SECTION 404 (b) EVALUATION REPORT
FORT PIERCE SHORE PROTECTION PROJECT
With BORROW MATERIAL FROM CAPRON SHOAL
ST. LUCIE COUNTY, FLORIDA

I. PROJECT DESCRIPTION

a. Location. St. Lucie County is located along the southeastern Atlantic coast of Florida approximately 54.6 miles (88 kilometers) north of the City of West Palm Beach. The coastal town of Fort Pierce is located in the northern portion of the county. Hutchinson Island is a 24-mile (38.4 kilometer) long barrier island with Fort Pierce Inlet to the north, St. Lucie Inlet to the south, the Indian River Lagoon to the west, and the Atlantic Ocean to the east.

b. General Description of Project. The proposed project calls for construction of a recreational and protective beach along a 1.3-mile reach of shore from Florida Department of Environmental Protection (FDEP) monument number R-34 just south of the Fort Pierce Inlet groin to R-41. Fill material would be obtained from Capron Shoal. Sand dunes, which protect development on the project's southern reach, are low and have been overwashed during severe storm generated waves.

c. Authority and Purpose. The Fort Pierce Shore Protection Project for St. Lucie, County, Florida, was authorized by the River and Harbor Act of 1965 (79 Stat. 1089, 1092) in accordance with the recommendations of the Chief of Engineers in House Document Number 84, 89th Congress. The authorized project provided for the restoration of a protective and recreational beach by the local cooperating agency along the 1.3 miles of shoreline south of Fort Pierce Inlet and for periodic nourishment as needed for a period of 10 years. The project was modified by Section 102 of the 1968 River and Harbor Act (PL 90-483) to provide construction of the project and periodic nourishment for 10 years by the Secretary of the Army. Participation in the project was reevaluated under Section 156 of the Water Resources Development Act of 1976, as amended by Section 934 of the 1986 Water Resources Development Act (PL 99-662). PL 99-662 allows for the extension of Federal participation to the fiftieth year after the initial construction of the authorized project. The General Design Memorandum (GDM) and Environmental Assessment (EA) was published in April of 1978. As part of the periodic nourishment plan, material dredged from the Fort Pierce Inlet was placed on the beach immediately south of the Inlet in March of 1990. In 1999 a lawsuit was filed (WINSTON, ET AL., v. LT.GEN.BALLARD) seeking a Temporary Restraining Order (TRO) against the Corps dredging project, alleging that the Corps did not conduct a thorough National Environmental Policy Act (NEPA) analysis, and alleging that immediate and irreparable harm would result if dredging went forward. The Court ruled in favor of the petitioners and issued a TRO on March 5, 1999. Subsequently, the Corps and the petitioners reached a Settlement Agreement, which committed the Corps to fund bryozoan studies of Capron Shoal and nearby shoals ($200,000), dredge only in the southern portion of the currently authorized borrow area during the first phase of the beach renourishment project, conduct a survey of the effect of beach nourishment on the

near-shore hardbottom, and do additional NEPA analysis before beginning the next phases.

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material. The existing beach material varies in shell and silt content throughout the beach. The composite mean grain size was 2.64 phi (0.16mm) with a composite sorting (+/- standard deviation) of 1.00 or moderately sorted. The median grain size was 3.14 phi (0.11 mm). The estimates of shell content ranged from 0 to 75 percent, with a mean value of 19 percent. Silt content along the existing beach ranged from 0 to 18 percent with a mean value of 5 percent. The Capron Shoal borrow site is located between 2.1 – 3.0 miles offshore of Hutchinson Island in 15-30 feet of water. A majority of the material is coarse calcareous sand with varying amounts of quartz. The calcareous material has a low silt content and was determined to be suitable for beach nourishment.

(2) Quantity of Material. The proposed Capron Shoal borrow areas contain an estimated 23 million cubic yards of material, the majority of the which is coarse calcareous sand with varying amounts of quartz. The borrow areas contain acceptable amounts of suitable material to be used as a beach nourishment source. Additional core borings will be needed in the future to further define the limits of the potential borrow areas. The 1978 General Design Memorandum estimated that 420,000 cubic yards of material would need to be placed on the project beach every seven years. This figure was based on beach conditions at that time. The current severely eroded beach will require 700,000 to 900,000+ cubic yards of sand be placed to restore the project.

(3) Source of Material. Beach fill material would be obtained from the Capron Shoal borrow site.

(4) Type of Habitat. The offshore sand habitats support a diverse fauna, and there are several studies of invertebrates and fishes from the open sand habitat in the general proposed project area. Johnson (1982) collected over 188 species of invertebrates in benthic grab samples from the Capron Shoal area off Fort Pierce Inlet. In a study offshore of Hutchinson Island in St. Lucie County, Futch and Dwinell (1977) collected lanclets (sand dwelling chordates in the subphylum Acrania) in densities as high as 1,750 per square meter. Other invertebrates that inhabit Capron shoals are interstitial bryozoans. Winston and Hakansson (1986) found at least twelve new species at Capron Shoals. Brostoff (2002) re-examined Capron and shoals in its vicinity and found that most of these bryozoan species do, or are likely to occur on other shoals. Gilmore et al. (1981) collected 194 species of fishes from open shelf sand habitats to the north in the Indian River County area. Flatfishes, searobins, and cusk eels, along with an assortment of batfishes and skates, dominated the fish fauna in similar habitats.

e. Description of the Proposed Discharge Site

(1) Location. The presently considered project calls for construction of a recreational and protective beach along a 1.3-mile (2.1km) reach of shore beginning just south of the Fort Pierce Inlet groin and continuing south for 1.3 miles (2.1 km). The project area beach experiences serious erosion due to dynamic oceanographic conditions common to the Atlantic coast and in particular to the littoral drift restriction of Fort Pierce Inlet which intercepts, confines and disperses sand precluding its deposition in the project area.

(2) Size. It is currently estimated that 850,000 cubic yards of beach fill will be placed on the 1.3-mile (2.1 km) segment of Fort Pierce Beach.

(3) Type of Site. The disposal site is a 1.3 mile (2.1 km) segment of eroding beach consisting primarily of existing sand, sparse beach vegetation and a low lying dune system.

(4) Type of Habitat. The supralittoral zone habitat consists primarily of eroding carbonate and shell sand. A low-lying dune system is present with sparse grasses and other salt tolerant vegetation inhabiting this area. The intertidal swash zone and nearshore intertidal marine habitat consists primarily of infaunal mollusks and crustaceans, epifaunal-crustaceans, and polychaete worms. Seaward of these zones, the inshore reef habitat is influenced by storm wave scour which periodically buries these structures. Sabellarid tropical worm reefs are located in the intertidal zone just south of the project area.

(5) Timing and Duration of Discharge. The initial construction phase of the proposed project is estimated to begin in late winter/early spring of 2003. Once construction begins, the project will require 2-3 months to complete.

f. Description of Disposal Method. Beach compatible fill will be excavated from the proposed offshore borrow area. Hopper dredge, hydraulic pipeline, or mechanical dredging could be used to place the fill material on the beach. The material will be graded/shaped by earthmoving equipment to achieve the desired beach profile.

II. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope. The beach's cross-section will provide a 1.3-mile (2.1km) recreational and protective beach just south of the Fort Pierce Inlet (Florida Department of Environmental Protection (FDEP) monument marker R-34) south to R-41. The resulting berm would be constructed to an elevation of 10 feet (3m) above mean high water (MHW) and would gradually slope toward mean low water (MLW) at a ratio of approximately 1 foot (0.3m) vertical to 20 feet 6.1m) horizontal. The filling of beach compatible material in this area would create a 200 (60.1m) foot wide beach at high tide. Below the MLW line, the slope of the beach fill would be approximately 1 foot (0.3m) vertical to 30 feet (9.1m) horizontal.

(2) Sediment Type. The sand to be used as beach fill material will be obtained from the Capron Shoal borrow area.

(3) Dredge/Fill Material Movement. The fill material will be subject to erosion by waves with the net movement of fill and upland material expected to be seaward, forming an offshore bar. This bar will be subject to littoral transport by longshore currents.

(4) Physical Effects on the Benthos. Non-motile benthic organisms may be directly buried by the beach fill and those found in the borrow site could be excavated. Some burrowing organisms may be able to burrow up through the fill material. Attached epifauna seaward of the project area may be impacted by both direct burial and short-term increases in turbidity levels. Because of the high fecundity and high turnover rate of many benthic invertebrates, recolonization in the project and borrow area by these species is expected in a relatively short period of time (usually within a matter of months). A significant portion of the benthos in the intertidal area just south of the project area consists of tropical sabellarid worm (*Phragmatopoma lapidosa*). These structures are periodically buried and reappear due to shifting sand. Because of the dynamic conditions to which they readily adapt, no adverse impacts are expected on these reefs.

Dredging of the borrow area in which the existing top layer of habitat is removed and the bottom topography changed, which is required to construct the beach fill project, would have temporal impacts to the benthic infaunal communities. However, most studies on the infauna of sand borrow areas have shown little lasting impact in terms of species diversity and total abundance or density. Previous studies have shown dredging to have minimal long-term adverse effects on benthic habitats (Culter and Mahadevan, 1982; Saloman et al., 1982; Hammer, et al., 2000). Johnson and Nelson (1985) found that abundance and species richness returned to near normal 9-12 months after dredging off Fort Pierce Inlet in the same general location as the proposed Project. Similar results were reported by Saloman et. al. (1982) off Panama City Beach, Florida and by Tuberville and Marsh (1982) in Broward County. Benthic infauna should be expected to start re-colonizing these areas within days after dredging is completed. Care should be taken not to construct an abrupt pit in the bottom and to dredge a cut with shallow sloping sides. This would help aid in the re-colonization of benthic organisms. Barry A. Vittor and Associates, Inc. (1999) found that the amount of silt/clay present within sediments and the location offshore could also affect recovery time of benthic infauna. Since very little fine material (silt/clay) is present within the borrow area, recovery should occur rapidly. Infaunal assemblages within the study area should re-established within one to two years following dredging.

Potentially unique interstitial bryozoan communities discovered at Capron Shoals were discussed in Winston and Hakansson (1986). A petition was also filed in February 1999 to list new species of bryozoans discovered at Capron Shoal as endangered species under the Endangered Species Act (ESA) (Federal Register, Vol. 64, Number 103). The National Marine Fisheries Service (NMFS) stated in response to this petition that, "…the

petition does not present substantial scientific or commercial information to warrant the petition action…", moreover NMFS stated in the same document that::
"NMFS acknowledges that dredging Capron Shoal will temporarily remove a portion of the bryozoan population and some features that make this area suitable habitat for bryozoans. However, NMFS biologists are confident that new surfaces exposed by dredging, when reshaped by natural events such as prevailing currents and wave action, will support the recolonization of the site by bryozoan larvae. The source for these bryozoan larvae will be undredged portions of Capron Shoal, nearby shoals, and the Indian River Lagoon system." In addition, Brostoff 2002, re-examined Capron shoals and shoals in its vicinity, which exhibited similar physical and chemical characteristics. This study revealed that most of the fauna discovered by Winston and Hakansson (1986) occurred, or were likely to occur, on shoals in the vicinity of Capron Shoal (Appendix B, Bryozoan Study).

(5) Other Effects. Elevated turbidity levels in the nearshore swash zone will be temporary. Organisms inhabiting the intertidal zone are primarily burrowers that readily adapt to periodic burial by resuspended material, as well as sabellarid worms, which use resuspended material to build their hardened structures.

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water

(a) Salinity. Because of water movement in and out of the project area from the dynamic oceanographic conditions found along the Atlantic coast in this area, placement of carbonate and shell fill is not expected to have any change on the salinity of nearshore waters.

(b) Water Chemistry. The shell and carbonate fill does not readily break down in water. Therefore, no significant long-term changes in the chemical makeup of the nearshore environment are anticipated.

(c) Clarity. There will be a temporary increase in turbidity during the construction process. The fill material is dense (low silt content) and will resist resuspension in the water column. The oceanographic conditions in this area are very dynamic, and beach material is constantly being eroded away and resuspended by wave energy. Therefore, any short-term elevated turbidity levels during the construction phase are not expected to significantly alter background water clarity seaward of the project area.

(d) Color. Fill placement will have no long-term or significant impact.

(e) Odor. The fill material is an odorless mixture of shell and carbonate sand.

(f) Taste. Fill material will have no effect on taste

(g) Dissolved Gas Levels. Even with elevated turbidity levels during construction and possible reduction in autotrophic organisms normally associated with

this condition, no reduction in dissolved gas levels are expected. Because of the nearshore water agitation caused by breaking waves, dissolved oxygen levels in the water column should not experience any significant reduction.

(h) Nutrients. The beach fill material consists primarily of a mixture of calcareous sand and shell with small amounts of quartz. Because of the low silt content of the material, no increases in nutrient levels are expected.

(i) Eutrophication. Because of water exchanges from tides and currents, no significant buildup of macronutrients in the project area is expected. Therefore, there will be no change in the trophic status of the nearshore waters.

(2) Current Patterns and Circulation.

(a) Current Patterns and Flow. The most significant ocean current that exists off the east coast of Florida is the Gulf Stream. With the exception of intermittent local reversals, its flow is northward. The average annual current velocity is approximately 28 miles (45km) per day, about 17 miles (27 km) per day in November and about 37 miles (59km) per day in July. In the study area, offshore and longshore transport of materials are also seasonal in nature. In the winter, the southward littoral movement is the dominant direction of the longshore current.

(b) Velocity. Based on 1978 data, the average wave period that strikes the shoreline in the project area is about 6.7 seconds. The project would have no adverse impact. The wind generated waves and currents are the primary causes of sand loss from the beaches, and cause most of the shoreline damage in the project area.

(c) Stratification. Because of the dynamic oceanographic conditions and currents originating from the Fort Pierce Inlet, it is highly unlikely that thermal or haline stratification ever exists. The project would have no adverse impact.

(d) Hydrologic Regime. The project would have no adverse impact.

(3) Normal Water Level Fluctuations. Tides in the project area are semi-diurnal mixed. The mean range of tides in the project area is 2.6 feet (0.8m) and the spring range is 3.0 feet (0.9m). Wind set-up (piling up of water on the shoreline) has significantly more effect on seasonal and long-term water fluctuations than astronomical tides. The average annual wave height seaward of the intertidal swash zone is about 2.1 feet (0.6m) .The project will have no adverse impact.

(4) Salinity Gradients. Because of constant water exchange from tidal and wind generated forces, salinity in the project area is at open ocean levels. The project would have no impact.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site. There will be a temporary increase in turbidity levels seaward of the project area during construction. This short-term increase may have an

adverse impact on nonmotile autotrophs as well as infaunal and sessile organisms such as periphyton, drifting phytoplankton, and mollusks. This elevated turbidity level will be temporary and is not expected to be significant, as state standards for turbidity will not be exceeded.

(2) Effects on Chemical and Physical Properties of the Water Column.

(a) Light Penetration. The placement of fill material will reduce light transmission in the littoral zone due to elevated levels of suspended particulates. Because of the density of the fill material, this adverse impact is expected to be temporary and short-term in nature.

(b) Dissolved Oxygen. Due to the low level of organic material in the borrow/fill material, anoxic layers of sediment exposed by dredging are anticipated to be minimal.

(c) Toxic Metals. Due to the clean nature of the calcareous borrow/fill material, toxic materials will not be introduced into the water column.

(d) Pathogens. No pathogenic material is expected to be involved with the project.

(e) Aesthetics. Aesthetic quality will be reduced during the beach construction period, but there will be a long-term increase in the aesthetic quality of the project area once the eroded beach is restored.

(3) Effect on Biota.

(a) Primary Production/Photosynthesis. Elevated turbidity levels from resuspended beach fill may have some insignificant adverse impact on drifting autotrophic organisms in the immediate project area. It is anticipated that this will be a temporary and short-term phenomenon. Exposed intertidal rock provides an attachment site for algae. If this habitat and associated organisms are permanently buried, their ecological functions would be replaced by a softbottom sand trophic community which supports interstitial phytoplankton activity. Because of nearshore water exchange from tidal and wind generated currents, it is probable that photosynthetic organisms are continuously carried into and out of the project area. Therefore, no long-term adverse impacts are expected.

(b) Suspension/Filter-Feeders. Beach fill material resuspended into the water column may contribute to the clogging of siphons of filter-feeders. This is expected to be a temporary and short-term condition. Because of high fecundity and turnover rates, rapid repopulation of these organisms is expected.

(c) Sight Feeders. Elevated turbidity levels will have a short-term adverse impact on these organisms. However, these organisms are highly motile and are able to migrate into more favorable areas to fulfill their nutritional requirements.

d. Contaminant Determinations. Deposited shell and calcareous fill material is similar to the existing beach material in the surrounding area and will not introduce, relocate or increase contaminants in nearshore waters.

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton. Decreased light transmission caused by suspended beach material may have a temporary adverse impact on plankton. However, this is expected to be short-term and insignificant. The Atlantic coast of Florida is highly dynamic in this particular area and resuspension of material is likely a natural phenomenon. Elevated turbidity levels will be a temporary condition and floating planktonic organisms may be removed from the project area via tides and currents.

(2) Effects on Benthos. Those benthic species not able to migrate from the project area will be covered. Because of the high fecundity and high turnover rate of benthic invertebrates, repopulation of most benthic communities should occur within a few months once construction has ceased. Hardbottoms affected will be mitigated by reef construction.

(3) Effects on Nekton. Direct impacts to motile organisms will be insignificant because of their ability to avoid unacceptable conditions. Adjacent hardbottom habitat is periodically covered because of scouring and shifting sand. Any hardbottom structure that is permanently buried will have an adverse impact on nektonic (especially cryptic) species.

(4) Effects on Aquatic Food Web. Beach nourishment activities are likely to have a temporary and insignificant short-term impact on both structures and associated organisms seaward of the project area. Because the nonmotile organisms are quickly able to repopulate nourished intertidal zones, no long term adverse impacts to higher trophic level organisms are expected.

(5) Effects on Special Aquatic Sites. Tropical sabellarid worm reefs are located primarily just south of the project area. The nourishing of the project beach is not expected to have any long-term significant adverse impact to these communities. As the beach seeks equilibrium, resuspended sand may settle on these structures. However, the project area lies within highly dynamic oceanographic conditions where resuspended bottom material is not uncommon. The worm, *Phragmatopoma lapidosa*, uses suspended material to build its protective tubes and enlarge its communities.

(a) Sanctuaries and Refuges. No Federal or State sanctuaries, refuges, or preserves exist in or adjacent to the project area.

(b) Wetlands. There are no intertidal marshes or submerged seagrasses seaward or adjacent to the project area.

(c) Vegetated Shallows. Because of the dynamic oceanographic conditions common to the project area, it is not uncommon for beach material to be resuspended into the water column. Because of the physical conditions, no submerged aquatic vegetation exists seaward of the project area.

(d) Coral Reefs. Nearshore sabellarid worm reefs (*Phragmatopoma lapidosa*) are an important hardbottom feature that can be found just seaward and south of the project area. The organisms comprise these reefs are adapted to highly dynamic conditions with continuous material resuspension that periodically buries these communities. Therefore, a temporary elevated resuspension of sand is not expected to significantly impact these communities. Coral banks consisting of the ivory tree coral (*Oculina varicosa*) are found well offshore in 165-330 feet (50- l00 m) of water. Because of their distance from the project area, no adverse impacts to these offshore reefs are expected. Any permanent loss of hardbottom structures such as worm reefs and limestone outcrops represents a loss of juvenile refuge and a food source for foraging adult species. Such effects will be mitigated by reef construction.

(6) Threatened and Endangered Species. In accordance with Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) have concurred that implementation of the proposed project would not adversely affect threatened or endangered species under their purview. Important safeguards to be implemented to assure that no adverse impacts from the project are experienced by threatened/endangered species is documented in Appendix C and Appendix D of this report.

(7) Other Wildlife. Renourishing the 1.3-mile (2.1km) section of the Atlantic shoreline of Fort Pierce Beach is not expected to have a long-term significant adverse impact on wading birds or terrestrial foraging animals. These organisms are highly motile and actively seek favorable environmental conditions for foraging and resting.

(8) Actions to Minimize Impacts. All practical safeguards will be taken during construction to preserve and enhance aesthetic, recreational, and economic values in the project area.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. The fill material will not cause unacceptable changes in the mixing zone specified in the Water Quality Certificate in relation to: depth, current velocity and direction, variability, degree of turbulence, stratification, or ambient concentrations of constituents.

(2) Determination of Compliance with Applicable Water Quality Standards. Class III State water quality standards will not be violated outside of the established mixing zone.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supply. No municipal or private water supplies will be impacted by the implementation of the project.

(b) Recreational and Commercial Fisheries. Finfish are highly motile and will seek favorable environmental conditions elsewhere. The physiochemical (temperature, salinity, depth) and substrate characteristics surrounding Hutchinson

Island are very similar. Ichthyofauna around Fort Pierce Beach may relocate or take advantage of prey species affected by project work. No significant adverse impact to pelagic organisms is expected.

{c) Water Related Recreation. The placement of fill will generate a temporary inconvenience for those using the beach for recreational purposes. Once construction has ceased, water related recreation would be preserved as well as enhanced by the creation of additional beach area.

(d) Aesthetics. A temporary decrease in aesthetics will occur with the presence of earthmoving equipment. However, the stabilization of an eroding beach will only improve beachfront aesthetics.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. No such designated sites are located within the confines of the project area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. The proposed discharge of material will have no cumulative negative impacts that would result in degradation of the natural, cultural, or recreational resources of the project area. The project will have no cumulative impacts that result in major impairment of water resources and will not interfere with the productivity and water quality of the existing aquatic ecosystem.

h. Determination of Secondary Effects on the Aquatic Ecosystem. No secondary effects are anticipated.

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III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE.

1. No significant adaptations of the guidelines were made relative to this evaluation.

2. In addition to considering the basic assumption of the "no action" alternative, nine nonstructural and 10 structural alternatives were also considered. No practical alternative exists which meets the study objectives that does not involve discharge of beach compatible fill into waters of the United States.

3. The discharge of beach compatible fill material to be dispersed will not cause or contribute to violation of any applicable State water quality standards for Class III waters.

4. The discharge of calcareous shelly carbonate sand will not cause or contribute to violations of any applicable State water quality standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

5. The placement of beach compatible fill material will not jeopardize the continued existence of any species listed as threatened or endangered, or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

6. There will be no adverse impact on the water supply of the City of Fort Pierce or St. Lucie County from the implementation of this project.

7. Direct (burial) and indirect (increased sedimentation) adverse impacts may affect nearshore (within 500 feet of the mean high water line} sabellarid worm reefs and limestone rock outcrops. Cryptic fishes may lose refuge habitat if these hardbottom structures are permanently buried. Non-motile sessile invertebrates may be buried by the beach fill and autotrophic and encrusting organisms may lose an attachment surface if the hardbottom structures are permanently buried. Hydrodynamic movements may redistribute offshore larvae of many of these organisms into the project area. Because of the high fecundity of many of these organisms, project area repopulation and biodiversity are expected to quickly rebound.

8. Short-term elevated turbidity levels during the construction phase may adversely affect attached autotrophic organisms. As turbidity returns to background levels with the cessation of construction, it is anticipated that this impact overall will prove insignificant and temporary.

9. There will not be a direct adverse impact on highly motile organisms. Indirectly, any permanent loss of hardbottom structures such as worm reefs and limestone outcrops represents a loss of juvenile refuge and a food source for foraging adult species. Such effects will be mitigated.

10. Non-motile infaunal organisms such as bivalve mollusks in the immediate project area will be buried by the beach fill but are expected to repopulate the area in a matter of months. Motile epifaunal species such as recreationally and commercially important crustaceans should not be adversely affected by the proposed project.

11. It is anticipated that there will be no significant or long-term changes in biodiversity of the nearshore areas around Hutchinson Island from the implementation of this project.

12. The dredging of Capron Shoal will temporarily remove a portion of the bryozoan population and habitat. However, new surfaces exposed by dredging and reshaped by natural events, such as prevailing currents and wave action, will support the recolonization of the site by bryozoan larvae. The primary source for bryozoan larvae will be undredged portions of Capron Shoals.

13. The composition of the beach fill material obtained from Capron Shoals is such that it will not contribute organics or pollutants to the aquatic environment. Earthmoving equipment is not expected to operate in water (below mean low water) thus minimizing hydrocarbon pollution from machinery. All responsible precautions will be taken to assure that no hazardous materials (oil, gas) are discharged from any construction equipment.

14. On the basis of the guidelines, the proposed disposal site for the discharge of fill material is specified as complying with the requirements of the Clean Water Act.