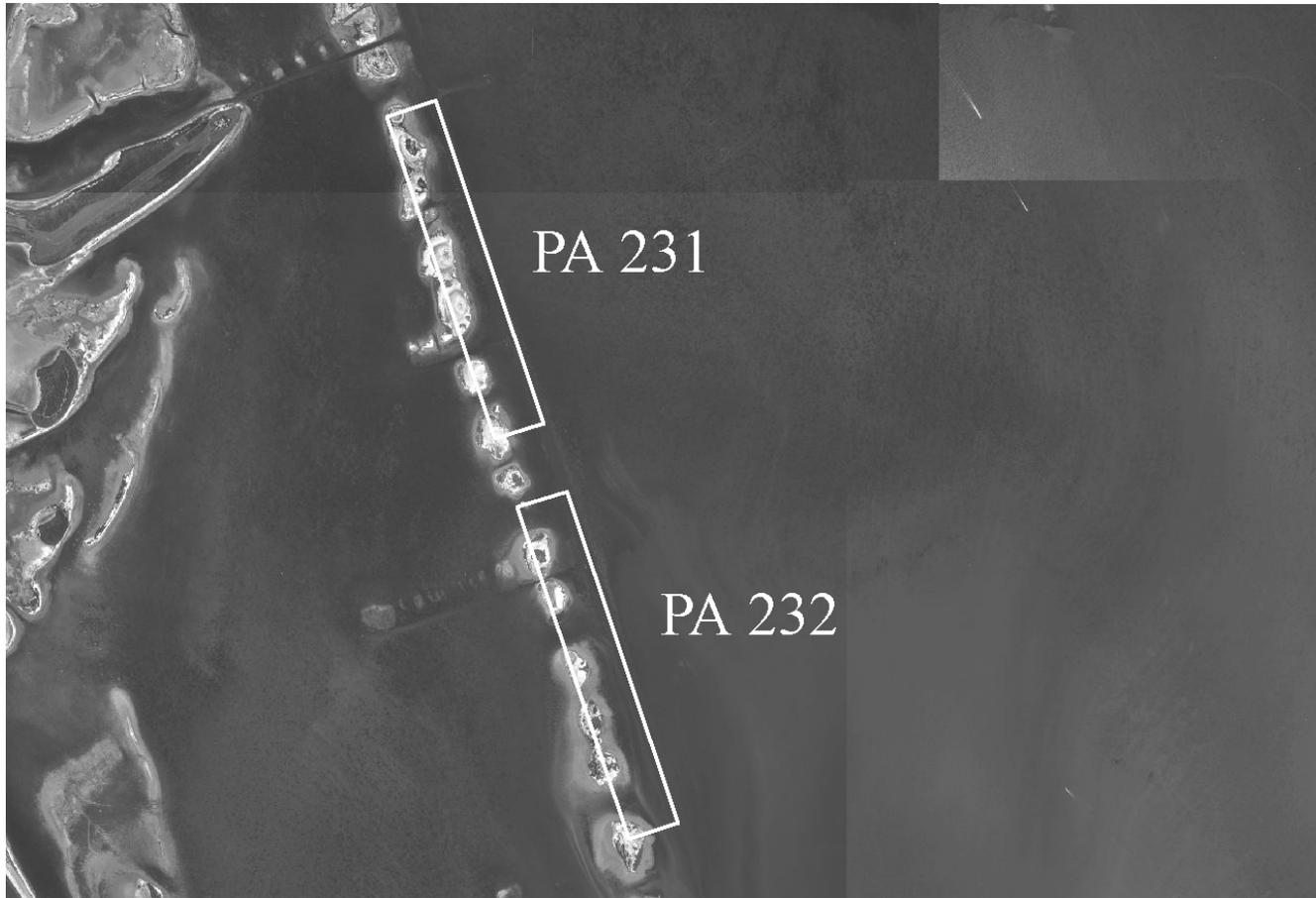


Figure 56. Placement Areas 231 and 232



Figure 57. Colonial Waterbird Rookeries on and adjacent to Placement Areas 231 and 232

#### Dredged Material Management Plan

**PA 231** – (88+700 – 80+800) This PA has the same characteristics as PA 230, but is a longer chain of small islands. This PA was also used one time only, that occurring in 1974. The ICT eliminated offshore and upland options for the same reasons listed above. The ICT determined the best management plan at this time is to use the PA with the same restrictions as PA 230. There are no data on sand content of dredged material in this segment. The volume discharged during the site's only use was 69,982 cy.

#### Dredged Material Management Plan

**PA 232** – (79+200 – 71+300) This PA consists of a chain of small islands on the west side of the GIWW. Shoaling is more of a problem at this site than to the north, requiring maintenance dredging 12 times between 1949 and 1995 with an average per-cycle discharge of 57,126 cy. There is some bird use of the islands and extensive seagrass beds surround the site. The ICT investigated moving the PA to the other side of the GIWW to avoid impacting surrounding seagrass beds. However, surveys of the area found it to be shallow and covered with an extensive bed of seagrass. Rather than create new impacts to an unaffected area of seagrass, the ICT determined that it would be the best management practice to continue placing dredged material (consisting of an average of 17% sand) at the current site, but to spread it along the PA in as thin a layer as possible to limit the depth of seagrass burial. Previous studies have shown that seagrass can recover if burial is no deeper than about 3 inches. The USACE will use a diffuser at the end of the pipe to facilitate thin layer placement. In order to help retain more material on the islands, the south and west boundaries will be expanded to enclose all of the islands. This plan will be reviewed before each dredging event to see if changes in the management plan are needed. This site will be managed primarily for seagrass habitat.

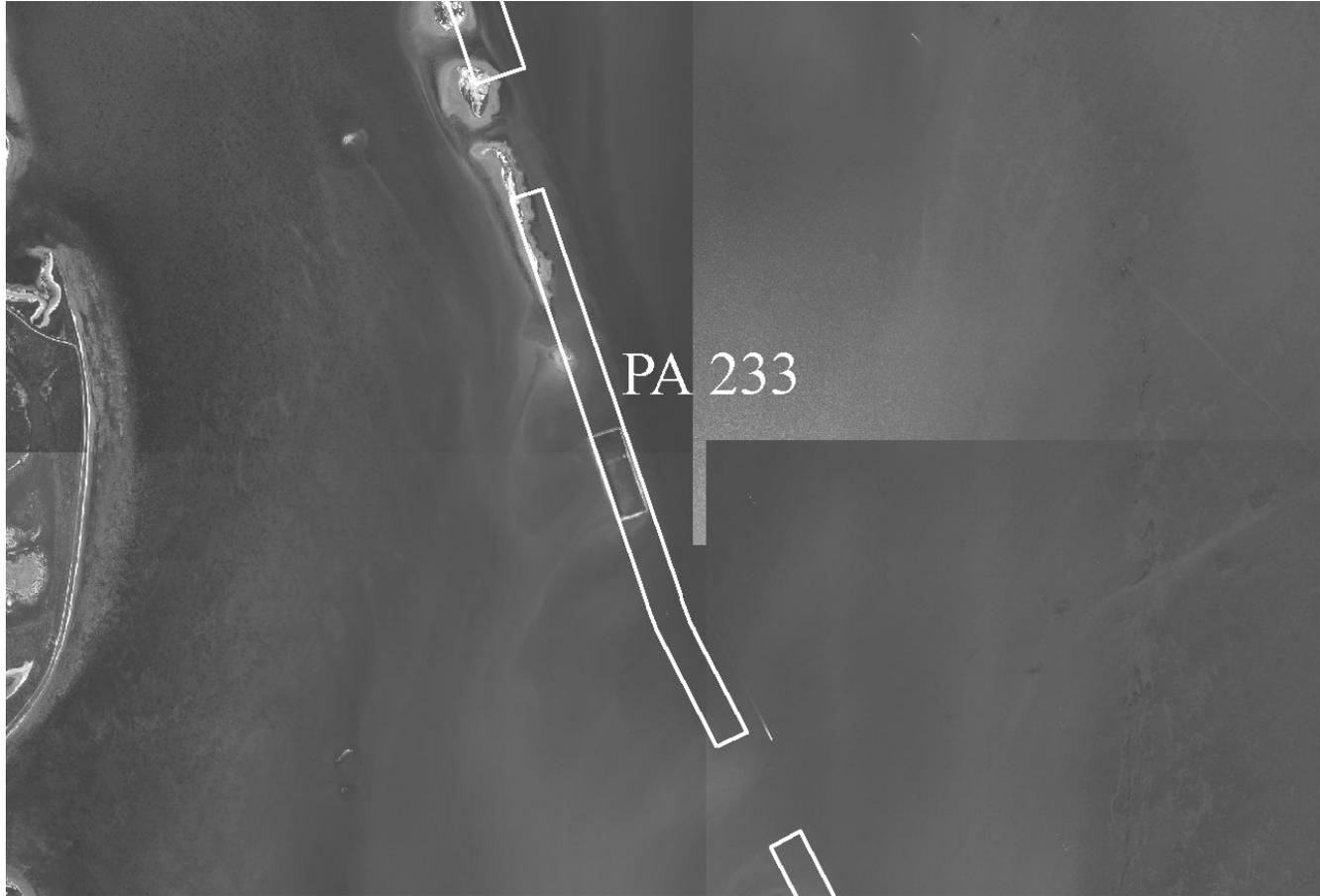


Figure 58. Placement Area 233

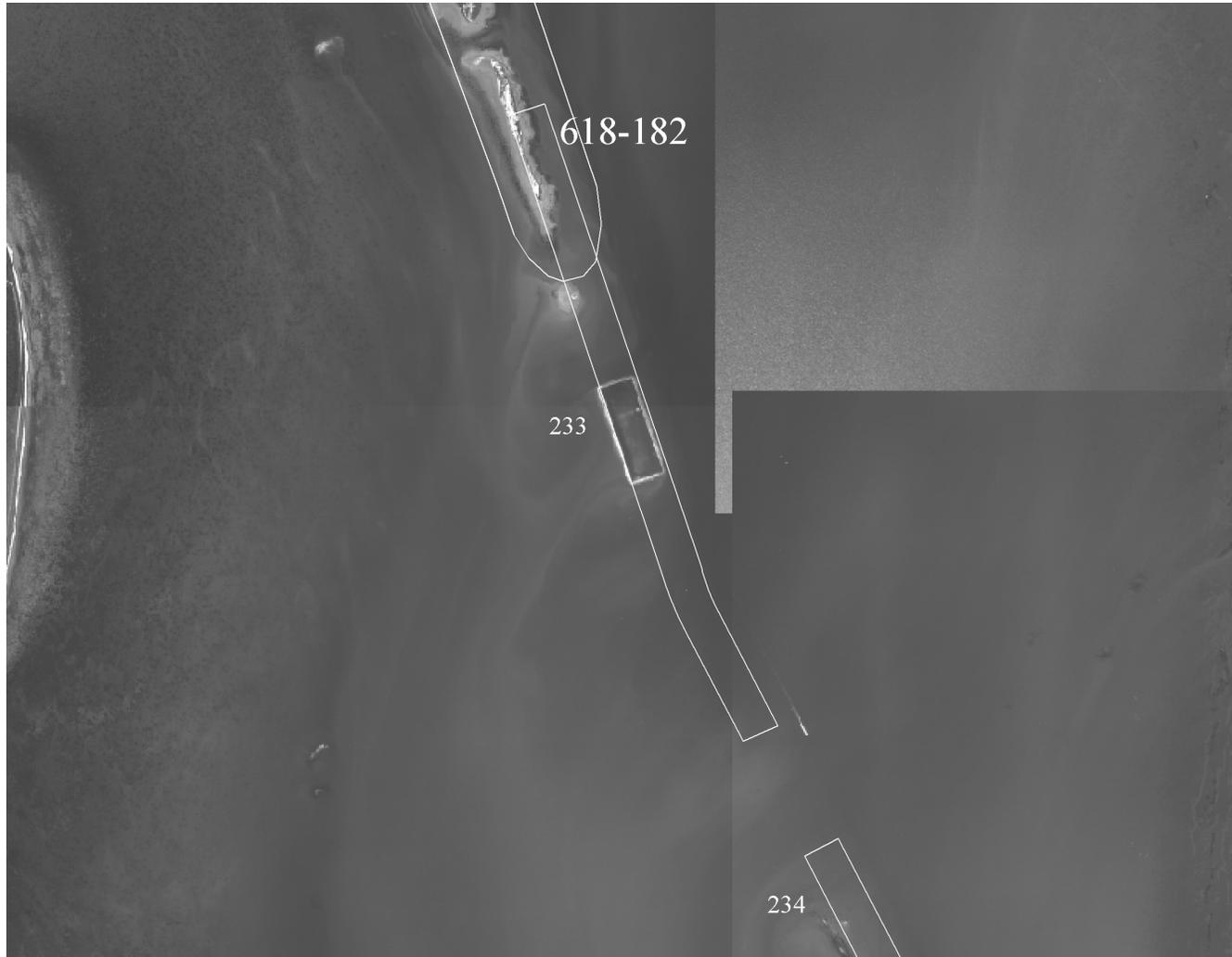


Figure 59. Colonial Waterbird Rookery on and adjacent to Placement Area 233

### Dredged Material Management Plan

**PA 233** – (68+700 – 55+800) This PA is located on the west side of the GIWW at the northern end of a continuously turbid area known as Cheryl's Shoal. The area has no emergent islands (except one at the extreme north end) due to the erosive currents across the site that tend to carry dredged material back into the GIWW or west and south toward Brazos Santiago Pass. Due to this strong current action, the area is subject to frequent shoaling requiring dredging 24 times between 1949 and 1995 with an average per-cycle discharge of 392,773 cy. A shallow ridge at the disposal site is flanked by deeper water to the west and south and has no seagrass growing near it due to water depth and turbid conditions. The ICT determined that the best management plan under the open bay disposal alternative is to move the disposal site about 2 miles farther to the southwest to deeper water (greater than 4.5 feet deep) to avoid seagrass and minimize the effects of the turbidity plume. The hydrodynamic and sediment transport models indicated the dredged material (consisting of an average of about 8% sand) would stay longer in the deeper water and sediment transport back into the GIWW would be reduced by about 13%. GLO studies have found fine sediments in the deeper areas, so the dredged material should be compatible for the benthos living in this habitat. The new PA will be designated as PA 233A.

The ICT also considered an ocean disposal plan as described under PA 220 that was more economical than ocean disposal with a hopper dredge or pipeline dredge. Under this alternative, a bucket dredge and scow would be used to take shoaled material from the reach of the GIWW designated for PAs 233 and 234 to an EPA designated offshore site to be determined later. A cost analysis of this alternative showed it would be 3.4 times more expensive than the present dredging and disposal method or the management plan ultimately accepted by the ICT for this site. Due to the high cost of this alternative, the ICT did not select it as the management plan for this site. However, the ICT will make a determination before each dredging cycle which alternative (open bay or ocean disposal) would be used based on ecosystem benefits and habitat needs, equipment limitations, disposal restrictions, and economics. EPA clearance for ocean placement will not be pursued until this alternative is identified as a viable option.

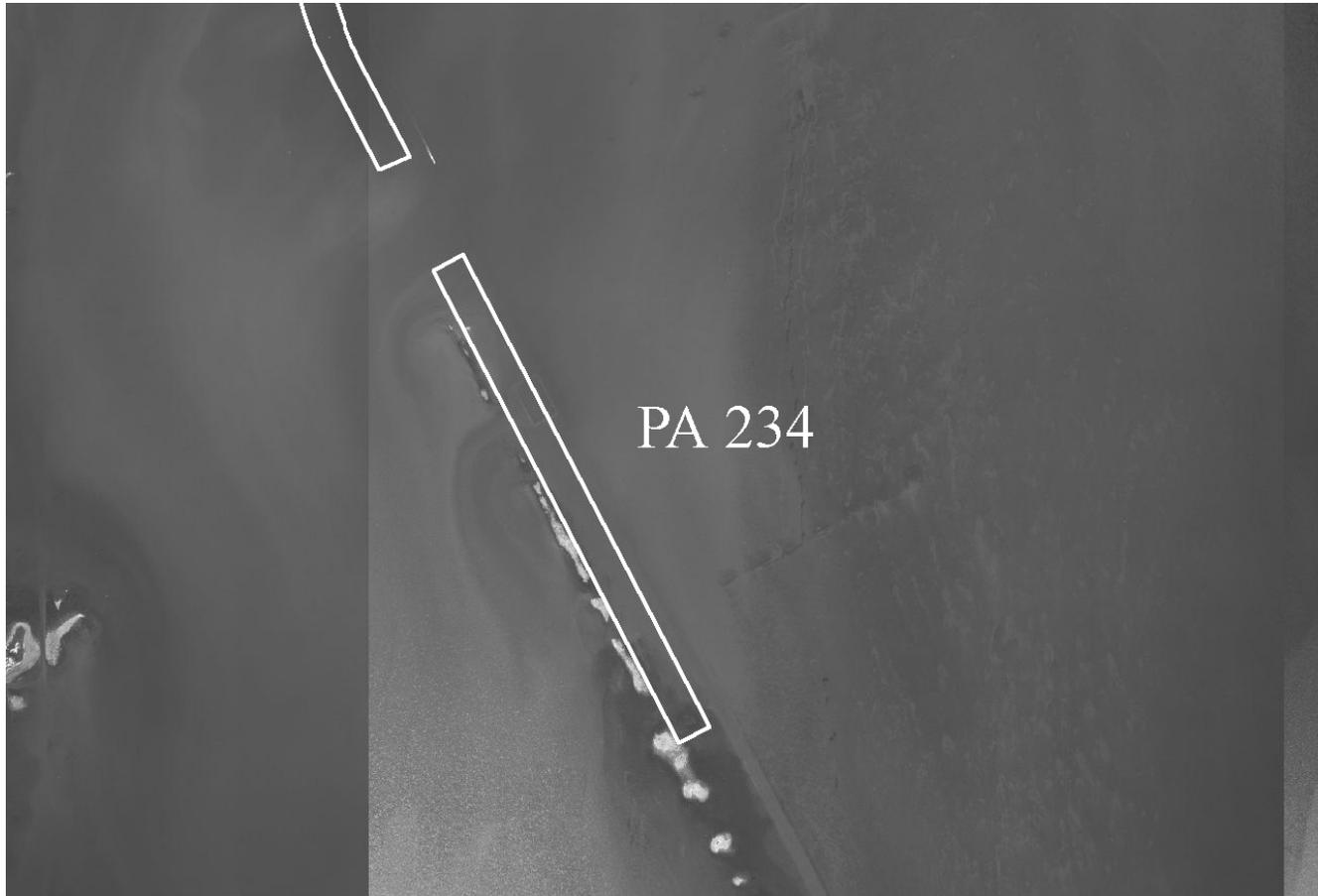


Figure 60. Placement Area 234



Figure 61. Colonial Waterbird Rookeries on and adjacent to Placement Area 234

#### Dredged Material Management Plan

**PA 234** – (53+200 – 41+300) This PA is located on the west side of the GIWW at the southern end of the current gyre that flows across the area. Because it has the same problems as PA 233 (dredged 25 times between 1949 and 1995), the ICT determined the best management plan would be to move this site about 1 mile to the west to join with PA 233A. The Hydrodynamic and Sediment Transport Models indicated the dredged material (consisting of an average of about 13% sand with an average per-cycle discharge of 227,513 cy) would stay longer in the deeper water, reducing the GIWW shoaling rate by about 7% at this site. The option of confining the dredged material in PA 233A was considered. However, models showed the large area needed to contain 50 years of dredged material in the deep water would reduce the cross-sectional area for current flow and would cause higher current velocities in the area and increase erosion around the confining levees. This option was eliminated from further consideration by the ICT. As described in PA 233, an ocean disposal alternative will be considered by the ICT for this PA, along with an open bay disposal, before each dredging cycle based on ecosystem benefits and habitat needs, equipment limitations, disposal restrictions, and economics.

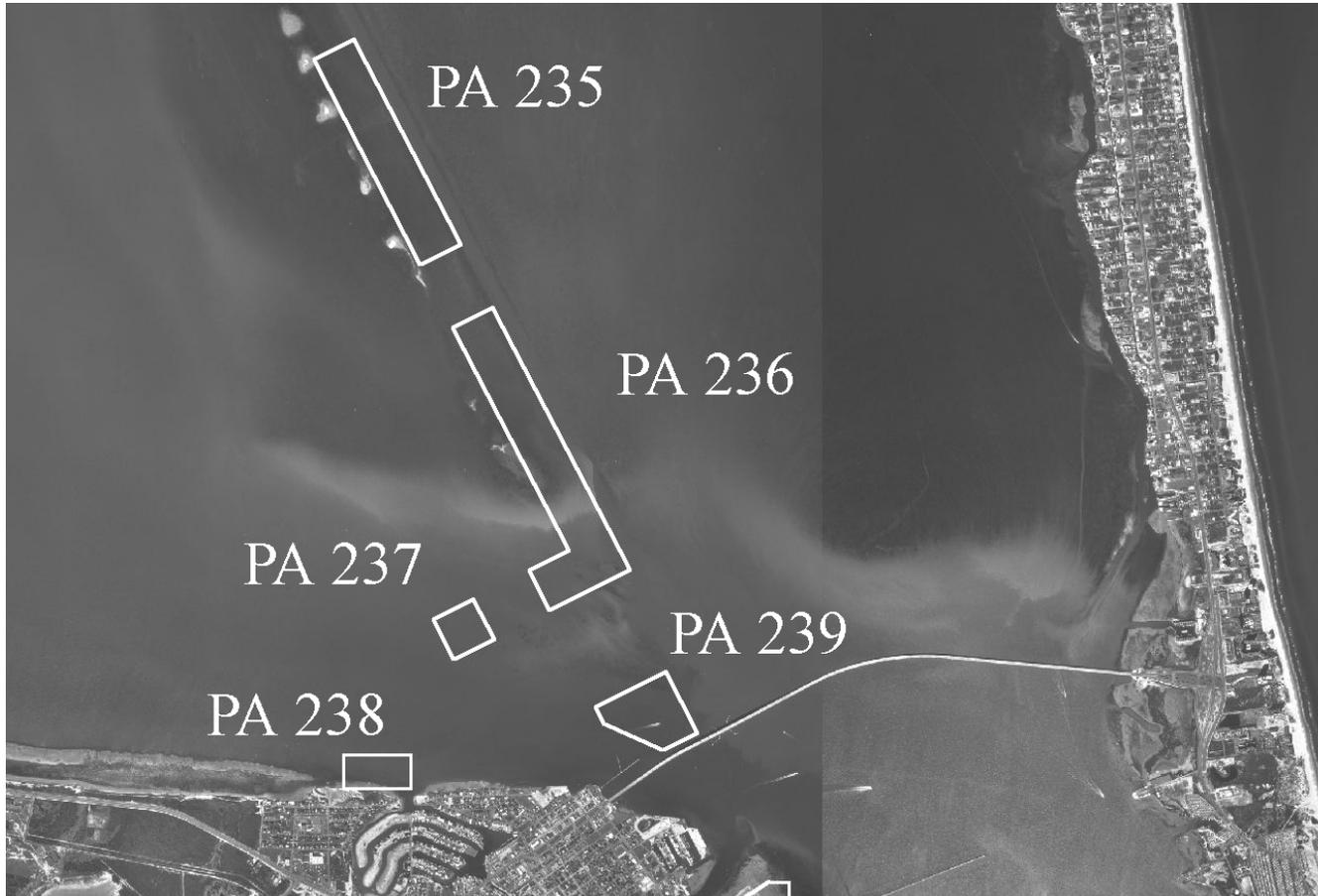


Figure 62. Placement Areas 235 - 239

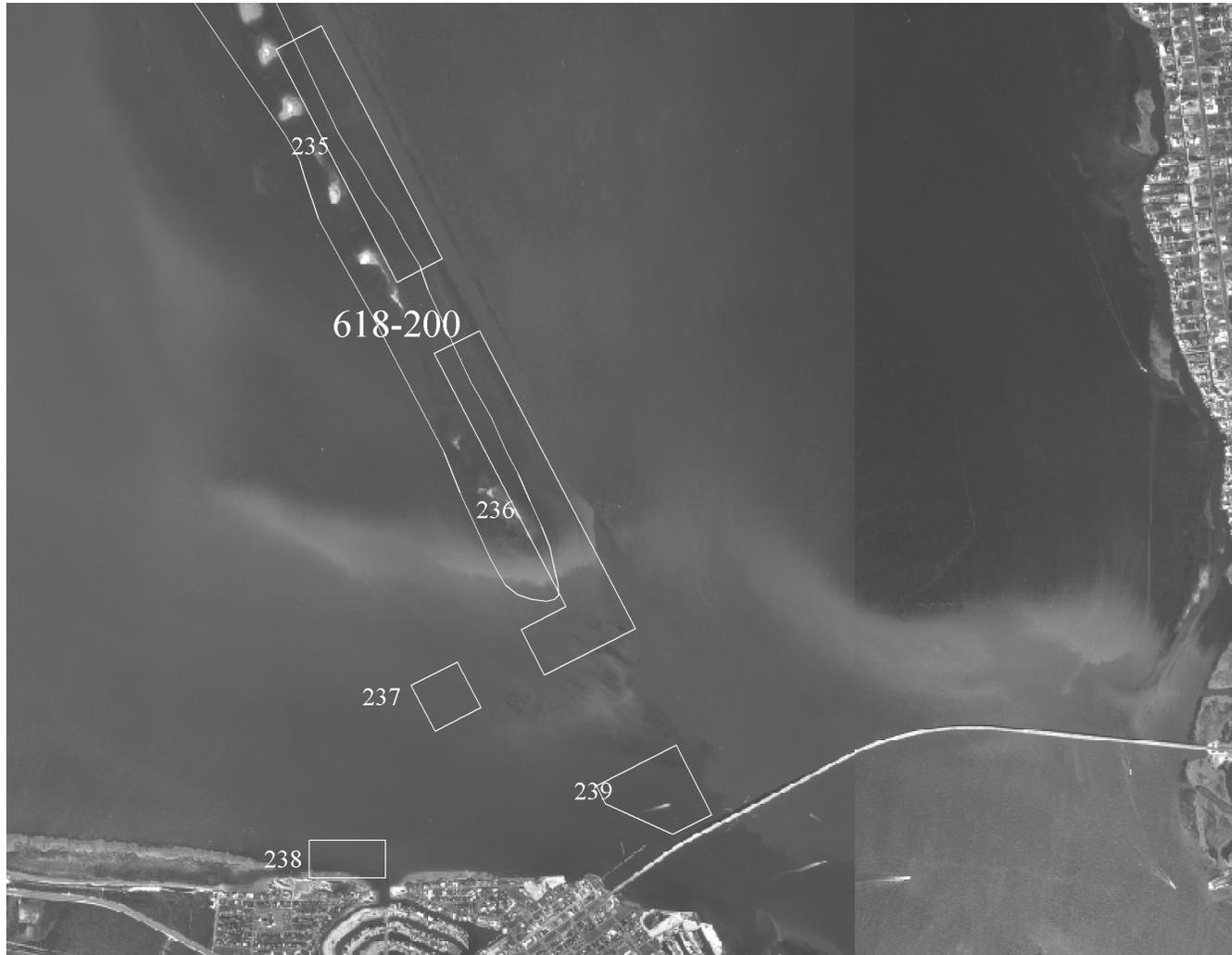


Figure 63. Colonial Waterbird Rookeries on and adjacent to Placement Areas 235 – 239

#### Dredged Material Management Plan

PA 235 – (38+700 – 30+800) This PA is located on the west side of the GIWW and south of the current gyre. The area is shallower than found around PAs 233 and 234 and has a series of small, low mounds dotting the surface parallel to the GIWW. The mounds are located outside the boundaries of the PA. The site is surrounded by seagrass in the shallow water with deeper water west of the seagrass (between it and the mainland). Birds have been observed roosting on the mounds, particularly at low tide, but they do not nest there. The PA is used infrequently (five times between 1949 and 1995 with an average per-cycle discharge of 43,053 cy) since little shoaling occurs there. The last regularly scheduled use was in 1984, but it was used in 1998 for material that would have gone into PA 234. This was an experimental placement to take the material out of the gyre to prevent it from returning to the GIWW. Some of the material was transported out of PA 235, but it was not determined if this material returned to the GIWW because Hurricane Brett interrupted the experiment in 1999.

The ICT determined that the site should be used only for dredged material (consisting of an average of about 30% sand) from the section of the GIWW it was established for and that no other dredged material be placed in it. This will allow sufficient time for seagrass to recover between cycles (nine years) and reduce the amount of material placed in the site. Disposal will take place during the November 1 to February 28 dredging window when seagrass is normally dormant and the dredge pipe moved frequently to prevent excessive build-up of material in any one location. Sandy material may be used to build up the mounds for more bird use in the future. Since the mounds are outside (west of) the boundary of the PA, the site will have to be expanded in the EIS to include the mounds for beneficial placement of sandy material, if any is available.

#### Dredged Material Management Plan

PA 236 – (29+200 – 22+594) This PA is an L-shaped site located west of the GIWW at the junction with the entrance channel to the small boat harbor at Port Isabel. It has the same characteristics as PA 235, except it has deep water located immediately south of the site. There is no indication in the dredging records that this site has been used since the GIWW was constructed. Although this PA is shared with the entrance channel to the small boat harbor, the entrance channel is seldom dredged at this location since it is naturally deep enough for the boats using the harbor. Most dredging in the entrance channel goes to PA 237, which is not used by the GIWW. The ICT decided to follow the same disposal procedure designated for PA 235, should it become necessary to use this site in the future. There are no data on the sand content from this segment of the GIWW, since it has not required maintenance dredging.

Note: Placement Areas 237 and 238 were not in the DMMP.

#### Dredged Material Management Plan

PA 239 – (20+200 – 18+700) This PA is located in deep water and has been used six times between 1949 and 1995 with an average per-cycle discharge of 86,056 cy. The dredged material consists of an average of about 54% sand, but it is located too far from the

beach to be pumped there for beneficial use. The minimum distance is about 3.5 miles without allowing for avoidance, if possible, of seagrass beds or structures in the City of South Padre Island between the GIWW and the beach. The ICT determined that since there is no beneficial use for the material, it is infrequently dredged, and the PA is located in deep water without nearby seagrass beds, the best management plan for the site is continued use of the present disposal practice.



Figure 64. Placement Area 240



Figure 65. Colonial Waterbird Rookery adjacent to Placement Area 240

Dredged Material Management Plan

**PA 240** – (16+000 – 13+669) This is a semi-confined site located on the northeast corner of Long Island on the south side of the GIWW opposite from Port Isabel. It has been used five times between 1949 and 1995 with an average per-cycle discharge of 97,482 cy. Dredged material (consisting of an average of about 39% sand) placed in the site can flow out into adjacent shallow flats. The ICT decided to continue the present disposal practice since it is seldom used and has little volume to flow out into shallow water.





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