

**DRAFT
ECOSYSTEM RESTORATION REPORT
FOR SARASOTA BAY
SARASOTA COUNTY, FLORIDA**

1.0 Study Purpose and Need

1.1. Study Authority

This report is submitted under the authority of Section 1135, 1986 Water Resources Development Act (WRDA), as amended by the 1990 Water Resources Development Act. The act reads, in part, as follows:

“The Secretary is authorized to review the operation of water resources projects constructed by the Secretary (Corps built projects) to determine the need for modifications in the structures and operation of such projects for the purpose of improving the quality of the environment in the public interest.”

1.2. Study Location

Sarasota Bay is located on the west central coast of Florida between Tampa and Venice, Florida. The system is bordered by a chain of coastal barrier islands (Anna Maria Island, Longboat Key, Lido Key, Siesta Key, and Casey Key). The six priority disposal islands for this project are located in lower Sarasota Bay, see Figure 1. The following is a location description of the proposed project disposal islands from south to north:

- Snake Island is the southernmost project disposal island located at the Venice Inlet. Snake Island is approximately 2 acres in size and is owned by the West Coast Inland Navigation District.
- Palmer Point Park is a 33-acre disposal island owned by Sarasota County. Palmer Point Park is located in lower Sarasota Bay (Little Sarasota Bay) toward the north end of Casey Key. The project area for this island includes approximately 5 acres of the southeast portion of the island.
- Jim Neville Marine Preserve, a 35-acre preserve owned by Sarasota County, is located directly north of Palmer Point Park, toward the southern end of Siesta Key.
- Skier’s Island is an 8-acre disposal island, which is owned by the West Coast Inland Navigation District, located in Roberts Bay.

- The Bird Colony Islands, covering approximately 2 acres, are located across the Gulf Intracoastal Waterway (GIWW) to the northeast of Skiers' Island in Roberts Bay.
- Big Edwards Island is a 6-acre disposal island owned by Sarasota County. Big Edwards Island is located in Roberts Bay just south of the Siesta Key bridge.

1.3. Study Need and Opportunity

Sarasota Bay was designated as a priority water body by the U.S. Environmental Protection Agency (EPA) in Section 320 of the Clean Water Act, as amended in 1987. In 1989, the Sarasota Bay National Estuary Program (SBNEP) completed a comprehensive technical assessment of the estuarine system in Sarasota Bay, *Sarasota Bay - The Voyage to Paradise Reclaimed: The Comprehensive Conservation management Plan for Sarasota Bay* (Reference 1). The findings of the assessment documented problems within the bay including the loss of approximately 40-percent of historical intertidal wetlands and 30-percent of historical seagrass beds. These habitats are critical nursery and foraging habitats for a variety of economically important fisheries species including snook, red drum, spotted sea trout, and mullet.

A portion of the historical wetland and habitat loss in Sarasota Bay is a result of the U.S. Army Corps of Engineers' placement of dredged fill material from the construction of the GIWW during the 1950's and early 1960's. During this time, the dredged material was placed within the bay to build-up existing islands or create new disposal islands visible to navigators, thus preventing dangerous shoals. Dredge material was frequently placed in mangroves and shallow water bay bottoms creating upland areas. The disposal islands that are part of this project, including Big Edwards Island, Bird Colony Islands, Skiers' Island, Snake Island, Jim Neville Marine Preserve, and Palmer Point Park, are all examples resulting from this practice.

The remaining wetlands and habitat within and adjacent to the study limits are impacted by the presence of non-native nuisance vegetation on these disposal islands and on-going erosion problems. The presence of exotic plant species inhibits the growth of native species resulting in low to no diversity of native species found on these islands. In addition, one exotic species, the Australian pine (*Casuarina equisetifolia*), has shallow root systems that can easily be uprooted and displaced by hurricanes and strong winds, potentially causing navigational problems or damaging property. Erosion is a problem on several of the disposal islands, which impacts both the water quality, as a result of the increased turbidity in the bay, and the filling of navigational channels.

The study is consistent with the Sarasota Bay National Estuary Program's *Comprehensive Conservation and Management Plan*. Specifically, the proposed project will help implement Action Items 1.2 (enhance, restore and create wetlands throughout the bay region) and 1.7 (remove exotic plants from wetlands). This project is especially beneficial because of the limited opportunity for restoring lands in the study area resulting from extensive coastal development. The project is also consistent with Sarasota County's Comprehensive Plan, which supports the implementation of the

SBNEP's *Comprehensive and Management Plan* (Policy 2.1.6), disposal island restoration (Policy 2.2.2) and the restoration of productive native habitat.

The purpose of this report is to present a Recommended Plan and the appropriate documentation in compliance with environmental statutes for the restoration of Big Edwards Island, Jim Neville Marine Preserve, Palmer Point Park, Skiers' Island, the Bird Colony Islands, and Snake Island. This project will provide the restoration and creation of habitat for native vegetation, fisheries, and wildlife.

1.4. Study Goal or Objective

General Goal

The primary goal of this study is to ecologically restore the degraded habitat by removing exotic vegetation, excavating tidal channels, and planting native vegetation. Striving to meet this goal, this study will concentrate on the existing disposal islands in Sarasota Bay and Venice Inlet.

Study Objective

The primary objective of this study is to restore the degraded ecosystem structure, function, and dynamic processes to a less degraded more natural condition. As a result, this study will identify, analyze, and recommend the most efficient, reliable, and cost effective alternatives for restoring the ecosystem.

1.5. Permits, Licenses, and Entitlements

On April 4, 2000, a meeting was held for this project between the interagency team and representatives from the Florida Department of Environmental Protection, the US Army Corps of Engineers' Regulatory Division, and the National Audubon Society. The purpose of this meeting was to discuss environmental issues and the permitability of the proposed restoration concepts. The anticipated permits that will be required for this project include:

- Environmental Resource Permit – Florida Department of Environmental Protection (Florida Statute 373)
- Section 10, Rivers and Harbors Act, U.S. Environmental Protection Agency

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2.0 ALTERNATIVES

This section describes in detail the No-Action Alternative, the proposed action, and other reasonable alternatives that were studied. Based on the information and analysis presented in the sections on the Affected Environment and the Probable Impacts, this section presents the beneficial and adverse environmental effects of all alternatives in comparative form, providing a clear basis for choice among the options for the decisionmaker and the public.

2.1 Description of Alternatives

For each of the disposal islands, several alternatives have been identified to accomplish the restoration objective of the proposed project. Common to all alternatives are combinations of the following components:

- Removal of exotic vegetation in both the upland and wetland areas.
- Creation of coastal upland habitats that will provide resting and feeding areas for native and migratory birds. Upland restoration areas will include coastal hammock vegetation as well as native sub-tropical trees and shrubs that will create diverse habitats.
- Creation of high and low marsh areas, including mangroves, that will function as nursery grounds for many fish and shellfish, as well as provide a benefit to water quality through the assimilation of nutrients and by reduction of erosion.
- Creation of tidal lagoons or open water areas that will provide foraging areas for bottom feeding fish, shorebirds, and invertebrates. These areas will also maximize the “edge effect” of adjacent marsh systems, in addition to providing flow, in several of the alternatives, through the islands.

2.1.1 Big Edwards Island

Concept 1

This concept (Figure 2) involves retaining over half of the island as upland restoration and lowering grades to intertidal elevations to support marsh grasses and mangroves. A small area of high marsh is also proposed. With Concept 1, approximately 4.4-acres of habitat will be created, including 2.7-acres of upland restoration, 1.4-acres of low marsh/mangroves, and 0.3-acres of high marsh. This concept will result in the excavation of approximately 33,500 cubic yards of material and a total project cost between \$800,000 and \$1.35 million.

Concept 2

Concept 2 (Figure 3) includes each of the components discussed earlier. This concept includes the creation of approximately 4.3-acres of habitat. Approximately 1.7-acres of upland areas will be restored, involving two separate areas on the north and south ends of the island. This concept also includes the creation of 1.9-acres of low marsh/mangroves and 0.2-acres of high marsh. In addition, an open water/tidal lagoon (0.5-acres) that will be exposed at low tides is located in the middle of the island with channel openings on the west and north sides of the islands. This concept will result in

the excavation of approximately 28,600 cubic yards of material and a total project cost between \$700,000 and \$1.15 million.

Concept 3

Concept 3 (Figure 4) also includes a mosaic of each of the components discussed at the beginning of this section. This concept includes three separate upland restoration/enhancement areas (1.3-acres); a high marsh area (1.0-acres); two separate low marsh/mangrove areas (1.8-acres); and an open water/tidal lagoon feature (0.4-acres) with an opening to the bay on the west side of the island. In addition, this concept includes a trail/boardwalk around the island and two overlooks for public use. It also includes the potential for educational interpretive signage. This concept will result in the excavation of approximately 28,650 cubic yards of material and a total project cost between \$700,000 and \$1.15 million.

Concept 4

Concept 4 (Figure 5) was developed in response to several public comments at the public workshops held in February 2000 for this project. This concept is similar to Concept 3 with some minor modifications. It includes a mosaic of upland enhancement (1.7-acres), low marsh/mangroves (1.6-acres), high marshes (0.2-acres) and an open water/tidal lagoon (0.5-acres) with openings to the bay on both the north and west sides of the island. As a result of the public workshop, the upland enhancement/restoration areas were modified to retain some of the unique features of the island, such as the southern upland portion of the island used frequently by the public. This concept also includes a recreational/educational element with a meandering foot trail within the upland areas and a boardwalk over the marshes and open water areas. This concept will result in the excavation of approximately 26,750 cubic yards of material and a total project cost between \$650,000 and \$1.10 million.

No-Action (Status Quo)

The No-Action Alternative does not include the removal of exotic vegetation or the creation of new habitat. As a result, the No-Action Alternative will result in the continued degradation of the existing upland and mangrove areas by exotic vegetation. There will also be continued erosion occurring on the island, resulting in impacts on water quality. In addition, the potential for fully implementing the SBNEP's approved management plan for Sarasota Bay will be reduced by eliminating this site from consideration.

2.1.2 Skiers' Island

Concept 1

Concept 1 (Figure 6) involves both upland restoration (2.9-acres) and the creation of low marsh/mangrove areas (2.7-acres). The upland restoration areas are located longitudinally in the center of the island with low marshes and mangroves around the outer portions. No filling will occur in the deep water areas surrounding the island, which are currently used for recreation. This concept will result in the excavation of approximately 11,500 cubic yards of material and a total project cost between \$500,000 and \$750,000.

Concept 2

Concept 2 (Figure 7) includes a mosaic of upland restoration (2.0-acres), low marsh/mangroves (3.7-acres), and open water/tidal lagoon (0.4-acres) areas. The upland restoration areas are proposed at the north and south ends of the island, which have the highest existing elevations. These upland areas are surrounded by low marsh/mangroves systems that extend into the middle of the island. Two small open water/tidal lagoon areas are located toward the middle of the island, one opening to the bay on the west side of the island and one opening to the bay on the east side. These open water/tidal lagoon areas will be exposed during low tides. No filling will occur in the deep water areas surrounding the island, currently used for recreation. This concept will result in the excavation of approximately 14,000 cubic yards of material and a total project cost between \$500,000 and \$800,000.

Concept 3

Concept 3 (Figure 8) includes upland restoration (2.5-acres), low marsh/mangroves (2.0-acres), and open water/tidal lagoons (0.8-acres). The upland restoration areas are located at each end of the island with an open water channel located through the center of the island with openings to the bay on both the east and west side of the island. Mangroves and emergent marshes surround both the upland and open water areas. No filling will occur in the deep water areas surrounding the island, currently used for recreation. This concept will result in the excavation of approximately 15,100 cubic yards of material and a total project cost between \$500,000 and \$800,000.

Concept 4

This concept (Figure 9) is similar to Concept 3 with some modifications identified by several participants at the public workshops that were held for this project in February 2000. Like Concept 3, this concept includes two upland restoration areas (2.5-acres) on each end of the island. Mangroves and emergent marshes (1.8-acres) surround these upland areas and an open water/tidal lagoon network (1.0-acres) provides both north/south and east/west flow on the island. The addition of a second opening from the tidal lagoon to the bay is the primary difference between Concept 3 and Concept 4. This concept will result in the excavation of approximately 15,700 cubic yards of material and a total project cost between \$550,000 and \$850,000.

No-Action (Status Quo)

The No-Action Alternative does not include the removal of exotic vegetation or the creation of new habitat. As a result, the No-Action Alternative will result in the continued degradation of the existing upland and mangrove areas by exotic vegetation. There will be no reduction of the amount of erosion occurring on the island and therefore no benefit to water quality and the ecosystem as a result of the No-Action Alternative. In addition, the potential for fully implementing the SBNEP's approved management plan for Sarasota Bay will be reduced by eliminating this site from consideration.

2.1.3 Bird Colony Islands

Concept 1

Concept 1 involves shoreline armoring of the Bird Colony Islands along the Intracoastal side of the islands to prevent further erosion. No earthwork is proposed on the islands as a result of this concept. This concept will not create any additional habitat; however, it will protect the existing critical bird-nesting habitat that has been documented on these islands. The total project cost for this concept is estimated to be \$17,000.

No-Action (Status Quo)

The No-Action Alternative does not provide any additional protection to the Bird Colony Islands. There will be no reduction of the amount of erosion occurring on the island and therefore no benefit to water quality and the ecosystem as a result of the No-Action Alternative.

2.1.4 Jim Neville Marine Preserve

Concept 1

Concept 1 (Figure 10) involves connecting the two portions of the island with a tidal lagoon network (7.2-acres). The tidal lagoons will have two openings to the bay on the east side of the island, one on the north portion and one on the south portion. Low marsh/mangroves (17.9-acres) surround the tidal lagoon network. The low marsh/mangrove areas and the tidal lagoon network will work together to create a sheet flow effect over a portion of the island during high tides. In addition, there are occasional upland restoration areas (2.0-acres) located at the existing higher elevations on both the north and south portions of the island. Concept 1 will require the excavation of approximately 123,500 cubic yards of material and the total project will cost between \$2.45 million and \$3.95 million.

Concept 2

This concept (Figure 11) is identical to Concept 1, except that it does not provide the connection between the two portions of the island. However, two separate tidal lagoon systems (6.1-acres) are proposed, one on each portion of the island. Low marsh/mangrove areas (18.9-acres) surround the tidal lagoon systems on each portion of the island. In addition, occasional upland restoration areas (2.0-acres) are located on both the north and south portions of the island. Concept 2 will require the excavation of approximately 118,900 cubic yards of material and the total project will cost between \$2.40 million and \$3.85 million.

Concept 3

Concept 3 (Figure 12) includes an upland restoration plateau and an upland restoration area on the northern portion of the island and a smaller upland restoration area on the southern portion of the island. The project will restore 6.9-acres of uplands. High salt marshes will surround the upland areas (9.3-acres). Areas of low marsh and mangroves (10.5-acres) will be constructed between the high marsh and the existing salterns. This concept will require the excavation of approximately 34,300 cubic yards of material and the total project will cost between \$1.05 million and \$1.65 million.

Concept 4

Concept 4 (Figure 13) was developed from public input at the February 2000 workshops for this project. Similar to Concept 1, this concept involves connecting the two portions of the preserve with a tidal lagoon network. This concept also extends that tidal lagoon to provide more openings to the bay on the west, east and north sides of the island. A total of 10.0-acres of tidal lagoon is included in this concept. As with Concept 1, low marsh and mangroves (16.6-acres) surround the tidal lagoon network on the island with occasional upland areas (2.0-acres) at some of the high points of the island. This concept will require the excavation of approximately 127,250 cubic yards of material and the total project will cost between \$2.5 million and \$4.1 million.

Concept 5

Concept 5 (Figure 14) is similar to Concept 4 with some modifications. Similar to Concept 4, this concept involves connecting the two portions of the preserve with a tidal lagoon network. However, this concept provides openings to the bay only on the north and east sides of the island. A total of 7.9-acres of tidal lagoon is included in this concept. As with Concept 4 and 1, low marsh and mangroves (17.6-acres) surround the tidal lagoon network on the island with occasional upland areas (2.0-acres). These low marsh/mangrove systems will provide an opportunity for sheet flow across the island during high tides. This concept will require the excavation of approximately 125,400 cubic yards of material and the total project will cost between \$2.50 million and \$4.05 million.

No-Action (Status Quo)

The No-Action Alternative does not include the removal of exotic vegetation or the creation of new habitat. As a result, the No-Action Alternative will result in the continued degradation of the existing upland and mangrove areas by exotic vegetation. In addition, the potential for fully implementing the SBNEP's approved management plan for Sarasota Bay will be reduced by eliminating this site from consideration.

2.1.5 Palmer Point Park

Concept 1

This concept (Figure 15) includes a tidal lagoon/open water system (0.9-acres) in the center of the island surrounded by low marsh and mangroves (1.6-acres). A small area on the western side of the project is proposed for upland restoration (0.3-acres) with a high marsh (0.2-acres) transitioning down to the low marsh areas. Concept 1 will require the excavation of approximately 7,950 cubic yards of material and the total project will cost between \$300,000 and \$500,000.

Concept 2

Concept 2 (Figure 16) is similar to Concept 1 except for the upland restoration area (0.4-acres) is proposed toward the southern portion of the project. Like Concept 1, this concept includes a tidal lagoon/open water system (0.8-acres) in the center of the island surrounded by low marsh and mangroves (1.7-acres). Concept 2 will require the excavation of approximately 6,650 cubic yards of material and the total project will cost between \$250,000 and \$450,000.

Concept 3

Concept 3 (Figure 17) includes lowering the grade of the entire project area to create a low marsh/mangrove area. This concept will create 3.0-acres of low marsh and mangroves and will allow for sheet flow over the island during high tides. Concept 3 will require the excavation of approximately 5,900 cubic yards of material and the total project will cost between \$250,000 and \$450,000.

Concept 4

Concept 4 (Figure 18) was developed by one group of citizens at the February 2000 public workshop for this project. This concept involves a tidal lagoon network (1.4-acres) that will provide two openings to the bay on the north and east sides of the project site. The tidal lagoon system is surrounded by low marsh/mangrove areas (1.4-acres), including a small mangrove island in the center of the proposed tidal lagoon. Concept 4 will require the excavation of approximately 8,700 cubic yards of material and the total project will cost between \$500,000 and \$300,000.

No-Action (Status Quo)

The No-Action Alternative does not include the removal of exotic vegetation or the creation of new habitat. As a result, the No-Action Alternative will result in the continued degradation of the existing upland and mangrove areas by exotic vegetation. In addition, the potential for fully implementing the SBNEP's approved management plan for Sarasota Bay will be reduced by eliminating this site from consideration.

2.1.6 Snake Island

Concept 1

Concept 1 (Figure 19) includes lowering the grade of the entire project area to create a low marsh/mangrove area. This concept will create 1.9-acres of low marsh and mangroves and will allow for sheet flow over the island during high tides. Concept 1 will require the excavation of approximately 5,950 cubic yards of material and the total project will cost between \$250,000 and \$400,000.

Concept 2

This concept (Figure 20) includes an upland enhancement area (0.4-acres) toward the eastern side of the island with low marsh/mangroves (0.8-acres) along the northern, western and southern sides. A high marsh transitional system (0.2-acres) is shown between the uplands and low marshes. Concept 2 will require the excavation of approximately 4,050 cubic yards of material and the total project will cost between \$200,000 and \$350,000.

Concept 3

Concept 3 (Figure 21) utilizes material dredged from the waterway to re-establish marshes (1.7-acres) along the outer edge of the island. Low marsh and mangroves (1.4-acres) surround a center portion of upland restoration (0.5 acres). The upland areas have public access via a small boardwalk over the marsh area. Shoreline stabilization will be required to protect the marshes after construction. A cove is also included on the west side of the island to provide boater access to the upland area.

Concept 3 will require the excavation of approximately 1,940 cubic yards of material and the total project will cost between \$700,000 and \$1.15 million.

Concept 4

Concept 4 (Figure 22) was developed through comments from the February 2000 public workshop. The concept is similar to Concept 3, but includes several modifications to address the public's concern regarding access and use of the island. Like Concept 3, this concept utilizes material dredged from the waterway to re-establish low marshes (1.4-acres) along the western side of the island where much of the erosion has been occurring. Shoreline stabilization will be required to protect the marshes and the island itself after construction. A large area of upland enhancement (0.9-acres) is provided on the eastern side of the island. This area will be surrounded to the north and south of the island by a low marsh/mangrove system (0.9-acres) to help eliminate further erosion of the island. The existing unconsolidated shore (0.6-acres) at the southern end of the island will be maintained and may be enhanced and extended to the eastern side of the island. Concept 4 will require the excavation of approximately 500 cubic yard of material and the total project will cost between \$200,000 and \$350,000.

No-Action (Status Quo)

The No-Action Alternative does not include the removal of exotic vegetation or the creation of new habitat. As a result, the No-Action Alternative will result in the continued degradation of the existing upland and mangrove areas by exotic vegetation. In addition, there will be no reduction of the amount of erosion occurring on the island and therefore no benefit to water quality as a result of the No-Action Alternative. In addition, the potential for fully implementing the SBNEP's approved management plan for Sarasota Bay will be reduced by eliminating this site from consideration.

2.2 Issues and Basis for Choice

Several important issues regarding the restoration of the disposal islands have been identified during the feasibility study through data collection and the public involvement process.

2.2.1 Big Edwards Island

Because this island is used frequently by the public, continued public use and access is an important issue that was raised during the public workshops held for the project. Related to this is the issue of balancing the recreational element of the island with the restoration of diverse and improved fish and wildlife habitat. The use of upland restoration areas is an important element in the development of restoration concepts because of the public use issue identified for this island. The use of upland restoration areas also helps to reduce the extent of excavation from the island, which reduces the cost of the project. Another issue identified by a few members of the public is a need to maintain the visual buffer currently provided by Big Edwards Island. Finally, a third issue identified through the public involvement process included looking at both Big Edwards Island and Skiers' Island comprehensively. At the public workshop held for this project in February 2000, the majority of the participants indicated a desire to

enhance the recreational and educational opportunities on Big Edwards Island while providing habitat restoration and to focus purely on habitat creation and restoration on Skiers' Island.

2.2.2 Skiers' Island

Issues for consideration identified for Skiers' Island include the need to provide improved and diverse fish and wildlife habitat and the need to reduce erosion from the perimeter of the existing island. In addition, an issue identified through the public involvement process for this project is to maintain the recreational use of the deep-water channel surrounding the island. As stated above, the public also indicated a desire to look at Skiers' Island comprehensively with Big Edwards Island, which includes enhancing the recreational elements on Big Edwards Island and focusing on habitat restoration on Skiers' Island.

2.2.3 Bird Colony Islands

Issues for consideration identified for the Bird Colony Islands include the need to protect, through stabilization and erosion control, the existing nesting bird habitat these islands provide.

2.2.4 Jim Neville Marine Preserve

Issues for consideration identified for Jim Neville Marine Preserve include the need to provide improved and diverse fish and wildlife habitat while minimizing impacts to the existing unique saltern areas and the existing mangrove systems. Another issue is to return the historical sheet flow across the island during high tides prior to the addition of the disposal material. Finally, a separate study regarding whether or not to reopen a closed pass, Midnight Pass, close to the island is currently underway. Therefore, an important issue regarding this disposal island is to provide a concept that will be successful independent of the decision on the Pass.

2.2.5 Palmer Point Park

Similar to the Jim Neville Marine Preserve, issues for consideration identified for Palmer Point Park include the need to provide improved and diverse fish and wildlife habitat while minimizing impacts to the existing unique saltern areas and the existing mangrove systems. In addition, a concept should be developed that is successfully independent of the Midnight Pass decision.

2.2.6 Snake Island

Issues for consideration identified for Snake Island include the need to provide erosion control and stabilization around the perimeter of the island. Another issue is to provide improved and diverse fish and wildlife habitat. Protection of the cultural resource located on the island from further exposure, due to erosion, is also an issue. Finally, through the public involvement process, an issue that has been identified is to maintain

the existing recreational use of the island by the public through provision of an upland restoration/enhancement area for access.

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2.3 Recommended Plans

2.3.1 Big Edwards Island

Concept 4 (Figure 5) is the Recommended Plan for ecosystem restoration on Big Edwards Island. This concept provides improved and diverse fish and wildlife habitat through the use of a mix of upland restoration, low marsh/mangroves, high marsh, and tidal lagoons. The open water/tidal lagoon system also maximizes the "edge effect" of the adjacent low marsh and mangrove systems. To incorporate public concerns, this concept also maintains public access and use of the island and it enhances public use with a proposed natural foot trail along the upland areas and boardwalk across the marsh and open water systems. In addition, this concept provides potential opportunities for educational interpretive signage promoting and explaining these diverse habitats, which was also suggested at the public workshop held for this project. In response to public comments, the Recommended Plan maintains the existing upland area at the southern portion of the island where the majority of public access to the island occurs. In addition, the Recommended Plan maintains the eastern upland berm along the island and the existing mature mangrove fringe around the perimeter of the island to provide a visual buffer for homeowners located on either side of the island. Concept 4 is also the least expensive concept for Big Edwards Island with a cost range between \$650,000 and \$1.10 million.

The No-Action Alternative does not meet the goals of ecosystem restoration identified for this project.

Although Concept 1 maximizes the upland restoration area for public use and access, this concept does not provide the extent of diverse and beneficial fish and wildlife habitat as the Recommended Plan. In addition, as a result of the extent of upland restoration areas, Concept 1 would result in a larger amount of continued maintenance than the Recommended Plan.

Concept 2 provides diverse fish and wildlife habitat, but limits the public use and access to a small upland area at the southern portion of the island. Unlike the Recommended Plan, Concept 2 does not address the concerns of the public to maintain recreational use of the island.

Although Concept 3 is similar to the Recommended Plan, it does not maintain the upland area at the southern portion of the island that is currently used by the public to access the island.

2.3.2 Skiers' Island

Concept 4 (Figure 9) is the Recommended Plan for Skiers' Island. This concept provides improved and diverse fish and wildlife habitat through the use of a mix of upland restoration, low marsh/mangroves, and tidal lagoons. The open water/tidal lagoon system also maximizes the "edge effect" of the adjacent low marsh and mangrove systems, as well as providing an opportunity for water to circulate through the

island. Concept 4 allows for the continued use of the deep-water channel surrounding the island for water skiing. In addition, the upland restoration area proposed at the northern end of the island would allow for public access for passive recreational uses. As identified through public comment, no structural recreational facilities are provided with this concept, instead the focus of this concept is purely ecological restoration. Concept 4 is the most expensive concept evaluated for Skiers' Island. This is primarily a result of the extent of tidal lagoons proposed, which, as discussed above, will provide a significant benefit to the new and existing habitat surrounding this project. The total project cost for this concept is between \$550,000 and \$850,000.

The No-Action Alternative does not meet the goals of ecosystem restoration identified for this project.

Concept 1 does not provide the extent of diverse and beneficial fish and wildlife habitat as the Recommended Plan. In addition, due to the extent of upland restoration areas, Concept 1 would result in much more continued maintenance than the Recommended Plan.

Concepts 2 and 3 are similar to the Recommended Plan. However, the Recommended Plan provides a greater amount of open water/tidal lagoon that helps to maximize the "edge effect" with the adjacent mangroves.

2.3.3 Bird Colony Islands

The Recommended Plan for the Bird Colony Islands is to provide shoreline armoring along the Intracoastal side of the islands to prevent further erosion. No earthwork is proposed on the islands. The Recommended Plan protects the existing critical bird nesting habitat that has been documented on these islands. The total project cost for the proposed work is estimated to be \$17,000.

2.3.4 Jim Neville Marine Preserve

Concept 5 (Figure 14) is the Recommended Plan for Jim Neville Marine Preserve. This concept provides improved and diverse fish and wildlife habitat through the use of primarily low marsh/mangroves and tidal lagoons, with some opportunity for upland restoration on the higher elevation areas of the island. The open water/tidal lagoon system maximizes the "edge effect" of the adjacent low marsh and mangrove systems, as well as providing an opportunity for water to circulate between the northern and southern portions of the island. The Recommended Plan also minimizes the impacts to the existing mangrove systems and unique saltern areas found on the island, while optimizing the use of low marsh areas to recreate the opportunity for sheet flow across the island during high tides. Finally, the Recommended Plan will be successfully independent of any decision regarding the opening/closing of nearby Midnight Pass. The total project cost for Concept 5 is estimated between \$2.50 million and \$4.05 million. This range of costs is close to two of the other proposed concepts.

The No-Action Alternative does not meet the goals of ecosystem restoration identified for this project.

Concept 1 is similar to the Recommended Plan; however, it does not provide as extensive a tidal lagoon system as the Recommended Plan. Therefore, the Recommended Plan will allow for a more diverse fish and wildlife habitat.

Concept 2 provides the diversity of the Recommended Plan; however it does not provide for the circulation between the northern and southern portions of the island. It also does not provide as extensive a tidal lagoon system as the Recommended Plan.

Concept 3 provides some diversity of habitat; however, it does not utilize the tidal lagoon systems to provide circulation between the two portions of the island. In addition, this concept does not allow for the opportunity of sheet flow during high tides events. Finally, the extensive upland areas would require much more continued maintenance than the Recommended Plan.

Concept 4 is similar to the Recommended Plan, except that it also includes tidal lagoons extending through the eastern side of the island. This will result in impacts to existing mature mangrove systems and potential impacts to the unique saltern areas on the island. Therefore, the Recommended Plan offers the same benefits of sheet flow and circulation as this concept without the extent of impacts to the existing mangroves and salterns.

2.3.5 Palmer Point Park

Concept 3 (Figure 17) is the Recommended Plan for Palmer Point Park. This concept provides the creation of low marsh/mangroves in the project area and will benefit from the opportunity of diversity of the adjacent upland areas in the park. The Recommended Plan minimizes impacts to the existing mangroves and salterns located adjacent to the project site. The Recommended Plan will result in minimal maintenance and the elimination of the tidal lagoon provided in some of the other concepts will reduce the potential for stagnant water and therefore mosquitoes. Concept 3 is one of the least expensive concepts evaluated for Palmer Point Park. The total project cost is estimated to be between \$250,000 and \$450,000.

The No-Action Alternative does not meet the goals of ecosystem restoration identified for this project.

Concepts 1 and 2 are similar with proposed uplands, mangroves and tidal lagoon areas. However, the upland areas proposed on these concepts are small (0.3-acres) considering the cost and difficulty in access to maintain and establish them. In addition, the tidal lagoons proposed in these concepts may become stagnant as a result of minimal tidal currents near the proposed opening and therefore may become a haven for mosquitoes, which is a concern of nearby residents.

Concept 4 potentially impacts existing salterns and mangroves by the proposed tidal lagoons. These salterns are a potential feeding source for the federally listed piping plover.

2.3.6 Snake Island

Concept 4 (Figure 22) is the Recommended Plan for ecosystem restoration on Snake Island. This concept provides improved and diverse fish and wildlife habitat through the use of a mix of upland restoration and low marsh/mangroves. In addition, the Recommended Plan provides for additional acreage to the island through the creation of a low marsh reclamation area on the west side of the island. To address public concerns, the Recommended Plan also provides a large upland enhancement area accessible on the east side of the island for public use. The Recommended Plan also provides soft-shore stabilization and additional mangroves to reduce the on-going erosion. The Recommended Plan maintains the unconsolidated shore used by the public on the southern end of the island and provides an opportunity to extend this area to the eastern side of the island. The estimated costs for each of the concepts evaluated for Snake Island are fairly close. Therefore, the total estimated project cost for the Recommended Plan (between \$200,000 and \$350,000) is comparable to the costs of the other concepts for this island.

The No-Action Alternative does not meet the goals of ecosystem restoration identified for this project. In addition, this concept will not reduce the on-going erosion of the island.

Concept 1 does not provide diverse fish and wildlife habitat, although the mangroves would help to reduce the on-going erosion. This concept will not allow for continued public use of the island.

Concept 2 provides for diverse fish and wildlife habitat but it does not provide stabilization of the existing shoreline and therefore does not help to reduce the on-going erosion.

Concept 3 is similar to the Recommended Plan; however, it was modified to address some of the concerns identified by the public. First, the public indicated that boat access to the island is primarily on the east side of the island. The public also requested that a portion of the unconsolidated shoreline remain for recreational use. In addition, the upland enhancement area was extended because of the extent of use of the island. Finally, the public did not want the boardwalk or any other structural recreational facility as identified in Concept 3. Therefore, the Recommended Plan was modified to reflect this.

2.4 Comparison of Alternatives

Tables 1 - 5 list the alternatives considered for each island and summarizes the major features and consequences of the proposed action and alternatives.

Table 1 - Big Edwards Island – Evaluation Matrix

Environmental Factor	Concept 1	Concept 2	Concept 3	Concept 4 Recommended	No-Action Status Quo
Habitat Types Created (Acres)*	4.4	4.3	4.5	4.0	0
-Upland Restoration	2.7	1.7	1.3	1.7	0
-High Marsh	0.3	0.2	1.0	0.2	0
-Low Marsh/Mangrove	1.4	1.9	1.8	1.6	0
-Tidal Lagoon/Mud Flats	0	0.5	0.4	0.5	0
Federally Protected Species	No Impact	No Impact	No Impact	No Impact	No Impact
Fish and Wildlife Resources	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat	Create potential nesting & migratory bird habitat. Low Marsh-potential fisheries habitat. Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds and invertebrates.	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds and invertebrates.	Continued degradation of uplands & low marsh by exotic vegetation.
Removal of Exotic Vegetation	Yes	Yes	Yes	Yes	No
Shoreline Erosion	No Impact	No Impact	No Impact	No Impact	No Impact
Water Quality	Improve, Create low/high marsh wetlands	Improve, Create low/high marsh wetlands	Improve, Create low/high marsh wetlands	Improve, Create low/high marsh wetlands	No Impact
Cultural Resources	No Impact	No Impact	No Impact	No Impact	No Impact
Recreation	Upland areas provide public access to the island for passive recreation	Upland areas provide public access to the island for passive recreation	Provides boardwalk, overlooks, and educational signage for more intense public use	Provides trail/boardwalk, and educational signage for more intense public use	Upland areas provide public access to the island for passive recreation
Navigation	No Impact	No Impact	No Impact	No Impact	No Impact
Public Acceptance**	Moderate	Moderate	High	High	Moderate
Economics (Cost Estimate)	\$800,000 - \$1,350,000	\$700,000 - \$1,150,000	\$700,000 - \$1,150,000	\$650,000 - \$1,100,000	N/A

* Includes additional acreage created due to restoration. Does not include existing habitat.

** Public Acceptance based on comments received as part of the public involvement efforts conducted for this project.

Table 2 - Skiers' Island – Evaluation Matrix

Environmental Factor	Concept 1	Concept 2	Concept 3	Concept 4 Recommended	No-Action Status Quo
Habitat Types Created (Acres)*	5.6	6.1	5.3	5.3	0
-Upland Restoration	2.9	2.0	2.5	2.5	0
-High Marsh	0	0	0	0	0
-Low Marsh/Mangrove	2.7	3.7	2.0	1.8	0
-Tidal Lagoon/Mud Flats	0	0.4	0.8	1.0	0
Federally Protected Species	No Impact	No Impact	No Impact	No Impact	No Impact
Fish and Wildlife Resources	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat Low Marsh-potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Continued degradation of uplands & low marsh by exotic vegetation.
Removal of Exotic Vegetation	Yes	Yes	Yes	Yes	No
Shoreline Erosion	Reduce	Reduce	Reduce	Reduce	No Change
Water Quality	Improve, Create low marsh wetlands	Improve, Create low marsh wetlands	Improve, Create low marsh wetlands and tidal lagoon provides east/west flow	Improve, Create low marsh wetlands and tidal lagoon provides east/west & north/south flow	No Improvement
Cultural Resources	No Impact	No Impact	No Impact	No Impact	No Impact
Recreation	Maintains Ski-ability	Maintains Ski-ability	Maintains Ski-ability	Maintains Ski-ability. Public access to upland area	Maintains Ski-ability. Public access to upland area
Navigation	No Impact	No Impact	No Impact	No Impact	No Impact
Public Acceptance**	Moderate	High	High	High	Moderate
Economics (Cost Estimate)	\$500,000–\$750,000	\$500,000–\$800,000	\$500,000–\$800,000	\$550,000-\$850,000	N/A

* Includes additional acreage created due to restoration. Does not include existing habitat.

** Public Acceptance based on comments received as part of the public involvement efforts conducted for this project.

Table 3 - Jim Neville Marine Preserve – Evaluation Matrix

Environmental Factor	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5 Recommended	No-Action Status Quo
Habitat Types Created (Acres)*	27.1	27.0	26.7	28.6	27.5	0
-Upland Restoration	2.0	2.0	6.9	2.0	2.0	0
-High Marsh	0	0	9.3	0	0	0
-Low Marsh/Mangrove	17.9	18.9	10.5	16.6	17.6	0
-Tidal Lagoon/Mud Flats	7.2	6.1	0	10.0	7.9	0
Federally Protected Species	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Exotic vegetation may continue to reduce habitat for the Piping Plover
Fish and Wildlife Resources	Create potential nesting & migratory bird habitat. Low marsh– potential fisheries habitat. Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat. Low marsh– potential fisheries habitat. Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat. Low marsh – potential fisheries habitat	Create potential nesting & migratory bird habitat. Low marsh – potential fisheries habitat. Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat. Low marsh– potential fisheries habitat. Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Exotic vegetation may continue to reduce habitat
Removal of Exotic Vegetation	Yes	Yes	Yes	Yes	Yes	No
Shoreline Erosion	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Water Quality	Improve, create low marsh wetland	Improve, create low marsh wetland	Improve, create low/high marsh wetland	Improve, create low marsh wetland	Improve, create low marsh wetland	No Impact
Cultural Resources	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Recreation	Limited public access	Limited public access	Limited public access	Limited public access	Limited public access	Limited public access
Navigation	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Public Acceptance**	Moderate	Low	Low	High	High	Low
Economics (Cost Estimate)	\$2,450,000 - \$3,950,000	\$2,400,000 - \$3,850,000	\$1,050,000 - \$1,650,000	\$2,500,000 - \$4,100,000	\$2,500,000 - \$4,050,000	N/A

* Includes additional acreage created due to restoration. Does not include existing habitat.

** Public Acceptance based on comments received as part of the public involvement efforts conducted for this project.

Table 4 - Palmers Point Park – Evaluation Matrix

Environmental Factor	Concept 1	Concept 2	Concept 3 Recommended	Concept 4	No-Action Status Quo
Habitat Types Created (Acres)*	3	2.9	3	2.8	0
-Upland	0.3	0.4	0	0	0
-High Marsh	0.2	0	0	0	0
-Low Marsh/Mangrove	1.6	1.7	3	1.4	0
-Tidal Lagoon/Mud Flats	0.9	0.8	0	1.4	0
Federally Protected Species	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Benefit to the Piping Plover, enhances existing habitat	Exotic vegetation may continue to reduce habitat for the Piping Plover
Fish and Wildlife Resources	Create potential nesting & migratory bird habitat. Low marsh– potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat. Low marsh– potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Create potential nesting & migratory bird habitat. Low marsh – potential fisheries habitat	Create potential nesting & migratory bird habitat. Low marsh- potential fisheries habitat Tidal lagoon creates feeding grounds for bottom feeding fish, shorebirds, and invertebrates.	Exotic vegetation may continue to reduce habitat
Removal of Exotic Vegetation	Yes	Yes	Yes	Yes	No
Shoreline Erosion	Reduce	Reduce	Reduce	Reduce	No Impact
Water Quality	Improve, Create low/high marsh wetlands	Improve, Create low marsh wetlands	Improve, Create low marsh wetlands	Improve, Create low marsh wetlands. Tidal lagoon provides water flow	No Impact
Cultural Resources	No Impact	No Impact	No Impact	No Impact	No Impact
Recreation	No Impact	No Impact	No Impact	No Impact	No Impact
Navigation	No Impact	No Impact	No Impact	No Impact	No Impact
Public Acceptance**	Moderate	High	Moderate	Moderate	Low
Economics (Cost Estimate)	\$300,000 - \$500,000	\$250,000 - \$450,000	\$250,000 - \$450,000	\$300,000 - \$500,000	N/A

* Includes additional acreage created due to restoration. Does not include existing habitat.

** Public Acceptance based on comments received as part of the public involvement efforts conducted for this project.

Table 5 - Snake Island – Evaluation Matrix

Environmental Factor	Concept 1	Concept 2	Concept 3	Concept 4 Recommended	No-Action Status Quo
Habitat Types Created (Acres)*	1.9	1.4	3.6	3.8	0
-Upland	0	0.4	0.5	0.9	0
-High Marsh	0	0.2	0	0	0
-Low Marsh/Mangrove	1.9	0.8	1.4	0.9	0
-Low Marsh Reclamation	0	0	1.7	1.4	0
-Unconsolidated Shore	0	0	0	0.6	0
Federally Protected Species	No Impact	No Impact	No Impact	No Impact	No Impact
Fish and Wildlife Resources	Creates low marsh wetlands for bird habitat and fisheries	Creates potential nesting & migratory bird habitat. Low marsh-potential fisheries habitat.	Creates potential nesting & migratory bird habitat. Low marsh/reclamation area potential fisheries habitat	Creates potential nesting & migratory bird habitat. Low marsh/reclamation area potential fisheries habitat	Continued degradation of uplands & low marsh by exotic vegetation.
Removal of Exotic Vegetation	Yes	Yes	Yes	Yes	No
Shoreline Erosion	Reduce	Reduce	Reduce & regain some lost acreage	Reduce & regain some lost acreage	Erosion of the island will continue
Water Quality	Improve, Create low marsh wetlands & stabilize erosion	Improve, Create low marsh wetlands & stabilize erosion	Improve, Create low marsh wetlands & stabilize erosion	Improve, Create low marsh wetlands & stabilize erosion	Worsen, continued erosion of the island
Cultural Resources	Creates adverse impacts to archeological site.	Shoreline stabilization will help preserve archeological site	Shoreline stabilization will help preserve archeological site	Shoreline stabilization will help preserve archeological site	Continued erosion and degradation to archeological site.
Recreation	Limit public access	Public access provided to upland area. Beach remains intact for public use.	Public access provided to upland area through boardwalk. Cove provides boat parking area.	Public access provided to upland area adjacent to beach. Beach area potentially expanded.	Public access currently exists.
Navigation	Reduced channel maintenance, less erosion	Reduced channel maintenance, less erosion	Reduced channel maintenance, less erosion	Reduced channel maintenance, less erosion	Continued need for channel maintenance as a result of erosion
Public Acceptance**	Low	Moderate	Low	High	High
Economics (Cost Estimate)	\$250,000 - \$400,000	\$200,000 - \$350,000	\$300,000 - \$500,000	\$200,000 - \$350,000	

* Includes additional acreage created due to restoration. Does not include existing habitat.

** Public Acceptance based on comments received as part of the public involvement efforts conducted for this project.

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3.0 AFFECTED ENVIRONMENT

The Affected Environment section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that would affect or be affected by the Recommended Plans if they were implemented. This section, in conjunction with the description of the “No-Action” Alternative, forms the base line conditions for determining the environmental impacts of the proposed action and reasonable alternatives.

3.1 General Environmental Setting

Sarasota Bay is a classic coastal lagoon system and is located on the central west coast of Florida between Tampa Bay and Venice, Florida. The system is bordered to the west by a chain of substantially developed coastal barrier islands (Anna Maria Island, Longboat Key, Lido Key, Siesta Key, and Casey Key) and to the east by the City of Sarasota mainland. Sarasota Bay is designated as a Class II OFW except for the area directly east of the Intracoastal Waterway in Sarasota County, which is designated as a Class III OFW.

Big Edwards Island

Big Edwards Island is a 6-acre island owned by Sarasota County. It is the northernmost project disposal island, located in Roberts Bay immediately south of the Siesta Key Bridge. Historically, Big Edwards Island was originally comprised of two small mangrove islands that were utilized for disposal of dredged material from previous channel dredging operations, including the construction of the GIWW. Big Edwards Island is about 550 feet north-to-south and 400 feet east-to-west. The topography of this island includes a relatively narrow perimeter berm enclosing an area where dredged material was placed during the dredging of the GIWW. The elevation of the perimeter berm generally varies from 12 to 13 feet MSL. The ground elevations of the interior portion of the island range from 5 to 17 feet MSL. The disposal material on Big Edwards Island consists of fine sand with varying amounts of shell and limestone rubble (Figure 23).

Skiers' Island

Skiers' Island is an 8-acre island owned by the West Coast Inland Navigation District. It is about 1250 feet long and varies in width from 400 feet at the northern end to 200 feet toward the southern end. Natural ground elevations on the island range from 7 feet MSL to 0 MSL. Historically, the area that is now Skiers' Island was located in the open waters of Roberts Bay, an estimated 600 feet offshore from Siesta Key. The dredged material from the construction of the GIWW was deposited on bay bottom to create the disposal island. The dredged material on Skiers' Island predominately consists of shell and limestone rubble with some fine sands. A deep-water channel surrounds Skiers' Island and is currently used by boaters for water skiing. In the past, Skiers' Island has been known for its importance as a colonial bird nesting site. However in recent years, few active nesting sites have been documented there (Figure 24).

Bird Colony Islands

The Bird Colony Islands are four small islands, approximately two acres in size located east of the GIWW north of Skiers' Island in Roberts Bay. The Bird Colony Islands constitute one of the most significant bird colonies along Florida's west coast and have suffered substantial erosion primarily from large boat wakes associated with their close proximity to the GIWW (Figure 25).

Jim Neville Marine Preserve

Jim Neville Marine Preserve is a 35-acre preserve owned by Sarasota County. This island is located to the west of the GIWW toward the southern end of Siesta Key. The former Midnight Pass is located to the west of the preserve. The southern area of the disposal island has gentle topography with a slight ridge running in the northwest to southeast direction. The highest point of this area is elevation 7 feet MSL. The northern portion of the island has gentle topography with a high point of 10.5 feet MSL located near the north end. Historically, a large mangrove island and a small area of adjoining open waters of Little Sarasota Bay occupied the area that is now Jim Neville Marine Preserve. During past dredging and the construction of the GIWW, the dredged material was deposited over much of the eastern portions of the island and adjacent bay waters. This created the present characteristic of the island which is an upland area, slightly elevated above surrounding mangroves. The dredged material on the Jim Neville Marine Preserve predominately consists of a mix of fine sands, shell fragments, limestone, phosphate, and silt (Figure 26).

Palmer Point Park

Palmer Point Park is a 33-acre park owned by Sarasota County. It is located at the north end of Casey Key. Palmer Point Park has very little topography with the highest point at elevation 4 feet MSL. Prior to the placement of dredge material, Palmer Point Park consisted of a narrow strip of mangrove that extended from the northern tip of Casey Key into the adjoining waters of Little Sarasota Bay. Dredged material was also placed in the bay waters immediately south of the original mangrove strip east of the island. The dredged material on Palmer Point Park predominately consists of primarily fine sands with varying amounts of shell fragments (Figure 27).

Snake Island

Snake Island is the southernmost project disposal island, located at the Venice Inlet. This island was originally more than 3 acres in size, but over the years this island has decreased to approximately 2 acres. The elevations of the interior portion of the island range from 2 feet MSL to 7 feet MSL. According to 1948 aerial photography, the area that is now Snake Island formed approximately the southern one-quarter of an elongated beach ridge island fringed by mangroves and open water at the confluence of Lyons Bay, Donna Bay, and Venice Inlet. Construction of the GIWW separated Snake Island from the remaining island, which today is called Turner Key. The dredged material on Snake Island predominately consists of fine sands with a small amount of shell fragments (Figure 28).

3.2 Vegetation

Big Edwards Island

Big Edwards Island has distinctive topographic features which includes a high disposal mound at the northern end of the island as well as an embankment around the perimeter of the island and a low, level area at the southern end of the island. As a result of the range of these topographic features, the vegetation on the island varies. The upland disposal mounds are dominated with an exotic nuisance plant canopy of large Australian pines and encroaching carrotwoods (*Cupaniopsis anacardioides*). At the low, level, southern end of the island, a temporary cover of rye grass (*Lolium perenne L.*) appears to have been planted and possibly maintained at certain times of the year. Wetland communities around the fringe of the island are less evident, thus producing a more “beach-like” environment. Few native plants appear to have survived the encroachment of exotic species on the island. Those native plants identified on the island include the shade-tolerant rouge plant (*Rivina humilis*), cabbage palm (*Sabal palmetto*), Florida privet (*Forestiera segragata*), corky passionvine (*Passiflora suberosa*), and moonvine (*Ipomoea alba*). In addition, there are scattered mangroves surrounding the island fringe.

Skiers' Island

Skiers' Island has had an excessive amount of fill placed on it from past dredging activities. A 7-foot embankment follows the perimeter of the island. The island is surrounded by a deep-cut channel, which is used for recreational water-skiing. This deep-cut channel precludes the colonization and growth of seagrass around the island. The perimeter of the island is dominated by a mixed-mangrove fringe including red (*Rhizophora mangle*), black (*Avicennia germinaus*), and white (*Laguncularia racemosa*) mangroves and buttonwoods (*Conocarpus erecta*). The interior portion of the island is dominated by exotic species including a canopy of large Australian pines and encroaching carrotwoods. A few small areas of native plants exists including native rouge plants, corky passionvine, moonvine, and prickly pear cactus (*Opuntia spp.*) that have been able to survive the increasing shade of the fast-growing Australian pine and carrotwood.

Bird Colony Islands

The Bird Colony Islands currently consist of primarily mixed-mangrove islands that serve as bird colony nesting sites. These islands are located adjacent to the GIWW and have suffered substantial erosion primarily from large boat wakes.

Jim Neville Marine Preserve

The wetlands surrounding the upland areas of Jim Neville Marine Preserve are in fairly good condition. These areas have a wide diversity of wetland native vegetation and community types. There is a mix of mangrove swamps as well as a diverse expanse of saltwater marshes with some encroachment of Brazilian pepper (*Schinus terebinthifolius*) primarily in the mangrove fringe and at the center of the northern end of the island. The interior upland portion of the preserve is degraded consisting primarily of a dense canopy of encroaching exotics, including primarily Australian pines with some melaleuca (*Melaleuca quinquenervia*). This monoculture of Australian pine has

totally disrupted the natural upland plant community. There are virtually no native trees in the canopy or subcanopy and only scattered Florida privet and saltbrush (*Baccharis halimifolia*) in the shrub cover. The dense shade and Australian “pine needle” groundcover has virtually excluded the natural community.

Palmer Point Park

This project area has an intact wetland fringe, which is relatively high in diversity and quality. There are very few nuisance species in the saltgrass (*Distichlis spicata*) meadow or the salt flat marsh dominated by a broad expanse of saltwort (*Batis maritima*), sea purslane (*Sesuvium portulacastrum*), and sea blite (*Suaeda linearis*). The mangrove fringe contains white, black and red mangroves and buttonwood with some encroachment of Brazilian pepper. In addition, the seagrass beds surrounding the island appear to be relatively dense. The upland interior of the area is the most disturbed primarily by the encroachment of exotic nuisance species, including a large monoculture of Australian pines and scattered carrotwood. However, it appears that private citizens and local environmental groups have made a concerted effort to kill and remove nuisance species north of this area in order to recreate and allow a natural native plant community to prevail. These communities consist of the Florida privet, wax myrtle (*Myrica cerifera*), and various shrubs of this maritime hammock.

Snake Island

Snake Island is a highly disturbed island that consists primarily of exotic plant species including Brazilian pepper, Australian pines and scattered carrotwood. There are several established mangroves on the island which are remnants of the original mangrove island prior to the dredging of the GIWW. Due to its location at the mouth of the Venice inlet, the island is surrounded by several navigational channels including the GIWW. This has resulted in significant erosion primarily on the western side of the island that currently precludes the growth of seagrasses in this area.

3.3 Threatened and Endangered Species

General Requirements

In accordance with Section 7 of the Endangered Species Act, a biological assessment of potential impacts of the proposed work on threatened and endangered species was prepared and forwarded to the US Fish and Wildlife Service (USFWS) (Appendix G). Federally protected animal species utilizing the wetland restoration project area that have been documented include: the piping plover (*Charadrius melodus*), the West Indian manatee (*Trichechus manatus*), the loggerhead sea turtle (*Caretta caretta*), the green sea turtle (*Chelonia mydas*), and the hawksbill sea turtle (*Eretmochelys imbricata*).

3.3.1 Piping Plover

The piping plover is found in the vicinity of both Palmer Point Park and the Jim Neville Marine Preserve. The piping plover is a threatened bird that spends the winter months along the southern Atlantic and Gulf coasts. The piping plover forages in tidal flats, which are located in the vicinity of both Palmer Point Park and the Jim Neville Marine

Preserve. Therefore, the protection or creation of tidal flat areas as part of the proposed project would be beneficial to this listed species.

3.3.2 Sea Turtles

The sea turtles identified by the USFWS within the project area include the loggerhead sea turtle, the green sea turtle, and the hawksbill sea turtle. The habitat for the loggerhead and green sea turtle includes the subtidal areas of the bay, and therefore is associated with each of the proposed disposal islands. Habitat for the hawksbill sea turtle is found in the vicinity of Big Edwards Island, Skiers' Island, the Bird Colony Islands, and Snake Island.

Sea turtle nesting has not been documented on any of the proposed project disposal islands. Therefore, it is highly unlikely that turtles use any of these islands for nesting, given the location and availability of sandy beach areas. Currently, there is no critical habitat designated for the loggerhead or green sea turtle; therefore, none will be affected. In addition, there is no critical habitat designated for the hawksbill sea turtle in the continental United States; therefore, none will be affected. During project construction, if a sea turtle is observed in an area of project activity, an approved sea turtle protection plan will be implemented.

3.3.3 Manatees

Habitat for the Western Indian manatee is located throughout the project area, particularly near areas of seagrasses located near several of the project disposal islands. It is anticipated that during the project construction phase, the "Standard Manatee Conditions" will be followed as will be stated in the project permit issued by the Florida Department of Environmental Protection.

3.4 Fish and Wildlife Resources

3.4.1 Fisheries

According to the Sarasota Bay National Estuary Program (Reference 1), declines in the water quality of the bay and the loss of shallow water habitats associated with mangroves and seagrass meadows over the last several decades has reduced the available habitat for juvenile fisheries. The proposed project aims to improve water quality through shoreline stabilization of the project disposal islands and increase the amount of shallow water habitat for juvenile fisheries.

3.4.2 Salt Flats

Salt flats are areas that experience short periods of tidal inundation that cause rapid algal production. Typically, the areas are slight impoundments that have increased salinities as a result of evaporation. The algae provide the base of the food chain via the grazing of the algal cells by organisms such as fiddler crabs, etc. Both the Jim Neville Marine Preserve and Palmer Point Park currently support this type of rare and

productive habitat. These areas should, if possible, be preserved as part of the project. In addition, salt flats should be created, where possible, as part of the proposed project on the project disposal islands.

3.4.3 Bird Habitat

The project areas provide habitat, nesting areas, and foraging areas for a variety of birds. In addition, the project areas provide seasonal habitat for migratory birds. The existing mangroves provide the highest quality habitat for these birds. However, due to the loss of mangroves and other native species, some birds have adapted to nesting in lesser quality habitat of nuisance species such as Australian pines.

Bird Colony Islands

According to the National Audubon Society, the following birds have utilized the Bird Colony Islands for nesting in the past three years (Table 6): the brown pelican (*Pelecanus occidentalis*), a state-listed species of special concern; the snowy egret (*Egretta thula*), a state-listed species of special concern; the little blue heron (*Florida caerulea*), a state-listed species of special concern; the tri-colored heron (*Egretta tricolor*), a state-listed species of special concern; the American oystercatcher (*Haematopus palliatus*), a state-listed species of special concern; the reddish egret (*Dichromanassa rufescens*), a state-listed species of special concern; the double-crested cormorant (*Phalacrocorax auritus*); the great blue heron (*Ardea herodias*); the great egret (*Casmerodius albus*); the cattle egret (*Bubulcus ibis*); and the black-crowned night heron (*Nycticorax nycticorax*).

Table 6. Bird Colony Island Nesting Survey*

Species	Listing**	1997 # Nests	1998 # Nests	1999 # Nests
Brown Pelican	SSC	168	276	239
Double-crowned Cormorant		39	28	32
Great Blue Heron		37	51	40
Great Egret		195	436	271
Snowy Egret	SSC	20	100	30
Little Blue Heron	SSC	-	2	-
Tri-colored Heron	SSC	1	2	3
Reddish Egret	SSC	-	1	-
Cattle Egret		10	111	13
Black-crowned Night Heron		4	10	10
American Oystercatcher	SSC	1	-	-
Total		475	1,017	638

*Numbers represent nesting pairs

Source: National Audubon Society

**Species of Special Concern

Skiers' Island

In the past, Skiers' Island has been known for its importance as a colonial nesting site. However in recent years, few active nesting sites have been documented there.

According to the National Audubon Society, the nesting birds that have been identified on Skiers' Island in the past three years include the great blue heron (*Ardea herodias*) and the yellow-crowned night heron (*Nyctanassa violacea*) (Table 7).

Table 7. Skiers' Island Nesting Survey*

Species	Listing**	1997 # Nests	1998 # Nests	1999 # Nests
Great Blue Heron		2	No data	8
Yellow-crowned Night Heron		5	No data	-
Total		7		8

*Numbers represent nesting pairs

Source: National Audubon Society

**Species of Special Concern

3.5 Coastal Barrier Resources

Two designated units of the Florida Coastal Barrier Resource System are located in the vicinity of Sarasota Bay and the project disposal islands. These designated units include Casey Key (#P22) and Venice Inlet (#71P). Both the Jim Neville Marine Preserve and Palmer Point Park fall within the boundaries of the #P22 designated COBRA unit. Snake Island falls within the boundary of the #71P designated COBRA unit. The designated units of the Florida Coastal Barrier Resource System are protected under the Coastal Barrier Resources Act, PL 101-591. However, in accordance with Section 6(A) of the Act, projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats, including acquisition of fish and wildlife habitats and related lands; stabilization projects for fish and wildlife habitats; and recreational projects are consistent with the purposes of this Act. The proposed ecosystem restoration of the project disposal islands is consistent with the purposes of this Act and will provide a ecological benefit to these coastal resources.

3.6 Water Quality

Sarasota Bay was designated as a priority water body by the US Environmental Protection Agency in Section 320 of the Clean Water Act, as amended in 1987. Sarasota Bay has also been designated as an OFW. Sarasota Bay has been identified as a Class II water body except for the area directly east of the GIWW in Sarasota County, which is designated as a Class III water body. Declines in water quality in Sarasota Bay have been identified as a significant issue because of the impact of water quality on seagrass habitat and fisheries productivity. The primary pollutants of concern are nutrients and toxic substances including heavy metals and pesticides. Sources of nutrient and toxicant loadings into the bay come from stormwater runoff, sewage treatment plant wastewater discharges, septic tanks, and rainfall (Reference 1).

Sarasota County has several programs and efforts in place to help monitor and improve the water quality of the bay. The County and four co-permittees have an U. S. Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES) permit to operate a Municipal Separate Storm Sewer System (MS4) for stormwater discharges.

The permit compliance program includes, but is not limited to:

- 1) operation and maintenance of structural controls and storm water collection system;
- 2) construction site runoff program that operates through requirements in the County's Land Development Regulations;
- 3) operation and maintenance of public streets, roads and highways;
- 4) ensuring flood control projects comply with state storm water quality requirements;
- 5) identification, monitoring, and control of discharges from municipal waste treatment facilities not covered by the NPDES storm water permit;
- 6) control of pollutants related to application of pesticides, herbicides, and fertilizers through public education, applicator certification requirements, and an integrated pest management program for all County facilities;
- 7) illicit connections and illegal dumping regulatory programs that operate through County Ordinance, field screening of outfalls, industrial inspections, and a 24-hour on-call investigative staff and;
- 8) industrial and high risk runoff inspection program.

In addition to the NPDES permit compliance, Sarasota County has a program to encourage acquisition of plant wastewater systems so that flows can be treated at state-of-the-art plants. About 10% have been taken off line, many of which lie within the Phillipi Creek watershed, which is a top priority, based on its environmental condition and connection to Sarasota Bay.

Sarasota County has a Septic to Sewer program that is geared toward replacing septic tanks and hooking residents up to central sewer. The first major project is the Phillipi Creek Project. Construction of the first phase should begin 2001-2002.

Sarasota County has an ordinance that regulates discharges to surface or ground water.

Lastly, the County has an ambient Water Quality Monitoring Program with sampling stations located throughout the waters of Sarasota County. The data generated from this program are analyzed to help identify water quality trends in the bay.

Big Edwards Island, Skiers' Island, and Bird Colony Islands

Big Edwards Island, Skiers' Island, and the Bird Colony Islands are all located in Roberts Bay. According to the FDEP 1998 305(b) data report, the status of Roberts Bay with regards to chemistry, fish, standards, metals, and biology is classified as "fair". Table 8 shows the trends (from 1995 to 1997) in several water quality parameters in Roberts Bay surrounding the project disposal islands. This information indicates that the turbidity level has been degrading in Roberts Bay over the past few years. In addition, dissolved oxygen levels and total phosphorus have also been degrading in the past few years. This may be attributed to stormwater discharge influences on the bay.

Jim Neville Marine Preserve and Palmer Point Park

The Jim Neville Marine Preserve and Palmer Point Park are located in Upper Little Sarasota Bay. The FDEP 1998 305(b) data reports the status of Upper Little Sarasota

Bay with regards to chemistry, fish, standards, metals, and biology is classified as “fair”. In this portion of Little Sarasota Bay, the water quality parameters that have been degrading from 1995 to 1997 include turbidity, secchi depth, and total phosphorus. Table 8 shows the trends in several water quality parameters in upper Little Sarasota Bay surrounding these two disposal islands.

Snake Island

Snake Island is located in the southern portion of Little Sarasota Bay. According to the FDEP 1998 305(b) data reports, the status of the Lower Little Sarasota Bay watershed with regards to chemistry, fish, standards, metals, and biology is classified as “good”. In this portion of Little Sarasota Bay, the only water quality parameter that has been degrading between 1995 to 1997 is turbidity. This could be partly due to the erosion of sand from islands like Snake Island. In addition, there is a significant amount of boat activity and strong currents also associated with this island. Table 8 shows the trends in several water quality parameters in lower Little Sarasota Bay surrounding this disposal island.

Table 8. Basin Water Quality Parameter Trends from 1995 - 1997

Water Quality Parameters	Roberts Bay	Upper Little Sarasota Bay	Lower Little Sarasota Bay
Total Coliform	Stable	Stable	Stable
Fecal Coliform	Stable	Stable	Stable
Turbidity	Degrade	Degrade	Degrade
Total Suspended Solids	No Trend	No Trend	No Trend
Biochemical Oxygen Demand	No Trend	No Trend	No Trend
Dissolved Oxygen	Degrade	Stable	Stable
Total Organic Carbon	No Trend	No Trend	No Trend
Chlorophyll a	No Trend	No Trend	No Trend
Secchi Depth	Stable	Degrade	Stable
Total Nitrogen	Stable	No Trend	Stable
Nitrate	Stable	No Trend	Stable
Total Phosphorus	Degrade	Degrade	Stable

Source: Florida Department of Environmental Protection 305(b) Data Report

3.7 Hydraulic Information

According to *A Field and Modeling Study on Circulation and Transport in Sarasota Bay* (Reference 2) prepared in 1993 for the Sarasota Bay National Estuary Program, circulation in Sarasota Bay is driven primarily by tides generated into the bay from the Gulf of Mexico and to a lesser degree by winds. Tides in Sarasota Bay consist of a mix of diurnal (lunar and solar tidal constituents which have periods on the order of 24 hours) and semi-diurnal tides (lunar and solar tidal constituents which have periods on the order of 12 hours).

Big Edwards Island, Skiers' Island, and Bird Colony Islands

The tides in Roberts Bay have been monitored by the Florida Department of Environmental Protection (FDEP), Bureau of Survey and Mapping and are reported as Published Tide Station Reports. The tide gauge for Big Edwards Island, Skiers' Island, and the Bird Colony Islands is Gauge No. 872 6045, located at the west end of a wooden dock at the Reagle Lagoon Boat Basin. Tidal data recorded at the station have been analyzed by the FDEP and the following tidal statistics are provided:

Mean Higher High Water	2.02' NGVD
Mean High Water	1.75' NGVD
Mean Sea Level	1.02' NGVD
Mean Low Water	0.29' NGVD
Mean Lower Low Water	0.00' NGVD
Mean Tidal Range	1.46' NGVD

Jim Neville Marine Preserve and Palmer Point Park

The tides in Upper Little Sarasota Bay have been monitored by the FDEP, Bureau of Survey and Mapping and are reported as Published Tide Station Reports. The tide gauge for the Jim Neville Marine Preserve and Palmer Point Park is Gauge No. 872 5985, located on the Midnight Pass Marina Pier. Tidal data recorded at the station have been analyzed by the FDEP and the following tidal statistics are provided:

Mean Higher High Water	1.86' NGVD
Mean High Water	1.57' NGVD
Mean Sea Level	0.95' NGVD
Mean Low Water	0.33' NGVD
Mean Lower Low Water	0.00' NGVD
Mean Tidal Range	1.24' NGVD

Snake Island

The tides in Lower Little Sarasota Bay, near Venice Inlet, have been monitored by the FDEP, Bureau of Survey and Mapping and are reported as Published Tide Station Reports. Due to the location of Snake Island, with influences from both Dona Bay and the Gulf of Mexico, two tidal gauges were identified to identify the range of tidal influences that occur in this portion of Little Sarasota Bay. The first gauge is Gauge No. 872 5858, located at the Venice Municipal Pier in the Gulf of Mexico. The second gauge is Gauge No. 872 5902, located on a private dock northeast of Snake Island in Dona Bay. Tidal data recorded at these stations have been analyzed by FDEP and the following statistics are provided:

Gauge No. 872 5858 – Venice Municipal Pier – Gulf of Mexico	
Mean Higher High Water	2.25' NGVD
Mean High Water	1.99' NGVD
Mean Sea Level	1.18' NGVD
Mean Low Water	0.37' NGVD
Mean Lower Low Water	0.00' NGVD
Mean Tidal Range	1.62' NGVD

Gauge No. 872 5902 – Dona Bay Northeast of Snake Island	
Mean Higher High Water	1.74' NGVD
Mean High Water	1.46' NGVD
Mean Sea Level	0.86' NGVD
Mean Low Water	0.26' NGVD
Mean Lower Low Water	0.00' NGVD
Mean Tidal Range	1.20' NGVD
Source: FDEP, Bureau of Survey and Mapping	

3.8 Geotechnical/Soils and Topography

Sampling Methods

A subsurface investigation of the project disposal islands was conducted in late 1999 and early 2000, by Williams Earth Sciences (Appendix E, Reference 3). The investigation was conducted in conjunction with a preliminary topographic survey completed by King Engineering (Reference 4) during this same time period. Utilizing field observations and preliminary sketches, the boring locations were identified prior to sampling. These boring locations were identified on the survey in addition to the preliminary topographic information.

The borings were conducted utilizing either a bucket type hand auger or a post-hole digger. In addition, where a significant amount of rock or shell was found, a pry bar was used to loosen or break the material so that the hole could be advanced. The boring holes were advanced to the water table or practical refusal utilizing the manually operated equipment. In addition to the borings, grab samples were obtained of the initial six inches of soil in two seagrass areas at Palmer Point Park and the Jim Neville Marine Preserve. Samples representative of the soils encountered were then selected for laboratory testing. However, due to the difficulty in obtaining representative samples of the larger sized materials, laboratory testing was limited to the sands and fine-grained soils. The laboratory tests included gradation tests, -200 wash gradations, organic content test and the Atterberg Limits test. Detailed information regarding the geotechnical investigation is found in the *Report of Geotechnical Services - Sarasota Bay Ecosystem Restoration* completed for the project (Reference 3).

Big Edwards Island

Big Edwards Island is approximately 6 acres in area with dimensions of 550 feet north-to-south and 400 feet east-to-west. The topography of the island is unique with a relatively narrow perimeter berm enclosing an area where dredged material was placed. The elevation outside of the perimeter berm ranged from 0 MSL to 5 feet MSL. The elevation of the perimeter berm generally varied from about 12 to 13 feet MSL. However, the berm was as high as about 14 feet MSL in the northwest corner of the island. Inside the perimeter berm, the elevation varied from a low of about 5 feet MSL at the south end of the island to a high of about 17 feet MSL near the north end of the island.

Forty-two borings were drilled on Big Edwards Island. The borings drilled both on the berm and inside of the berm encountered similar dredged fill consisting of fine sand with

a varying amount of shell and limestone rock pieces. The rock included pieces as large as eight to ten inches in dimension. In several locations, it was difficult to advance the borings due to large rocks. The greatest amount of shell material was found toward the southern portion of the island and the greatest amount of rocky material was found toward the northern end of the island. The borings conducted at the lower elevations around the perimeter of the island encountered fine sands with some shell fragments. In addition, some silty sands and sandy silts were encountered, primarily at the south end of the island at about 0 MSL.

According to the 1987 Soil Conservation Services (SCS) soil survey (Reference 5), the soils on Big Edwards Island are identified as Kesson and Wulfert mucks. Two borings encountered organic soils at their termination depths and several others encountered silts that may be representative of this soil type.

Based on the samples recovered, it does not appear that the dredged material from the island is suitable for beach restoration or seagrass restoration due to the relatively large size of material encountered. It also does not appear that a sufficient amount of material was large enough to allow it to be used for shoreline stabilization.

Skiers' Island

Skiers' Island is a relatively long slender island approximately 1250 feet long by an average of 275 feet wide and encompassing approximately 8 acres. The island has a ridge running along its spine ranging from about 6 feet MSL near the south end to about 7 feet MSL near the north end. In addition, the ridge breaks in the middle of the island to an elevation of approximately 1-foot MSL.

Twenty-nine borings were drilled on Skiers' Island. Borings drilled at elevation 2 feet MSL or less generally encountered fine sands with some shell or limestone pieces. This material was considered sands. The borings drilled at elevation 2 feet MSL or higher encountered dredged fill material consisting of sand with large shell and limestone pieces. Some of the surficial limestone pieces were as large as 12 inches in dimension. In addition, rocks, on the order of 6 inches were observed on the ground surface throughout the island.

According to the 1987 SCS soil survey, the soils on Skiers' Island are identified as Kesson and Wulfert mucks. However, this material was not apparent in the material sampled.

Based on the samples recovered, it does not appear that the dredged material from the island is suitable for beach restoration or seagrass restoration due to the relatively large size of material encountered. It is likely that material on the interior areas of the island, after processing, may be used for erosion protection. However, a sufficient quantity of the material must be identified in order for processing of the material to be cost effective.

Jim Neville Marine Preserve

Jim Neville Marine Preserve encompasses approximately 35 acres and consists of two areas connected by a mudflat. The southern area has a gentle topography with a slight ridge running in the northwest to southeast direction. The highest point of this area is about elevation 7 feet MSL. The northern area is somewhat larger and also has a gentle topography with a high point of about elevation 10.5 feet MSL, located near the north end.

Nine borings were drilled on the southern portion of the island. Six borings were drilled along the perimeter of the southern area and three were drilled in the interior at elevation +2 feet MSL or higher. Those borings drilled on the perimeter encountered fine sands to their termination 1 to 2 feet below the ground surface. Some shell fragments, phosphate and silt were also present in these samples. The borings drilled on the interior portion encountered fine sand with a significant amount of large, intact shell, shell fragments and limestone fragments to a depth of 5 to 7 feet below the ground surface. Below this material, fine sands were encountered to the termination of the borings. A small amount of peat was identified in a couple of the borings.

Fifteen borings were drilled on the northern portion of the island. Four borings were drilled at higher interior locations while the rest were drilled around the perimeter. These borings encountered similar materials to the southern area.

According to the 1987 SCS soil survey, the soils on the Jim Neville Marine Preserve are Kesson and Wulfert muck. The geotechnical investigation indicates that this type of soil was present prior to the dredge material being placed on the island.

With the exception of the soils found at the perimeter of the island, the dredged material does not appear to be suitable for beach restoration or seagrass restoration due to the significant amount of large material such as shells and limestone pieces.

Palmer Point Park

Palmer Point Park is a 33-acre disposal area with very little topography. The highest point of the area is at about elevation 4 feet MSL.

Eighteen borings were conducted on Palmer Point Park. The borings generally encountered fine sands with a varying amount of shell fragments. A boring conducted in a mudflat on the east end of the island encountered a silty peat from the ground surface to the termination of the boring at 6 inches.

According to the 1987 SCS soil survey, the soils in the Palmer Point area are identified as Kesson and Wulfert mucks. These soils were most likely present prior to the deposition of dredge material on the island.

Materials found on Palmer Point Park are suitable for beach restoration. In addition, it is possible that the material found on this island may be suitable for seagrass restoration to some extent.

Snake Island

Snake Island is approximately 2 acres. Topographically, it is characterized by 2-foot high banks close to the water edge. The elevation of the interior of the island generally ranges between 2 feet MSL to a high of about 7 feet MSL (northwest quadrant of the island).

Eleven borings were conducted on Snake Island. The borings encountered soils classified as fine sands from the ground surface to their termination. Some shell, shell fragments, and small pieces of phosphate were found within the sand. At the termination of the borings conducted in the middle of the island and the northwest quadrant, an organic silt was encountered.

According to the 1987 SCS soil survey, the soils on this site are identified as Canaveral fine sands, a natural formation. The soil found on Snake Island is representative of this type of soil.

Soils identified on Snake Island appear to be suitable for beach restoration. However, the shell fragments would need to be removed if the soil was to be used for seagrass restoration.

3.9 Air Quality

Air quality within the project area is good due to the presence of either on or off-shore breezes. Sarasota County is classified as an attainment area for all Federal Air Quality Standards.

3.10 Noise

Ambient noise levels in the project area are low to moderate. The major noise producing sources are boat activity and adjacent commercial and residential areas. These sources are expected to remain at their present noise levels.

3.11 Aesthetic Resources

Sarasota Bay is bordered primarily by residential developments and some commercial land uses. Throughout the public involvement process, many homeowners have stated that the aesthetic value of these disposal islands are important to them and should be a consideration in the selection of the Recommended Plan.

3.12 Recreation Resources

The primary recreational use of Sarasota Bay is “viewing it”, according to a public opinion survey by the Sarasota National Estuary Program in the early 1990’s (Reference 1). However, there are numerous other recreational uses of the bay, which include both active and passive forms of recreation. These recreation uses include boating, water-skiing, kayaking, swimming, wildlife observation (birding), and fishing. Recreational fish resources include a variety of species including redfish (*Sciaenops*

ocellatus), sea trout (*Cynoscion* spp.), jacks (*Seriola fasciata*), pompano (*Trachinotus carolinus*), black drum (*Pogonias cromis*), sheepshead (*Archosargus probatocephalus*), snook (*Centropomus* spp.), flounder (*Paralichthys albigutta*), and mangrove snapper (*Lutjanus griseus*).

Several of the project disposal islands, particularly Big Edwards Island, Skiers' Island, and Snake Island, are used by the public regularly for picnicking and other activities. However, each of the islands has evidence of human activity except Bird Colony Islands. Skiers' Island's primary recreational use is water skiing. The deep-cut channel surrounding the island is one of the few places in Sarasota Bay where water-skiing is feasible.

3.13 Navigation

The Gulf Intracoastal Waterway is adjacent to each of the project disposal islands. In addition, several other marked channels are located throughout the project area to provide access to residential areas adjacent to the bay.

The majority of the Intracoastal Waterway in the vicinity of the project disposal islands has been designated as "No-Wake" zones.

3.14 Cultural Resources

A cultural resource investigation was conducted for the proposed project and coordination with the State Historic Preservation Officer (SHPO) has been initiated.

Big Edwards Island, Skiers' Island, and Bird Colony Islands

Figure 29 is a 1948 aerial of Big Edwards Island taken from the 1959 Soil Conservation Service soil survey for Sarasota County, Florida (Reference 6). In 1948, prior to dredging of the GIWW, the area that is now Big Edwards Island was occupied by two small mangrove keys and the adjoining waters of Roberts Bay.

Figure 30 shows the 1948 aerial for the area that is now Skiers' Island. As shown, this area was occupied by open waters of Roberts Bay an estimated 600 feet offshore from Siesta Key. The dredge material from the GCIW was deposited on the bay bottom to create Skiers' Island.

Figure 31 shows the 1948 aerial for the area identified as the Bird Colony Islands. Similar to today, the 1948 aerial indicates this area was occupied by three small mangrove islands prior to the dredging of the GIWW.

The cultural resource investigation for Big Edwards Island, Skiers' Island and the Bird Colony Islands included archival research and review of soil survey maps. This information indicated that there were no significant cultural resources on any of these islands and that there is little likelihood of sites being present on any of these islands.

Jim Neville Marine Preserve and Palmer Point Park

The 1948 aerial of the area that is now the Jim Neville Marine Preserve is shown in Figure 32. In 1948, this area was occupied by a large mangrove island (the Bird Keys) and a small area adjoining open waters of Little Sarasota Bay.

In 1948, the area that is now Palmer Point Park consisted of a narrow strip of mangroves that extended east from the northern tip of Casey Key into the adjoining waters of Little Sarasota Bay, as well as open water immediately south of this strip (Figure 33).

The cultural resource investigation for Jim Neville Marine Preserve and Palmer Point Park included archival research, review of soil survey maps and field reviews. This research resulted in the identification of no significant cultural resources on these islands.

Snake Island

In 1948, the area that is now Snake Island formed approximately the southern one-quarter of an elongated beach ridge island fringed by mangroves and open water at the conjunction of Lyons Bay, Dona Bay, and Venice Inlet (Figure 34). Construction of the Intracoastal Waterway separated Snake Island from the remaining island (Turner Key).

The cultural resource investigation for Snake Island included archival research, review of soil survey maps and field review. This investigation resulted in the identification of an archaeological site (Site S02336) located on Snake Island. Testing of this site on Snake Island determined that the site is eligible for the *National Register of Historic Places*. Coordination with the SHPO has been initiated. Consultation with the SHPO will determine what is the appropriate mitigation measure for preservation of the archeological site on Snake Island.

4.0 ENVIRONMENTAL EFFECTS

This section is the scientific and analytical basis for the comparisons of the alternatives. See Tables 1-5 in Section 2.0, Alternatives, for the summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects.

4.1 General Environmental Effects

During construction of the GIWW during the 1950's and early 1960's, placement of dredged material on mangrove islands and bay bottom created upland areas. The dredged material was placed within the bay to build islands visible to navigators, thus preventing dangerous shoals. The disposal islands that are part of this project, including Big Edwards Island, Skiers' Island, Bird Colony Islands, Snake Island, Jim Neville Marine Preserve, and Palmer Point Park are all examples of this practice.

The disposal islands were constructed with and without the use of berms. Big Edwards Island is typified by a berm (or containment system) around the outer edge of the island where disposal material was pumped in the interior during dredging operations. The other islands were built without perimeter berms and are mounds with the highest point in the center with decreasing elevations towards the outer edges. The islands were colonized by non-native trees and shrubs such as Australian pine, Brazilian pepper, and carrotwood. Occasional ground cover species such as railroad vine (*Ipomea pes-caprae*), sandspur (*Cenchrus* spp.), and prickly pear cactus are found in the understory.

In addition to the uplands, the wetland fringes of the disposal islands and adjacent habitat are impacted by the presence of non-native nuisance vegetation and by an on-going erosion problem. The presence of exotic plant species inhibits the growth of native species causing the diversity of native species found on these islands to be reduced as a result of competition and a subsequent loss of native wildlife habitat. Erosion is a problem on several of the disposal islands, which impacts the water quality in the bay and results in deposition of sediments in navigational channels.

4.2 Vegetation

The following discussion will focus on the impacts, both positive and negative, resulting from the Recommended Plan. As the intent of this study is to identify the most feasible alternative for ecological restoration of the disposal islands, the concepts developed for each island (as discussed in Section 2.0, Alternatives) are generally consistent regarding potential impacts to the affected environment.

For each of the disposal islands, the control of nuisance species after restoration is an important consideration. In general, the control of these nuisance species, primarily Brazilian pepper, Australian pines, and carrotwood, will be facilitated through the following:

- Grade changes resulting in the removal of substrate will remove the root stock and seed source from these species and will result in incompatible habitat creation for exotics.
- Grade changes resulting in the addition of fill will cover over seed sources preventing germination of seeds.
- Use of composted shredded (tub-ground) woody vegetation will act as a thick mulch layer physically preventing seed germination. Material used from the nuisance species must be composted to prevent seed germination in the mulch.
- Use of applied herbicides (injection, frill and girdle, or cut stump application) may be used to control Australian pines and Brazilian pepper in specified areas.
- Finally, follow-up treatment and monitoring will be necessary.

Planting of desirable species will also help with controlling nuisance species by creating competition in the newly disturbed soils. Upland plantings should include a diverse mix of subtropical hardy native trees and shrubs. Wetland plantings should include mangrove species and high and low marsh species. The wetland plants should be planted on close centers as liners or bare root for quick coverage and optimum competition. Detailed planting plans for each island will be completed during the design phase of the project. Table 9 provides a general list of plant species that will be considered for each of the various habitats.

Big Edwards Island

The most significant impact to vegetation associated with the Recommended Plan, Concept 4, on Big Edwards Island will be removal of nuisance species including, but not limited to, Brazilian pepper, Australian pine, and carrotwood. Some desirable species such as cabbage palm, rouge plant, Florida privet, corky passionvine, and moonvine will be impacted by construction activities. The removal of the substrate, whether minor grading or significant grade changes, increases the opportunity for successful eradication of exotics through the removal of root stock and seed sources. Revegetation activities associated with upland restoration will include installation of many of the desirable species impacted as well as other desirable species to create a diverse plant community (Table 9).

The installation of high marsh species such as knotgrass (*Paspalum* ssp), marsh-hay (*Spartina patens*), and saltgrass (*Distichulus*) will improve the habitat functions of the island. These efforts will increase the amount of cover of high marsh species that are almost non-existent in the Sarasota Bay area. The increase in acreage of mangroves is another positive effect of the project. The increased acreage of mangroves will increase the fisheries habitat value as a result of the project. The Recommended Plan increases the open water edge effect of the mangroves that typically improves the function and value of mangroves.

Table 9. Proposed Plant Species List

Upland Trees	
<i>Busera simaruba</i>	Gumbo limbo
<i>Celtis laevigata</i>	Sugarberry
<i>Coccoloba uvifera</i>	Seagrape
<i>Coccoloba diversifolia</i>	Pigeon Plum
<i>Conocarpus erectus</i>	Green buttonwood
<i>Diospyros virginiana</i>	Persimmon
<i>Juniperus silicicola</i>	Southern Red Cedar
<i>Persea borbonia</i>	Red bay
<i>Quercus myrtifolia</i>	Myrtle oak
<i>Quercus virginiana</i>	Live oak
<i>Sabal palmetto</i>	Cabbage palm
<i>Zanthoxylum clava-herculis</i>	Hercules club
Upland Shrubs	
<i>Callicarpa americana</i>	Beautyberry
<i>Chrysobalanus icaco</i>	Coco plum
<i>Chrysophyllum oliviforme</i>	Satinleaf
<i>Dodonaea viscosa</i>	Varnish leaf
<i>Erythrina herbacea</i>	Carol beam
<i>Forestiera segregata</i>	Wild olive
<i>Myrcianthes fragrans</i>	Simpson stopper
<i>Pithecellobium keyense</i>	Blackbead
<i>Psychotria nervosa</i>	Wild coffee
<i>Randia aculeata</i>	White Indigo Berry
<i>Scaevola plumieri</i>	Inkberry
<i>Serenoa repens</i>	Saw palmetto
<i>Sophora tomentosa</i>	Necklace pod
<i>Suriana maritima</i>	Bay cedar
Wetland – High and Low Marsh Species	
<i>Avicennia germinans</i>	Black mangrove
<i>Rhizophoraceae mangle</i>	Red mangrove
<i>Laguncularia racemosa</i>	White mangrove
<i>Conocarpus erectus</i>	Buttonwood
<i>Spartina bakeri</i>	Sand cordgrass
<i>Spartina patens</i>	Marshhay cordgrass
<i>Spartina alterniflora</i>	Smooth cordgrass
<i>Juncus roemerianus</i>	Black needle rush
<i>Scirpus spp.</i>	Bulrush
<i>Batis maritima</i>	Sea pickle
<i>Sesuvium spp.</i>	Seapurslane
<i>Paspalum vaginatum</i>	Seashore paspalum
<i>Distichlis spicata</i>	Saltgrass

Construction access is anticipated to occur from the western side of the island. This location is adjacent to a channel that is not vegetated with seagrasses and therefore no impacts to adjacent seagrasses are proposed. Grade changes in the northwest portion of the island will occur adjacent to existing mangroves. As such, occasional individual mangroves will be impacted to provide a consistent elevation between planted mangroves and the existing vegetation. Where practical, design efforts will identify these locations and adjustment in species type will minimize impacts while providing an opportunity for exchange of water during normal tidal events. Sheet flow of tidal waters is beneficial to the quality of habitat.

Seagrasses adjacent to the east of Big Edwards Island will not be negatively impacted by the Recommended Plan. The installation of temporary erosion control measures during construction and permanent erosion control measures will prevent impacts to the seagrasses from continued erosion of the adjacent shoreline. The seagrasses to the south of the island may experience minor impacts from the existing unconsolidated shore. In order to provide access to upland areas and to take advantage of existing conditions, the upland area on the southern portion of the island will remain. However, through upland restoration plantings, all efforts will be made during the design process to include vegetation and maintenance commitments that will minimize erosion.

Skiers' Island

The greatest effect to vegetation by the Recommended Plan, Concept 4, involves the removal of exotic and nuisance vegetation. Skiers' Island is dominated by Australian pine with occasional Brazilian pepper adjacent to the existing mangroves that fringe the island. Within isolated pockets, encroaching carrotwoods will be impacted by the restoration project. Small, healthy communities of native rouge plants, corky passionvine, moonvine, and prickly pear cactus that have been able to survive the increasing shade of the fast-growing carrotwood will be impacted by the project. This unavoidable impact occurs during the removal of substrate, whether minor grading or significant grade changes. However, the removal increases the opportunity for success through the elimination of exotic nuisance root stock and seed sources. Revegetation activities associated with upland restoration will include installation of many of the desirable species impacted, as well as a diverse mix of subtropical upland hammock species (Table 9).

The proposed locations of upland restoration will not impact the existing mangroves. The Recommended Plan reduces the steep slopes of disposal material adjacent to the existing mangroves. The elimination of the upland disposal material and nuisance species adjacent to the existing mangroves will have a positive impact on the existing mangroves.

The existing mangroves are currently inundated from the outside edge of the island. The proposed open water connections to the east, west, and north will have a positive effect on the function and value of the proposed and existing mangroves. The increased inundation improves the fisheries habitat value of the mangroves. Low marsh habitat will be initially installed and will create nursery habitat for fish and estuarine, inter-tidal invertebrates.

Historic dredging adjacent to Skiers' Island and the subsequent placement of fill on the Island precludes much habitat for seagrasses. The limited amount of seagrass habitat present will be impacted in a positive manner from the proposed activities. The Recommended Plan includes mangrove coverage around more than 90% of the island, thus reducing the opportunity for continued erosion. The reduction in erosion should improve water quality and reduce siltation over seagrasses from migrating disposal material.

It is anticipated only minor and temporary construction related impacts will occur to desirable wetland vegetation during construction through the use of best management practices such as the use of silt fences, turbidity barriers, and controlled construction access.

Bird Colony Islands

The proposed activities for the Bird Colony Islands are limited to stabilization. It is anticipated that stabilization will occur through the placement of rubble rip-rap and will have no negative impacts on the nesting habitat provided by the mangroves. As a result of the wave energy, which has caused erosion of the mangrove areas, there are no seagrasses on the edge of the small islands. Therefore, placement of the stabilization material will have no impact on seagrasses.

Jim Neville Marine Preserve

The Recommended Plan, Concept 5, on the Jim Neville Marine Preserve provides the greatest opportunity for improvements to the existing vegetation and ecological habitat. With more than 27 acres of nuisance species cover, the primary effect will be the positive effect of the removal of nuisance plants. However, as the disposal material was placed in the middle of existing mangroves during excavation of the GIWW, some impacts to existing mangroves and seagrasses will occur during construction. These impacts will be temporary and minor, and are anticipated to return to valuable wetland habitat.

The previously placed disposal material created two mounds which have become vegetated almost exclusively with Australian pines associated with two areas in the interior of Jim Neville Marine Preserve. Upland vegetation restoration will target removal of the Australian pines. Additional areas of melaleuca exist with Brazilian pepper encroaching into the mangrove fringe. Scattered Florida privet and saltbush exist on the island and will be unavoidably impacted by the re-grading efforts. Approximately two acres of upland restoration is proposed for the Recommended Plan, replacing upland exotic nuisance species with a diverse, desirable sub-tropical hammock species (Table 9). It is anticipated the positive effect on the upland vegetation for Jim Neville Marine Preserve will increase the function and value of the ecological restoration. The Recommended Plan provides a favorable balance of uplands and mangroves.

The placement of material on the island created a unique habitat between the upland nuisance species and the mangrove band around the island. This habitat is quite similar to natural salterns in other coastal areas. Typically, the area becomes inundated

with the tide and water is entrapped. As the tide ebbs, the trapped water evaporates and the salinity greatly increases. This increased salinity prevents propagation of seeds and the growth of most vegetation. What does occur is rapid blooms of single cell algae. The algae provide a food source for fiddler crabs (*Uca uca*) and other invertebrates. This habitat will not be impacted by the proposed activities.

The mangrove bands that were left after placement of the disposal material will not be negatively impacted by the Recommended Plan. Positive impacts will occur as a result of increased mangrove acreage as well as increased contact with the restored mangrove areas by tidal flows. The increased function and value of the multiple channel connections included in the Recommended Plan compensates for the temporary, construction-related impacts to mangroves. The existing mangroves as well as the planted mangroves will benefit from sheet flow of tidal water across the island during high tide. It is anticipated the designs provide an opportunity for the sheet flow from all directions, depending on the prevailing tides and/or winds.

The temporary impacts will include removal of mangroves associated with the channel connections, construction access, and construction of the low marsh/mangrove planting areas. The construction access is necessary to build the Recommended Plan as deep water areas do not exist adjacent to the proposed construction areas.

Impacts to the adjacent seagrass habitat will occur. These impacts will be both positive and negative. The negative impacts will occur as a result of tidal channel connections and construction access. Where practical, the proposed location for the tidal channel will be the same location used for access. Additional excavation may occur in the grass flats adjacent to the island to allow ingress and egress of construction equipment and removal of the excavated material. Exact locations will be identified during the design phase and all efforts will be made to determine locations that will provide long-term benefits through increased circulation. The positive benefits will be improved water quality as a result of nutrient assimilation by the wetland vegetation as well as trapping suspended sediments.

The use of best management practices such as the installation of silt fences, turbidity barriers, and controlled construction access will reduce impacts during construction. It is anticipated phased construction would have a negative impact on the vegetation. Nuisance species are opportunistic and colonize quickly on exposed soils. Phased construction would maintain a seed source if nuisance species remained within areas of no work. The recently constructed areas would contain exposed areas of soil adjacent to the nuisance species. As a result maintenance costs would increase substantially.

Palmer Point Park

While some removal of nuisance species by volunteers currently occurs on Palmer Point Park, the primary effect of the Recommended Plan, Concept 3, will be a positive one, consisting of the removal of nuisance species such as Australian pine and Brazilian pepper. This site is somewhat different than the other areas as it is part of a contiguous peninsula, not an island. Furthermore, the Recommended Plan, which will create all low marsh and mangrove habitat, considers the presence of nuisance species

on the adjacent uplands. As a result, the loss of upland habitat is an unavoidable impact, but the proposed habitat will have significant benefits. The opportunity for restoration of the uplands on the adjacent properties will eventually provide a mosaic of habitat improving the total ecological value of Palmer Point Park.

The mangroves will provide a positive impact to the adjacent habitat by increasing nesting opportunities, improving water quality, and increasing fisheries habitat. The mangroves would benefit from increased sheet flow of tidal waters.

As with Jim Neville Marine Preserve, open sandy areas of high salinity that are similar to natural salterns are present. The vegetative value, while considered high, is limited to the rapid algal blooms. The Recommended Plans would have no impact to this community. Detailed analysis during design and careful construction techniques will be required to avoid impacts to this unique habitat.

The Recommended Plan precludes the use of open water lagoons that were considered in other concepts. However, preliminary analysis indicated the small area of open water opening to the bay would not have enough volume to provide high enough flow rates through the connection to existing open water areas. As such, the low flow rates would cause the opening to silt in and would create a stagnant water area of reduced water quality. This potential secondary affect would impact the function and value of the restored wetland.

Snake Island

Vegetative impacts to Snake Island include the positive effects of nuisance species removal including Australian pine, Brazilian pepper, and carrotwood. Removal of the nuisance species will eliminate the seed sources from an active inlet. The volume of water that passes through Venice Inlet covers a large area during each tidal cycle and has the potential of vast seed dispersal. Occasional planting of native species such as oaks has occurred and will be impacted by the proposed project.

Upland restoration will improve the habitat value and have a positive impact on the project area. While the recreation value of the island is intended to remain, there is a negative effect on the wildlife value of the upland restoration activities.

The few existing mangroves present on the island will not be impacted by the Recommended Plan.

The continued erosion of Snake Island has impacted adjacent seagrass beds. While few grasses are present within the nearby water, the proposed design will reduce the erosion and avoid additional impacts to seagrass. The No-Action Alternative would continue to reduce water quality and eliminate existing mangroves.

The proposed low marsh area would have a positive impact on the fisheries habitat. The reclaimed area will be protected by soft-shore stabilization such as rubble rip-rap, sand filled fabric tubes, or other geotextile alternatives to reduce the high energy environment creating the current erosion.

4.3 Threatened and Endangered Species

Through a determination by U.S. Fish and Wildlife Service, it has been determined this project will have no negative impact on Threatened and Endangered Species. The piping plover, a federally threatened species, is found in the vicinity of both Palmer Point Park and the Jim Neville Marine Preserve and forages in tidal flats. Therefore, the protection or creation of tidal flat areas as part of the Recommended Plans for each site will be beneficial to this listed species.

Sea turtle nesting has not been documented on any of the project disposal islands and will not be impacted by any of the Recommended Plans. Habitat for the Western Indian manatee is located throughout the project area, especially in areas of seagrasses located near the islands. During the project construction, the "Standard Manatee Conditions" will be followed as will be stated in the project permit issued by the Florida Department of Environmental Protection. It is anticipated that following the conditions will help avoid impacts to the manatee as a result of implementation of the Recommended Plans.

4.4 Fish and Wildlife Resources

As discussed in Section 4.2, impacts to fish and wildlife resources will be primary benefits from the ecological restoration through the removal of nuisance species and their habitat and the replacement by desirable upland and wetland species. In turn, the increase in the acreage of the desirable species improves the function and value of the fisheries and bird habitat.

Temporary impacts will occur during construction. These impacts will be limited to adjustments in cover type and to construction access. While it is recognized a temporal loss in bird nesting habitat will occur, the long-term benefits of planting more desirable species will have a positive impact on the bird habitat.

Construction activities on the Bird Colony Islands are minimal. It is anticipated that stabilization will occur through the placement of rubble rip-rap and will have no negative impacts on the nesting habitat provided by the mangroves. In addition, construction activities will be minimized during the most active nesting season.

Without the implementation of this project, there would continue to be negative impacts as a result of erosion, nuisance species seed dispersal, and reduced water quality.

4.5 Water Quality

Overall, the Recommended Plans will have a long-term positive effect on water quality within the bay because of the reduction of erosion through mangroves, marshes and other shoreline stabilization methods. This vegetation will also help to assimilate nutrients, which will also improve water quality.

Temporary impacts to water quality will occur during construction. Best management practices will be incorporated to reduce impacts. Mixing zones will be established for the work areas. No increase in suspended sediments will be allowed outside of the mixing zones. Creative concepts such as the use of organic fluids in the hydraulic systems of earthmoving equipment will reduce the chance of accidental impacts to water quality.

4.6 Aesthetics

Each of the project areas and Recommended Plans involve similar impacts to aesthetics.

The visual look of the proposed project islands will change as a result of the project. Newly planted vegetation will require time to mature to the existing heights of the exotic species. However, the majority of these islands have existing mature vegetation, particularly mangroves, which will remain intact with the implementation of the project. Many of these mangrove areas extend up to 20 feet high providing quite a visual buffer around the island.

The public involvement process revealed that “beauty is indeed in the eye of the beholder”. Personal differences exist regarding nuisance species, disposal islands, visual buffers, and recreational usage. A small portion of the public is adamant in the feeling that Australian pines are beautiful and should not be cut down. Disposal islands are visual landmarks for boaters while providing visual buffers for adjacent homeowners. Finally, several homeowners felt that increased recreational usage of the islands would be an aesthetic impact to their viewshed. Other members of the public indicated that the restoration of these disposal islands with native, desirable habitat would add to the beauty of the bay. In addition, the increase in species diversity would also improve their view of the bay.

On islands such as Big Edwards Island and Snake Island, for which viewshed seemed an important issue to members of the public, opportunities to minimize dramatic changes to the viewshed will be evaluated during the design phase of this project, including planting larger trees and a phased removal approach.

4.7 Recreation

Impacts to the recreational value of the proposed project areas are limited. Design alternatives were considered to reduce impacts to recreation. Impacts to passive recreation will result from reduced access on some of the islands. During construction, recreation will be impacted as the islands will be considered construction sites and access by the public will be trespassing. This unavoidable, temporary impact will be mitigated through the increased recreational value associated with the pedestrian trail and small boardwalk on Big Edwards Island.

Through the public involvement process, a general consensus was achieved regarding the desire for recreation on the project disposal islands. Specifically, the public identified the importance of public access and use of Big Edwards Island and Snake Island.

The public also expressed the importance of the continued use of the deep-water channel surrounding Skiers' Island for water skiing. As a result of existing mangroves around the island, recreational water skiing will not be impacted from increased wave action. Through the public involvement process, it was also determined that water skiers preferred the leeward side of the island as a result of the wind break. Through upland restoration, vegetation will be installed that will eventually grow large enough to provide the same level of protection from the wind for the recreational skiers. The existing mature mangroves around the island also provide a wind break. It is anticipated that the changes in vegetation will not impact the recreational value of the island.

Finally, the public identified the importance of limiting public use and access of the Jim Neville Marine Preserve and the project area of Palmer Point Park. These comments were considered and incorporated into the Recommended Plan for each island.

4.8 Cultural Resources

Project features of the Recommended Plan will impact archeological site 8So2336. Adverse effects to the site, however, will be mitigated by project features. Beneficial uses of dredged material will help in the preservation of the site. A detailed mitigation plan will be worked out through consultation with the SHPO.

4.9 Cumulative Impacts

Cumulative impact is the impact on the environment which results from the incremental impact of the preferred action when added to other past, present, and reasonable foreseeable future actions (40 CFR 1508.7). The cumulative impact of the proposed action is the positive benefit of removal of the seed source of nuisance species, the improvement of water quality through erosion control, the continued increased production of fisheries resources as a result of increased habitat, and the increased habitat for birds.

4.10 Compatibility with Federal, State, and Local Objectives

As discussed in Section 1.3 (Project Need and Opportunity), this project is consistent with Federal, State, and Local Objectives.

The project is consistent with the Sarasota Bay National Estuary Program's *Comprehensive Conservation and Management Plan* (Reference 1). Specifically, the proposed project will help implement Action Items 1.2 (enhance, restore, and create wetlands throughout the bay region) and 1.7 (remove exotic plants from wetlands). This project is especially beneficial because of the limited opportunity for restoration lands in the project area resulting from extensive coastal development. The project is also

consistent with Sarasota County's Comprehensive Plan, which supports the implementation of the SBNEP *Comprehensive and Management Plan* (Policy 2.1.6), disposal island restoration (Policy 2.2.2) and the restoration of productive native habitat.

In addition with the above local plans, the project is consistent with the types of projects being proposed by other Federal, State, and Regional agencies, including the Southwest Florida Water Management District, the Sarasota Bay National Estuary Program, the Tampa Bay Estuary Program, the Florida Department of Environmental Protection, and the U.S. Fish and Wildlife Service.

4.11 Conflicts and Controversy

As discussed in Section 6.0 (Public Involvement), an extensive public involvement program was completed for this project. Through this process, the study team identified issues that were important to the public, including not only ecosystem restoration but also recreation and visual effects. While maintaining the overall goal of ecosystem restoration, the public's issues were addressed in the development of the concepts that were evaluated, and in many cases the Recommended Plans. During the design phase of this project, further consideration will also be given to the visual effects of the island, as discussed in the Section 4.6 (Aesthetics).

4.12 Environmental Commitments

The U.S. Army Corps of Engineers and its contractor commit to avoiding, minimizing, or mitigating for adverse impacts during construction activities by including the following commitments in the contract specifications: (Environmental Commitments will be included in the Final Ecosystem Restoration Report (ERR), based on comments received during the Draft ERR review period by the review agencies.)

4.13 Compliance with Environmental Requirements

4.13.1 National Environmental Policy Act of 1969

Environmental information on the project has been compiled and the Draft Environmental Assessment was made available for public review through public notice in compliance with 33 CFR Parts 335-338. These regulations govern the Operations and Maintenance of U.S. Army Corps of Engineers Civil Works Projects involving the Discharge of Dredged or Fill Material into Waters of the U.S. or Ocean Waters. This public coordination and environmental impact assessment complies with the intent of NEPA. The process will fully comply with the Act once the District Commander has signed the Findings of No Significant Impact.

4.13.2 Endangered Species Act of 1973

Consultation with the U.S. Fish and Wildlife Service was initiated in August 1999 for the purposes of Section 7 Coordination. By the letter dated February 24, 2000, the USFWS determined that there would be no impacts on any listed endangered species. This project was fully coordinated under the Endangered Species Act; therefore, this project is in full compliance with the Act (Appendix G).

4.13.3 Fish and Wildlife Coordination Act of 1958

The project has been coordinated with the U.S. Fish and Wildlife Service. It has prepared a Coordination Act Report for the project. Therefore, the project is in compliance with this Act (Appendix G).

4.13.4 National Historic Preservation Act of 1966, as amended (PL 89-665)

Archival research conducted for Big Edwards Island and Skiers' Island including analysis of soil survey data determined that there is little likelihood of sites being present. Archeological surveys completed at Jim Neville Marine Preserve and Palmer Point Park did not locate any significant cultural resources. Testing of archeological site 8So2336 on Snake Island determined that the site is eligible for listing on the *National Register of Historic Places*. Coordination with the Florida State Historic Preservation Officer (SHPO) has been initiated. Consultation with the SHPO will determine what is the appropriate mitigation measure for preservation of the archeological site on Snake Island.

4.13.5 Clean Water Act of 1972

Section 404(b)(1) (Appendix A). As the project is in tidal waters and adjacent to the Intracoastal Water Way, Section 10 of the Rivers and Harbors Act of 1899 will supercede Section 404(b)(1) for any Dredge and Fill activities associated with the project.

Section 401 of the Clean Water Act requires water quality certification for projects that may impact wetlands of the United States. Delegation for the section has occurred to the State of Florida through the Environmental Resource Permitting. By obtaining a permit through Florida Statute 343, water quality certification consistent with Section 401 will be provided.

4.13.6 Clean Air Act of 1972

No air quality permits would be required for this project. Therefore, this Act would not be applicable.

4.13.7 Coastal Zone Management Act of 1972

The project has been evaluated in accordance with Section 307 of the Coastal Zone Management Act (Appendix B). It has been determined that the project would have no unacceptable impacts and would be consistent with the Florida Coastal Zone Management Plan.

4.13.8 Farmland Protection Policy Act of 1981

No prime or unique farmland would be impacted by implementation of this project. This act is not applicable.

4.13.9 Wild and Scenic River Act of 1968

No designated Wild and Scenic river reaches will be affected by project related activities. This act is not applicable.

4.13.10 Marine Mammal Protection Act of 1972

Incorporation of the safe guards used to protect manatees during dredging and disposal operations will be implemented during construction; therefore, this project is in compliance with this Act.

4.13.11 Estuary Protection Act of 1968

The proposed project is located in a designated estuary, the Sarasota Bay National Estuary. However, this estuary will not be adversely affected by project activities.

4.13.12 Federal Water Project Recreation Act, as Amended

There is no recreational development proposed for maintenance dredging or disposal. Therefore, this Act does not apply.

4.13.13 Resource Conservation & Recovery Act 1976(PL 94-580, 7 U.S.C. 100, et seq.)

This law has been determined not to apply, as there are no items regulated under this act being disposed of or affected by this project.

4.13.14 Toxic Substances Control Act of 1976,(PL94-469; U.S. C. 2601, et seq.)

This law has been determined not to apply, as there are no items regulated under this act being disposed of or affected by this project.

4.13.15 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990

The proposed work is within two Coastal Barrier sites as prepared by the Department of Interior in the Report to Congress on the Coastal Barrier Resources System. However, in accordance with Section 6(a) of the Act, projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats, including acquisition of fish and wildlife habitats and related lands, stabilization projects for fish and wildlife habitats, and recreational projects are consistent with the purposes of the Act. The rehabilitation of the disposal islands is therefore exempt.

4.13.16 E.O. 11990, Protection of Wetlands

No wetlands will be affected by project activities. This project is in compliance with the goals of this Executive Order.

4.13.17 E.O. 11988, Flood Plain Management

No activities associated with this project will take place within a floodplain; therefore, this project is in compliance with this Executive Order.

4.13.18 Magnuson-Stevens Fishery Conservation and Management Act

This Act requires that Essential Fish Habitat (EFH) be considered when undertaking any dredging project. The proposed action would not have an adverse impact on EFH or Federally managed fisheries. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

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5.0 LIST OF PREPARERS

The U.S. Army Corps of Engineers' consultant, HDR Engineering, Inc. had the primary responsibility of preparing this document. The USACE, Jacksonville District, was instrumental in providing information for this document. The USFWS furnished the Fish and Wildlife Coordination Act Report, which was used in preparing the Ecosystem Restoration Report and the Environmental Assessment. The Sarasota Bay National Estuary Program, Florida Department of Environmental Protection, West Coast Inland Navigation District, and Sarasota County provided input on the existing resources.

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6.0 PUBLIC INVOLVEMENT

6.1 Public Meetings and Workshops

The public involvement process for this study incorporated a three-phased approach to informing the community, identifying community concerns, and achieving consensus. The three phases included several one-on-one/small group meetings with identified interested parties of the community; media contact and public notification prior to public workshops; and advertised public workshops.

The public involvement process for this study was developed to address the concerns of the public, who through past County ecosystem restoration efforts, have indicated a desire to be informed and involved in these types of projects.

6.1.1 One-on-One/Small Group Meetings

Several individuals representing neighborhood groups, environmental groups, or other interest groups in the vicinity of the project disposal islands were identified through coordination with the Sarasota Bay National Estuary Program and Sarasota County. The project team arranged six one-on-one meetings with these individuals in August and September 1999. In addition, approximately 12 phone calls to other identified interested parties were made during this time period. These meetings and conversations were arranged to discuss with interested members of the community their primary concerns and their perceived objectives of ecosystem restoration in Sarasota Bay. Appendix H provides additional correspondence that resulted directly from these meetings.

6.1.2 Public Workshops

A total of five public workshops were held for this project. Appendix H provides a copy of the press release and public notice letters advertising the workshop; mailing lists; the transcripts and summaries from each of these meetings including oral and the written comments received at these workshops; related newspaper articles; and workshop materials.

October 28, 1999 Public Workshop

The first public workshop was held on October 28, 1999 at Sarasota High School in Sarasota, Florida. The workshop was attended by 61 members of the public. The purpose of this workshop was to introduce the Sarasota Bay Ecosystem Restoration Feasibility Study and the Section 1135 process to the public, as well as to identify issues that were important to the public in respect to past restoration efforts in and around the bay. The project team provided background on the Section 1135 funding mechanism, the environmental review process under the National Environmental Policy Act, the upcoming public involvement opportunities for this project, the project need and rationale behind the proposed Sarasota Bay ecosystem restoration, and the project schedule. In addition, a representative from Palm Beach County Department of Environmental Resource Management presented the Munyon Island restoration project

as an example of the Section 1135 process and the successful implementation of that project.

During the second half of the meeting, the public was given the opportunity to comment on the project through oral comments and questions. In addition, written comments were accepted both at the Workshop and the 10-day period following the Workshop. Fifteen (15) people presented verbal comments and questions during this period and ten (10) people provided written comments. Many of the written comments reflected a more detailed reiteration of the verbal comments provided at the Workshop. The comments received are summarized below:

- One individual expressed concern for the prior history of disposal island restoration efforts in Sarasota Bay while this person, and several others, thanked the Corps for involving the public at an early stage for this project.
- Several individuals asked for the inclusion of areas and islands not identified in this 1135 project including shoreline along Whittaker Bayou and Little Edwards Island, while another individual indicated that Little Edwards Island should not be included in the project.
- Several comments indicated that the project should look at the restoration of these islands through a “comprehensive, integrated, inter-related” plan including the effects the current study concerning the opening of Midnight Pass may have on the restoration alternatives for the Jim Neville Marine Preserve.
- Several individuals also commented that the historical sheet flow across the Jim Neville Marine Preserve should be included in the restoration efforts.
- Two individuals expressed concern on how the restoration activities at Snake Island may be affected by activities in Shakett Creek and Cowpen Slough, which flow into the Venice Inlet.
- One individual urged the Corps to consider the needs of boaters in the vicinity of the restoration sites while another person urged the Corps to prioritize restoration over recreation. Another individual sought assurances that skiing would remain an allowable recreational activity around Skiers’ Island.
- Concern was expressed over the effect that survey and other activities might have on bird nesting in the Bird Colony Islands. Also in regards to these islands, another individual suggested that the area adjacent to the Bird Colony Islands should be designated as a “no-wake” zone.
- One individual, in favor of the restoration, expressed concern over the long-term maintenance of these projects and asked that this be considered during the feasibility study.
- Several individuals suggested that a project website should be created to provide information and graphics prior to the upcoming public workshops.

February 2000 Workshops

Three workshops were held in February 2000 to present, discuss, and receive comments on the preliminary restoration concepts developed for the project. Three separate workshops were held to break the project disposal islands into geographical groups. In addition, surveys were provided to the participants to identify their primary recreation and restoration objectives of the proposed project.

The format of these workshops included a brief summary of the background, need, and authorization of the project followed by the presentation of issues of concern the project team had identified through previous public input. Next, the existing conditions of the islands were presented along with three preliminary restoration concepts followed by a short public comment period. The second portion of the meeting included a break-out group session that gave the participants an opportunity to draw their own ideas and concepts or modify the concepts that had been presented. Additional issues of concern were also identified during this process. Finally, the workshop ended with the presentation of the Break-Out Groups' various concepts and issues. At the conclusion of the workshop, time was allowed for additional public comments and questions.

Snake Island – February 1, 2000

The first February 2000 workshop was held on February 1, 2000 and focused on the restoration of Snake Island. This Workshop was held at the Venice Community Center in Venice, Florida. Approximately 52 people attended this Workshop. Prior to the break-out group session, approximately ten (10) individuals made oral comments or questions to the group. The majority of these comments focused on Snake Island remaining as a public recreational island. Many of the individuals who commented were concerned that the restoration may prohibit their unrestricted use of the island. However, they also commented on the need to do something to help stop the on-going erosion of the island before the resource is lost completely. Several other individuals commented on their desire to take ownership of the island and to help maintain the island as a community. During this period, others asked questions about the project, data collection, and the Section 1135 process.

The presentation of the break-out groups' concepts and issues resulted in a consensus of all five groups. In general, these groups indicated that stabilization of the island needs to occur to prevent further erosion. Each of the groups indicated that additional acreage with stabilization should be added to the western side of the island with the eastern side of the island providing the best boat access. Each of the groups also expressed their interest in maximizing the upland area for public access. Each group also agreed that they did not want any structural recreational facilities on the island. Although some groups did not see the need for the removal of the exotic species, they requested that a phased approach be considered when the project moves forward. In addition to the oral comments made at the workshop, two written comments were received which covered similar issues raised at the Workshop.

Big Edwards Island, Bird Colony Islands, and Skiers' Island – February 2, 2000

The second February 2000 workshop was held on February 2, 2000 and focused on the restoration of Big Edwards Island, the Bird Colony Islands, and Skiers' Island. This Workshop was held at the Pine View School in Osprey, Florida. Approximately 36 people attended this Workshop. Prior to the break-out group session, approximately eight (8) individuals made oral comments or questions to the group. In general, comments expressed support for exotic vegetation removal and restoration of the islands. However, some individuals expressed concerns regarding the affect of restoration on the existing visual buffer the Australian pines provide to some homeowners. In respect to this concern, another comment was approaching the

restoration with a phased approach to minimize the affect on the visual buffer. The issue of maintenance of the restoration projects was also brought up. One individual suggested that while the islands should be addressed separately, they should also be viewed comprehensively. Finally, several people commented on the need to armor the Bird Colony Islands and to protect this resource.

All five break-out groups agreed that the protection of the Bird Colony Islands was important and several suggested that the area adjacent to these small islands should become a “no-wake” zone. As for the restoration of Big Edwards and Skiers' Islands, there was generally a consensus of four of the five break-out groups. Essentially, four of the groups identified more active recreational uses on Big Edwards Island, including a foot trail, boardwalk, and possible educational signage, in addition to restoration. They also indicated that the southern portion of the island, currently used for public access, should be maintained as an upland area. These groups also suggested that Skiers' Island should be purely done for ecosystem restoration with minimal opportunity for public recreation on the island. However, each of these groups indicated that it was important to maintain the deep-water channel around this island for recreational activities. In addition, one group indicated the importance of vegetation on the island to provide a windbreak for those skiing around it. The other group indicated that the restoration efforts should be focused on the Bird Colony Islands, but they were concerned about restoration efforts on Big Edwards and Skiers' Island because of the potential impact on the existing visual buffer the Australian Pines provide. This group also expressed concern regarding the long-term maintenance of these restoration efforts on these islands.

In addition to the oral comments made at the workshop, four written comments were received which primarily covered issues raised at the Workshop. However, one individual indicated that on both islands ecological restoration is the primary objective and restoration of these islands to mangrove islands would be beneficial.

Jim Neville Marine Preserve and Palmer Point Park – February 3, 2000

The third February 2000 workshop was held on February 3, 2000 and focused on the restoration of the Jim Neville Marine Preserve and Palmer Point Park. This Workshop was held at the Pine View School in Osprey, Florida. Approximately 74 people attended this Workshop. Prior to the break-out group session, approximately seventeen (17) individuals made oral comments or questions to the group. In general, the comments supported the restoration project. In addition, many of the comments requested that the project consider the results of the on-going study to open Midnight Pass and asked that the project team look at this project in a comprehensive manner. Individuals also had questions regarding the cost and allocation of the funds for the project and requested information on how citizen input would be quantified in the process.

Four of the five groups had similar ideas for the restoration of these islands. These suggestions included modifications to Concept 1 for Jim Neville Marine Preserve to provide more tidal lagoons for east/west and north/south flow. In addition, each of these groups suggested the importance of returning the historical sheet flow across the islands during high tides. Regarding Palmer Point Park, most of the groups supported

Concept 2 because of the diversity of habitat it provides. One group suggested a concept that included only mangrove and tidal lagoons.

In addition to the oral comments made at the workshop, eleven written comments were received which primarily covered issues raised at the Workshop. Several of these comments focused more on the opening of Midnight Pass, a separate but relevant project. Others commented on the cost of the project and the use of the excess material removed from the Jim Neville Marine Preserve.

May 17, 2000 Workshop

The final public workshop was held on May 17, 2000 at the Pine View School in Osprey, Florida. The workshop was attended by 26 members of the public. The purpose of this workshop was to present the concepts developed from the public input from the last public workshops and to present the Recommended Plan for each island. In addition, the public was given the opportunity to comment through both oral and written comments. In general, the written comments covered similar issues discussed at the workshop. The comments received are summarized below:

- A few individuals expressed concern about the removal of the exotic vegetation and its affect on the visual buffers they currently create. Several individuals indicated that replacing this vegetation should be accomplished by planting larger trees.
- Other commentors expressed support for exotic vegetation removal and restoration of the islands and explained how past efforts at exotic removal have been successful. One individual repeatedly supported exotic removal and gave several examples as to why removal of exotics such as Australian Pines would benefit property owners by providing greater protection in a storm. Reference was made to the problems encountered with Australian Pines at Dinner Key in Miami after Hurricane Andrew.
- One individual stated that there was not enough notice about this Workshop, which mailings were not sent out to past participants, and that having this workshop in Osprey prevented people from attending this meeting. Another individual stated that she had received a notice in the mail about the Workshop and stated that she wished that people had gotten involved earlier in the process so that they would understand how these concepts came about as a result of public input from earlier workshops. A representative from the U.S. Army Corps of Engineers explained that notices had been sent to 150 persons who had attended previous meetings and that the Corps had sent out a press release prior to the Workshop.
- Several comments were made concerning the scope of the project. One individual felt that Little Edward's Island should be included in the Project. Another suggested that while each island should be addressed separately, that they should also be viewed in their entirety for specific uses and restoration goals. One individual felt that Midnight Pass should be addressed by this project.
- Several individuals asked questions regarding how the project would affect current flows and waterways and specifically, boater access to the surrounding

- areas. The management/maintenance of the islands by the County's Parks and Recreation Department was also an issue raised by several people.
- Specifically regarding Palmer Point Park, one individual expressed support for the Recommended Plan selected. Another individual liked the idea of tidal lagoons throughout the island to allow for kayak access to the area.
 - Specifically regarding the Jim Neville Marine Preserve, one individual reminded the project team that there should only be passive recreation on this island. Another stated that they would like to see both an East-West and North-South flow on this island to maximize water flow. This person also stated that the salterns could be a potential mitigation for future projects. Another individual also reminded the project team that the Preserve was subject to deed restrictions to maintain the island in its pristine state.
 - Specifically regarding Snake Island, one individual stated that he does not support the Recommended Plan and expressed concern over the source of any sand that would be added to this island. This individual also stated that the island is already crowded with people and putting in marsh and mangroves areas would overcrowd the island further.
 - Specifically regarding the Bird Colony Islands, several individuals expressed support for the Recommended Plan for this island. Another individual felt that this island should be given priority, because of the on-going erosion.
 - One individual stated that the Corps is going to spend \$6 million to fix something that isn't broken. Another individual stated that Section 1135 is for habitat restoration and that if Sarasota does not take advantage of this opportunity, some other area will. This individual felt that it is in the public interest to restore these areas and the small loss in recreational access is outweighed by the benefits.

6.1.3 Notice of Availability of Draft Ecosystem Restoration Report

The draft Ecosystem Restoration Report with the Environmental Assessment will be made available to the public in early August 2000.

6.2 Agency Coordination

The U.S. Army Corps of Engineers, Jacksonville District Office furnished the U.S. Fish and Wildlife Service with the environmental scoping letter (Appendix G). The purpose of the scoping letter is to identify potential problems concerning policy and the acceptability of the project as early as possible in the planning process. The scoping component is a source of communicating the Corps study with interested persons, and it enables the Corps to receive valuable feedback. Responses to the scoping letters were received and incorporated into the plan formulation process.

Additional agency coordination occurred throughout the feasibility study. Monthly interagency meetings or conference calls were held to coordinate with the local sponsor, WCIND; Sarasota County; and the Sarasota Bay National Estuary Program. These coordination meetings provided information to these representatives to update their respective boards and technical advisory committees.

On April 4, 2000, a coordination meeting was held with the project team and representatives from the Florida Department of Environmental Protection, the National Audubon Society, and the US Army Corps of Engineers Regulatory Division to discuss permitability and other environmental issues. The notes from this meeting are provided in Appendix G.

6.3 List of Recipients

A complete mailing list to which copies of the Draft ERR were mailed is in Appendix H.

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Recommendations

I have weighted the accomplishments to be obtained from the proposed wetland restoration of Sarasota Bay in Sarasota County, Florida, against project costs and considered the alternatives, impacts, and scope of the proposed project. In my judgement, the proposed project is a justified expenditure of Federal funds. I recommend that the Secretary of the Army approve the Section 1135 Sarasota Bay Ecosystem Restoration Report. The total estimated cost of the project is \$5,150,000 (of which \$3,750,000 would be the Federal cost according to Section 1135(b)(2) of Public Law 99-662. The remaining \$1,400,000 would be non-Federal funds provided by West Coast Inland Navigation District. I further recommend that funds be allocated in the fiscal year of 2001 to initiate preparation of plans and specifications.

The above recommendations are made with the provision that prior to project implementation, the non-Federal sponsor shall enter into a binding agreement with the Secretary of the Army or his designated representative to perform the following items highlighted in the project coordination agreement:

- a. Provide all land, easements, and rights-of-way, and suitable borrow and dredged or excavated material disposal areas, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the implementation, operation, and maintenance of the Project Modification;
- b. Provide all improvements required on lands, easements, and rights-of-way to enable the proper disposal of dredged or excavated material associated with the implementation, operation, and maintenance of the Project Modification;
- c. Provide, during implementation, any additional amounts as are necessary to make its total contribution equal to 25 percent of the project environment restoration costs and 50 percent of the project recreation costs;
- d. For so long as the Project Modification remains authorized, operate, maintain, repair, replace, and rehabilitate the complete Project Modification, or functional portion of the Project Modification, at no cost to the Federal Government, in a manner compatible with the Project Modification's authorized purposes and in accordance with applicable Federal and State Laws and regulations and any specific directions prescribed by the Federal Government;
- e. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor, now or hereafter, owns or controls for access to the Project Modification for the purpose of inspection, and, if necessary, after failure to perform by the non-Federal sponsor for the purpose of completing, operating, maintaining, replacing, or rehabilitating the Project Modification. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall operate to relieve the non-Federal sponsor of responsibility to

meet the non-Federal sponsor's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance;

f. Hold and save the United States free from all damages arising from the implementation, operation, maintenance repair, replacement, and rehabilitation of the Project Modification and any Project Modification related betterment, except for damages due to the fault or negligence of the United States or its contractors;

g. Keep, and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the Project Modification in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Sections 33.20;

h. Perform, or cause to be performed, any investigations for hazardous substances as are deemed necessary to identify the existence and extent of hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that are owned by the United States and administered by the Federal Government, and except for any such lands that the Federal Government determines to be subject to the navigation servitude.

i. Assume complete financial responsibility, as between the Federal Government and the non-Federal sponsor, for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the implementation, operation, or maintenance of the Project Modification, except for any such lands, easements, or right-of-way owned by the United States and administrated by the Federal Government;

j. As between the Federal Government and the non-Federal sponsor, the non-Federal sponsor shall be considered the operator of the Project Modification for the purpose of CERCLA liability. To the maximum extent practicable, operate maintain, repair, replace, and rehabilitate the Project Modification in a manner that will not cause liability to arise under CERCLA;

k. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, required for the implementation, operation, and maintenance of the Project Modification, including those necessary for relocation, borrow materials, and dredged or excavated materials disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

l. Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C.2000d), and Department of Defense Directive 5500.11 issues pursuant thereto,

as well as Army Regulation 600-7, entitled “nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army”;

m. Provide 25 percent of that portion of total historic preservation mitigation and data recovery costs attributable to the Project Modification that are in excess of one percent of the total amount authorized to be appropriated for the Project Modification;

n. Under no circumstances shall the total cost of the environmental restoration, including previous study costs, exceed the legislated maximum per modification total cost of \$5,000,000;

The recommendations contained herein reflect information available at this time and current departmental policies governing formulation of individual projects. Consequently, the recommendations may be modified before they are approved for implementation.

JOE R. MILLER
Colonel, Corps of Engineers
Commanding

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8.0 REFERENCES

1. Sarasota Bay National Estuary Program. *The Voyage to Paradise Reclaimed: The Comprehensive Conservation and Management Plan for Sarasota Bay*. 1995.
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3. Williams Earth Sciences. *Report of Geotechnical Services - Sarasota Bay Ecosystem Restoration*. 1999 – 2000, Prepared for the Sarasota Bay Ecosystem Restoration Feasibility Study.
4. King Engineering Associates Inc.. *Report of Survey for the Sarasota Bay Ecosystem Restoration Site Feasibility Study*. December 1999.
5. Soil Conservation Service. *Sarasota County, Florida Soil Survey*. 1987
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