ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET

LONG BEACH ISLAND, NEW YORK

FEASIBILITY REPORT

VOLUME I:
MAIN REPORT
AND
FINAL ENVIRONMENTAL IMPACT STATEMENT

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NORTH ATLANTIC DIVISION

FEBRUARY 1995

Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet

LONG BEACH ISLAND, NEW YORK

FINAL FEASIBILITY REPORT
WITH
FINAL ENVIRONMENTAL IMPACT STATEMENT
(FEIS)

STORM DAMAGE REDUCTION PROJECT

New York District
North Atlantic Division
February 1995

CENAD-DE (CENAN/Feb 95) (1105-2-10c) 1st End Mr. Panasiuk/7088
SUBJECT: Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Feasibility Study and Final Environmental Impact Statement

Commander, North Atlantic Division, Corps of Engineers, ATTN: CENAD-PL-F, 90 Church Street, New York, New York 10007-2979 MAR 31 1995

FOR COMMANDER, HQUSACE ATTN: Policy Review Branch, Policy Review and Analysis Division, Kingman Building, Fort Belvoir, Virginia 22060-5576

I concur in the District Commander's recommendation to proceed with all necessary engineering and design. The recommendation for Federal implementation of the project is not, however, in accordance with the Administration policy, which does not support Federal participation in the construction of hurricane and storm damage reduction projects.

Milton Hunter
MILTON HUNTER
Brigadier General, USA
Commanding

SYLLABUS

This report presents the results of a feasibility phase study to determine an implementable solution and the extent of Federal participation in a storm damage reduction project for the barrier island of Long Beach, New York, otherwise referred to as Long Beach Island. The feasibility study was prepared based on the recommendations of a reconnaissance study completed in 1989, which identified a possible solution to the storm damage problems facing the barrier island, determined that such a solution was in the Federal interest and identified the non-Federal sponsor. The feasibility study was cost shared between the Federal Government and the New York State through the Department of Environmental Conservation, and was conducted under the provisions of the Feasibility Cost Sharing Agreement executed in September 1990. The feasibility study was initiated in May 1991 upon receipt of initial study funds.

Long Beach Island is a 9-mile long barrier island located on the Atlantic Coast of Long Island, New York, between Jones Inlet to the east and East Rockaway Inlet to the west. The area has been subject to major flooding during storms, causing damage to structures along the barrier island. Over the years, continued erosion has resulted in a reduction of the height and width of the beach front, which has increased the potential for storm damage.

During the feasibility study, various alternative plans of improvement were considered. Many of the possible alternatives were ruled out early in the plan formulation process due to various factors. Of the alternatives considered, the most cost effective design was similar to the recommended solution presented in the reconnaissance report. The investigations conducted during the feasibility study indicated that a 110-foot wide beach berm at an elevation of +10 feet NGVD, backed by a dune system at an elevation of +15 feet with a crest width of 25 feet provided the greatest net benefits over cost. The selected plan includes rehabilitation of 16 of the existing groins, construction of 6 new groins in the most critical erosion area along the island, dune grass, dune fencing and suitable advance beachfill and periodic nourishment to ensure the integrity of the design. The plan requires 8,642,000 cubic yards of initial fill to be placed from a designated offshore borrow site and subsequent periodic nourishment of 2,111,000 cy of fill every five years for 50 years.

The feasibility report is based on June 1994 price levels and the 1994 Federal interest rate of 8%. The economic analysis for the selected plan indicates that the selected plan will provide annual benefits of $16,980,000, which when compared to the total annual cost of the proposed plan of $8,954,800, yields a benefit to cost ratio of 1.9 with $8,026,000 in net excess benefits. Since the selected plan yields the greatest not storm damage reduction benefits of all of the alternatives considered, the selected plan is the same as the National Economic Development (NED) Plan.

The first cost of the initial project construction including advance nourishment is currently estimated to be $69,894,000 (June 1994 price levels). The Federal share of this first cost is $45,431,000 (65 percent), and the non-Federal share $24,463,000 (35 percent), with $23,676,000 being the total required non-Federal cash contribution and the balance is the estimated creditable cost for real estate and relocations. The annualized cost for periodic nourishment is currently estimated to be $2,143,000, which will be similarly cost shared.

The local sponsor, the New York State Department of Environmental Conservation, has indicated their support for the selected plan and are willing to enter into a Project Cooperation Agreement with the Federal Government for the implementation of the plan. Local municipalities along the barrier island intend to cost share the non-Federal share with the State. These municipalities, which include the City of Long Beach, the Town of Hempstead and Nassau County, are supportive of the selected plan. The plan provides improvements to approximately 7 miles of public shorefront. The Village of Atlantic Beach, which encompasses the western 2 miles of the barrier island, has asked not to be included in the project and are not affected by the proposed plan.

The requirements of Section 404(r) of Public Law 92-500, as amended, have been met.

PERTINENT DATA

Project Title: Long Beach Island, New York.

Description: The proposed project provides a protective beach with a dune system to reduce the potential for storm damage along the barrier island of Long Beach.

Beach Fill	
Volume of Initial Fill	8,642,000 cy
Volume of Renourishment Fill	2,111,000 cy
Interval of Renourishment	every 5 years for 50 years, subject to the Corps monitoring program)
Length of Fill	41,000 ft
Width of Beach Berm	110 ft
Width of Dune Crest	25 ft
Elevations	
Dune Crest	+15 NGVD
Beach Berm	+10 NGVD
Slopes	
Dune (Landward)	1V:5H
Dune (Seaward)	1V:5H
Beach Berm to existing bottom	1V:25H (for the easternmost 5,500 ft)
	1V:35H (for the remaining shoreline)

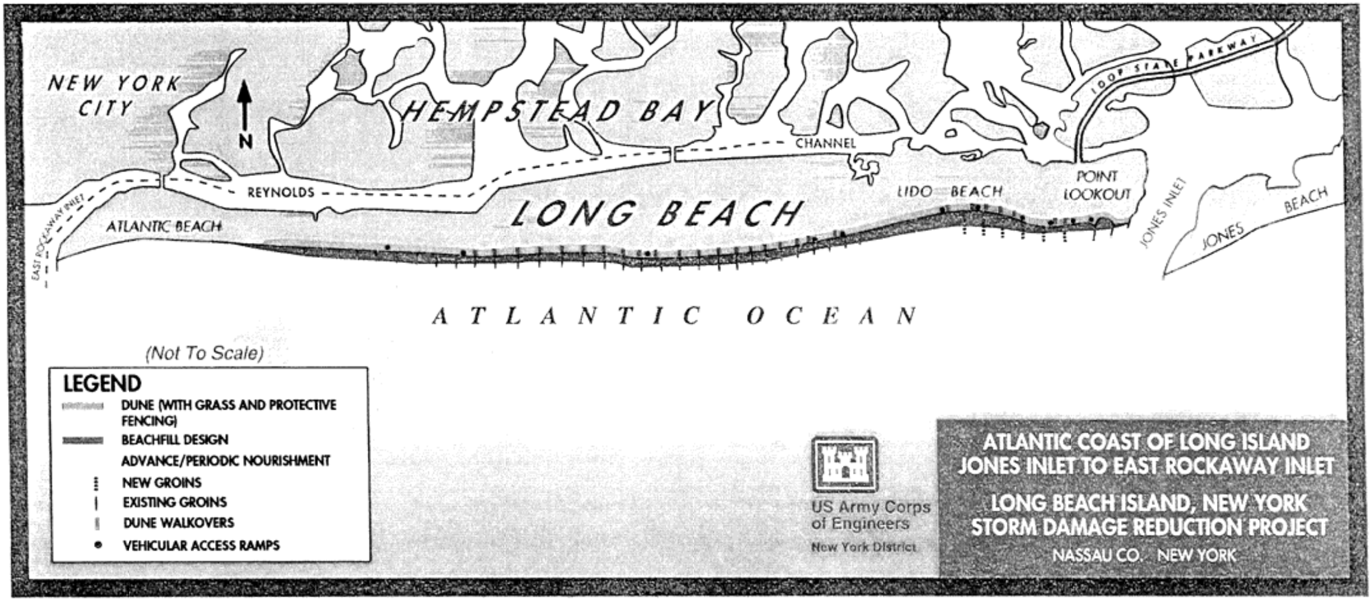
Groins

(1) Rehabilitation of 16 existing groins
(2) Six New Groins fronting the Town Park at Hempstead and Lido Beach (approximately 1200 ft spacing)

Dune Appurtenances	Grass Planting
	Sand Fencing
	Vehicle Access Ramps
	Dune Walkovers
Project Cost	
Initial Cost	$ 69,894,000
Annualized (Discounted at 8%)	$ 8,954,000

Average Annual Benefits	
Storm Damage Reduction	$ 15,403,000
Recreation	$ 1,576,000
Loss of Land	$ 1,000
Benefit/Cost Ratio	1.9
Cost Apportionment (First Cost)	
Federal	$ 45,431,000
Non-Federal	
Cash	$ 23,676,000
Other	$ 787,000

NOTE: All elevations referenced to the National Geodetic Vertical Datum (NGVD).


NEW YORK CITY
N
HEMPSTEAD BAY
CHANNEL
REYNOLDS
EAST ROCKAWAY INLET
ATLANTIC BEACH
LONG BEACH
LIDO BEACH
POINT LOOKOUT
LOOP STATE PARKWAY
JONES INLET
JONES BEACH
ATLANTIC OCEAN
(Not To Scale)
LEGEND
DUNE (WITH GRASS AND PROTECTIVE FENCING)
BEACHFILL DESIGN
ADVANCE/PERIODIC NOURISHMENT
NEW GROINS
EXISTING GROINS
DUNE WALKOVERS
VEHICULAR ACCESS RAMPS
US Army Corps of Engineers
New York District
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT
NASSAU CO. NEW YORK

Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet
LONG BEACH ISLAND, NEW YORK

STORM DAMAGE REDUCTION PROJECT

FINAL FEASIBILITY REPORT

TABLE OF CONTENTS

Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet
LONG BEACH ISLAND, NEW YORK

STORM DAMAGE REDUCTION PROJECT

FINAL FEASIBILITY REPORT

TABLE OF CONTENTS (CONT'D)

TABLE OF CONTENTS (CONT'D)

TABLES

PLATES

STORM DAMAGE REDUCTION PROJECT

FINAL FEASIBILITY REPORT

TABLE OF CONTENTS (CONT'D)

APPENDICES

STORM DAMAGE REDUCTION PROJECT
Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet
LONG BEACH ISLAND, NEW YORK

FINAL FEASIBILITY REPORT

I. INTRODUCTION

1. The barrier island of Long Beach, New York is located on the Atlantic Coast of Long Island, New York, between Jones Inlet and East Rockaway Inlet. The area lies within Nassau County, New York. The Reconnaissance Report dated March 1989 determined that there is Federal interest in the restoration and protection of the barrier island between Jones Inlet and East Rockaway Inlet (otherwise referred to as Long Beach Island) against erosion and from ocean storm damage. The purpose of the feasibility study is to evaluate and, if warranted, recommend an implementable solution for storm damage reduction along the barrier island of Long Beach.

2. This document is prepared in accordance with ER 1105-2-100 (Planning Guidance), ER 1110-2-1150 (Engineering & Design for Civil Works Projects), ER 1165-2-130 (Federal Participation in Shore Protection) and other applicable guidance and regulations. This report documents the evaluation of the feasibility of Federal participation in a plan to provide storm damage protection for the barrier island between Jones Inlet and East Rockaway Inlet, otherwise referred to as Long Beach Island, New York.

Study Authority

3. The feasibility phase of studies of storm damage protection for the Long Beach barrier island is the second of a two-part study effort. The study is being conducted in response to the authority of a resolution by the Committee on Public Works and Transportation of the U.S. House of Representatives adopted October 1, 1986, which reads:

> "Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors is hereby requested to review the previous report on the Atlantic Coast of Long Island, New York, Jones Inlet to East Rockaway Inlet, authorized by resolution of the Committee on Public Works and Transportation, adopted March 20, 1963, and June 19, 1963, respectively, and also in response to Public Law 71, 84th Congress, First Session, approved June 15, 1955, with a view to determining the feasibility of providing storm damage protection works for Long Beach Island".

Study Purpose and Scope

4. The purpose of the feasibility study is to evaluate an array of shoreline protection measures, and if warranted to select a plan and economically optimize the scale of design and level of protection. If such a plan is supported by a non-Federal sponsor and is environmentally and socially acceptable, the feasibility report would recommend an implementable solution for storm damage reduction along the barrier island of Long Beach.

The study covers the Atlantic Coast of Long Island from Jones Inlet to East Rockaway Inlet and considers the restoration and protection of the shore of Long Beach Island from erosion and ocean storm damage. This report considers the results of the reconnaissance phase of this study and includes the additional analyses conducted during the feasibility phase. In the preparation of this report, extensive basic data were collected and analyzed. Field data consisting of hydrographic and topographic surveys, and sand sampling to determine the characteristics of the existing beach and offshore material were obtained in 1991. Field investigations and office work involved analyses of data pertinent to the storm damage problems facing the barrier island. In addition to the plan recommended in the reconnaissance phase, the feasibility study considers a wide array of alternatives for comparison. This report includes detailed engineering and economic appendices, including cost estimates, to compare alternate plans of protection. Ultimately the goal of these studies is to identify the National Economic Development Plan (NED), and the selected plan of protection which may or may not be the same as the NED plan to reduce the storm damage potential along the Long Beach barrier island.

Prior Studies and Reports

5. In 1965, the New York District prepared a draft survey report, addressing storm damage protection for Long Beach, New York. This survey report, entitled Beach Erosion Control and Interim Hurricane Study for the Atlantic Coast of Long Island, New York, Jones Inlet to East Rockaway Inlet, was prepared to determine the best method of restoring adequate protective beach fronts and recreational beaches, to provide continued stability of the beach, and to develop an adequate plan of protection against hurricane tidal inundation of the barrier island.

6. The 1965 report recommended a multiple purpose plan of improvement for shore and hurricane protection of the study area. This plan was designed to provide protection against tidal inundation caused by the occurrence of a hurricane surge level of 12.3 feet above sea level. The recommended plan of 1965 included hurricane barriers, closure levees, an oceanfront dune with protective beach berm, groin reconstruction, construction of a terminal groin at Jones Inlet and periodic beach nourishment. The considered multipurpose plan was economically justified.

7. Local interests voiced objections to the 1965 recommended plan. The primary objection was that the proposed dune along the oceanfront was not compatible with the type of development on the barrier island of Long Beach. Even after various modifications, the plan was still not acceptable to local interests. A letter, dated July 21, 1971, was sent to the New York State Department of Environmental Conservation (the local cooperating agency), indicating that the study was to be terminated and a negative report issued. The local interests concurred with the termination of the study.

8. In response to the authorizing resolution of 1986, Federal funds were allocated in 1988 to conduct a reconnaissance study of the area entitled "Long Beach Island, New York." The reconnaissance report entitled Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York: Reconnaissance Report, dated March 1989, was approved by the Office of the Chief of Engineers (OCE) in July 1989. The reconnaissance report indicated that a 110-foot wide beach at an elevation of +10 feet

NGVD, backed by a dune system to elevation +15 ft NGVD with suitable advance and continuing nourishment would be an implementable design. The plan included the rehabilitation of 30 groins and the reconstruction of the terminal groin at the eastern end of the island. This analysis indicated a first cost of $53.2 million (Oct 88 price levels), with a resulting benefit to cost ratio of 1.74. These findings indicated that there is Federal interest is protecting the barrier island of Long Beach from storm damage, therefore, the reconnaissance report recommended that the necessary planning and engineering studies proceed to a cost shared feasibility study. State and local government officials concurred in the decision to proceed, and subsequently a Feasibility Cost Sharing Agreement was signed in September 1990. With the receipt of non-Federal and matching Federal funds in May 1991, the Feasibility Study was initiated.

9. Numerous reports and other documents have been prepared regarding the navigation oriented studies conducted in the Jones Inlet area. Table 1 provides a compilation of these documents. The most recent of these reports entitled Section 933 Evaluation Report, Jones Inlet, New York, dated March 1993, connected the dredging of material from Jones Inlet with the storm damage reduction potential for the barrier island, specifically the eastern end of the island at Point Lookout. This evaluation report determined that it is justified to place material dredged from Jones Inlet onto the adjacent beaches based on the benefits derived from storm damage protection. This report was approved by the Headquarters of the Army Corps of Engineers (HQUSACE) in August 1993. Based upon the findings of the evaluation report and the authorizing language in Section 933 of the Water Resources Development Act of 1986, the incremental cost of placing the dredged material from Jones Inlet onto the adjacent beaches in the Town of Hempstead was cost-shared 50% Federal-50% non-Federal, in lieu of offshore (or less costly) disposal. In March 1994, Jones Inlet was dredged and the material was placed onto the adjacent beaches in accordance with the basic design presented in the Section 933 Evaluation Report.

Table 1: Related Reports of the Jones Inlet area

Beach Erosion Control and Interim Hurricane Study for the Atlantic Coast of Long Island, New York, Jones Inlet to East Rockaway Inlet; U.S. Army Corps of Engineers, New York District; 1965 (Draft).

House Document No. 2102, 64th Congress, 2nd Session (Shore front from Jones Inlet to Rockaway Inlet, New York).

House Document No. 19, 71st Congress, 1st Session. (East Rockaway Inlet, Jones Inlet, and other waterways in the vicinity of the Hempstead Bay).

House Document No. 409, 77th Congress, 1st Session. (Jones Inlet, New York).

Brief Definite Project Report on Jones Inlet, New York; U.S. Army Corps of Engineers, New York District; December 1952 (Revised April 1953).

Jones Inlet to Freeport, N.Y. Stage I Reconnaissance Report; U.S. Army Corps of Engineers, New York District; August 1981; .

Jones Inlet to Freeport, N.Y. Stage II Study; U.S. Army Corps of Engineers, New York District; March 1983.

Jones Inlet, New York: Navigation Project, Modification of the Existing Project Operation; U.S. Army Engineer District, New York; May 1985.

Jones Inlet to East Rockaway Inlet, Long Beach Island, New York: Reconnaissance Report; U.S. Army Corps of Engineers, New York District; March 1989.

Jones Inlet, New York: Section 933 Evaluation Report; U.S. Army Corps of Engineers, New York District; April 1992 (Revised March 1993).

Description of Study Area

10. The general study area is located along the Atlantic Coast of Long Island, New York from Jones Inlet westerly to East Rockaway Inlet. The area lies within Nassau County, New York and from east to west includes the developed community of Point Lookout and adjacent beaches owned by the Town of Hempstead, Nassau Beach, Lido Beach, the City of Long Beach and the Village of Atlantic Beach. All unincorporated areas are under the direct jurisdiction of the Town of Hempstead. The 9-mile long barrier island varies in width from 1,500 to 4,000 feet and is bounded on the west by East Rockaway Inlet, on the south by the Atlantic Ocean, on the east by Jones Inlet, and on the north by Reynolds channel. A project area map is shown on Figure 1.

11. The terrain of the island is low-lying and flat with elevations generally less than 10 ft above National Geodetic Vertical Datum (NGVD). The ocean shoreline of Long Beach Island consists of a continuous strip of generally low-lying beach with a series of locally constructed groins along the much of the oceanfront. Many of the groins are in deteriorated condition. The physical presence of the barrier island offers protection against wave attack to the Long Island mainland shore surrounding Hempstead Bay.

12. Long Beach Island is highly developed with generally suburban characteristics. The following paragraphs describe some of the development features.

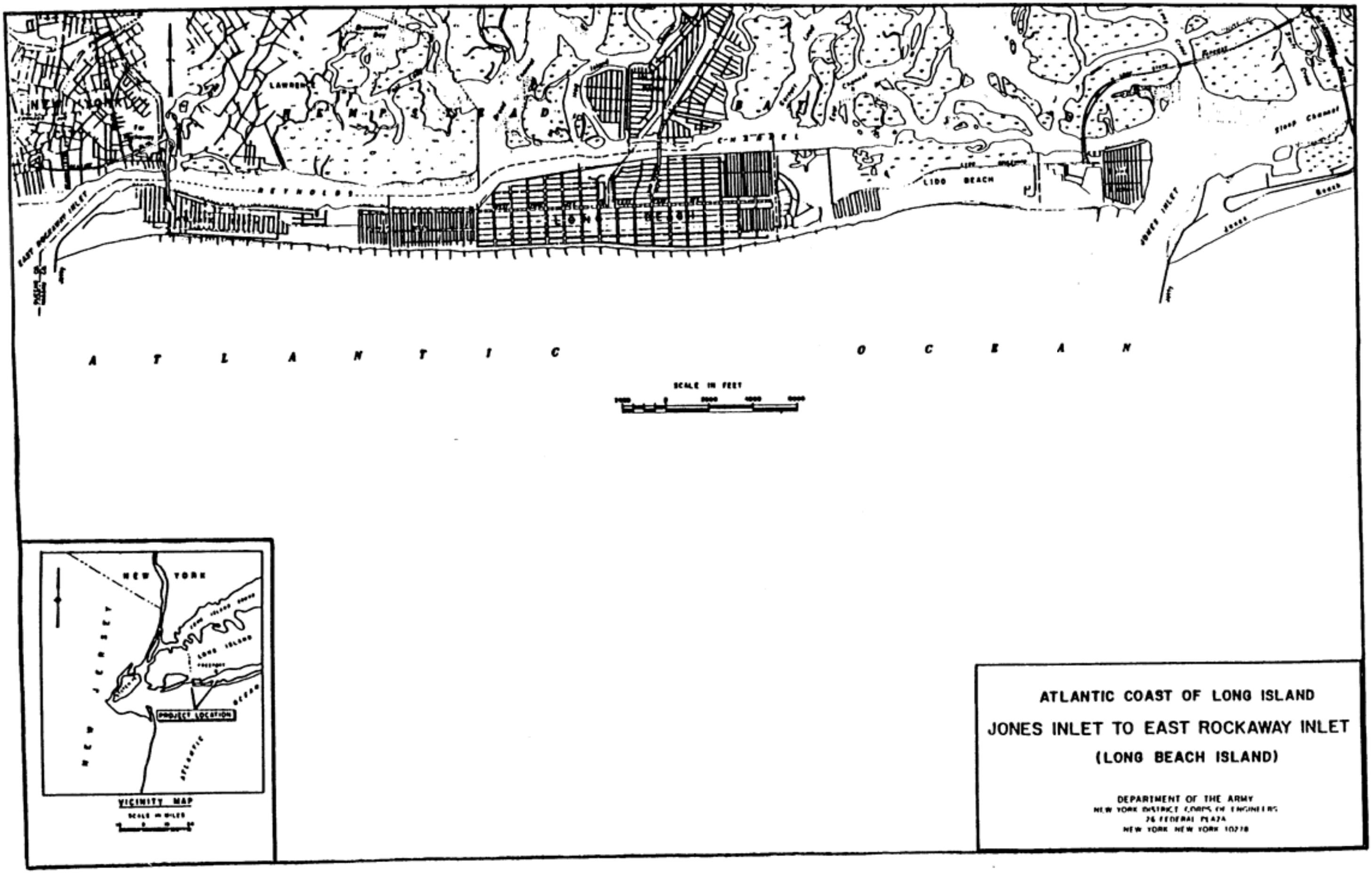
13. Point Lookout: The unincorporated community of Point Lookout, in the Town of Hempstead, lies directly west of the Jones Inlet navigation channel and extends to Nassau Beach, a distance of approximately 1 mile. Point Lookout is fronted by a rip-rap revetment on the inlet side and three groins along the ocean shore, one of which being the terminal groin attached to the existing revetment. The Town of Hempstead Town Park and Malibu Beach, which are beach facilities, comprise the westerly portion of this area. These parks include facilities such as lifeguard stations, bathhouses, refreshment stands, comfort stations, large public parking area for each, and other supporting facilities. The eastern portion and bay side of these sections of the barrier island of Long Beach are primarily densely populated residential areas, and include the Town of Hempstead's Department of Conservation and Waterways office headquarters.

14. Nassau Beach: West of the Point Lookout area extending approximately 0.7 miles is the recreational beach facility of Nassau Beach, which is owned and operated by Nassau County. The northern portion of this area is predominantly undeveloped land.

15. Lido Beach: This unincorporated area extends for approximately 2.3 miles from Nassau Beach on the east to the City of Long Beach on the west. South of Lido Boulevard, the principal traffic artery, the area has been developed with a hotel, densely spaced dwellings, beach clubs, and Lido Beach Town Park, which extends one-half mile along the ocean front. A series of groins along the barrier island begins in the residential section of Lido Beach and continues westward to the East Rockaway inlet jetty. North of Lido Boulevard, originally a low-lying salt water marsh, the area has undergone considerable development with densely spaced dwellings, the Long Beach High School and the Lido Beach golf course; the northeastern portion of the area still remains partially in its natural state.

16. Long Beach: The City of Long Beach, one of just two cities in all of Nassau County, is centrally located on the barrier island and extends from Lido Beach to Atlantic Beach, a distance of 3.4 miles. It is primarily residential in character with a high concentration of commercial and public facilities. The area is almost completely developed with little space available for expansion. A boardwalk skirts almost the entire ocean front and provides ramped access to the continuous public beach. The groin field continues along the City beach, which also includes a lifeguard station and a concession stand. Fringing the northside of the boardwalk are many commercial establishments consisting of retail stores, refreshment stands, hotels, nursing homes, condominiums and rooming houses. Over the past twenty years, the area has experienced economic revitalization with a significant portion of the strip being upgraded with new high-rise cooperative apartment buildings and condominium complexes.

17. Atlantic Beach: This area extends for 2.8 miles from the City of Long Beach to East Rockaway Inlet. At the eastern end, fronting the Atlantic Ocean, is the small unincorporated community of East Atlantic Beach, which consists of a densely populated residential area fronted by a recreational beach of the Town of Hempstead. The central portion of this stretch of the island comprises the incorporated Village of Atlantic Beach, which also is residentially developed with densely spaced dwellings and fronted by private beach clubs. A vast recreational beach area and a boardwalk skirts much of the area. The western portion of the area, known as Silver Point Park, extends to East Rockaway Inlet. This area is primarily used as a recreational beach by two private beach clubs; however, the westernmost portion of this area is comprised of vegetated rolling dunes, which is designated for environmental habitat.


ATLANTIC OCEAN
SCALE IN FEET
EAST ROCKAWAY INLET
REYNOLDS CHANNEL
LONG BEACH
LIDO BEACH
JONES INLET
LAWRENCE
Sloop Channel
NEW YORK
NEW JERSEY
LONG ISLAND
PROJECT LOCATION
ATLANTIC
VICINITY MAP
SCALE IN MILES
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
(LONG BEACH ISLAND)
DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
26 FEDERAL PLAZA
NEW YORK NEW YORK 10278

Description of the Problem

18. As stated previously, the terrain of the island is low-lying and flat with elevations generally less than 10 ft above NGVD. Although some areas have dunes, the ocean shoreline of Long Beach Island generally consists of a continuous strip of generally low-lying beach with a series of groins along the oceanfront.

19. Severe storms in recent years have caused a reduction in the overall beach height and width along the barrier island, and accelerated deterioration of the locally constructed stone groins, which makes the densely populated communities along the barrier island increasingly susceptible to storm damage. The continuing erosion combined with the low elevation of the protective beach berm exposes Long Beach Island to a high risk of catastrophic damage from ocean flooding and wave attack.

20. The rate of erosion is most severe at the eastern end of the barrier island, where recurring damages have been most evident. During the December 1992 northeaster, the Town of Hempstead Town Park observed the collapse of the concrete sidewalk in front of the lifeguard stations, and subsequently the lifeguard stations were undermined. The Town has consistently refilled the area with stone and concrete rubble as armament to protect these facilities from further storm damage.

21. The problems encountered in the Long Beach study area also include the deterioration of the existing protective coastal structures. Many of the groins fronting the barrier island, including the eastern terminal groin, have been severely battered by storms and have not been repaired or maintained since the 1950's when most of these structures were constructed. The deterioration of these structures decreases the protective capability of the beach and increases the vulnerability of the communities along the barrier island to storm damage.

22. Coastal storms have been a continuing source of damage and economic loss within the study area with significant events occurring in September 1938, September 1944, November 1950, November 1953, August 1954, September 1960, March 1962, March 1984, September 1985, October (Halloween) 1991, December 1992 and March 1993. The March 1962 storm, extending over five high tides, caused severe erosion, wave attack and inundation with the ocean meeting the bay in at least one location. This storm resulted in approximately $20 million in financial losses to the study area based on October 1992 price levels. Figures 2 through 5 show the project area and damages experienced by "Five High" in 1962, Hurricane Gloria in 1985 and the Halloween storm of 1991.

23. The barrier island is also subject to flooding, though at lower stages and less frequently, from the bay side of the island. However, this report concentrates on the protection of the barrier island from direct ocean storm damage, and is not intended to consider protection from tidal inundation from the bay side of the island.

24. Based on the current FEMA delineation of the 100-year tidal inundation area, the Long Beach Island Regional Planning Board estimates that over 3,000 homes would be flooded, directly impacting over 8,000 residents. With roadway flooding likely to isolate the island from the mainland, the consequences of such a storm could be devastating.

25. The potential damages incurred as a result of storms include structural damages to residential and commercial structures, inaccessibility to evacuate due to flooding of the major roads along the barrier island and the threat to life. The threat of loss of life is a distinct possibility in any coastal flooding situation and is important to realize for this specific project area due to the extensive population. However, this threat is difficult to measure. Similarly, the threat of inaccessible accessways when there is extensive flooding is real and can be devastating. There are only three access points to get on or off the barrier island, which are all accessible to the one major road that extends the entire length of the island. This road is also susceptible to flooding during storms. Although this inaccessibility is difficult to calculate, the threat of a major storm occurring and prohibiting access is important to realize. This report concentrates primarily on the benefits obtained by providing reduced damages to structures due to oceanic forces. Damage mechanisms are discussed in more detail later in this report.

Improvements Desired

26. After the March 1962 storm, local interests became concerned about the damages incurred and subsequently the Corps prepared the 1965 draft Survey Report, which recommended a beach erosion control and hurricane protection plan for the Long Beach barrier island. Studies were terminated after this plan could not be adopted by the local interests. Similarly, after sustaining damages due to Hurricane Gloria in 1985, there was a renewed interest in the development of a plan which would reduce storm damage to the barrier island. In response, the Corps prepared a Reconnaissance Report which generally recommended a beachfill plan with a 110 ft wide beach berm at an elevation of +10 ft NGVD backed by a dune system at +15 ft NGVD. The local interests expressed their desire to proceed with such a plan and subsequently entered into a Feasibility Cost Sharing Agreement to continue the evaluation of plans to reduce storm damage.

27. Meetings have been held during the feasibility study to keep local interests abreast of the analyses being conducted and the preliminary findings as they became available. Representatives from the Town of Hempstead, City of Long Beach and Nassau County generally desire that adequate protective measures be provided to minimize damages that occur due to storms. They have expressed both support of the plan presented in the Reconnaissance Report and the need for Federal participation in the cost of the work. The cost sharing of this feasibility study by the various levels of government is an indication of the desire by the non-Federal interest to provide storm damage reduction works similar to the plan presented in the Reconnaissance report. Therefore, coordination was maintained with the local interests to address all changes from the previous plans.

28. During the feasibility phase, representatives of the Village of Atlantic Beach expressed concerns about any protection plans for the Village at the western end of the barrier island. These concerns stem from many considerations. Of these considerations is the requirement that if the Federal government participates in improvements, the Village must open their private beaches to the public or the non-Federal sponsor must provide 100% of the cost for improvements in this area. Also, any newly created dunes fronting the beach clubs and cabanas would potentially block the present view of the beach and may be a hindrance to beach users. Furthermore, the Village representatives are convinced that their beaches are

accreting, and are not in need of restoration. Coordination will continue with the State and all of the municipalities on the barrier island to ensure, to the extent possible, that the legitimate desires of each are met.

Figure 2: Aerial view within the City of Long Beach. Note the vast amount of residential structures within the barrier island and the high rise apartments and condominiums directly behind the boardwalk, all of which are susceptible to ocean storm damage.

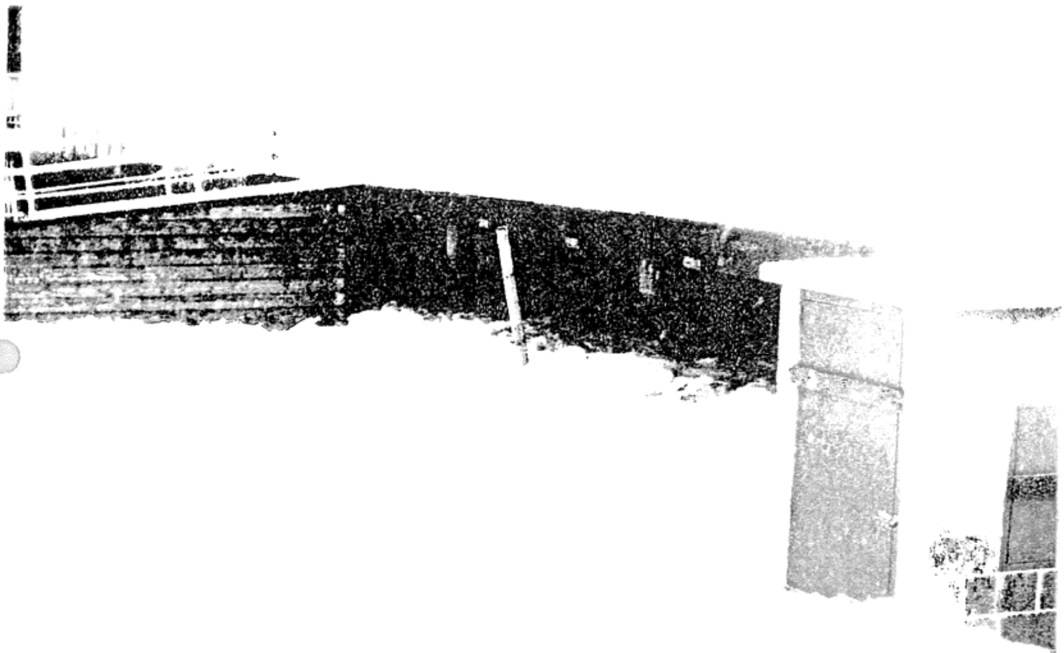


Figure 3: The ocean surges underneath the boardwalk during Hurricane Gloria in 1985. Note that the elevation of the boardwalk is approximately +17 ft NGVD. This storm caused substantial flooding and erosion of the shoreline along the barrier island, but not as much as the Extratropical Storm of 1962 ("Five High"), which is shown on the following page.

Figure 5a: July 1991 - Beach goers enjoy a summer day at the Town of Hempstead Town Park, on the eastern end of the barrier island. Sand on this beach was provided one year before (September 1990) as a result of the placement of dredged material from Jones Inlet onto these nearby, adjacent beaches.

U. S. Coast Guard photo from Herald Tribune—UPI

FLOODED BY STORM—This was Long Beach, N. Y., yesterday as storm-tossed waves inundated homes. Scores of houses were reported to have been washed away by the storm.

Figure 4: Photo from the New York Herald-Tribune, March 8, 1962. Extratropical Storm of 1962, also known as "Five High" because of the damaging high waters which occurred on five successive high astronomical tides. Based on today's dollars, a storm of this magnitude would cause damages to the Long Beach barrier island in excess of $20 million.

Figure 5b: November 1991 - The Town of Hempstead Town Park loses its beach due primarily to the Halloween Storm of 1991. The beach continued to erode causing subsequent damage to Town of Hempstead structures until placement of additional sand from the following maintenance dredging of Jones Inlet in March 1994.

II. EXISTING CONDITIONS: FACTORS PERTINENT TO THE PROBLEM

A. Physical Setting

29. Tides. Tides along the Atlantic shore portion of the study area are semi-diurnal. The mean tidal range along the outer coast of Long Beach is 4.5 feet and the spring tidal range reaches 5.4 feet. In Hempstead Bay, these ranges are 3.9 feet and 4.7 feet, respectively.

30. Currents. Tidal currents along the ocean shore of the study area are generally weak. Currents at Jones Inlet and East Rockaway Inlet have respective average maximum velocities of 3.1 and 2.3 knots at flood tide, and 2.6 and 2.2 knots at ebb tides.

31. Winds. Prevailing winds at sea are from the western quadrant, and from the southwest on the south shore of Long Island. The fetch from the west is very restricted, so westerly winds have little affect on the littoral drift. Winds blowing from the eastern and southern quadrants have a significant influence on littoral transport, due to virtually unlimited fetches in those directions. Winds from the southwest average 10.1 knots. Velocities during tropical storms exceed 60 mph, and may approach 100 mph during severe storms.

32. Waves. The direction of wave approach to the Long Beach Island shoreline is primarily from the south and southeast.

33. A wave height-frequency curve was developed to obtain storm wave conditions. Breaking wave heights were calculated for the 10, 25, 50, 100 and 500 year return periods using the method outlined in the Shore Protection Manual (U.S. Army Coastal Engineering Research Center, 1984). The results of storm wave conditions, including significant and breaking wave heights and the corresponding wave periods, are summarized in Appendix A. The results of these calculations indicate that the deep water wave height for a storm having a 100 year return period would be 21 feet.

34. Stage-Frequency. Flooding in the study area is caused by the combination of storm-induced water level rise and astronomical tide. The storm-induced water level rise has several causes: 1) storm winds exert shearing forces; 2) decreased atmospheric pressure; and 3) storm waves which raise the water level along the shore. The combination of the first two effects is defined as storm surge (and when added to the astronomical tide level, is called the total stage), and the third effect is called wave setup. It is the total stage levels with wave setup that are used for analysis in this report. Stage frequency curves, which relate flood water elevations to the average interval or time between storm events, were developed for the ocean shoreline and the back bay based on the calculated water elevations for the 10, 25, 50, 100 and 500 year return periods. A storm having a return period of 100 years is calculated to have an associated water level elevation of 12.1 feet above NGVD. The following table illustrates the calculated ocean and bay elevations for various return period storms.

Table 2: Ocean and Bay Still Water Level Stage-Frequency Elevations in ft. NGVD.

Return Period	Ocean Stage	Bay Stage
10	8.4	5.9
20	9.2	6.4
50	10.8	7.4
100	12.1	8.3
200	13.6	9.3
500	15.3	11.1

35. Sea Level Rise. The effects of possible changes in relative sea level were examined in accordance to EC 1105-2-186. The historic, or local low level rate of rise of 0.01 ft/yr was obtained from NOAA (The National Ocean and Atmospheric Administration) for the Long Beach Area, which correlates to 0.5 ft of increased water elevation over the 50 year project life. All project alternatives would require the same additional nourishment volumes and the same increase in berm and dune elevation. Therefore, sea level rise rates should have no impact on which alternative is the optimum.

36. Storms. The study area is subject to damages from hurricanes and from extratropical cyclones known as "northeasters". Hurricanes strike the study area from June through December, and more frequently within this period from August through October. Northeasters strike the study area from October through March.

37. A summary of storms that struck, or occurred, near the project area from 1665 to 1962 is given in Appendix E of the 1965 Survey Report. More detail on historic storms can be found in that document. Appendix A of this feasibility report gives details on the major storms which affected the project area in the more recent past.

38. Hurricanes. This type of storm affects the project area most severely with its high winds, waves, rainfall and tidal flooding. A hurricane is defined as a cyclonic storm with winds in excess of 74 mph which originates in the tropical or subtropical latitudes of the Atlantic Ocean and move erratically in a curved path, changing from an initial northwest to a final northeast direction. Hurricanes may affect localities along the entire Atlantic and Gulf Coasts of the United States.

39. The hurricanes that most severely affect the study area usually approach from the south-southwest direction after recurving around eastern Florida and skirting the Middle Atlantic States. The most severe hurricane on record for the study area is Hurricane Donna, which occurred on 12 September 1960.

40. Northeasters. Named after the predominant wind direction, these are large-scale, low pressure disturbances that are less severe than hurricanes. Northeasters have sustained wind speeds which rarely exceed 50 knots, although gusts can reach hurricane strength in a very severe northeaster. Flood damage caused by a typical northeaster is often a function of duration rather than intensity. This type of storm typically lasts two to three days, making it possible for it to act through several periods of high astronomic tide. The longer the storm, the more opportunity it has to destroy both natural and engineered shoreline protection features.

41. Northeasters sometimes develop into more complex storms. Relative location of high and low pressure centers may cause wind speed in excess of what would be expected from a single storm cell. Winds reaching almost hurricane speed may occur over many thousands of square miles. The most severe northeaster of record that struck the project area occurred 6-8 March 1962. It caused serious tidal flooding and widespread damage all along the Middle Atlantic Coast.

42. More recently, the Halloween Northeaster of 1991 and the December 1992 Northeaster caused significant inundation and erosion. Damages associated with these extratropical storms included property damage, damage to the boardwalk, groin damage and debris washing into the streets due to the severe coastal flooding.

43. Geology. Long Island lies within the Coastal Plain physiographic province and marks the southern boundary of Pleistocene glacial advance in the eastern part of the North American continent. Two end moraines form the physiographic backbone along the northern part of Long Island. These moraines are superimposed along the western half of Long Island but split in west-central Long Island and diverge around Great Peconic Bay. Terrain south of the terminal moraines originated as glacial outwash plains, and is composed of sand and gravel detritus transported south by melt-water streams during Pleistocene time. Shallow brackish-water lagoons and low relief sandy barrier islands with associated dunes are the dominant landforms along most of the southern shore of Long Island. Long Beach Island is one of these barrier islands. Metamorphic bedrock underlies sandy deposits, at depths varying from -200 ft. NGVD in northern Long Island to -2000 ft. NGVD below Fire Island.

44. The back-barrier lagoons and elongated-barrier islands are geologically very recent features which owe their origins to coastal processes operating during the gradual worldwide rise in sea level. The barrier islands are constructional landforms built up over the past several thousand years by sand from the sea floor and by sand transported westward along the Long Island shoreface by wave-generated longshore currents. This chain of sandy barrier islands extends from the western end of Long Island eastward to Southampton and is presently broken in continuity by six tidal inlets.

45. Littoral Materials. Beach sediment grab samples were collected in 1988 along ten profile lines at +8, 0, -8, -18 and -30 ft. NGVD. Sand samples were described as tan to dark tan in color, with sizes ranging from very fine sand to coarse sand, with some shell fragments. Grain size distribution curves were then calculated based on composite beach samples for each profile line. Three overall composites were made by combining the profile composites to produce typical beach sand models for the Lido Beach, Long Beach and Atlantic Beach areas of the shoreline. The median grain sizes for the three typical beach models are 0.21 to 0.22 mm, which are classified as fine sand based on the Wentworth Classification.

46. Analyses were performed to compare offshore borrow material with the three native beach material models to determine the overfill and renourishment factors. Borrow areas were selected based on the compatibility of the material to the native beach sand. Detailed evaluation to determine beach and borrow area compatibility is presented in Appendix B of this report.

47. Shoreline Changes. Shoreline changes between 1835 and 1990 are shown in Appendix A (Figure A5). During this time period the barrier island/inlet system evolved to its present configuration. The magnitude of shoreline change, which has historically ranged from as erosive as -23 ft/yr at the eastern end of the barrier island to as accretive as +51.0 ft/yr, in the west end (following the construction of the East Rockaway Inlet jetty), indicates the great potential for sediment movement which exists along the entire Long Beach shore. Stabilization efforts, namely construction of inlet jetties, groin fields, and seawalls, as well as periodic beachfill, have reduced the observed rates of accretion and erosion, except in the area just west of Point Lookout, where erosion rates remain extreme in spite of human efforts.

48. The predominantly erosive zone is located just west of Point Lookout is associated with the evolution of Jones Inlet. The erosive trend in this area is expected to continue for the foreseeable future. The western portion of Long Beach Island has been accretionary since the construction of the East Rockaway jetty in 1934. It is likely that impoundment capacity of this jetty has been reached, which will reduce the accretionary trend in this area.

49. Sediment Budget - Existing Condition. An existing condition sediment budget was developed for the study area based on comparison of beach profiles between 1963 and 1988, and records of beachfills placed in that time period. The pattern observed alongshore is one of alternating erosive and accretive zones. Transport is net westerly, with an overall erosive trend, losing an estimated 80,000 cy/yr over the entire Atlantic shoreline. Accretion at the western end of the island can be attributed in part to impoundment by the East Rockaway jetty. The most erosive zone is located adjacent to Jones Inlet although significant losses are found mid-island as well. Material eroded migrates westward over time along the length of the island, contributing to accretionary zones further downdrift. As seen from the historic shoreline comparisons, the location of accretive and erosive zones shifts alongshore over time, so that any given location will experience cycles of both deposition and loss.

50. Sediment Budget - Projected 50-Year. A second sediment budget was prepared for a 50-year projection, to reflect the without-project condition. Measured erosion rates were averaged over relatively long reaches to capture the effects of migrating erosive and accretive zones. Measured erosion rates from the 1963-1988 period were increased to account for several trends. First, it was assumed that the East Rockaway jetty will reach capacity early in the 50-year projection, and that impoundment in western Atlantic Beach will cease. Second, deterioration of groins alongshore will result in increased sediment movement. Third, sea level rise over a 50 year period will cause an increase in erosion rates for the entire shoreline. Additionally, the 1963-1988 time period contained relatively few severe storm events, indicating that greater losses of material are likely to occur in the future.

51. Projected average erosion rates range from -5 cy/yr/ft of shoreline to zero. The net transport direction is westerly. Overall predicted losses for the Long Beach shoreline are estimated at 195,000 cy/yr.

52. Existing Beach Characteristics. Dunes are present on 14 out of 33 profile surveys. The average maximum dune elevation measured on the beach profiles is +17.75 ft NGVD,

with a range of maximum elevations from +13.5 to +20 ft NGVD. Average dune crest width is 17.12 ft, ranging from no flat crest to 160 ft of crest width. Dune side slopes range from 1V:4H to 1V:12.5H.

53. Flat berm features are not present on all profiles. Those without well defined berms slope continually downward. Of 18 profiles showing well defined berms, the average elevation is +9.42 ft NGVD, with a range between +7 and +14 ft NGVD. Average berm width is 93.5 ft, ranging between 0 and 600 ft.

54. Offshore slopes are steeper on the eastern end of the island, averaging 1V:21.75H. The remaining offshore slopes average 1V:34.52H.

55. Existing Coastal Structures. Of the 50 groins inspected, approximately 60 percent are deteriorated. All exposed timber and concrete bulkheads are in good condition and are serving as shore protection structures. The East Rockaway Inlet Jetty is presently under rehabilitation.

56. In the City of Long Beach, the majority of the groins are of timber and stone composite construction and have deteriorated to a fair to poor condition. Of the 16 composite groins, one is covered, six are completely deteriorated, and nine are in poor condition with many dislodged, missing or broken capstone on the crest and side slopes. Eight other stone groins are in poor to fair condition. Rehabilitation is needed for all portions of the 23 groins which remain uncovered by the design fill. At Lido Beach, all 4 groins are in poor condition. Rehabilitation is needed for the portions of the 4 Lido Beach groins which remain uncovered by the design fill. At Point Lookout, all 3 stone groins are in good condition, except for the outer end of the terminal groin, and are generally filled to capacity. At Atlantic Beach, most groins are of stone construction and in good condition, still effective in trapping sand. Five groins have a few missing capstones. Although no immediate rehabilitation of the Atlantic Beach groins is needed, local interests should continue to monitor their condition and maintain their integrity.

57. Interior Drainage Structures. All storm-water interior drainage structures have their outlets in Reynolds Channel. Project improvements to the Long Beach Island ocean front will have no impact on the functioning of the interior drainage systems on the island.

B. Social and Economic Setting

58. Population. Population in the City of Long Beach has decreased from a 1980 total population of 34,073 to a 1987 total of 32,890. This trend is also evidenced in the overall population for Nassau County, and is projected to continue until 1995.

59. Income. Per capita income is an indicator of the economic strength of a community. The per capita income in the City of Long Beach has increased during the period of 1979 to 1989 from $12,479 to $20,933, a change of about 68%. This rate of increase is higher than that of the State of New York, yet slightly less than the overall rate for Nassau County.

60. Transportation. The study area is accessible to major population and commercial centers, through an extensive network of highways, roads and railways. Direct access from the major corridors to the barrier island is provided by three vehicular bridges from: Loop Parkway on the eastern end of the barrier island; Atlantic Beach bridge on the west; and the Long Beach causeway in the center. The communities are also served by the Long Island Railroad, which provides passenger rail service from eastern Long Island and New York City directly into the City of Long Beach. There is a public bus which runs east to west along the major artery of the barrier island from Point Lookout to Atlantic Beach.

Beach Usage

61. The south shore of Long Beach Island is a continuous strip of sand beach serving the year-round inhabitants as well as the great influx of summer visitors and vacationers. Most visitors to Long Beach are from Nassau, Kings and New York Counties. The Long Island Railroad offers discounted passes for beach use in the City of Long Beach. In 1993, nearly 1 million people attended the beach in the City of Long Beach, and almost 600,000 in the eastern beaches of Point Lookout, Nassau and Lido. It is noted that due to the erosion which has most severely affected the usage of the Point Lookout area, beach attendance has substantially declined. In comparison to the 1993 attendance in the Point Lookout area of 115,852, the 1984 attendance in this area was 523,065.

Shore Ownership and Use

62. The majority of the beaches within the study area are publicly owned and publicly accessible. Private ownership is predominant in the Village of Atlantic Beach. There is public transportation to the majority of the beaches as well as sufficient parking area along most of the project shorefront. There is full lateral beach access along the entire 9 mile shorefront, and a public bus which provides drop-offs along the main artery of the barrier island. As prescribed by Corps policy and regulations, costs of improvements in those areas that are not open to the public would be 100% non-Federal, unless protection to such areas is incidental to the project. The State has submitted a Public Access Plan which is intended to conform with Federal policy (See Appendix G). To allow for full public access and yet offset the levies that residents are charged for beach maintenance, several of the beach areas have adopted differential fees, which include higher fees for non-residents than residents.

C. Existing Environmental Conditions

63. The project shoreline has been highly modified as a result of human development. Upland areas within the project area have been committed to residential, commercial, and recreational development.

64. Nourishing the project shoreline would serve the public interest by preserving a heavily used public beach from erosion and affording continued protection to shorefront structures from storm-induced waves and surges. In addition, it would preserve beach habitats for sand-dwelling invertebrates and a large population of shorebirds, as well as serve as a feeding and resting area for migrating birds along the Atlantic Flyway.

Significant Resources

65. Regional Wildlife Resources. Within the project area itself, the high degree of public recreational use of its beaches and development of adjacent lands limits their value to wildlife species. Gulls, terns, skimmers, and sandpipers typically use such areas for resting and feeding. Many species of waterfowl including geese, dabbling ducks, and diving ducks overwinter in the bays, inlets, and harbors along the south shore of Long Island (See Table 5). Many birds utilize the Jamaica Bay Wildlife Refuge and Gateway National Recreation Area located west of the project area and would, therefore, be expected to occur in the Long Beach Island vicinity on occasion. Terrestrial birds such as the rock dove (Columba livia), mourning dove (Zenaida macroura), tree swallow (Iridoprocne bicolor), barn swallow (Hirundo rustica), European starling (Sturnus vulgaris), American robin (Turdus migratorius), common grackle (Quiscalus quiscula), house sparrow (Passer domesticus), and house finch (Carpodacus mexicanus), would be common in the residential area adjacent to the beaches. The Federally-listed threatened piping plover (Charadarius melodus) and State- listed endangered least tern (Sterna antillarum) currently nest at Nassau Beach, Lido Beach, and Atlantic Beach. Nesting occurred at Point Lookout until 1991, when due to coastal erosion due to storms eradicated the available nesting sites. Mammalian species likely to be found in these areas include gray squirrel (Sciurus carolinensis), house mouse (Mus musculus), Norway rat (Rattus norvegicus), eastern cottontail (Sylvilagus floridanus), and feral cat (Felis catus).

66. Borrow Area Biological Resources. The important biological resources of the proposed borrow area are the benthos (bottom fauna) and fin-fisheries. The diverse benthic fauna provides food for demersal fish species. The nearshore area provides a migratory pathway and spawning, feeding and nursery area for many species common to the mid-Atlantic region. The borrow area lies approximately 1.5 miles south of Long Beach Island between 25 feet mean low water (MLW) to about 60 feet MLW.69. Phytoplankton in this zone are an important food source for filter-feeding bivalves. A sand fauna community is found in the proposed borrow area sediments. In June of 1993, the Corps conducted benthic invertebrate sampling within the proposed borrow area. Seventy-five taxa (species most of the time) were found during the course of the sampling, which indicated a clear positive correlation between number of taxa and percent silt/clay of sediments (WCH Industries, 1994). The presence of high proportions of juveniles and of species with short life cycles suggest that populations undergo large seasonal variations in this habitat (WCH Industries, 1994). Polychaete worms and blue mussels are the most numerous macrobenthic organisms. The most numerous species in the survey was the tube-dwelling polychaete (Asabellides oculata).

67. Shellfish also occur in the proposed borrow area. The most important bivalve species are the surf clam (Spisula solidissima), the tellin (Tellina agilis), and the razor clam (Ensis directus) (Steimle and Stone, 1973). According to the New York Department of Environmental Conservation (NYSDEC) Bureau of Shellfisheries, the area around and including parts of the borrow area is responsible for the majority of New York's surf clam harvesting. Surf clam surveys conducted immediately west of the borrow area, off the Rockaway Beach Peninsula, have been shown to produce a harvest at approximately $100,000 per 100 acres (NYSDEC, 1994). In addition to the above there are gastropods, amphipods, isopods, sand dollars, starfish, and decapod crustaceans. This assemblage was

also sampled by the June, 1993 Corps survey (WCH Industries, 1994).

68. Important recreational species found in the proposed borrow area include Atlantic mackerel (Scomber scomblrus), black sea bass (Centropristes striatus), winter flounder (Pseudopleuronectes americanus), summer flounder [fluke] (Paralichthys dentatus), and scup (Stenotomus chrysops).

69. Shipwrecks, obstructions and large rocks, in the borrow area and nearshore zone provide habitat for attaching organisms not found on sandy bottoms. Within the project area shipwrecks may exist within one mile of the shore or within the borrow area. Shipwrecks and artificial reefs (such as the existing groins) provide shelter for fish and invertebrates. Hydroids, sponges, barnacles, mussels, polychaetes, crabs and lobsters are some of the organisms expected to use shipwrecks, artificial reef structures and irregular bottoms. Atlantic cod, pollock, hake and black sea bass are among the common species associated with high profiles and thus these areas are important to both recreational and commercial fisheries.

70. Regional Fishery Resources. A variety of fish species with recreational and commercial importance can be found in the vicinity of the Long Beach Island beaches and East Rockaway and Jones Inlet areas. Many species of marine fish use the shallow nearshore waters as feeding areas. Important recreational species include Atlantic mackerel (Scomber scomblrus), black sea bass (Centropristes striatus), winter flounder (Pseudopleuronectes americanus), summer flounder [fluke] (Paralichthys dentatus), and scup (Stenotomus chrysops). The principal species using this area include tautog (Tautoga onitis), northern puffer (Sphoeroides maculatus), black sea bass, striped bass (Morone saxatilis), weakfish (Cynoscion regalis), and bluefish (Pomatomus saltatrix). Species commonly found in the more protected inlet waters to the east include scup, windowpane (Scophthalmus aquosus), summer flounder, winter flounder, and American eel (Anguilla rostrata).

71. Significant Coastal Habitat. In the project area, there is one area listed as significant coastal fish and wildlife habitat by the New York State Department of State (1987), Nassau Beach. Nassau Beach is located approximately one mile west of Point Lookout. The beach is located within Nassau Beach County Park, in the Town of Hempstead, Nassau County. The significant habitat consists of approximately 15 acres of sparsely vegetated dunes and the adjacent shell and pebble area inland and north of the dunes. Although the beach receives heavy recreational use during the summer months, the habitat area is generally located behind the open beach, and receives little disturbance. The Town of Hempstead actively posts and protects the area.

72. This area serves an important nesting area for the State-listed endangered least tern (Sterna albifrons) and Federal-listed threatened piping plover (Charadrius melodus). In 1993, there were 6 piping plovers and 0 least terns recorded in the area; a marked decrease from 8 piping plovers and 148 least terns in 1992 (NYSDEC, 1994). This drop appears to correlate with the severe erosion taking place at the project area.

Threatened or Endangered Species

73. The Federal-listed threatened piping plover, the State- listed threatened common tern (Sterna hirundo), and the endangered least tern all use essentially the same habitat: sand or sand/cobble beaches along ocean shores, bays, and inlets between the high tide line and the area of dune formation. They usually nest at sites with little or no vegetation. However, it is not uncommon to find plover nests at the seaward base of dunes, or even behind the dunes, where blowouts provide access and where beachgrass (Ammophila breviligulata) can shelter the nest and eggs from the sun and weather (Andrle, 1988). Piping plovers have been sited within portions of the proposed project area. Section 7 coordination under the Endangered Species Act, as amended (ESA), has resulted in the District utilizing a survey/monitoring plan to reduce the possibility of any actions significantly impacting shorebirds in the proposed project area.

74. No State and/or Federal-listed endangered or threatened marine species are known to breed within the study area. However, during the summer and early fall months, the threatened loggerhead (Caretta caretta), endangered Kemp's ridley (Lepiduchelys kepmi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles occur in New York coastal waters (NMFS, 1993). Although sea turtles have been known to occur in this region, nesting has been documented only as far north as New Jersey (NRC, 1990). Coordination with the National Marine Fisheries Service under Section 7 of the Endangered Species Act of 1973, as amended, has resulted in the requirement that NMFS-approved observers will be utilized if hopper dredges are used.

D. Cultural Resources

75. To fulfill the Corps' responsibilities according to the National Historic Preservation Act of 1966, as amended (NHPA), a cultural resources survey was prepared as part of this project. An extensive history and prehistory of the Long Beach Island area was compiled and a pedestrian survey of the shore portion of the study area was conducted (Pickman 1993).

Onshore Portion of the Project Area

76. Prehistoric Resources. The cultural resources study found that there were no known prehistoric or contact period archaeological sites located on Long Beach Island (Pickman 1993:9). Native Americans living on the main portion of Long Island may have visited Long Beach Island for brief periods of time to collect fish and shellfish (Pickman 1993:11). The island, however, would not have been attractive to Native Americans for permanent or semi-permanent settlement because of its exposure to the wind and weather from the Atlantic Ocean. Long Beach would have been especially uninviting to Native American occupation because there was no source of fresh water available on the island (Pickman 1993:11).

77. Historic Resources. The first European settlers arrived on Long Island during the first half of the 17th century. It was not until the middle of the 19th century, however, that Long Beach was occupied by Euro-Americans. According to local histories, no structures

were located on Long Beach until after 1849. Residents of the mainland used the island primarily for pasturage. In 1849, a Life Saving Station was constructed on Long Beach to house surf boats, lifesaving apparatus and a crew of six to seven men.

78. Between 1849 and 1879, only a few buildings were constructed on Long Beach. In 1873, a transatlantic cable connecting New York to England, via Halifax, Nova Scotia, made its landfall at Long Beach Island, between the current Edwards and Riverside Boulevards. The development of the island began in 1880 with the construction of a railroad from Lynbrook to Long Beach and the construction of the first large resort hotel and bathing pavilion on the island. This was followed by the construction of a number of other hotels in the 1880s and 1890s and during the first two decades of the 20th century. Summer homes and permanent residences were also built on the island during the 20th century. The location of these structures was well north of the present boardwalk and beach zone (Pickman 1993:14-32; 51). No significant remains of the project area's history would be situated along the site of the present beach.

79. Two structures located in the vicinity of the project area, the Granada Towers and the United States Post Office, are listed on the National Register of Historic Places (NRHP). One private residence, located on Washington Boulevard and thought to be one of the first private homes on Long Beach, is listed on the historic structures inventory maintained by the New York State Office of Parks, Recreation and Historic Preservation. None of these structures will be affected by the proposed project.

Near Shore and Offshore Portions of the Project Area

80. Shipwrecks. The cultural resources study also examined the potential for shipwrecks to be located in the near shore placement area and within the boundaries of the offshore borrow area. Marine charts of the project area show the location of two wrecks within the near shore sand placement zone near Lido Beach and Point Lookout (Pickman 1993:52). The eastern wreck has been identified as the Mexico, an American bark that was wrecked in 1837. The western wreck has been identified, but is thought to be buried. A knowledgeable local diver also identified two other wrecks, a small tugboat and a barge that may lie within the nearshore portion of the project area.

81. Submerged Prehistoric Sites. During the last glacial period, the sea level was up to 120 meters lower than current levels. The shoreline at this time lay at the outer edge of the continental shelf approximately 100 miles from the present shoreline. According to area studies, the sea level rose at a steady pace between ca. 7000 B.P. and 3000 B.P., with a slower rate of increase after ca. 3000 B.P. Cores taken adjacent to the project area indicate the presence of peat, silt, and clay deposits that are remains of the lagoons that formed behind the barrier islands that were created off the present Long Island shoreline at this time. The presence of these lagoonal deposits may mean that the inundation of the ground surface occurred in a low energy environment, which may have permitted any prehistoric sites located in the nearshore area to survive any disturbance. These deposits would consist of organic peat and/or organic silts and clays (Pickman 1993:46).

82. The proposed borrow area may also contain prehistoric landsurfaces. The borrow site

would have been available for human occupation until some time after 7000 B.P. Two of fifteen cores taken from within the borrow site to a depth of 20 feet below the ocean floor contained either a clay layer or layer of dark gray silt (Pickman 1993:47). Based on data taken from cores and borings for adjacent areas, it is possible that these two cores taken within the borrow site may represent landsurfaces that would lie on top of prehistoric deposits (Pickman 1993:48).

E. Without Project Future Conditions (No Action Alternative)

83. In the without project future condition, it is anticipated that the project area will be subject to the same erosive forces which have necessitated the desire for protective measures to be implemented. Coastal storms of various frequencies will continue and erosion will continue unabated resulting in further reduction in beach height and width. The average erosion rate across the barrier island shoreline of approximately 5 ft/yr is anticipated to continue.

84. Such erosion would further diminish the storm damage protection capability of the beach and existing dunes, therefore making the barrier island structures increasingly more vulnerable to storm damage from wave attack and inundation due to wave run-up. As the long term erosion diminished the width of the beach, the recreation portion of the beach would be similarly diminished.

85. In the without project future condition, it is anticipated that local municipalities would allow erosion to continue until the shoreline reached the seaward toe of the existing dunes or boardwalk before taking remedial action to restore the beach. This assumption has been corroborated by the City of Long Beach, Town of Hempstead, Nassau County and the State of New York Department of Environmental Conservation. Furthermore, this assumption is verified by the erosion which continually diminishes the easternmost beaches in the Town of Hempstead between dredging cycles of Jones Inlet. The Town and the State have attempted emergency measures aimed at preserving the cabanas, lifeguard stations, bathhouses and parking lot by placing concrete rubble, sta-pods and other similar structures on the Point Lookout section of the beach.

86. During coastal storms, some of the damages incurred along the barrier island come from inundation of the bay structures on the north side of the barrier island. The alternative plans considered are solely intended to provide protection from erosion, wave attack and inundation due to the oceanic forces. With the implementation of a storm damage protection project for the barrier island of Long Beach, it is anticipated that the range of bay elevations will not change from the elevations observed in the without project condition. Therefore it is anticipated that in the with- and without project conditions, flooding will continue in the back bay areas.

87. To reduce the effects of long term erosion which would occur without any storm damage protection project in place, it is anticipated the State and local government officials would request beach placement of the inlet dredged material, as they have in the past. Currently, the non-Federal sponsor is responsible for providing fifty percent of the additional cost of dredging above the least costly alternative. Beach placement of suitable

material dredged from Jones Inlet was most recently conducted in March 1994. In the without-project condition, similar placements are assumed to continue each time the inlet is dredged, which is currently estimated at once every three years through the life of the project. The long-term erosion rates used for the economic evaluation were decreased accordingly.

88. Due to the extensive development on the barrier island of Long Beach, it is inconceivable that residents would abandon the barrier island and retreat to the mainland. Therefore, this alternative is not considered. Since most communities in the study area are currently participating in the National Flood Insurance Program (NFIP), most structures destroyed by future storms will be rebuilt to the NFIP base flood elevation.

III. PLANNING NEEDS, CONSTRAINTS AND OBJECTIVES

CURRENT NEEDS

89. Over the years erosion has seriously reduced the ability of the shoreline in the project area to provide adequate storm damage protection of the barrier island. Continuation of this historic trend will increase the potential for economic losses and the threat to human life and safety.

90. The purpose of the feasibility study is to evaluate and, if warranted, recommend and implementable plan which provides protection to the barrier island of Long Beach against ocean storm damage. This report considers various alternative solutions to reducing storm damage within the project area, including the plan recommended in the project Reconnaissance report.

PLANNING OBJECTIVES

91. Planning Objectives were identified based on the problems, needs and opportunities as well as existing physical and environmental conditions present in the project area.

92. In general, the prime Federal objective is to contribute to the National Economic Development (NED) account consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders and other Federal planning requirements. Accordingly, the following objectives have been identified.

- Reduce the threat of potential future damages due to the effects of storms, with an emphasis on inundation and recession.
- Mitigate the effect of or prevent the long term erosion that is now being experienced.
- In accordance with the limits of institutional participation, all plan components must maximize NED benefits.
- Utilize available material, such as the dredged material from Jones Inlet. In developing plans of improvements, use a systems approach, which considers the barrier island as a system whose source is primarily the littoral material coming from the east.

PLANNING CONSTRAINTS

93. Planning constraints are technical, environmental, economic, regional, social and institutional considerations that act as impediments to successful response to the planning objectives or reduce the theater of possible solutions.

Technical Constraints

- Plans must represent sound, safe, acceptable engineering solutions.
- Plans must be in compliance with Corps engineering regulations.
- Plans must be realistic and reflect state-of-the-art measures and analysis techniques. They must not rely on future research and development of key components.
- Plans must provide storm damage protection.
- Plans which consider elimination of a segment of the project area must ensure that the elimination of such areas do not adversely affect the protected areas or the areas which have been eliminated.

Economic Constraints

- Plans must be efficient. They must represent optimal use of resources in an overall sense. Accomplishment of one economic purpose cannot unreasonably impact another economic system.
- The economic justification of the proposed project must be determined by comparing the average annual tangible economic benefits which would be realized over the economic life with the average annual costs. The average annual benefits must equal or exceed the annual costs.
- Federal participation in storm damage reduction projects requires that the project be economically justified primarily on benefits associated with storm damage reduction. Federal funds are not used to support storm damage reduction projects for which incidental recreation benefits are greater than 50 percent of the total benefits unless the project is economically justified on primary benefits alone.

Environmental Constraints

- Plans cannot unreasonably impact on environmental resources.
- Where a potential impact is established plans must consider mitigation or replacement and should adopt such measures, if justified.

Regional and Social

- All reasonable opportunities for development within the study scope must be weighed one against the other and state and local public interests' views must be solicited.
- The needs of other regions must be considered and one area cannot be favored to the unacceptable detriment of another.
- Public access plans must be obtained for those area where sand is proposed to be placed creating new beaches, unless such placement is purely incidental to project function or for cost savings to the Government.

Institutional

- Federal and State participation must be contracted for period of up to 50 years.
- Plans must be consistent with existing federal, state, and local laws.
- Plans must be locally supported to the extent that local interests must, in a signed cooperation agreement, guarantee all items of local cooperation including cost sharing.
- Local interests must agree to provide public access to the beach in accordance with all requirements of Federal and state laws and regulations.
- The plan must be fair and find overall support in the region and state.
- A project will be designed that conforms with Federal and State regulations in that the State is unable to participate in plans not conforming to its CZM. NYS Coastal Zone Management Plan regulations state that beach erosion projects must have a reasonable probability of controlling erosion for at least 30 years.

IV. PLAN FORMULATION

94. The Water Resources Council's "Principles and Guidelines" require the systematic preparation and evaluation of alternative ways of addressing identified problems, needs, and opportunities under the objective of National Economic Development (NED) consistent with protecting the nation's environment. With respect to the planning objectives, a formulation and evaluation process was conducted considering an array of various appropriate measures. Plans were evaluated through a three step process:

(1) identification of possible solutions,
(2) development of alternatives,
(3) assessment of alternatives.

95. Alternatives considered include those which provide storm damage protection from a number of possible damage mechanisms:

a. long term erosion
b. storm recession
c. inundation
d. wave attack

96. Recreation benefits achieved by any of the alternative plans are considered to be incidental to the storm damage reduction objectives of the study. The storm damage mechanisms are briefly described in the following paragraphs.

97. Long term erosion damage: Generally, erosion damages refer to the long-term loss of dry land area due to deficits in littoral sediment transport, the impact of sea level rise and the long-term net impact of storms, including post-storm accretion. Long term erosion may itself cause economic losses and will reduce the amount of protective beach area resulting in increased future storm damage from storm recession, inundation and wave attack.

98. Storm recession damage: The project area is potentially subject to significant storm-induced shoreline recession which becomes increasingly more damaging as long-term erosion reduces the ability of the beach to provide a protective buffer. Unlike long-term erosion, which is assumed to halt at bulkheads and major access roads, storm recession occurs over a short period of time during the course of a storm, thereby not allowing sufficient time for preventive intervention by man. Thus, storm recession is considered capable of impacting any shorefront building, including those fronted by protective structures.

99. Inundation damage: The most widespread problem on Long Beach Island is frequent flooding, resulting in damage to homes, businesses and public facilities. This extensive flooding results from the convergence of tides surging through the inlets with waves running over the shorefront and across the island. Since there is no significant topographic relief over much of the island, storm waters wash across the island toward the bay where elevations are generally lower. Stabilizing and strengthening the oceanfront dune system would significantly reduce the extent of flooding by protecting against wave overwash. Flooding from tidal surges backing up storm drains and overtopping the bulkheads along

Reynolds Channel will not be significantly impacted by the oceanfront improvements. The extent and severity of flooding is expected to increase in relation to continued increases in sea level. Measures to reduce flooding from the bay side of the island were not considered to be viable based on a preliminary review of residual damages after providing direct ocean storm protection there would not be sufficient benefits to support the high cost of levees, walls and interior drainage works that would be required.

100. Wave attack damage: Structures along the oceanfront are potentially subject to significant forces due to the impacts of waves breaking against the structure or the runup associated with waves breaking seaward of the structure. The forces associated with such waves are capable of causing structural failure due to the overturning or lateral displacement.

Identification of Possible Solutions

101. During the Feasibility Phase of studies, the first step in the plan formulation process was to identify possible solutions which met the objectives of this study for providing storm damage protection along the nine miles of Long Beach Island. Possible solutions considered in the initial phases of plan formulation are listed below:

a) No Action
b) Beach Restoration
c) Beach Restoration with Groins
d) Seawall
e) Seawall with Beach Restoration
f) Bulkhead with Beach Restoration
g) Breakwater with Beach Restoration
h) Perched Beach with Beach Restoration

102. The following paragraphs summarize the objectives and evaluation of each of the above preliminary alternatives.

103. No Action. The No Action alternative involved no measures to provide erosion control, recreational beach preservation or storm damage protection to structures landward of the beach front. This preliminary alternative would not check the continuing erosion of the beaches, nor would it prevent property from becoming more subjected to higher storm damages from beach recession, flooding and wave attack. The existing groins would continue to deteriorate further accelerating the loss of beach. This plan failed to meet any of the objectives or needs of the project. This alternative is the same as the without project condition and is used as the base condition to measure the effectiveness and economic benefits of the remaining alternatives.

104. Beach Restoration. This preliminary alternative involved the placement of beach fill from an offshore borrow source in order to widen and stabilize the existing beach profile. A design template was developed for this alternative, based on the findings of the 1989 Reconnaissance Report, including of a 110 ft wide berm at elevation of +10 NGVD fronting a 25 ft. top width dune at crest elevation +15 NGVD with 1 on 5 side slopes. The

foreshore slope utilized for the eastern third of the project length matched the existing predominant slope of 1 V on 25 H and the foreshore slope for the remaining two thirds of the project length matched the existing predominant slope of 1 V on 35 H. Advanced nourishment was included in initial placement. Periodic nourishment, estimated at 2,500,000 c.y. every 6 years, was planned to be placed throughout the 50 year project life in order to maintain the design profile. The total initial fill volume was 10,940,000 c.y. Existing groins in disarray that protruded above the beach fill placement were planned to be restored for stability to the adjacent beach fill and for safety to beach users.

105. Beach Restoration with Groins. This preliminary alternative provided the same beach restoration plan as described above with the following changes: (1) a terminal groin was added at the eastern end of the project adjacent to Jones Inlet for closure, (2) 7 new groins were added to 2 miles of currently ungroined project frontage near the eastern end of the project and 24 existing groins were extended to the toe of initial fill placement along the remaining 7 miles of project frontage, (3) advanced fill in initial placement and nourishment fill were reduced due to the presence of the groins which reduce the erosion rate and therefore reduce the magnitude of beach nourishment. The initial fill volume including advance fill was 10,640,000 c.y. with 2,200,000 c.y. of nourishment every 6 years. The stone volume to extend 24 existing groins was 460,000 tons, the stone volume to construct 7 new groins was 245,000 tons and the stone volume for the terminal groin was 102,000 tons. The additional stone volume required for this preliminary alternative will be much more costly than the additional sand required for the periodic nourishment of the beach restoration project.

106. Seawall. This preliminary alternative included the construction of a "Galveston type" seawall placed along the entire nine mile project length with a top elevation of +20 NGVD to prevent overtopping from a 100 year storm event. This structure included fronting toe scour stone protection, was pile supported and provided with underlying sheeting to reduce underseepage. The volume of concrete for the seawall was 498,000 c.y. This alternative would not provide any recreational beach restoration but would provide storm damage protection consistent with the other structural alternatives. It is noted that the seawall section used is approximately 10% less costly than an equivalent stone revetment section per linear foot.

107. Seawall with Beach Restoration. This preliminary alternative provided the same beach restoration plan as above except that the improved dune segment fronting the Long Beach area (3.5 miles) was eliminated and replaced with the seawall to provide continuity of storm damage protection. A seawall was not selected for the entire shoreline in combination with beach restoration because of the existing dune system to the east and west of Long Beach (which essentially has no existing dune system). The seawall design was able to be slightly downsized due to the presence of the fronting beach improvement compared with the seawall above. The required initial beach fill for this preliminary alternative was 10,740,000 c.y. with the same nourishment as for the beach restoration plan. Concrete for the seawall portion of this alternative was 170,000 c.y.

108. Bulkhead with Beach Restoration. This preliminary alternative was the same as the seawall with beach restoration except that a concrete capped steel sheet pile bulkhead would be utilized to provide storm damage protection at Long Beach in lieu of the concrete

seawall for cost comparison purposes. Thus 10,740,000 c.y. were required for initial fill, 2,500,000 c.y. were required for nourishment every 6 years and 868,000 s.f. of steel pile bulkhead were required for the 3.5 miles fronting Long Beach.

109. Breakwater with Beach Restoration. This preliminary alternative included 39 offshore stone rubble mound structures each approximately 600 ft. long with 500 ft. gaps between structures placed about 700 ft offshore covering the nine mile project length. The capstone for these structures was 16-ton with a total quantity of stone of 2,145,000 tons. The beach restoration was similar to the beach restoration plan above except that the dune height was reduced since the offshore breakwater will trip the 100 year storm design wave before it intercepts the improved beach; the improved beach would be subjected to a lower impinging wave environment. In addition nourishment requirements were substantially reduced since the erosion rate would be significantly lowered by the presence of the offshore breakwaters. The initial fill placement was 8,840,000 c.y. with 500,000 c.y. of nourishment required every 6 years.

110. Perched Beach with Beach Restoration. This preliminary alternative was similar to the beach restoration alternative above except that a submerged stone rubble mound structure was used to support the offshore end of the fill thus eliminating approximately the outer 300 ft. of beach profile near its closure with ocean bottom included in the beach plan. The volume of initial sand fill as well as nourishment volume was therefore reduced since no placement of sand would extend beyond the submerged structure. Initial sand fill including advance nourishment was estimated to be 8,600,000 c.y. Nourishment was estimated to be 2,000,000 c.y. required every 6 years. The stone for the submerged structure was 630,000 tons. The perched beach was not anticipated to reduce the erosion rate of the improved beach.

TABLE 3:

COST COMPARISON OF PRELIMINARY DESIGN ALTERNATIVES (1/94 P.L.)

Alternative	First Cost (Million $)	Total Annual Cost (Million $)
a) No Action	0	0
b) Beach Restoration Only	75.5	8.5
c) Beach Restoration w/Groins	132.4	13.3
d) Seawall	275.1	24.2
e) Seawall w/Beach Restoration	168.0	16.8
f) Bulkhead w/Beach Restoration	150.9	15.0
g) Breakwater w/Beach Restoration	256.1	23.0
h) Perched Beach w/ Beach Restoration	116.5	11.9

111. All of the preliminary alternatives were evaluated based on designs which provide similar storm damage protection with the exception of the No Action alternative (a). Similarity in the level of protection for alternatives b through h is based on the following design assumptions which were common to all alternative solutions:

(1) All alternatives used a 73-year storm event as the design storm;
(2) Design wave heights, wave periods, still water levels and wave set-up elevations were the same for all alternatives considered;
(3) Continuous coverage of the entire project shoreline was provided by each alternative;
(4) All beach restoration alternatives assumed the use of the same sand borrow source.

112. Since the benefits provided by each alternative would be similar, the evaluation of the preliminary alternatives was primarily based on the relative cost of each alternative considered. A summary of first and annual costs which were used to screen the preliminary alternatives for further study in this feasibility phase are presented in Table 3. Local preference and social impacts also played a role in the selection of the alternative which would be considered for further evaluation.

113. In addition to the above alternatives, consideration was given to a plan consisting of rehabilitation and upgrade of the existing groin field either alone or in conjunction with beach placement of material dredged from regular maintenance of Jones Inlet. It became apparent early in the analysis that such a plan would not provide any benefits against ocean inundation, nor would it completely overcome long term erosion losses and storm induced erosion losses. Furthermore, the use of dredged material for beachfill placement results in unpredictable volumes for placement at unpredictable intervals. A plan limited to renovation of the existing groin field and placement of Jones Inlet dredged material was not considered further. However, as will be discussed later in this report, it is worthwhile to incorporate these shore protection components into each of the considered alternatives.

114. Based on the evaluations of preliminary alternatives for providing storm damage reduction, the most cost effective alternatives considered is beach restoration. In addition to cost considerations, the remaining structural alternatives to beach restoration are either socially unacceptable or inconsistent with New York State Coastal Zone Management regulations. Socially unacceptable plans include those alternatives that reduce the aesthetics of the beach, do not check the erosion and/or do not provide recreational beach use. Socially unacceptable plans are not anticipated to be supported by the State. The beachfill alternative is the locally preferred alternative, and the social impacts as a result of this alternative are anticipated to be minimal. Plans which involve beach restoration were considered for further evaluation. Alternative beachfill cross-sections and dunes were designed for the final project analyses and optimization. Further alternative measures were considered in the Point Lookout and Town of Hempstead park areas as project closure alternatives, which would reduce the volumetric requirement of nourishment fills.

V. EVALUATION OF BEACH RESTORATION ALTERNATIVES

A. Physical Parameters

115. Beachfill. Necessary design parameters for beachfill include dune slope, dune position, dune crest width, beach slope, berm elevation, berm width, and dune elevation. The first five of these parameters are affected by natural processes and were based on site specific existing beach characteristics. Berm width and dune elevation were varied to achieve project optimization.

116. Dune Slope. Since dunes are above water, dune side slopes can be limited to the steepest slope that is stable for the given beach material. This reduces dune encroachment on the berm and reduces costs. Existing dune side slope vary between 1V:4H and 1V:12.5H at the project site. Additionally, 7 out of 14 existing dunes have slopes of 1V:5H or steeper. A dune side slope of 1V:5H was chosen for design.

117. Dune Position. Dunes were placed as landward as possible on the berm. The design layouts tie new dunes into existing dunes where possible, allowing for smooth transitions of both the dune line and resulting seaward fill.

118. Dune Crest Width. Existing dune crest widths vary widely, from 0 ft. to 160 ft. Design crest widths considered ranged between 15-40 ft, with a crest width of 25 feet being chosen for design to preclude dune instability based on previous experience.

119. Beach Slope. Beach slopes are the result of on-site wave climate and the characteristics of beachfill material. Existing beach slopes are steeper in the eastern portion of the island, near the influence of Jones Inlet. Design slopes of 1V:25H and 1V:35H were chosen, based on the existing averages.

120. Berm Elevation. The top elevation of the berm should be in equilibrium with the prevailing wave climate to be cost effective. Over time, nature will act to ensure that such equilibrium is achieved, regardless of the elevation at which material is placed. For Long Beach Island, the natural berm top elevation is +10 ft NGVD. This is not expected to change significantly during the life of the project in view of existing rates of sea level rise. Berm heights which are lower than the equilibrium top elevation are shown to erode more quickly by models such as EBEACH and SBEACH under design storm conditions. This would result in greater nourishment costs and less protection. Evaluation of berm heights above the +10 ft NGVD was unnecessary due to the inclusion of a dune as a project feature. Under design conditions, which includes dunes, a berm height higher than elevation +10 ft NGVD adds costs with no additional benefit.

121. Berm Width. Typically, 50 foot increments have been used to distinguish between plans on the Atlantic Coast areas of the New York District. Because of the approximate 60 ft. width of the existing beach, the smallest plan considered was 0 ft of additional design berm width in conjunction with 50 ft. of advanced nourishment. The 110 ft. wide berm was the recommended berm width from the 1989 Reconnaissance Study. To bracket the 110 ft. plan for economic justification, the 60 ft berm and the 160 ft berm alternatives at +10 ft NGVD were chosen. These other plans were within the capabilities of the storm

induced erosion modeling to predict differences in erosion impacts. The 110 foot berm would be an addition of approximately 50 feet to existing beach widths. Both the 110 ft. and 160 ft. design berms would be placed in conjunction with 50 feet of advanced nourishment.

122. Dune Elevation. The range of possible dune elevations considered was +10 ft. NGVD (i.e. no dune) to +20 ft. NGVD. Three of the alternatives were designed with no additional dune placement as a lower limit. A less than 5-foot dune would provide limited protection against runup and wave attack. Accordingly, the next dune elevation chosen was +15 ft. NGVD, which would give a 5-ft. minimum dune across the project area. The highest dune elevation considered for optimization was +17 ft. NGVD, which exceeds the 500-year runup elevation.

123. Summary of Beachfill Alternatives. In summary, nine beachfill alternatives were analyzed to achieve project optimization. These were:

1) no dune with 50 ft. advance nourishment only,
2) no dune with 110 ft. berm and nourishment,
3) no dune with 160 ft. berm and nourishment,
4) +15 ft. NGVD dune with 50 ft. advance nourishment,
5) +15 ft. NGVD dune with 110 ft. berm and nourishment,
6) +15 ft. NGVD dune with 160 ft. berm and nourishment,
7) +17 ft. NGVD dune with 50 ft. advance nourishment,
8) +17 ft. NGVD dune with 110 ft. berm and nourishment,
9) +17 ft. NGVD dune with 160 ft. berm and nourishment.

B. Assessment of Alternatives

124. The alternative plans considered for further evaluation are very similar in that each are beach nourishment alternatives. However, since dune heights and berms widths were varied, the storm damage reduction potential associated with each of these plans varies. As discussed previously, the primary mechanism of ocean storm damage in the study area is inundation caused by storm surges with the wave set-up effect. Inundation is generally decreased by the introduction of an effective barrier to separate the ocean storm surge from the affected communities along the barrier island. Therefore, the most effective plan is expected to be one which includes a dune, as a dune is a cost effective addition to a beach berm to protect against high storm water levels. Raising the entire berm in comparison to constructing a dune would be less cost effective (for the same level of protection, the raised beach berm would be more costly).

125. The existing conditions provide a low level of protection against storm-induced recession, inundation and wave attack. In the evaluation of the beach restoration alternatives, a coastal processes analysis was conducted to establish the design parameters and storm damage reduction potential of each alternative. Only the design alternatives which include the 110 ft or 160 ft berm widths increase the level of protection against storm-induced recession significantly. The design alternatives which include dunes will increase the level of protection against ocean surge inundation. The design alternatives which include the 110 ft or 160 ft wide berms with dunes provide a significant increase in the level of protection against wave attack. A detailed discussion of the coastal analyses is

contained in Appendix A.

126. The designs for each alternative were the basis for determining the initial and annualized costs, which were then compared based on the economic benefit provided by each respective alternative. The development of the alternatives also included analysis of specific design features. These specific design refinements are briefly described in the following paragraphs. These specific design refinements were incorporated in each of the alternatives, and included in determining the annualized cost of each alternative, which are shown on the benefit to cost comparison table on page 61 (Table 8) of this report.

127. Closure Alternatives. Design of the beachfill alternatives included the selection of closure alternatives at the eastern and western ends of the project, and the evaluations of the closures. At the western end of the project, local representatives in Atlantic Beach have voiced concerns about Federal participation in a plan which would require public access and create dunes which may diminish the aesthetics of the beach. Therefore, the western section of the barrier island (Village of Atlantic Beach) was treated as a separate reach of the overall plan. Based on coastal engineering modeling (GENESIS), a 6.5 degree taper to the existing shoreline was selected as the closure design. This taper at the western end was included in all the design alternatives. In coordination with local representatives, it was agreed that this taper would begin at Yates Avenue in East Atlantic Beach. This was determined to be a technically sound closure alternative as it would tie into and thereby takes advantage of the existing topography in this area. Additionally, the taper design creates no negative downdrift impacts, which would have been likely with alternative terminations such as a terminal groin. In the event of downdrift impacts, additional project would be incurred as wall as a reduction in project benefits. The taper was determined to be the most cost effective closure at the western end of the project.

128. Closure of the project at the eastern end would include an effective transition to ensure that the Point Lookout area was afforded adequate protection and accounted for the eastward migration of sediments returning to Jones Inlet. Two alternatives were considered for the closure of the project at the eastern end:

a) the extension of the existing terminal groin on the western side of Jones Inlet, or

b) a sand taper within the existing eastern groin compartment, considering the rehabilitation of the existing terminal groin and the adjacent revetment

129. The final closure alternative chosen was based on historical shoreline evolution methods and coastal processes modeling, economic considerations and engineering judgement. The analysis of the closure alternatives resulted in selection of the sand taper within the eastern groin compartments. The existing revetment and terminal groin along the western side of Jones Inlet for approximately 640 ft will be rehabilitated. The rehabilitation of the revetment and terminal groin is necessary to prevent flanking and loss of project fill material. This closure is considered to be a less costly closure alternative at Jones Inlet than the sand taper, and is not anticipated to increase the current volumes of material in the inlet. This closure is common to all of the alternative plans.

130. Near the eastern terminus of the beach fill and nourishment, the proposed design must

consider the effects of Jones Inlet. The beach restoration alternatives were refined to include an additional feature which would control, or reduce, the severe erosion which occurs at the eastern end of the island. Two alternatives were considered for such stabilization measures:

a) sand fill alone, which would extend westward from the existing eastern groinfield,
b) a groin field along Hempstead and Lido Beach, which would be a continuation of the existing groinfield in Point Lookout.

131. Similar to the closure alternatives, the analyses of the stability alternatives for the eastern end of the project were based on historical shoreline evolution methods and coastal processes modeling, economic considerations and engineering judgement. The final closure alternative chosen was the continuation of the Point Lookout groin field west into Lido Beach, which includes a beach transition to the existing shoreline in Point Lookout. This alternative provided for a reduction in nourishment material required in the Town of Hempstead Park and Lido Beach, and a cost-effective design for stability of the shoreline to alleviate the effects of Jones Inlet. This closure is common to all of the alternative plans.

132. Groin Rehabilitation. All of the alternative plans considered include rehabilitation of the exposed portions of the existing groins (i.e. not covered by design fill placement) that were found to be in poor to fair condition. A site inspection and evaluation of the existing groins between Pt. Lookout and Silver Pt. Park was conducted in December 1993. Rehabilitation is being proposed only for those groins whose proposed seaward ends would protrude seaward of the design fill (not including the advance nourishment). The resulting number of groins to be rehabilitated for each of the design alternatives are shown in Appendix A. Rehabilitation of the pertinent damaged groins will provide for better stability of the adjacent beach improvement as demonstrated by historical shoreline changes, where the shoreline, prior to 1937 (groin construction) in Long Beach was found to be much more erosive than subsequent to 1937. A cost comparison shown in Appendix A (see Table 26a) demonstrates the advantage of rehabilitation of existing groins over the increased nourishment requirement if the groins are not rehabilitated.

133. Project Layout. Typical profiles of all of the alternatives are presented in Figures 6 thru 8. Figures 9 thru 19 present the layout of Design 5, the +15 ft. NGVD dune with 110 ft. berm, for the project length from Point Lookout through East Atlantic Beach. The project layout for the other eight alternatives is similar, a continuous fill of beach material. The beachfill alternatives which include dunes incorporated the existing dune system where possible. In some areas it was necessary to straighten the existing dune line somewhat in order to provide a smooth and continuous seaward shoreline. The new dunes seaward of the Long Beach boardwalk have their landward toe between 15 ft. and 25 ft. seaward of the seaward edge of the boardwalk to allow for construction and maintenance access to the landward side of the dune. The beach berm widths for the six dune plans are measured from the seaward toe of the dune. The project baseline for the alternatives without dunes is a straightened approximation of the existing +10 ft. NGVD contour. Beach berms for alternatives without dunes are measured from the project baseline.

134. Total Initial and Nourishment Fill Volumes. The total initial project fill volume is the sum of the design, advanced nourishment, tolerance and overfill quantities.

135. Fill Tolerance. Additional fill is required during the construction of the beach restoration project to provide for a design template tolerance. A one-foot construction tolerance was utilized in this analysis which increases volumetric requirements. Tolerance is included to allow for the difficulty in grading sand to the exact design elevation.

136. Overfill Volume. Since the borrow area material is not perfectly compatible with the native beach material, an additional amount of fill called overfill volume must be provided for in the total required volume. This extra amount of fill will move offshore when the project erodes, leaving the design cross-section in equilibrium.

137. Quantity Estimates - Design Fill. In order to calculate the required beachfill volumes, the beachfill cross-section template for the alternative designs were superimposed on beach profile surveys taken in November 1991 and May 1992. Total calculated volumes for the initial construction of each of the alternative designs are shown below (including tolerance, overfill and advance nourishment):

Alternative	Description	Beachfill Quantity (c.y.)
(1)	no dune/50 ft nourishment only	5,432,700
(2)	no dune/110 ft berm and nourishment	5,763,300
(3)	no dune/160 ft berm and nourishment	7,901,300
(4)	+15 ft dune/50 ft nourishment only	6,938,600
(5)	+15 ft dune/110 ft berm and nourishment	8,642,000
(6)	+15 ft dune/160 ft berm and nourishment	10,655,500
(7)	+17 ft dune/50 ft nourishment only	7,865,100
(8)	+17 ft dune/110 ft berm and nourishment	9,566,800
(9)	+17 ft dune/160 ft berm and nourishment	11,581,900

138. Nourishment Fill Requirements. To maintain the integrity of the design beach cross-section over the project life, including the berm width and height, beachfill nourishment was included in the project design. Without nourishment, long-shore and cross-shore coastal processes would erode the design beach, reducing the storm damage protection ability of the project design. The nourishment fill is considered a sacrificial fill volume, which protects the design fill volume. Various coastal processes, including long-term erosion losses, beachfill losses due to predicted (current rate) of sea level rise, and losses due to storm-induced erosion for various nourishment intervals, were analyzed to develop an estimate of the nourishment fill volumes required.

139. To develop the total nourishment volume required, the volumetric losses from the three coastal processes were combined. To determine the construction nourishment fill volume required, tolerance and overfill factors (described below) were applied to the design nourishment fill volume. The width of nourishment fill volume to be placed was determined for each cycle length.

140. Advanced Fill and Nourishment Volumes. Analyses for the array of beach restoration alternatives concluded that a 5 year nourishment cycle would be more effective than the 6

year cycle estimated in the Reconnaissance Report and the initial screening of alternatives. Nourishment operations are estimated to require 2,111,000 cy for each 5 year cycle for the 50-year life of the project, which totals to approximately 19 million cy required for beach nourishment over the life of the project. Nourishment requirements are the same for all of the alternatives considered. Extreme climatic events occurring between scheduled nourishment operations, major rehabilitation due to the impacts of infrequent events and post-construction beachfill monitoring may revise the quantities of nourishment requirements. It is noted that placement of material dredged from the Jones Inlet navigation channel onto the downdrift beaches would decrease the volume of material required from the designated fill source although it is not included.

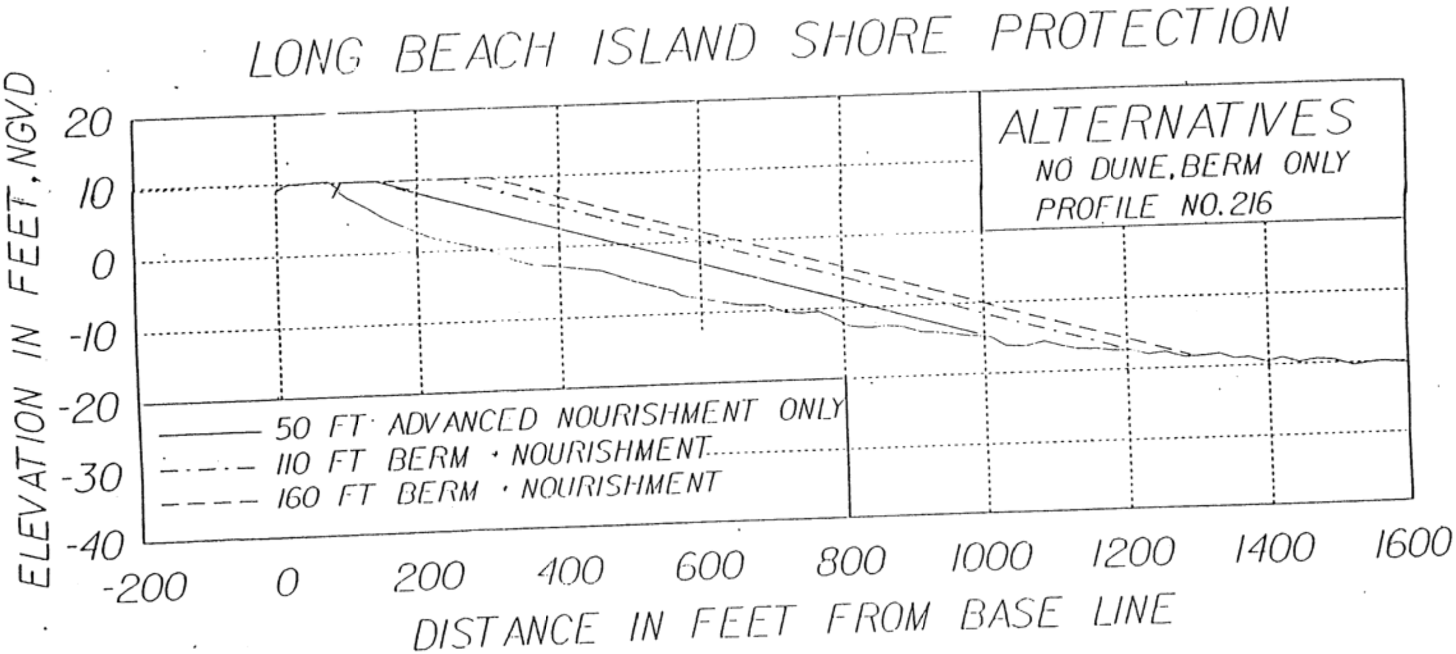

LONG BEACH ISLAND SHORE PROTECTION
ALTERNATIVES
NO DUNE, BERM ONLY
PROFILE NO. 216
50 FT ADVANCED NOURISHMENT ONLY
110 FT BERM + NOURISHMENT
160 FT BERM + NOURISHMENT
ELEVATION IN FEET, NGVD
20
10
0
-10
-20
-30
-40
-200
0
200
400
600
800
1000
1200
1400
1600
DISTANCE IN FEET FROM BASE LINE

FIGURE 6

LONG BEACH ISLAND SHORE PROTECTION

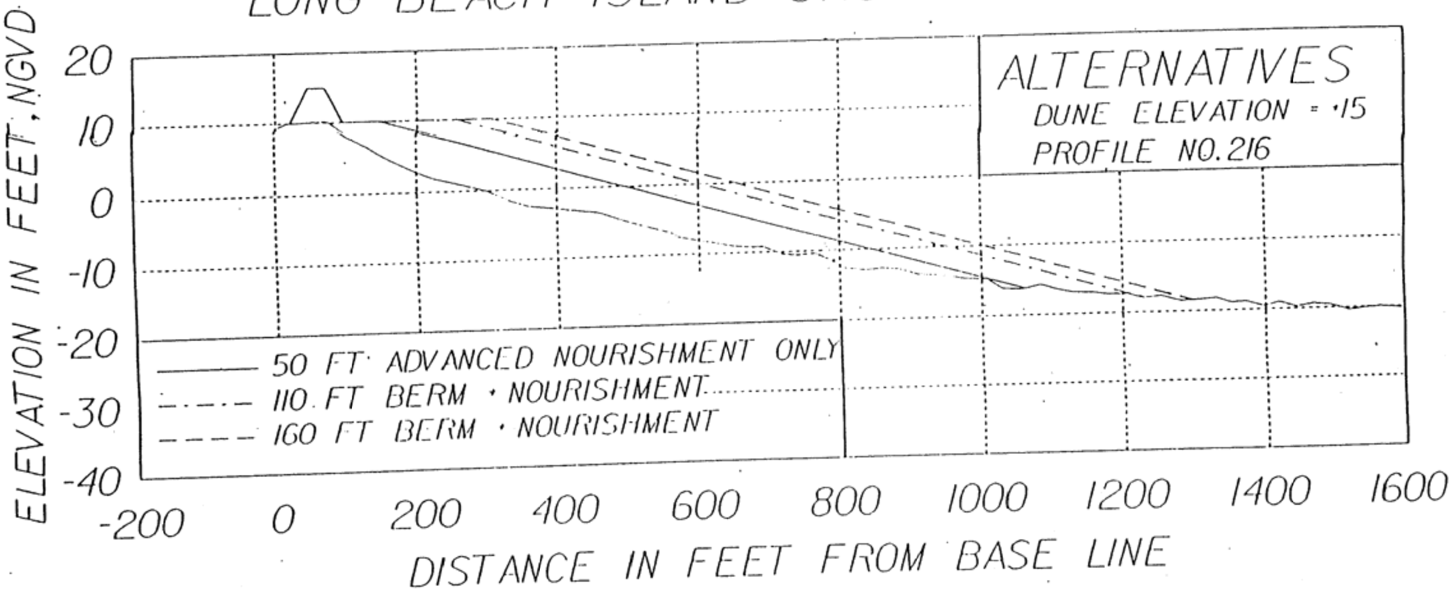


FIGURE 7

LONG BEACH ISLAND SHORE PROTECTION

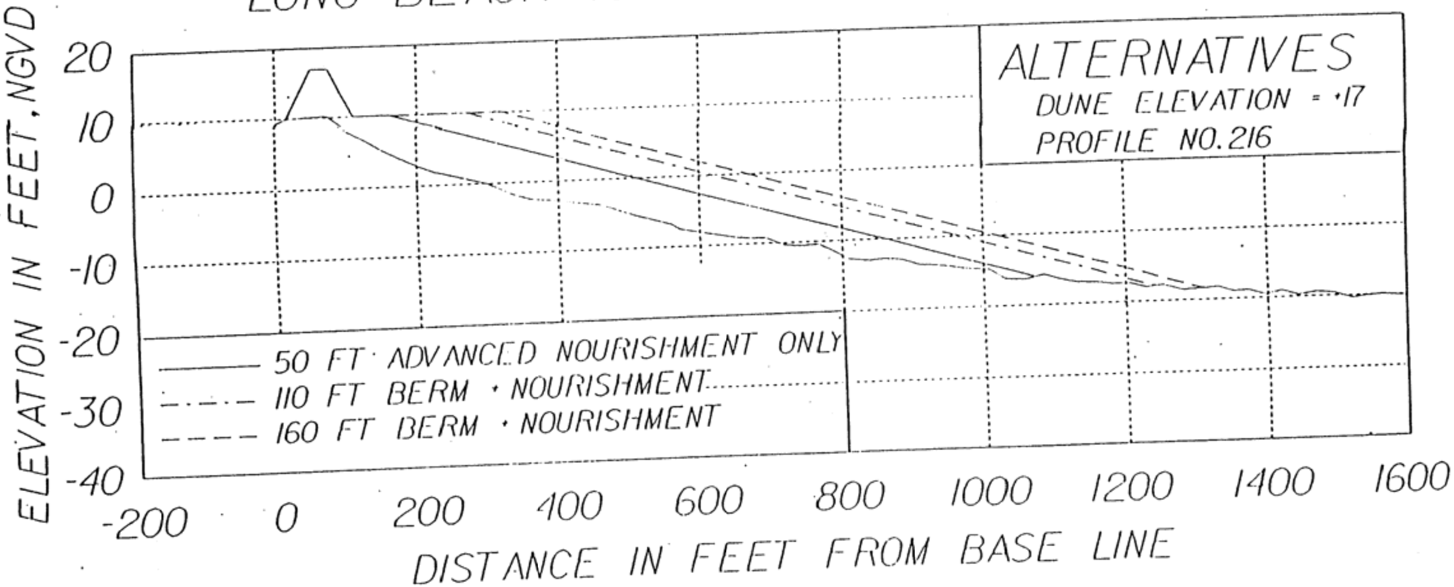


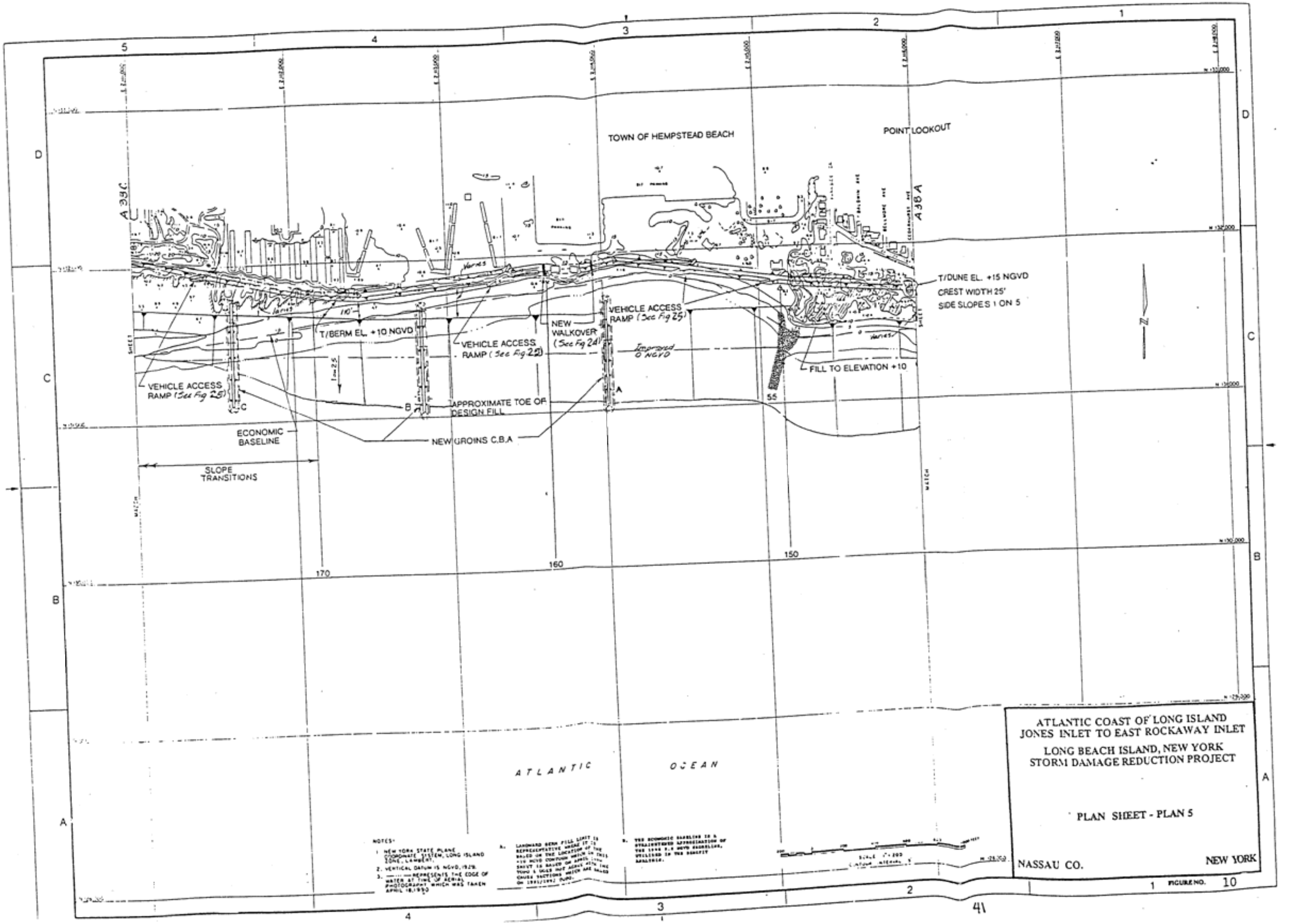
FIGURE 8

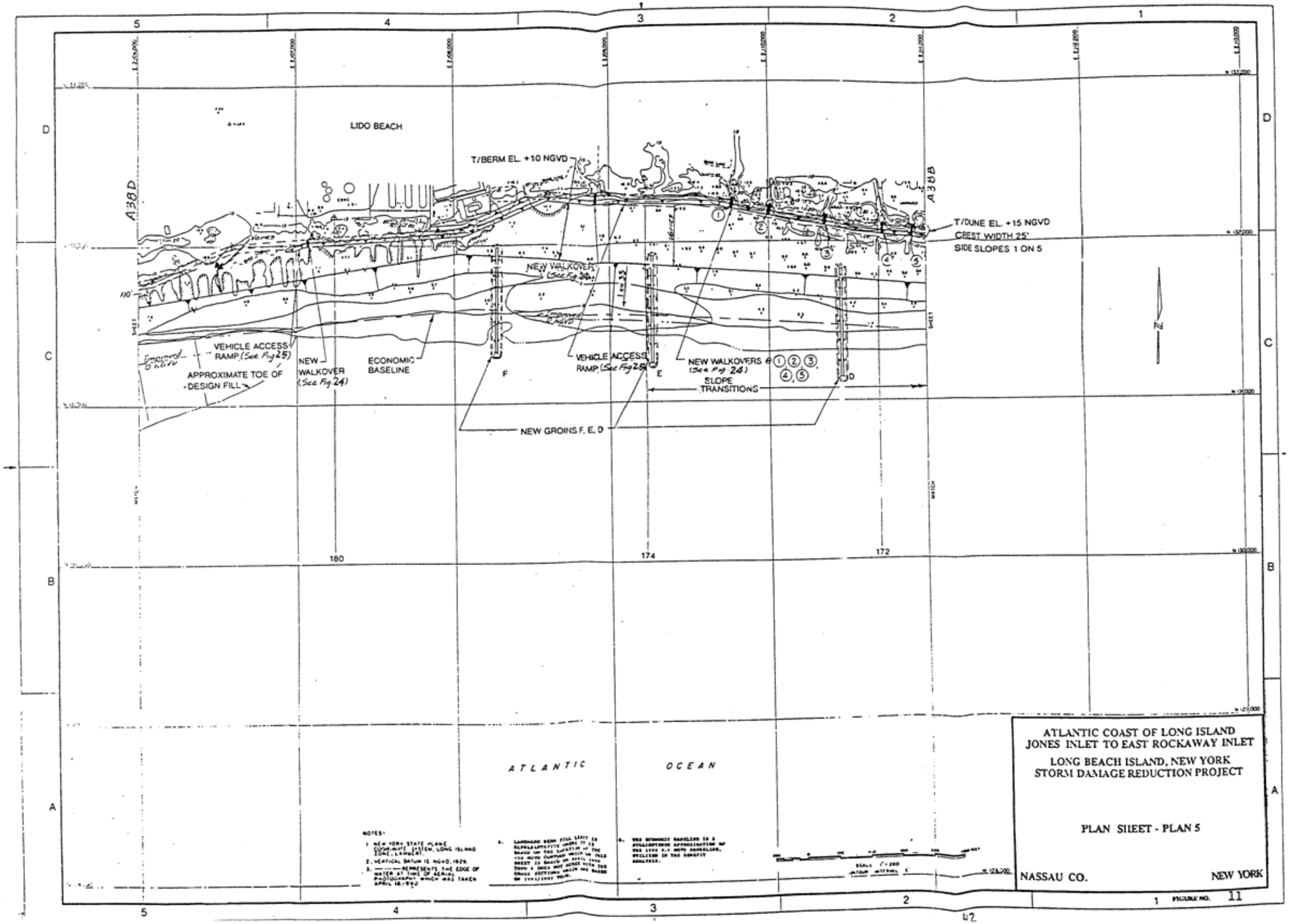
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 9


TOWN OF HEMPSTEAD BEACH
POINT LOOKOUT
A 39C
A 38A
T/DUNE EL. +15 NGVD
CREST WIDTH 25'
SIDE SLOPES 1 ON 5
VEHICLE ACCESS RAMP (See Fig 25)
T/BERM EL. +10 NGVD
VEHICLE ACCESS RAMP (See Fig 25)
NEW WALKOVER (See Fig 24)
VEHICLE ACCESS RAMP (See Fig 25)
Improved 0 NGVD
FILL TO ELEVATION +10
APPROXIMATE TOE OF DESIGN FILL
ECONOMIC BASELINE
NEW GROINS C,B,A
SLOPE TRANSITIONS
170
160
150
ATLANTIC OCEAN
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT
PLAN SHEET - PLAN 5
NASSAU CO.
NEW YORK
FIGURE NO. 10

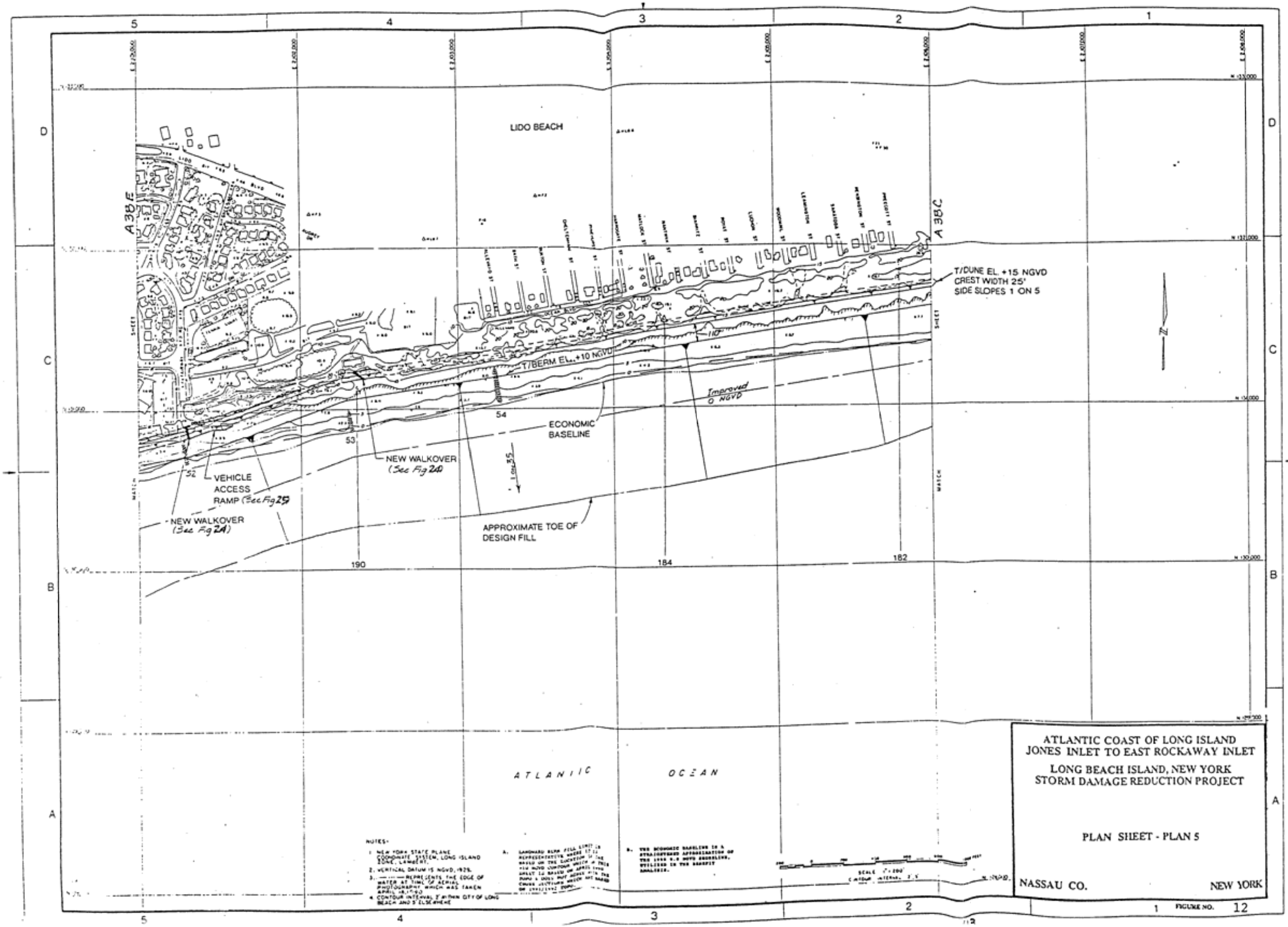


ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 11

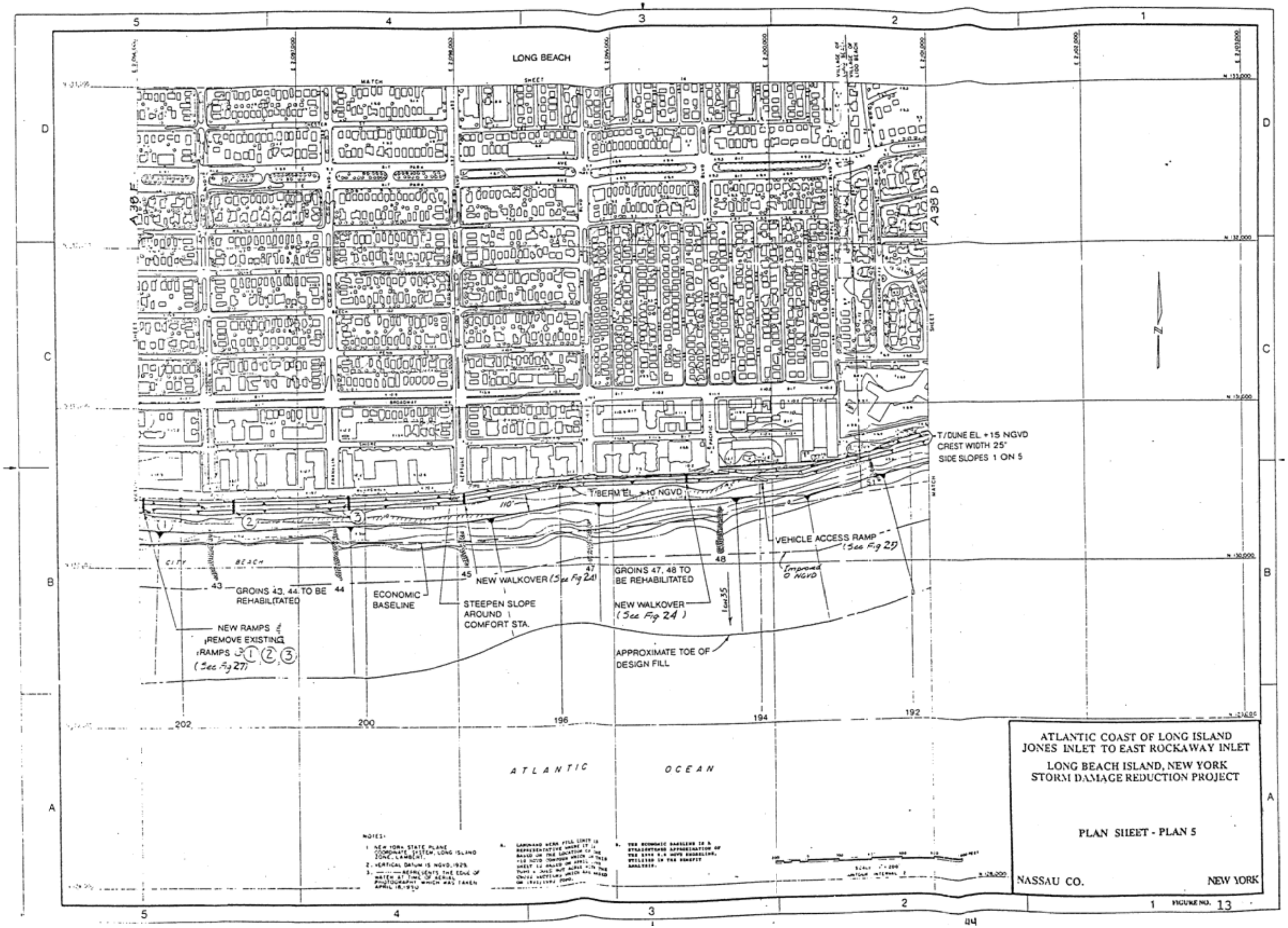


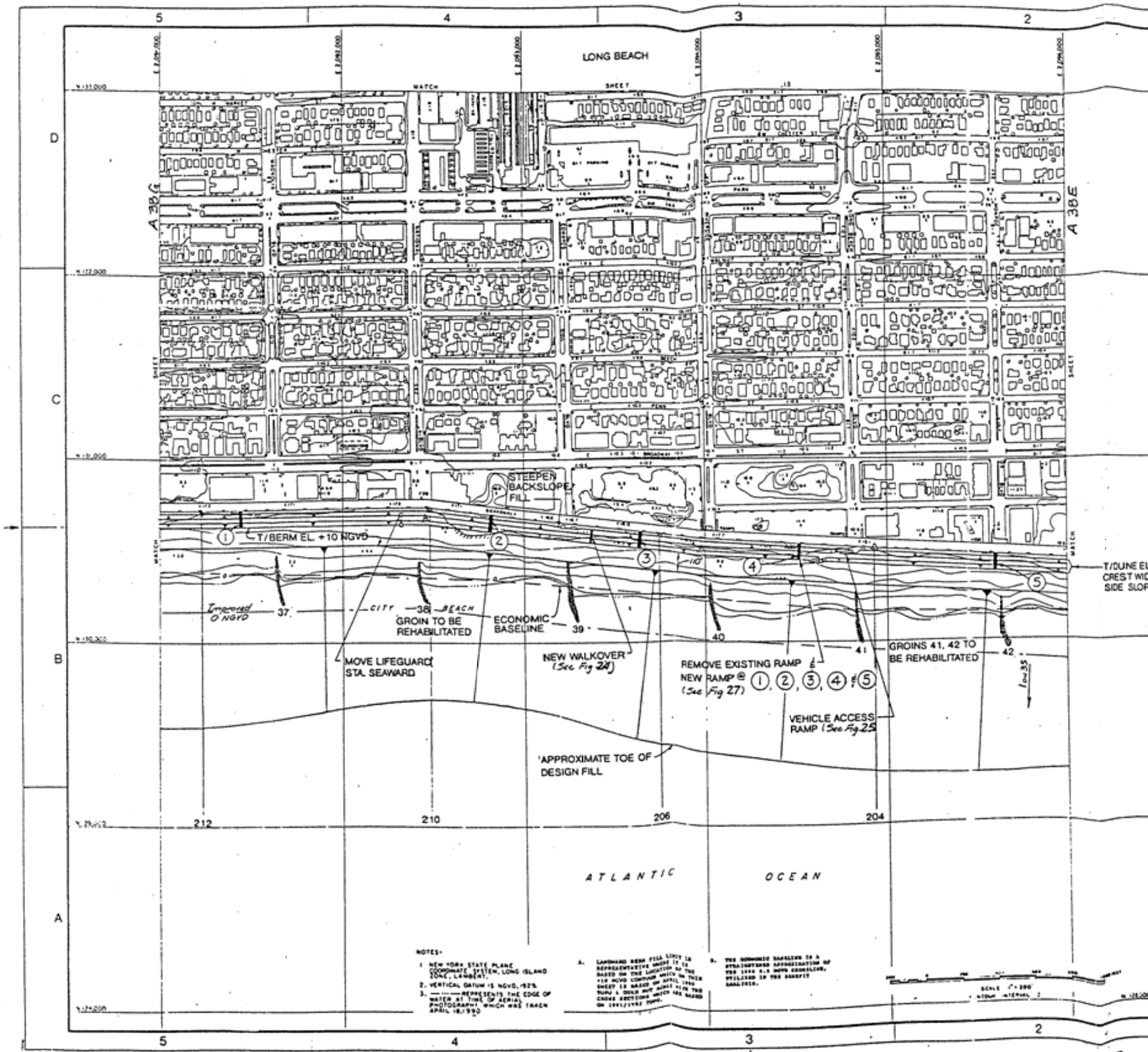
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 12


LONG BEACH
MATCH SHEET A38 E
MATCH SHEET A38 D
VILLAGE OF LONG BEACH
VILLAGE OF LIDO BEACH
BROADWAY
NEPTUNE
PACIFIC
T/DUNE EL +15 NGVD
CREST WIDTH 25'
SIDE SLOPES 1 ON 5
T/BERM EL +10 NGVD
110'
CITY BEACH
VEHICLE ACCESS RAMP (See Fig 27)
Improved 0 NGVD
GROINS 43, 44 TO BE REHABILITATED
ECONOMIC BASELINE
STEEPEN SLOPE AROUND COMFORT STA.
NEW WALKOVER (See Fig 24)
GROINS 47, 48 TO BE REHABILITATED
NEW WALKOVER (See Fig 24)
1 on 35
NEW RAMPS & REMOVE EXISTING RAMPS 1 2 3 (See Fig 27)
APPROXIMATE TOE OF DESIGN FILL
43
44
45
47
48
202
200
196
194
192
ATLANTIC OCEAN
N
NOTES:
1. NEW YORK STATE PLANE COORDINATE SYSTEM, LONG ISLAND ZONE, LAMBERT.
2. VERTICAL DATUM IS NGVD, 1929.
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT
PLAN SHEET - PLAN 5
NASSAU CO.
NEW YORK
FIGURE NO. 13

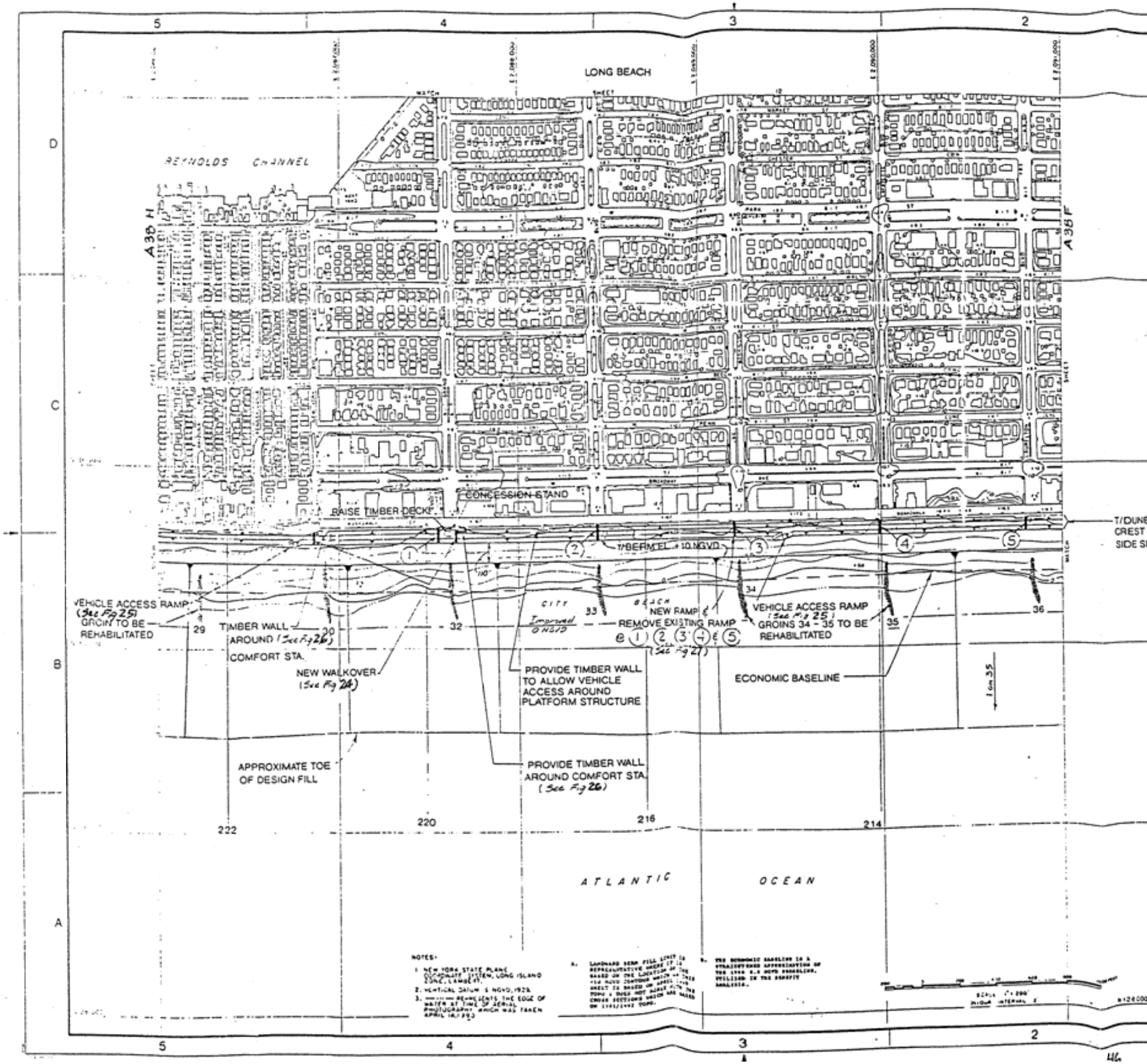


ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 14

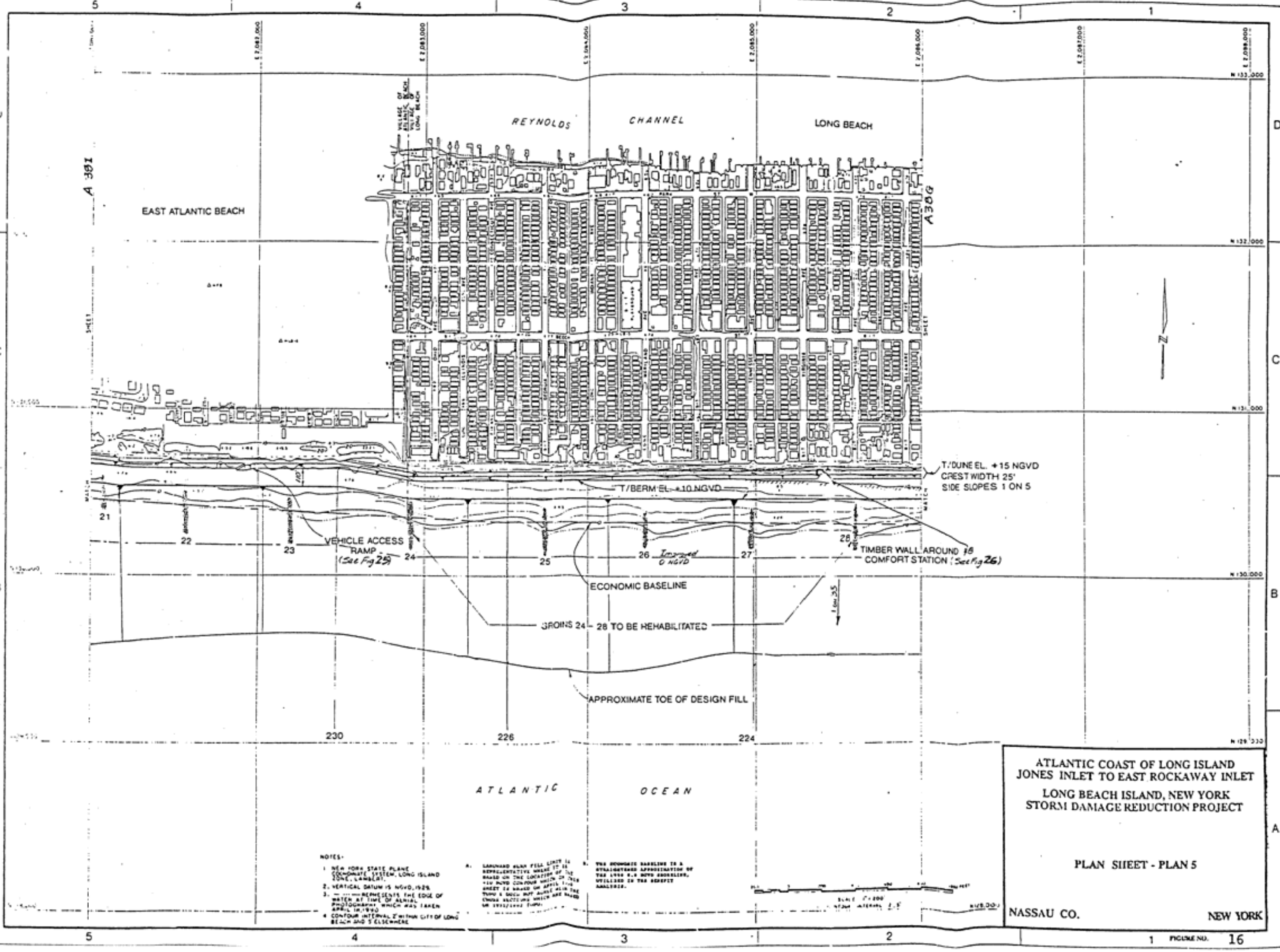


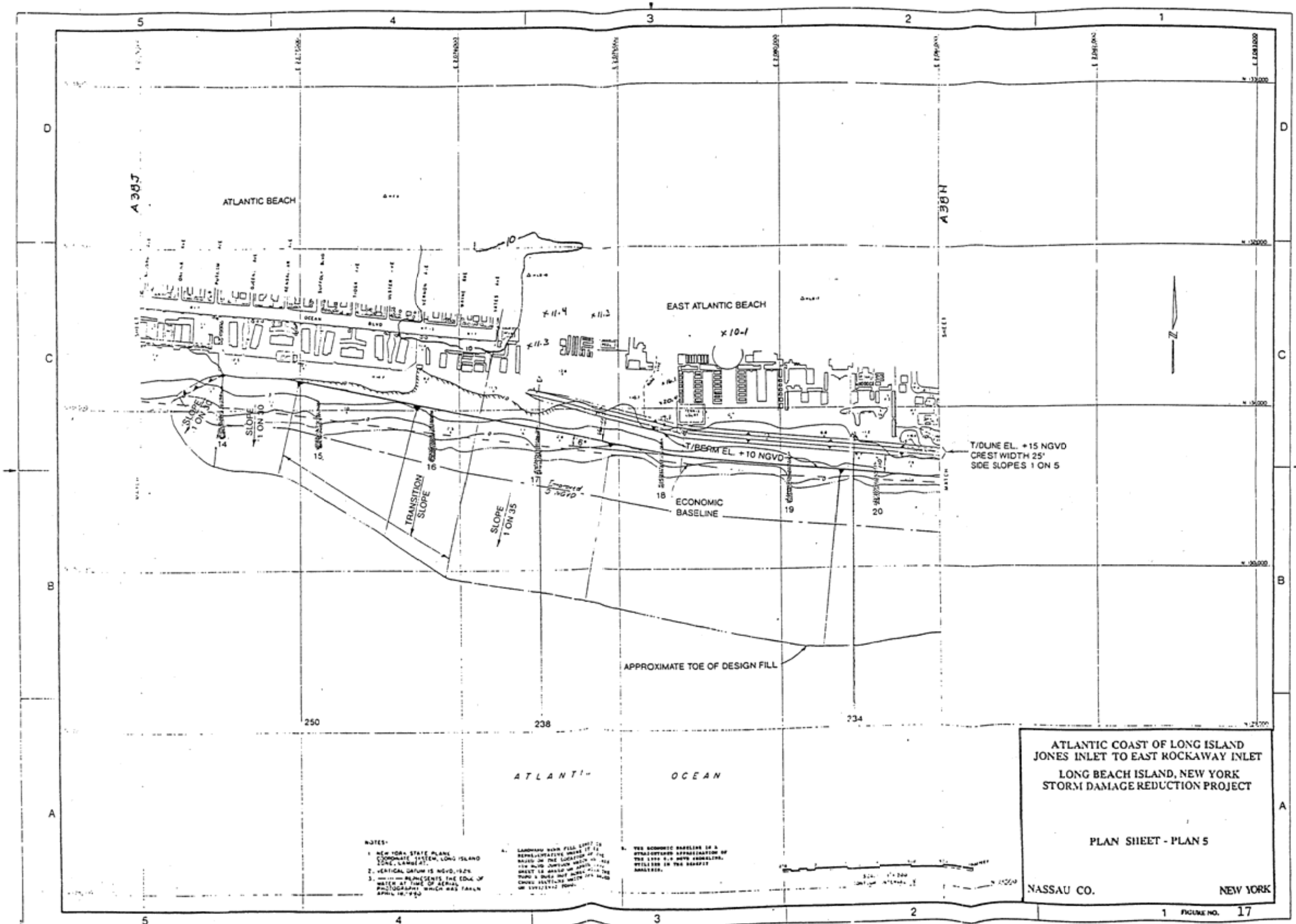
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 15


A 381
A 30G
EAST ATLANTIC BEACH
REYNOLDS CHANNEL
LONG BEACH
VILLAGE OF ATLANTIC BEACH
VILLAGE OF LONG BEACH
T/DUNE EL. +15 NGVD
CREST WIDTH 25'
SIDE SLOPES 1 ON 5
T/BERM EL. +10 NGVD
VEHICLE ACCESS RAMP (See Fig 25)
TIMBER WALL AROUND 18 COMFORT STATION (See Fig 26)
ECONOMIC BASELINE
GROINS 24 - 28 TO BE REHABILITATED
APPROXIMATE TOE OF DESIGN FILL
ATLANTIC OCEAN
21
22
23
24
25
26
27
28
230
226
224
E 2,082,000
E 2,083,000
E 2,084,000
E 2,085,000
E 2,086,000
E 2,087,000
E 2,088,000
N 133,000
N 132,000
N 131,000
N 130,000
N 129,000
NOTES:
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT
PLAN SHEET - PLAN 5
NASSAU CO.
NEW YORK
FIGURE NO. 16

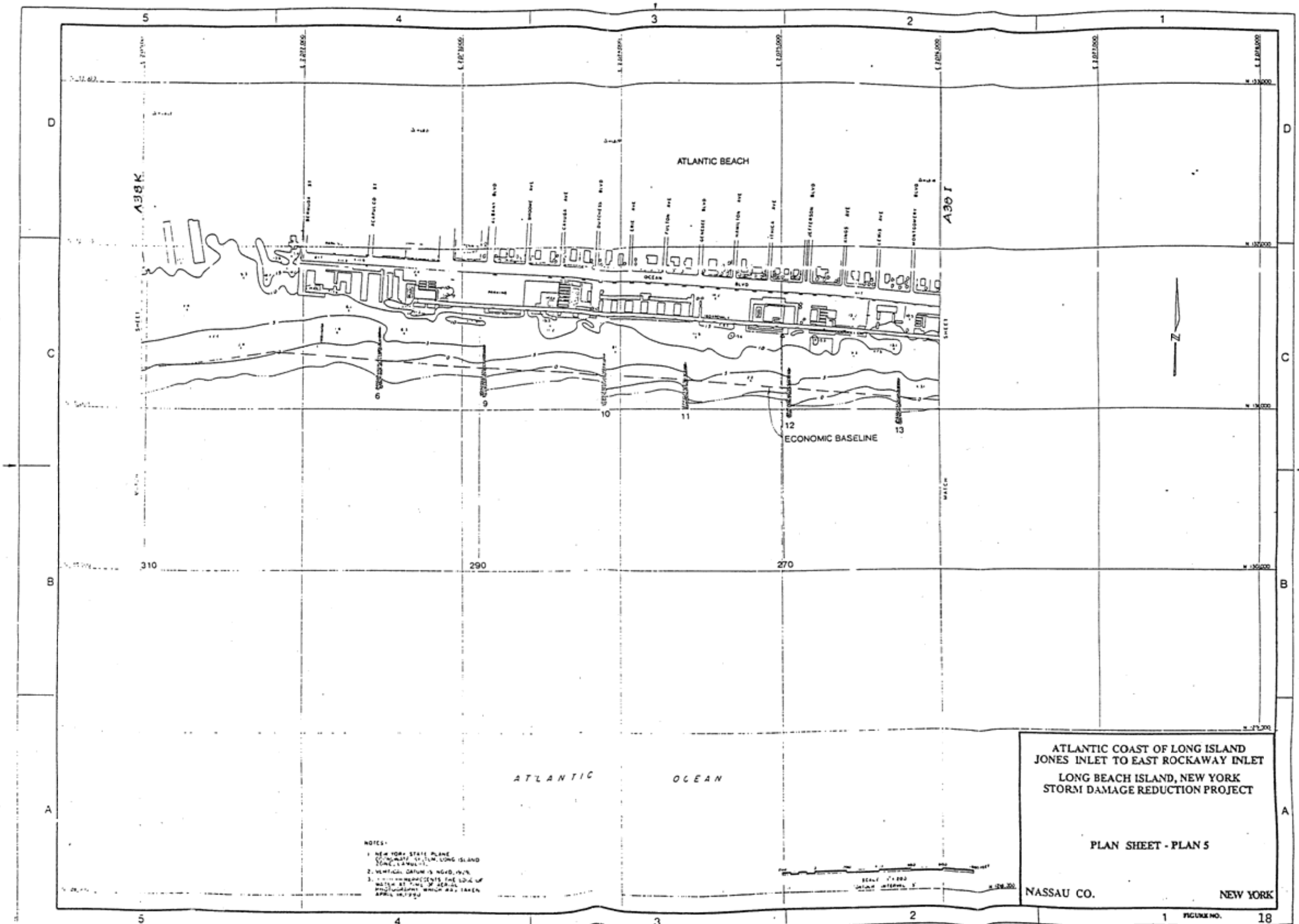


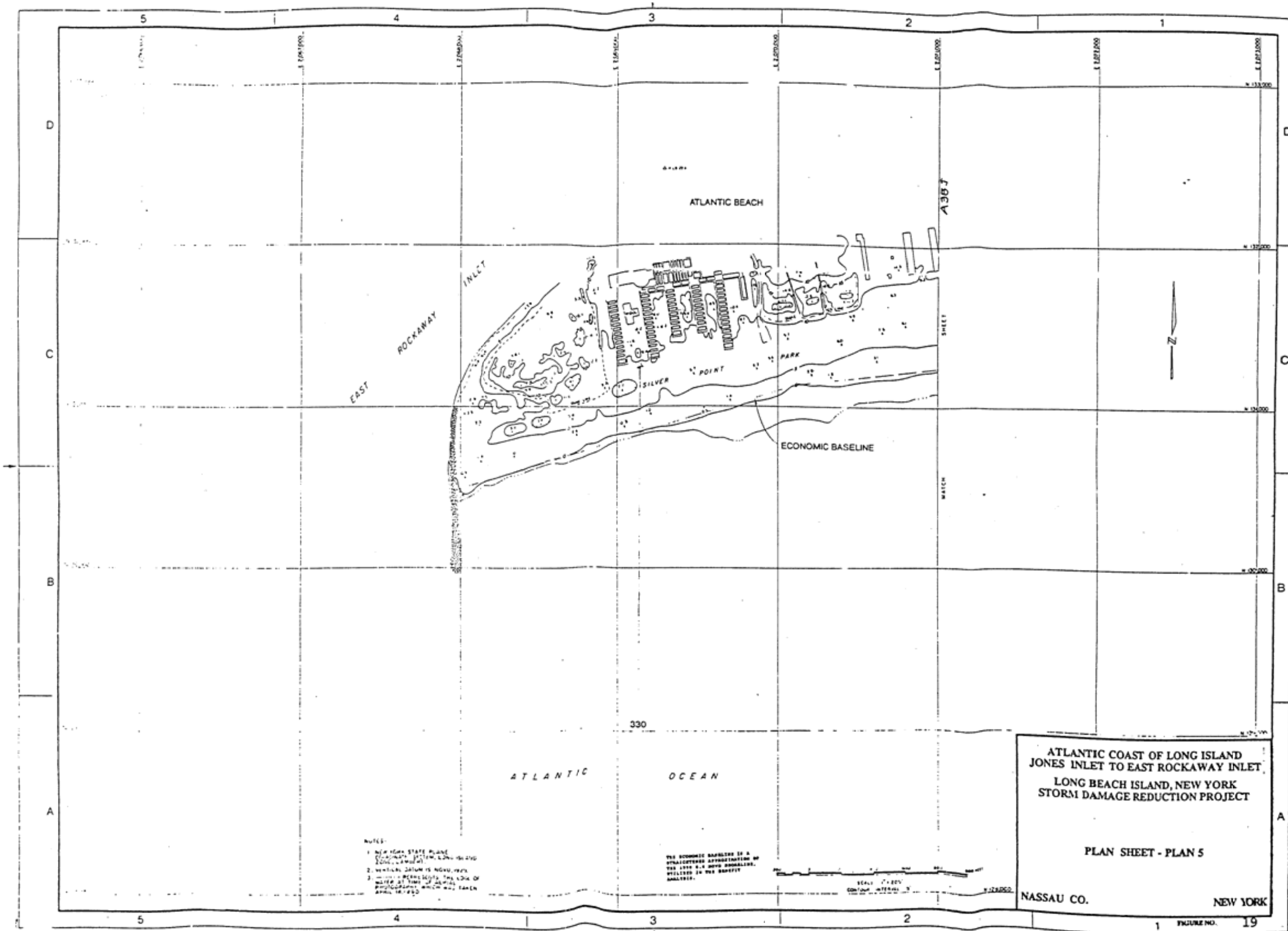
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 17


ATLANTIC BEACH
BERMUDA ST
ACAPULCO ST
ALBANY BLVD
BROOME AVE
CAYUGA AVE
DUTCHESS BLVD
ERIE AVE
FULTON AVE
GENESEE BLVD
HAMILTON AVE
ITHICA AVE
JEFFERSON BLVD
KINGS AVE
LEWIS AVE
MONTGOMERY BLVD
A38K
A38 I
OCEAN BLVD
MATCH SHEET
6
9
10
11
12
13
ECONOMIC BASELINE
310
290
270
ATLANTIC OCEAN
NOTES:
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT
PLAN SHEET - PLAN 5
NASSAU CO.
NEW YORK
FIGURE NO. 18



ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PLAN SHEET - PLAN 5

NASSAU CO. NEW YORK

FIGURE NO. 19

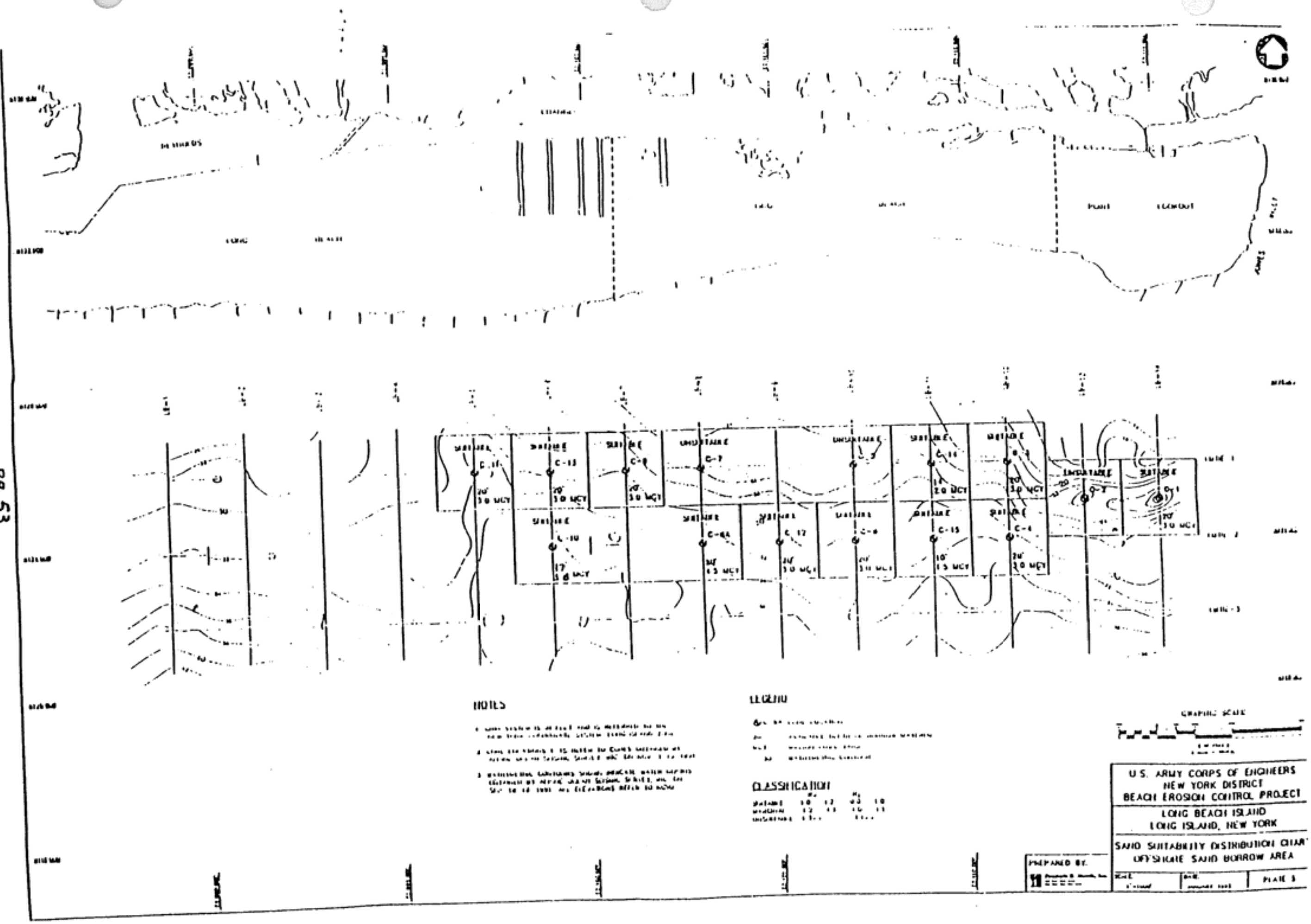
141. Fill Sources. - Jones Inlet. With the proposed project in place, beach placement of Jones Inlet material would not be imperative since the beach conditions would be sufficient due to the storm damage protection project for the barrier island. Furthermore, future dredging quantities cannot be accurately defined at this time since these amounts would be a function of the needs of the navigation channel. Therefore, it is assumed that material dredged from Jones inlet would be disposed of by the least costly method. In the future, the Federal, State and/or local governments may opt to pay the difference in cost to place the dredged material onto the beach; however, this can not be assumed to occur with the project in place, and thus, Jones Inlet material is not considered as a viable fill source with the project in place. If, however, beach placement of suitable material dredged from Jones Inlet is used for beach placement, the anticipated savings in the nourishment costs over the project life is approximately $25,000,000. While this potential storm damage reduction project is independent of the process or scheduling of the navigation channel of Jones Inlet, it is economically prudent and advisable to utilize suitable material from Jones Inlet for beach placement whenever maintenance dredging is undertaken.

142. Offshore Sources. It is anticipated that all the beach fill needed for any potential beachfill project would come from an independent offshore borrow area. Based on the borrow area investigations, approximately 35 million cubic yards of suitable sediment have been identified in the borrow area approximately 1/2 to 1 mile offshore of Lido Beach and Long Beach (south of the eastern half of the barrier island). This material will be used for the initial construction and renourishment operations. Details on the borrow area identification are given in Appendix B. Figure 20 shows the location of the proposed borrow area to be used for beach placement.

143. Impacts on East Rockaway Inlet. Shoaling of the navigation channel at East Rockaway Inlet has been an on-going maintenance concern in the vicinity of the project area. Modeling studies were conducted to make a general prediction of possible increases to the bypassing rate (and therefore channel shoaling) due to the nourishment project. Since the nourishment volumes were the same for all of the design alternatives, the impacts were the same for all alternatives. The analysis of the plan without improvement at Atlantic Beach showed that the jetty would impound material to equilibrium ten years after project construction, and then take about three years to impact the channel dredging rates. The range of increases to net sand transport rates is predicted to be 42,000 to 94,000 yards/year. The average rate of 68,000 cy/yr is included in the total project cost.

144. Impacts on Jones Inlet Maintenance Dredging Disposal. In studies performed under the authority of Section 933 of the Water Resources Development Act of 1986, the New York District determined that it is justified to place suitable material dredged from Jones Inlet onto the downdrift beaches in the Town of Hempstead. This operation is expected to continue in the with-out project condition. With the implementation of a beach restoration project along the barrier island, it is expected that the least costly disposal option for the dredged material will be chosen (i.e. offshore); however, as mentioned in the paragraph on Fill Sources, placement of suitable dredged material from Jones Inlet onto the downdrift beaches is expected to reduce future nourishment costs associated with the Long Beach Island project. It is estimated that use of the inlet material may save approximately $25 million in future nourishment costs over the life of the Long Beach Island project, if historical rates of inlet dredging continue. However, since this material is tied into the

navigation of the inlet, and dredging quantities cannot be accurately anticipated, the material cannot be counted on as nourishment material and, therefore was not included in the development of the total shore protection project cost. All fill material for the Long Beach Island project is anticipated to come from the offshore borrow source.



POINT LOOKOUT
LONG BEACH
SUITABLE
UNSUITABLE
C-1
C-7
C-8
C-10
C-11
C-13
C-15
C-17
C-6A
NOTES
LEGEND
CLASSIFICATION
GRAPHIC SCALE
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
BEACH EROSION CONTROL PROJECT
LONG BEACH ISLAND
LONG ISLAND, NEW YORK
SAND SUITABILITY DISTRIBUTION CHART
OFFSHORE SAND BORROW AREA
PREPARED BY:
PLATE 5

pg 53

FIG-20

B. Benefits Analysis

145. General. Economic benefits were calculated for the nine beach restoration alternative plans considered. Table 4 contains a summary of the variable dune heights and berm widths associated with each of the alternative plans considered. Due to the variation in berm widths, the number of groins to be rehabilitated varies. Many of the groins are buried in plans with wider berm widths. Table 4 also includes the extent of groin rehabilitation required for each plan, since the rehabilitation costs have an effect on the total annualized cost for each plan.

TABLE 4: Overview of Alternative Plans Considered

ALTERNATIVE	DUNE HEIGHT	BERM WIDTH	REHABILITATED GROINS
PLAN 1	none	existing (with advance nourishment); approximately 60 ft	23
PLAN 2	none	110 ft	23
PLAN 3	none	160 ft	15
PLAN 4	+15 ft NGVD	existing	23
PLAN 5	+15 ft NGVD	110 ft	15
PLAN 6	+15 ft NGVD	160 ft	9
PLAN 7	+17 ft NGVD	existing	23
PLAN 8	+17 ft NGVD	110 ft	15
PLAN 9	+17 ft NGVD	160 ft	9

146. Benefits to be derived from the improvement are:

a. Reduction of damage associated with long-term and storm recession erosion to structures,
b. Reduction of wave attack to structures,
c. Reduction in inundation of structures,
d. Reduced emergency response costs and cleanup,
e. Reduced costs for stabilizing the existing shoreline,
f. Maintenance of existing recreation value,
g. Increased recreation value, and
h. Prevention of loss of land.

147. The first five benefit categories are storm damage reduction benefits. The base year for this economic evaluation is year 2000 and the project life is 50 years. Damages were

evaluated for the period using the fiscal year 1994 interest rate of 8% and January 1994 price levels.

148. Benefits from the proposed plans of improvement were estimated by comparing damages with and without the proposed project under existing and future development conditions. In calculating storm damage reduction benefits, the type of damage causing the maximum impact was identified at each structure for various storm frequencies. To prevent double counting, only this maximum damage was included in the calculation of project benefits. Structures destroyed by long-term erosion were removed from the analysis for future years as it was determined they would not be reconstructed because the site was destroyed. For buildings destroyed by storm recession and/or wave attack, existing development patterns indicate that they would be rebuilt unless subject to wave or storm recession damage from storms on a frequent basis.

149. The replaced buildings were considered to be elevated to meet the National Flood Insurance Plan (NFIP) criteria. Structures which have been replaced at an increased level of protection are assumed to suffer no damage at events associated with a surge elevation of less than 11 feet NGVD, the regulated Base Flood Elevation. For high-rise structures, complete destruction was not considered due to their structural stability and deep pile foundations. Figure 21 provides a generalized Flow Chart of the analysis methodology. To accomplish the benefit analysis, the initial consideration was the development of the structure database to assist in predicting storm damages. The structure database was generated through a complete windshield survey of all structures on the island. Data on oceanfront high rise buildings obtained through a review of construction plans was used to supplement the data obtained through the windshield survey of the area. Replacement value was calculated for the residential and commercial structures using standard estimating guides in conjunction with size, occupancy, and construction material data, with refinements for the presence of basements and garages. Replacement costs were adjusted to reflect depreciation based on exterior judgments of the quality and condition of the structures.

150. For non-building structures, such as roads, boardwalks, utility lines, etc., a similar inventory was conducted by extracting data from mapping. Once collected, the information was encoded for use on a computerized database giving an overall picture of the floodplain population.

151. Following the completion of the building inventory, a sample population of buildings was selected for on-site inspection to determine damage potential. The survey targeted three major groups of structures with specific analysis goals considered in the sample designs; major oceanfront structures, residential structures, and non-residential structures. Generalized damage functions were generated for physical damage, and emergency costs. Non-residential damage functions reflect damages per square foot of structure size which were then applied to each structure to determine damages at 1-foot increments of flood stage. For the residential structures, functions were developed relating the physical damages and emergency costs to structure value.

152. In order to adequately assess the economic feasibility of proposed erosion control and coastal protection plans, the project area was subdivided into segments or reaches of more uniform characteristics. Reaches are presented in Figure 22.

153. Critical Damage. As previously described, the study area's oceanfront structures are exposed to storm damages resulting from long-term erosion, storm recession, inundation and wave action. In order to calculate Average Annual Damages, damages for each structure were summarized by frequency-damage over the 50-year project life. Each one-foot stage of inundation was related to a frequency and that frequency was utilized to evaluate the potential damage from each mechanism. To prevent double counting, only the maximum damage to any single structure is reported for a specific frequency. As depicted in Figure 23, the "Critical Damage" can fluctuate from inundation to storm recession to wave attack for different frequency events. Since a structure may suffer damage due to more than one mechanism (which would be double counting), the sum of damages resulting from these individual damage mechanisms will often far exceed the critical damage (maximum damage).

COMBINED DAMAGE CALCULATION FLOW NET

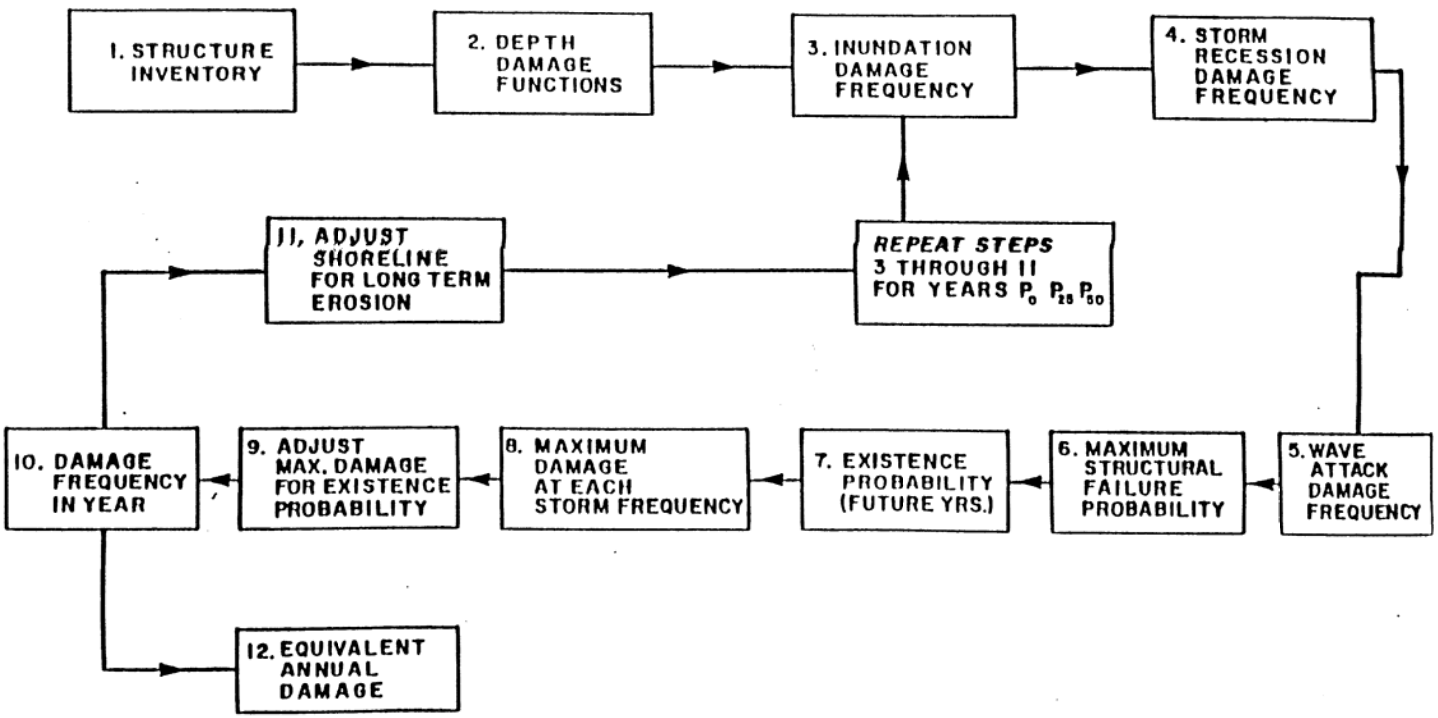
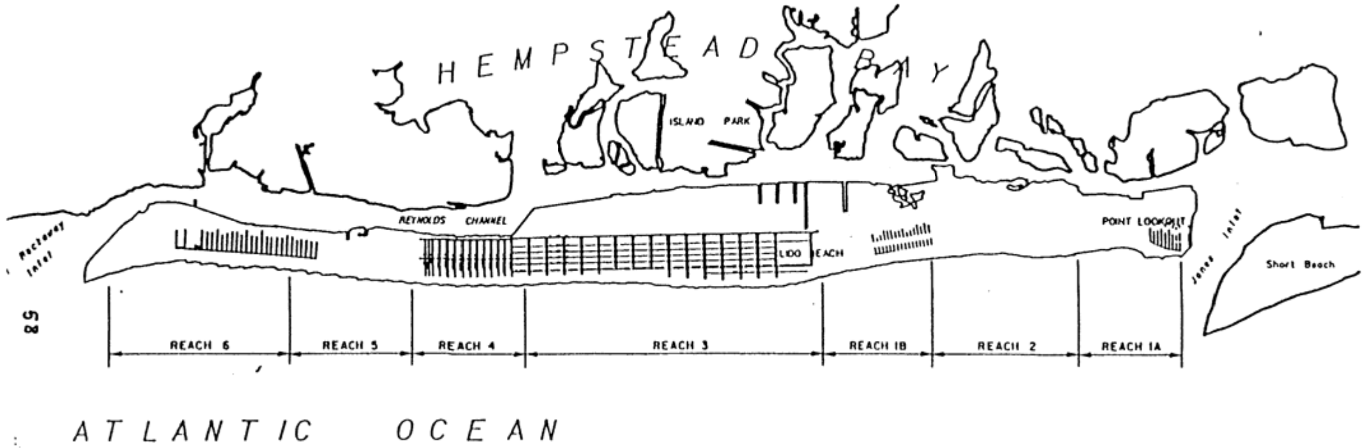


FIGURE 21

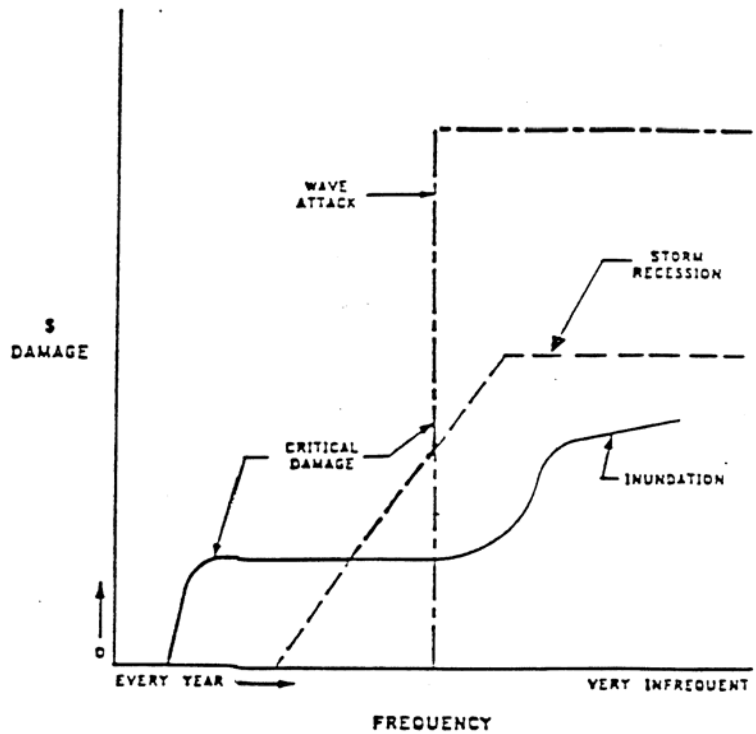


LONG BEACH ISLAND
LONG ISLAND, NEW YORK

ECONOMIC REACHES

SCALE: NONE

FIGURE 22



SCHEMATIC OF CRITICAL DAMAGE ANALYSIS

FIGURE 23

Annual Damages

154. Average Annual Building Damages. Utilizing the critical damage-frequency relationships for oceanfront structures, including adjustments for probability of existence, probability weighted average annual damages were computed at 10-year increments for each structure. The probability the original structure exists was taken as the probability of prior failure.

155. Damage to Roads and Infrastructure. Damage to roads and utilities was calculated based on storm recession undermining the facility, necessitating replacement and emergency bypassing. Damage was adjusted in future years to reflect the without project loss of protective beach.

156. Damage to boardwalk was evaluated using the repair and replacement costs reported for ongoing maintenance projects and damage surveys from the December 1992 storm. Damage frequency curves were developed using the reported damages, with the upper portion of the curve based on structure failure when the wave crest impacts the stringers supporting the boardwalk.

157. Public Emergency Costs. Historical reports of storm damage in the study area indicate two major sources of publicly-borne emergency costs — the post-storm cleanup of sand and materials deposited landward of the beach, and costs of providing emergency police protection, road closings, evacuation and related services.

158. The costs of providing emergency public services during storm events were estimated using damage survey reports for the December 1992 storm. Historically, substantial volumes of sand are carried inland during major storms, clogging sewers and roads and requiring substantial resources for collection and disposal. Annual costs for sand cleanup or removal were estimated based on the damage survey reports and storm erosion model results.

159. Future Protection Costs. Under without project conditions it is expected that efforts will be made to protect various locations from long-term erosion. These efforts include placing suitable Jones Inlet dredge material on the beach near Point Lookout. Additional protection costs were considered only where future erosion would threaten critical access roads or protection features.

160. Loss of Land. Under the without project scenario, the project area is subject to a loss of land due to long-term erosion. For each town, near shore land values were applied to the eroded land area to establish the value of land lost in any future year. The present worth of these values was then annualized to determine the equivalent annual value of land loss.

161. **Recreation Benefits** The procedure for estimating the value of recreation was to develop Simulated Demand Curve. These demand curves are referred to as "simulated" since they are not based on actual market behavior, but on behavior in the hypothetical market. The concept of demand, in the instance of a beach visitor using a daily pass to enter the beach, describes the relationship between the number of annual visits (Quantity

Demanded) people are willing to make each Willingness to Pay (WTP) bid (Price). For a visitor using a season pass to enter the beach, quantity demanded is measured by the number of people using a season pass rather than the number of annual visits. The use value is estimated as the area under the demand curve.

162. The information necessary to develop a simulated demand curve was obtained from a survey conducted during July and August 1992. Respondents were asked about the WTP for the 'without' and 'with project' conditions, and about their visitation patterns. Benefits were then calculated based on the difference in value in the with and without project conditions. The methodology described above is referred to as the Contingent Valuation Method (CVM). The benefit analysis considered the impact of the project on both attendance and WTP. Future use of the recreation beach was forecast to vary in proportion to the projected growth in population.

Summary of Damage and Benefits

163. Damages. Average annual damages were calculated over the life of the project for the nine improvement alternatives as well as for the without project condition. A summary of the equivalent annual without project damages for each of the six reaches analyzed is provided in Table 5. The largest cause of building damage, representing approximately 57% of the critical damage, is widespread flooding due to the combined impacts of high ocean surges, waves overtopping berms and dunes, and elevated stages in the channels and bays to the north of the island. Inundation damage is expected to become progressively more widespread in response to continued loss of dune stability and an expected rise in sea level. The second most widespread cause of damage, representing approximately 35% of the critical damage, is undermining of structures due to shoreline recession during storms. The severe damage caused by such undermining is expected to worsen in future years as protective beaches are narrowed by erosion, exposing upland structures to more frequent damage. Damage from the wave impact is the least widespread, though most severe, cause of damage. Representing approximately 15% of the critical damage, wave impacts may be due to either waves breaking directly on the structure or the uprush runup associated with broken waves. It is important to re-emphasize that the sum of damages from the various causes exceeds the 'critical' damage due to the potential for some structures to suffer damage from multiple causes, for example, a flooded structure suffering wave damage.

164. Under with project conditions the various alternatives will reduce the potential for storm damage. The added height and width of the beach/dune complex will serve to absorb much of the damaging and erosive energy of future storms. With the protective berms, the dunes are more stable, providing a barrier against ocean flooding and wave action across the island. Each of the major project components; widening the beach, ensuring a stable dune line, and continued periodic nourishment, address the specific causes of storm damage, such as inadequate protective beach, or waves overtopping the beach and dune.

The analysis of damages for each alternative reflect adjustments in physical damage parameters including:

- Long-term Erosion;
- Structure Setback;

- Storm Recession;
- Wave Runup;
- Dune Height;
- Dune Stability; and
- Wave Overtopping.

165. A summary of with-project damage is shown in Table 6. This table does not reflect any improvements in the Village of Atlantic Beach (Reach 6). With-project damages in this reach, however, reflect prevention of long-term shoreline erosion based on the impact of project nourishment in eliminating any material deficit in the littoral system. Although no designed protection is included for this reach, the project will provide a reliable source of littoral material that could be expected to prevent any ongoing loss of protective beach due to long term erosion.

166. Benefits. Benefits for each alternative are simply the difference in storm damage and other economic outputs with and without the project. Table 7 provides a summary of benefits for each alternative considered. A matrix of benefits and costs are presented in Table 8.

TABLE 5
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH, NY
SUMMARY OF EQUIVALENT ANNUAL DAMAGES
MAXIMUM/CRITICAL DAMAGE
W/O PROJECT CONDITIONS

DAMAGE TO EXISTING STRUCTURES	REACH 1	2	3	4	5	6	TOTAL
RESIDENTIAL STRUCTURES							
PHYSICAL	$982,700	$25,630	$9,077,300	$2,514,730	$745,030	$1,425,310	$14,770,700
EMERGENCY	$57,460	$1,250	$536,690	$158,540	$36,120	$78,840	$869,120
COMMERCIAL STRUCTURES							
PHYSICAL	$236,780	$70,800	$2,840,520	$228,870	$149,740	$739,700	$4,266,410
EMERGENCY	$4,720	$1,170	$53,710	$3,450	$2,490	$10,180	$75,700
OTHER STRUCTURES							
PHYSICAL	$72,520	$4,290	$703,230	$6,490	$4,040	$19,820	$810,390
EMERGENCY	$1,270	$210	$11,020	$100	$1,860	$260	$14,740
SUBTOTAL	$1,355,470	$103,350	$13,222,670	$2,912,180	$939,280	$2,274,110	$20,807,060
DAMAGE TO INFRASTRUCTURE							
INFRASTRUCTURE DAMAGE	$0	$0	$69,500	$84,010	$0	$0	$153,510
BOARDWALK/ACCESS RAMPS	$0	$0	$17,400	$0	$0	$12,400	$29,800
SUBTOTAL	$0	$0	$86,900	$84,010	$0	$12,400	$183,310
PUBLIC EMERGENCY COSTS							
EMERGENCY PROTECTION	$1,491	$114	$14,545	$3,203	$1,033	$2,502	$22,888
SAND/DEBRIS REMOVAL	$8,800	$5,100	$11,000	$3,400	$3,000	$8,100	$39,400
SUBTOTAL	$10,291	$5,214	$25,545	$6,603	$4,033	$10,602	$62,288
FUTURE PROTECTION COSTS							
SECTION 933 COSTS	$400,000	$0	$0	$0	$0	$0	$400,000
EXIST. STRUC. PROTECTION	$590	$0	$270	$0	$110	$0	$970
SUBTOTAL	$400,590	$0	$270	$0	$110	$0	$400,970
LOSS OF LAND	$490	$0	$0	$0	$950	$0	$1,440
							TOTAL
TOTAL DAMAGE	$1,766,841	$108,564	$13,335,385	$3,002,793	$944,373	$2,297,112	$21,455,068

TABLE 6

EAST ROCKAWAY INLET TO JONES INLET, LONG BEACH, NY
SUMMARY OF DAMAGES BY ALTERNATIVE
INTEREST RATE= 8.00%

DAMAGE TO EXISTING STRUCTURES	ALTERNATIVE 1	2	3	4	5	6	7	8	9
RESIDENTIAL STRUCTURES									
PHYSICAL	$12,058,770	$9,099,020	$9,028,300	$5,824,390	$4,881,860	$4,838,290	$5,740,070	$4,503,370	$4,502,550
EMERGENCY	$678,360	$517,010	$511,590	$377,840	$310,830	$307,660	$373,810	$302,790	$302,700
COMMERCIAL STRUCTURES									
PHYSICAL	$3,283,520	$2,195,150	$2,184,740	$1,494,240	$905,380	$899,950	$1,434,020	$881,850	$882,090
EMERGENCY	$81,810	$50,830	$50,768	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
OTHER STRUCTURES									
PHYSICAL	$580,390	$230,790	$228,380	$118,150	$85,860	$85,250	$118,100	$84,480	$84,200
EMERGENCY	$12,020	$11,770	$11,850	$4,410	$3,390	$3,380	$4,410	$3,120	$3,120
SUBTOTAL	$16,674,870	$12,104,560	$12,011,720	$7,848,850	$6,007,400	$5,954,750	$7,687,890	$5,785,330	$5,794,410
DAMAGE TO INFRASTRUCTURE									
INFRASTRUCTURE DAMAGE	$28,522	$982	$978	$5,084	$782	$200	$4,810	$228	$203
BOARDWALK/ACCESS RAMPS	$29,800	$26,500	$26,500	$28,700	$25,400	$25,400	$28,700	$25,400	$25,400
SUBTOTAL	$58,322	$27,482	$27,478	$33,784	$26,182	$25,600	$33,810	$25,628	$25,603
PUBLIC EMERGENCY COSTS									
EMERGENCY PROTECTION	$18,342	$13,315	$13,213	$8,834	$6,608	$6,550	$8,468	$6,375	$6,374
SAND/DEBRIS REMOVAL	$39,400	$10,700	$10,600	$39,400	$11,200	$11,100	$39,400	$13,200	$13,200
SUBTOTAL	$57,742	$24,015	$23,813	$48,034	$17,808	$17,650	$47,868	$19,575	$19,574
FUTURE PROTECTION COSTS									
SECTION 933 COSTS	$0	$0	$0	$0	$0	$0	$0	$0	$0
EXIST. STRUC. PROTECTION	$0	$0	$0	$0	$0	$0	$0	$0	$0
SUBTOTAL	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL DAMAGES	$16,790,734	$12,156,067	$12,063,011	$7,930,470	$6,051,370	$5,998,000	$7,779,368	$5,840,534	$5,839,587

TABLE 7

EAST ROCKAWAY INLET TO
JONES INLET, LONG BEACH, NY
SUMMARY OF BENEFITS BY ALTERNATIVE

INTEREST RATE= 8.00%

	ALTERNATIVE								
REDUCED DAMAGE TO EXISTING STRUCTURES	1	2	3	4	5	6	7	8	9
RESIDENTIAL STRUCTURES									
PHYSICAL	$2,711,830	$5,871,880	$5,744,400	$8,848,310	$10,088,840	$10,132,410	$9,030,630	$10,287,330	$10,288,150
EMERGENCY	$190,760	$352,110	$357,830	$401,580	$558,490	$561,480	$485,810	$568,340	$568,420
COMMERCIAL STRUCTURES									
PHYSICAL	$982,890	$2,071,280	$2,061,870	$2,770,170	$3,381,030	$3,384,480	$2,832,390	$3,384,880	$3,384,320
EMERGENCY	$14,090	$24,880	$24,840	$45,790	$58,420	$58,480	$48,020	$55,950	$55,950
OTHER STRUCTURES									
PHYSICAL	$230,000	$570,600	$584,010	$684,240	$724,830	$726,140	$694,290	$728,930	$728,190
EMERGENCY	$2,720	$2,870	$2,790	$10,330	$11,350	$11,380	$10,330	$11,820	$11,820
SUBTOTAL	$4,132,390	$8,702,500	$8,785,340	$12,858,410	$14,799,640	$14,852,310	$13,100,170	$15,011,730	$15,012,650
REDUCED DAMAGE TO INFRASTRUCTURE									
INFRASTRUCTURE DAMAGE	$124,990	$152,520	$152,530	$148,420	$152,780	$183,310	$148,600	$183,280	$183,310
BOARDWALK/ACCESS RAMPS	$0	$3,300	$3,300	$1,100	$4,400	$4,400	$1,100	$4,400	$4,400
SUBTOTAL	$124,990	$155,820	$155,830	$149,520	$157,180	$187,710	$149,700	$187,680	$187,710
PUBLIC EMERGENCY REDUCED COSTS									
EMERGENCY PROTECTION	$4,550	$9,570	$9,670	$14,250	$16,280	$16,340	$14,420	$16,510	$16,510
SAND/DEBRIS REMOVAL	$0	$28,700	$28,800	$0	$28,200	$28,300	$0	$26,200	$26,200
SUBTOTAL	$4,550	$38,270	$38,470	$14,250	$44,480	$44,640	$14,420	$42,710	$42,710
FUTURE PROTECTION COSTS FORGONE									
SECTION 933 COSTS	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000
EXIST. STRUC. PROTECTION	$970	$970	$970	$970	$970	$970	$970	$970	$970
SUBTOTAL	$400,970	$400,970	$400,970	$400,970	$400,970	$400,970	$400,970	$400,970	$400,970
RECREATION BENEFITS									
RECREATION ENHANCEMENT	$0	$937,180	$1,345,650	$0	$937,180	$1,345,650	$0	$937,180	$1,345,650
RECREATION MAINTENANCE	$639,120	$639,120	$639,120	$639,120	$639,120	$639,120	$639,120	$639,120	$639,120
SUBTOTAL	$639,120	$1,576,300	$1,984,770	$639,120	$1,576,300	$1,984,770	$639,120	$1,576,300	$1,984,770
LOSS OF LAND BENEFITS									
LOSS OF LAND	$1,440	$1,440	$1,440	$1,440	$1,440	$1,440	$1,440	$1,440	$1,440
TOTAL BENEFITS	$5,303,460	$10,875,280	$11,376,820	$14,163,710	$16,979,980	$17,441,840	$14,314,820	$17,190,810	$17,600,250

TABLE 8

LONG BEACH ISLAND, NEW YORK
FEASIBILITY STUDY
BENEFIT/COST MATRIX

		EXISTING BERM	110 FT BERM	160 FT BERM
		ALT.1	**ALT.2**	**ALT.3**
NO DUNE	Benefits	$5,303,460	$10,875,000	$11,377,000
	Storm Benefits	$4,664,000	$9,299,000	$9,392,000
	Costs	$8,817,100	$8,756,500	$8,444,300
	BCR	0.6	1.2	1.3
	Net Benefits	($3,513,640)	$2,118,500	$2,932,700
	Net Storm Benefits	($4,153,100)	$542,500	$947,700
		ALT.4	ALT.5	ALT. 6
+15 FT NGVD DUNE HT.	Benefits	$14,164,000	$16,980,000	$17,442,000
	Storm Benefits	$13,525,000	$15,404,000	$15,457,000
	Costs	$9,524,800	$8,954,000	$9,428,300
	BCR	1.5	1.9	1.8
	Net Benefits	$4,639,200	$8,026,000	$8,013,700
	Net Storm Benefits	$4,000,200	$6,450,000	$6,028,700
		ALT.7	ALT.8	ALT.9
+17 FT NGVD DUNE HT.	Benefits	$14,315,000	$17,191,000	$17,600,000
	Storm Benefits	$13,676,000	$15,615,000	$15,615,000
	Costs	$9,946,600	$9,361,200	$10,012,100
	BCR	1.4	1.8	1.8
	Net Benefits	$4,368,400	$7,829,800	$7,587,900
	Net Storm Benefits	$3,729,400	$6,253,800	$5,602,900

Note: The 9 alternatives evaluated include varying degrees of groin rehabilitation depending on the width of beach berm considered.

ECONOMICS OF THE NED PLAN

167. Optimization of dune heights considered three alternative dunes:

- the existing dune height (which averages approximately +14 ft in areas where dunes currently exist);
- a +15 ft NGVD minimum dune height; and
- a +17 ft NGVD minimum dune height

The comparison of costs and benefits demonstrated that the +15 ft dune would provide the maximum net benefits. Existing dunes in the project area generally provide protection in excess of a +13 ft dune height. In the limited areas which would realize additional protection by a +13 ft dune height plan, preliminary dune stability analyses indicated that the dune would fail at less than a 100 year event. This alternative would therefore provide no significant protection from inundation or wave attack during larger storms. Based on a review of the existing data, it has been estimated that a reduction in the dune height from +15 ft to +13 ft would result in excess of $1,000,000 in increased annual inundation damages, while reducing annual costs by approximately $100,000. This comparison of the expected benefits and costs supports the selection of a +15 ft dune height.

168. The NED plan for shore protection of Long Beach Island from Jones Inlet to East Rockaway Inlet calls for the placement of beach fill to provide a 110-foot berm width in conjunction with a 15-foot NGVD dune (Alternative 5). Project costs are $8.95 million annually for the 50-year life of the project.

169. The NED plan will provide $16.98 million in annual benefits over a project life of 50 years with annual net excess benefits of $8 million.

170. Of the total benefits, $15.4 million are attributable to the project's damage prevention accomplishments and $1.58 million are attributable to the maintenance and enhancement of recreation opportunities. The damage prevention benefits include $15.0 million in reduced storm damage and emergency costs for physical structures such as buildings and roads, and $0.40 million in reduced future protection costs.

171. The recreation benefits include $0.64 million for maintaining the existing beaches and $0.94 million for enhanced recreation opportunities.

172. <u>Sensitivity</u>. In evaluating the benefits and costs of any project there are often uncertainties which may affect project justification. In order to evaluate the impact of these uncertainties on the BCR, sensitivity analyses were performed to quantify a range of possible results. Two elements of significant uncertainty, overwash inundation depths and interest rate, were selected for analysis.

173. While the convergence of multiple forces create many uncertainties in the dynamic coastal environment, inundation has been determined as the most widespread cause of damage on Long Beach Island, thus reducing the impact of uncertainties associated with wave attack and recession. In order to more accurately reflect documented flood marks (due to inundation), the economic analysis has assumed that in some cases near-shore inundation depths can exceed still water ocean stages as a result of wave runup. While such extensive inundation is well documented in video and still photographs, these

inundation depths are potentially transient and may not fully saturate the building and contents. To evaluate the sensitivity of using the runup depth, the impact of more limited inundation depths on the storm damage analysis was evaluated. This sensitivity analysis limited maximum inundation stages to the still water ocean inundation level, which is considered to be an extreme lower limit of potential inundation.

174. This alternative inundation analysis reduced the without project damage estimates $3,338,000 annually, while only reducing the with project damages $266,000 annually. As seen in Table 9, this change in the analysis procedure still results in a strongly positive BCR.

TABLE 9

EAST ROCKAWAY INLET TO JONES INLET,
LONG BEACH, NEW YORK

INUNDATION DEPTH SENSITIVITY OF SELECTED PLAN
(ALTERNATIVE 5)

	Selected Inundation Depth Analysis	**Alternative Inundation Depth Analysis**
Benefits	$16,980,000	$13,908,220
Storm Benefits	$15,404,000	$12,331,940
Costs	**$8,954,000**	**$8,954,000**
BCR	1.9	1.6
Net Benefits	$8,026,000	$4,954,220
Net Storm Benefits	$6,450,000	$3,377,940

175. The sensitivity analysis also considered uncertainty with regard to future interest rates. In addition to the FY 94 annual discount rate of 8%, annual rates of 7% and 9% were considered. As seen in Table 10, this analysis indicated that fluctuations in interest rates will not impact project justification. The net effect of the decrease in the FY 95 Federal discount rate to 7.75% from the FY 94 rate of 8% is an increase in the total average annual benefits to $17,074,000 from 16,980,000; a decrease in the average annual costs from $8,954,000 to $8,773,000; an increase in total net benefits from $8,026,000 to $8,301,000; and a slight increase in the benefit to cost ratio from 1.9 to 1.95.

TABLE 10 EAST ROCKAWAY INLET TO JONES INLET, LONG BEACH, NEW YORK INTEREST RATE SENSITIVITY OF SELECTED PLAN (ALTERNATIVE 5)			
Interest Rate	7.00%	8.00%	9.00%
Benefits	$17,354,860	$16,980,000	$16,650,190
Storm Benefits	$15,790,180	$15,404,000	$15,062,110
Costs	$8,229,700	$8,954,000	$9,705,000
BCR	2.1	1.9	1.7
Net Benefits	$9,125,160	$8,026,000	$6,945,190
Net Storm Benefits	$7,560,480	$6,450,000	$5,357,110

176. Residual Damages. Residual storm damages for the 110-foot wide berm, 15-foot NGVD dune will average $6.05 million annually. Approximately 75% of residual damage is due to inundation. Appendix D presents the damage summary by reach for the NED Plan.

VI. SELECTED PLAN

A. Identification of the NED Plan

177. The NED Plan is defined as the plan which maximizes beneficial contributions to NED while meeting planning objectives. Eight of the nine beachfill plans considered meet the planning objectives inasmuch as all provide a degree of storm damage protection which is greater than the cost of implementation. The NED Plan selected is Plan 5, which generally provides for a 110ft wide berm backed by a dune system at an elevation of +15 above NGVD. Plan 5 was chosen because it provides the maximum net excess benefits over costs, as well as providing the maximum net storm damage benefits. Plan 5 provides average annual benefits of \$16,980,000 at an average annual cost of \$8,954,000, yielding net excess benefits of \$8,026,000. Table 8 provides a matrix of the nine alternatives considered.

B. Selection of the Recommended Plan

178. The primary study objective was to evaluate the Federal interest in providing storm damage protection to the Long Beach barrier island, and recommend an implementable solution. Nine alternative plans were evaluated based on engineering, economic and environmental considerations. These plans were deemed an appropriate range of the scale of beach restoration to satisfy the needs of the study area. Of the nine alternatives evaluated, eight plans were economically justified. Only Plan 1, which was basically a nourishment of the existing beach, was not justified. Plans 2 and 3, which did not include a dune, were justified; however, these plans provided few net storm protection benefits. Plans 4 and 7, which did not include an increase in the existing berm width, were justified and also provided high net benefits; however, not as much as the remaining four plans. The remaining plans were quite similar in total costs and benefits; however, Plan 5 provided much greater net storm damage benefits than any of the other plans.

179. The primary reason for the selection of Plan 5 stems from the primary problem along the project area. The primary damage which was identified and previously described is inundation due to wave run-up. The damages caused by inundation are generally decreased as a result of the protective dune system, which is protected by the fronting beach berm. In reviewing the stage-frequency curves, it can be seen that a dune having an elevation of +15ft NGVD will provide adequate protection against storms occurring with return periods of up to 200 years. As the investigations have shown, the plan with no dune and no increased berm width is not justified since it is only an approximation of the existing condition with a commitment to nourishment. Because of the lack of a protective barrier to prevent or reduce wave run-up, plans having no dune with increases of berm width are only marginally justified. On the other hand, plans with dune heights that provide protection for storms with return periods of greater than 200 years increase the project costs for only a minimal incremental damage reduction. As seen in table 8, increasing the berm width to 160 provides only a minimal increase in storm damage protection. This additional berm width is ineffective in providing inundation and wave damage protection against extreme storm events due to significant submergence of the berm, allowing waves to break directly against the dune. Under these conditions, the dune quickly becomes unstable, allowing wave overtopping and damage to upland structures. In combination with the 17 foot dune, in fact, the 160 foot berm provides no measurable

improvement above the 110 foot berm. As a result, Plan 5 is the optimum plan of all of the alternatives considered.

180. Plan 5 has been identified as the NED plan; it is an implementable design and it is the selected plan for providing storm damage protection for the Long Beach barrier island. This plan met all of the planning objectives and is the locally preferred plan. A description of the selected plan is provided in the following section.

181. The selected plan incorporates components, which were similar for all alternatives considered, among which includes a transition of the beach berm in the western end for closure of the project into the Village of Atlantic Beach. At the eastern end of the project, a similar closure is selected which will taper the beachfill to the terminal groin at Point Lookout. The taper at Point Lookout is expected to be sufficient to prevent additional fill drifting into Jones Inlet; therefore, extension of the terminal groin is not necessary. However, rehabilitation of the terminal groin and the adjacent revetment is included in the plan. A series of six groins is proposed to be added west of the easternmost three groins, which would provide stabilization of the shoreline fronting the Town of Hempstead and Lido Beach. This additional groinfield would also decrease the volume of material required by renourishment of these areas, and therefore has been proven to be economically justified.

182. A more detailed description of the selected plan and associated features of the plan is provided in the following section of this report.

C. Description of the Selected Plan

183. The selected plan is a beachfill plan which is characterized by a 110 ft wide beach berm at an elevation of +10 ft above NGVD, and a dune system with a top elevation of +15 ft NGVD. The selected plan includes approximately 41,000 linear feet of beachfill which extends from the easternmost end of the barrier island at Point Lookout to Yates Avenue in East Atlantic Village, where the selected plan tapers into the existing shoreline in Atlantic Beach. Details of the selected plan are shown on Figures 9 through 19. The selected plan includes:

A dune with a top elevation of +15 ft NGVD for a crest width of 25 ft, with 1 on 5 side slopes on the landward and seaward sides; a 15 to 25 ft maintenance area is included landward of the dune;

A beach berm extending 110 ft from the seaward toe of the dune at an elevation of +10 ft NGVD, with a shore slope of 1 on 25 for the easternmost 5,500 linear ft of the shoreline, thence transitioning to a 1 on 35 slope for the remaining shoreline.

A total sand fill quantity of 8,642,000 cy for the initial fill placement, including tolerance, overfill and advanced nourishment;

29 acres of planting dune grass and 90,000 linear ft of sand fence for dune sand entrapment;

16 dune walkovers and 13 timber ramps for boardwalk access, and 12 vehicle access ramps over the dune (schematics of these structures are shown on Figures 24 thru 28);

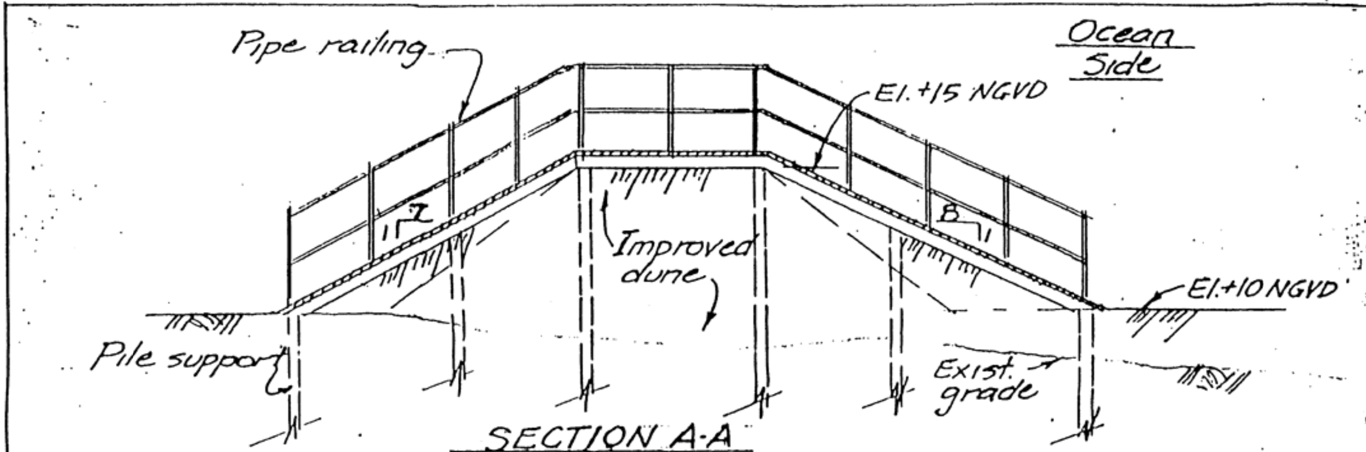
6 new groins west of the existing groins at the eastern end of island, spaced approximately 1,200 ft apart across 6,000 linear ft of beach frontage;

Rehabilitation of 16 of the existing groins, including rehabilitation of 640 ft of the existing revetment on the western side of Jones Inlet; and

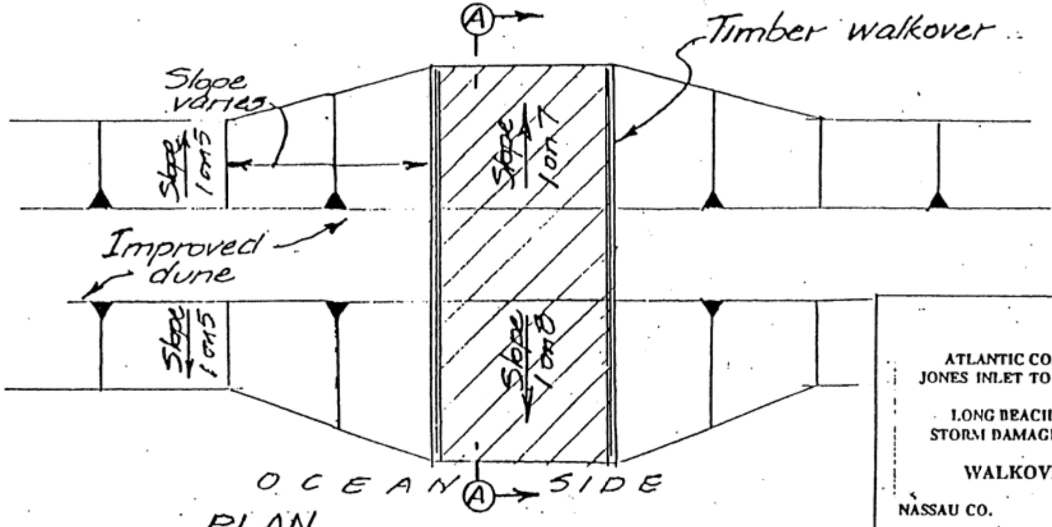
Renourishment of approximately 2,111,000 cy of sand fill from the offshore borrow area every 5 years for the 50 year project life. Note that this volume would decrease if the material dredged from Jones Inlet is deposited on the downdrift beaches as part of the navigation project.

184. Beachfill for the proposed project is available from an offshore borrow area containing approximately 36 million cy of suitable beachfill material. The borrow area is located approximately one mile offshore of the barrier island of Long Beach. Details on the borrow area and the material are provided in Appendix B.

185. To properly assess the functioning of the proposed plan, monitoring of the placed beachfill, borrow area, shoreline and wave and littoral environment is included in the plan. Environmental monitoring is being addressed through coordination with other interested agencies, and will be finalized in the Final Environmental Impact Statement for this project. The proposed Coastal Monitoring Plan is presented in Appendix H.



SECTION A-A
N.T.S.



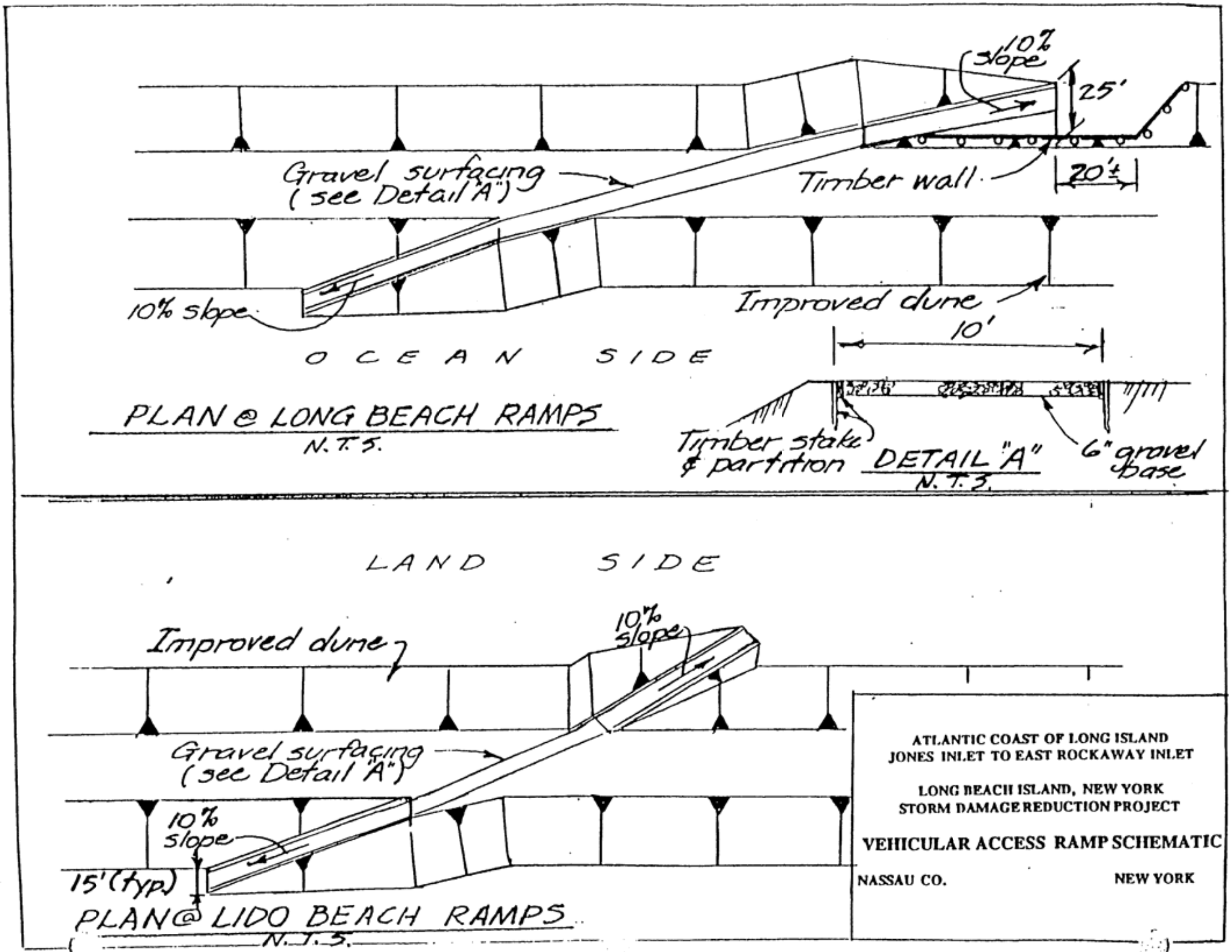
PLAN
N.T.S.

ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET

LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

WALKOVER SCHEMATIC

NASSAU CO. NEW YORK

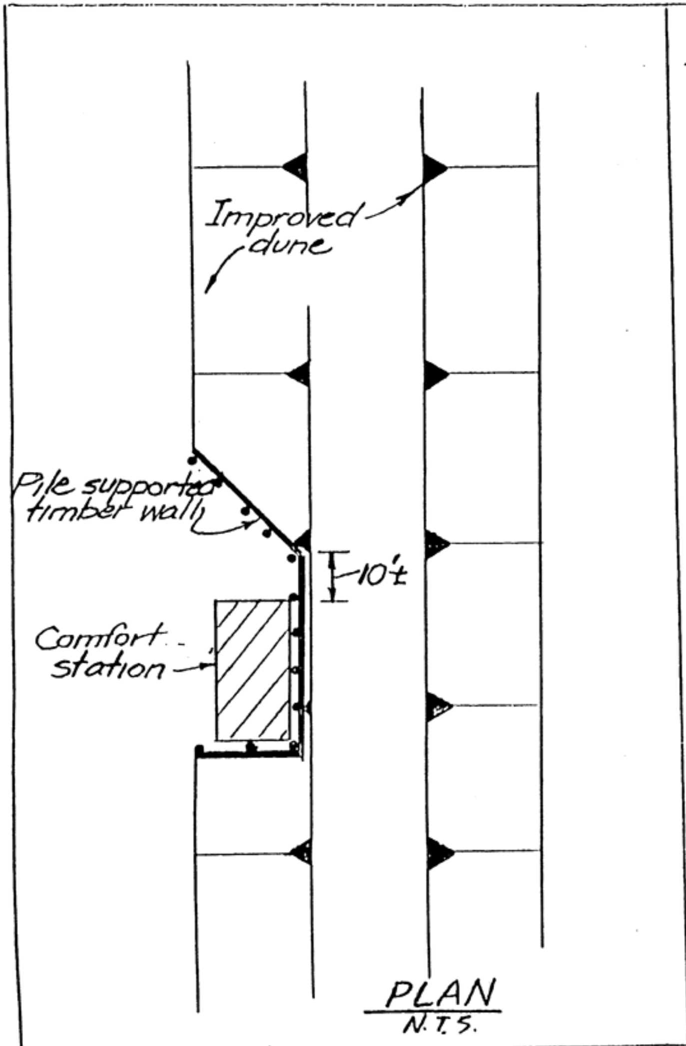


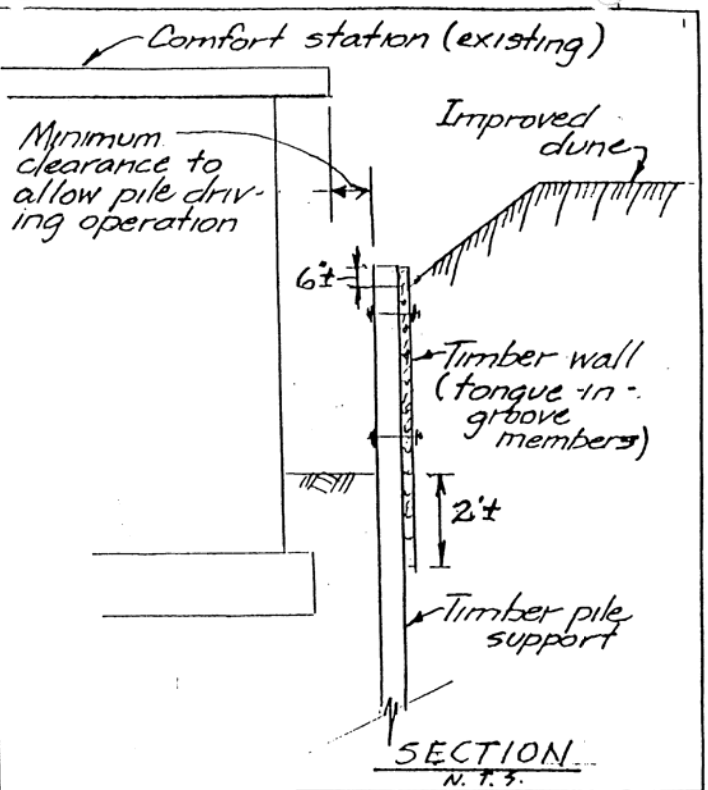
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET

LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

VEHICULAR ACCESS RAMP SCHEMATIC

NASSAU CO. NEW YORK





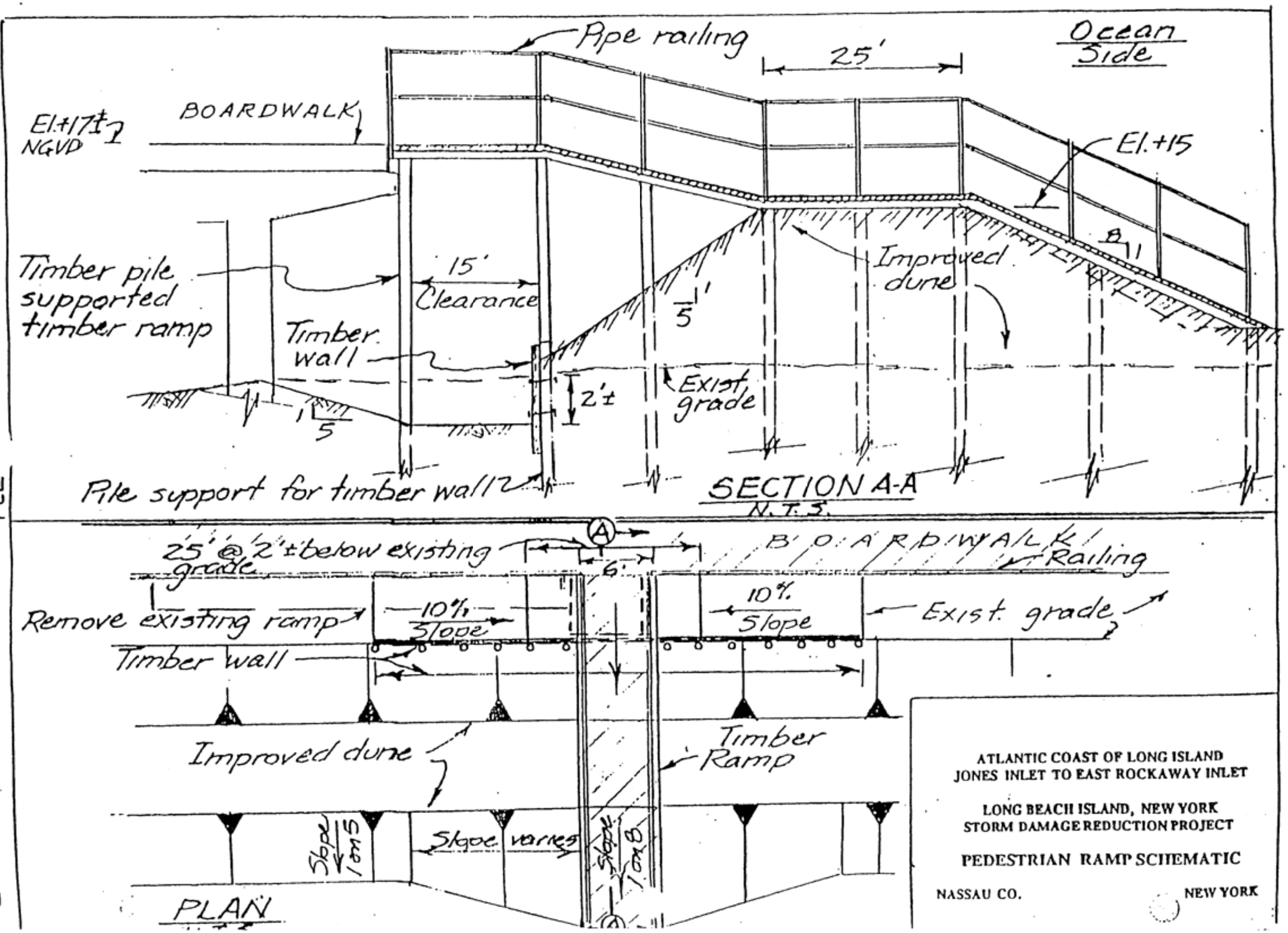
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET

LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

TIMBER WALL SCHEMATIC

NASSAU CO. NEW YORK

FIGURE NO. 26

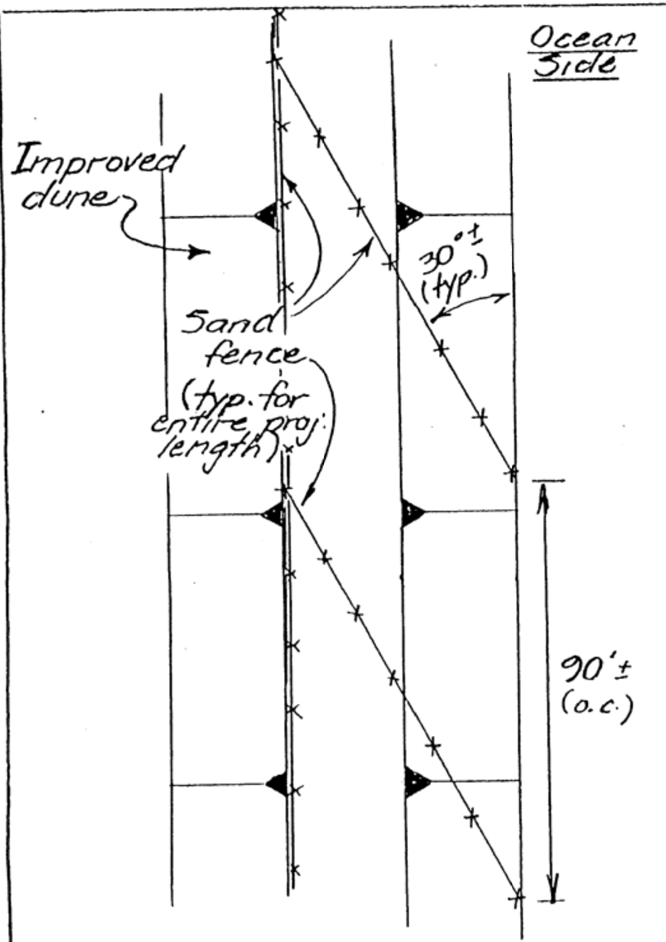


ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET

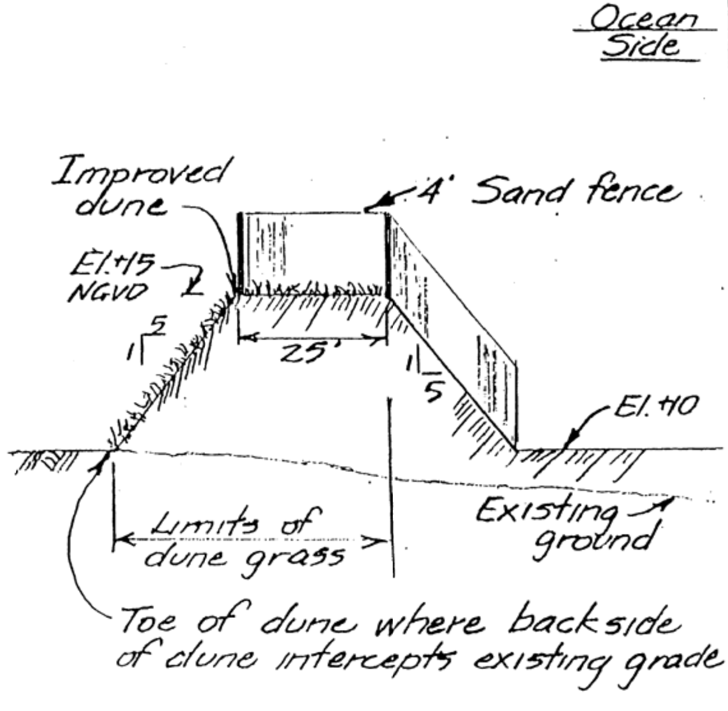
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

PEDESTRIAN RAMP SCHEMATIC

NASSAU CO. NEW YORK



PLAN
N.T.S.



SECTION
N.T.S.

ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET

LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

SAND FENCE & DUNE GRASS
SCHEMATIC

NASSAU CO. NEW YORK

FIGURE NO. 28

D. Project Cost Estimate

186. The estimated first cost for the selected plan described above is $69,894,000 (June 1994 price levels) which includes real estate acquisition costs (including administrative costs), engineering and design (E&D) and construction management (CM) and associated contingency. E&D costs include the preparation of the project design memorandum, plans & specifications, environmental, cultural and coastal pre-construction monitoring and the development and execution of the Project Cooperation Agreement (PCA). A summary of the first cost is shown on Table 11.

187. Periodic nourishment is expected to occur at five year intervals subsequent to the commencement of initial construction. Based on a volume of 2,111,000 for each nourishment operation, the total cost per operation is estimated to be $12,661,000 (June 1994 price levels). The estimated annualized cost of periodic nourishment is $2,143,000.

188. The estimated total annual cost of the selected plan is $8,954,000, which is based on an economic project life of 50 years and an interest rate of 8%. This cost includes the annualized first cost and interest during construction, the annualized periodic nourishment costs, the annualized major rehabilitation costs, the annualized increased cost from this project's impacts on East Rockaway Inlet, post construction monitoring costs and annual dune and groin maintenance costs.

ACCT CODE	DESCRIPTION	Qty UNIT	UNIT PRICE	ESTIMATED AMOUNT	CONT. AMOUNT	CONT. %
01	LANDS AND DAMAGES					
01.02	ACQUISITIONS	1 JOB		7,575	1,137	15%
01.05	APPRAISALS	1 JOB		2,790	418	15%
	TOTAL LANDS AND DAMAGES			10,365	1,555	11,920
02	RELOCATION					
02.03.47	STRUCTURES					
02.03.47.02.01	TIMBER DUNE WALKOVER	16 EA	10,000	160,000	32,000	20%
02.03.47.02.02	TIMBER RAMP W/STAIRS & RAILINGS	13 EA	20,000	260,000	52,000	20%
02.03.47.02.03	RELOCATE LIFE GUARD STATION	1 EA	31,305	31,305	6,261	20%
02.03.47.02.04	EARTH ACCESS RAMP	12 EA	15,479	185,748	37,150	20%
02.03.47.02.05	RAISE TIMBER DECK	1 EA	9,096	9,096	1,819	20%
	TOTAL RELOCATION			646,149	129,230	775,379
10	BREAKWATERS AND SEAWALLS					
10.00	MOBILIZATION, DEMOBILIZATION, AND PREPARATORY WORK	1 LS	294,284	294,284	44,143	15%
10.00.46	BREAKWATERS					
10.00.46.02	SITEWORK FOR NEW GROINS					
10.00.46.02.01	PLACEMENT OF ACCESS STONES	6,200 TONS	39.27	243,472	36,521	15%
10.00.46.02.03	EXCAVATION	40,000 CY	10.71	428,341	64,251	15%
10.00.46.02.04	FILTER CLOTH	38,800 SY	9.77	379,257	56,889	15%
10.00.46.02.05	BEDDING STONES	29,400 TON	47.33	1,391,527	208,729	15%
10.00.46.02.06	UNDERLAYER STONES 1200-1600 LBS	11,600 TON	56.74	658,172	98,726	15%
10.00.46.02.07	6-9 TON CAPSTONE	89,000 TON	68.84	6,126,325	918,949	15%
10.00.46.03	SITEWORK TO RECONSTRUCT GROINS					
10.00.46.02.02	REMOVE STOCKPILE GROIN STONES	28,200 TON	34.56	974,598	146,190	15%
10.00.46.02.03	EXCAVATION	61,800 CY	10.71	661,788	99,268	15%
10.00.46.02.04	FILTER CLOTH	16,700 SY	9.77	163,237	24,486	15%
10.00.46.02.05	BEDDING STONES	14,400 TON	47.33	681,564	102,235	15%
10.00.46.02.06	UNDERLAYER STONES	6,600 TON	56.74	374,477	56,172	15%
10.00.46.02.07	5 TON CAPSTONE	46,600 TON	56.40	2,628,470	394,271	15%
10.00.46.02.11	DISPOSE EXCESS STONES (AT SITE)	5,300 TON	13.82	73,268	10,990	15%
10.00.47	SEAWALL					
10.00.47.02	SITEWORKS FOR REVETMENT REHABILITATION					
10.00.47.02.01	4-TON ARMOR STONES	13,440 TON	83.20	1,119,424	167,914	15%
10.00.47.02.02	BACKFILL (SAND)	73 CY	3.10	233	35	15%
10.00.47.02.03	EXCAVATION	18,987 CY	7.78	147,750	22,163	15%
10.00.47.02.04	FILTER CLOTH	6,514 SY	9.77	63,672	9,551	15%
10.00.47.02.05	BEDDING STONES	2,083 TON	47.33	98,500	14,780	15%
10.00.47.02.06	UNDERLAYER STONES 800 LBS	5,080 TON	56.74	339,299	50,895	15%
10.00.47.02.07	1.6 TON ARMOR STONES	1,686 TON	68.84	116,056	17,409	15%
10.00.47.03	SITEWORKS FOR RECONSTRUCT REVETMENT					
10.00.47.03.02	REMOVE, STOCKPILE & REUSED ARMOR	1,154 TON	49.92	57,608	8,641	15%
10.00.47.03.05	REMOVE, STOCKPILE & REUSED BEDDING	175 TON	49.92	8,736	1,310	15%
10.00.47.03.05	REMOVE, STOCKPILE & REUSED UNDERLAYER	489 TON	49.92	24,411	3,662	15%
	TOTAL BREAKWATER AND SEAWALL			17,054,559	2,558,189	19,612,748
17.00.01	MOBILIZATION, DEMOBILIZATION, AND PREPARATORY WORK	1 LS	1,236,443	1,236,443	185,466	15%
17.00.16	PIPELINE DREDGING					
17.00.16.02	SITE WORK					
17.00.16.02.01	SAND FILL PLACEMENT	8,641,900 CY	4.01	34,648,406	5,197,261	15%
17.00.60	ASSOCIATED GENERAL ITEMS					
17.00.60.02.01	DUNE GRASS	29 ACR	7,518	218,012	32,702	15%
17.00.60.02.02	SAND FENCE	90,000 LF	6.48	583,085	87,463	15%
17.00.60.02.03	TIMBER WALL, 4' HIGH	570 LF	97.24	55,428	11,086	20%
	TOTAL BEACH REPLENISHMENT			36,741,374	5,513,978	42,255,352
30	ENGINEERING AND DESIGN	1 LS		2,228,000	222,800	10%
31	CONSTRUCTION MANAGEMENT	1 LS		3,830,000	957,500	25%
	TOTAL PROJECT FIRST COST (JUNE 1994 PRICE LEVEL)			60,510,447	9,383,252	69,893,699

E. Cost Apportionment

189. The cost apportionment between Federal and non-Federal total first cost of the selected plan is shown in Table 12. The selected plan has been shown to be economically justified on benefits associated with storm damage reduction. There are no separable recreation features included with this project. The value of recreation benefits anticipated as a result of the project are minimal and not required for project justification. Therefore, all recreation benefits are assumed to be incidental to the project. In accordance with Section 103 of the Water Resources Development Act of 1986 and appropriate Federal regulations, such as ER 1165-2-130, Federal participation in a project formulated for hurricane and storm damage reduction is 65 percent of the estimated total project first costs, including Lands, Easements, Right-of-Ways, Relocations and Dredged Material Disposal Areas (LERRD) assigned to this purpose. All of the 41,000 linear feet of proposed project shoreline is categorized as publicly owned and/or privately owned with public benefits.

190. The cost sharing for the selected plan is based on a total first cost of $69,894,000, and does not include interest during construction, which is used only for economic justification purposes.

191. Relocations include costs for relocations of accessways due to the configuration of the dune, which would otherwise impede beach access. Relocations include dune walkovers (and removal of the existing beach access ramps), vehicle access ramps, relocation of the existing lifeguard station and raising of one timber deck due to the dune positioning. Schematics of walkovers, access ramps and other relocations are shown on Figures 24 through 28.

Table 12: Cost Apportionment

COST SHARING	FEDERAL SHARE	NON-FEDERAL SHARE	TOTAL
CASH CONTRIBUTION	$ 45,430,900	$ 23,675,500	$ 69,106,400
OTHER COSTS			
LERRD:			
Real Estate Lands & Damages	$	$ 11,900	$ 11,900
Relocations (Walkovers, Accessways)	$	$ 775,400	$ 775,400
TOTAL FIRST COST	$ 45,430,900	$ 24,462,800	$ 69,893,700
PERIODIC NOURISHMENT COST (PER CYCLE)	$ 8,230,000	$ 4,431,000	$ 12,661,000
ANNUALIZED NOURISHMENT COST	$ 1,392,950	$ 750,000	$ 2,142,950

F. Environmental Effects

192. The effects on the environment of the operation of dredging and fill placement are materially influenced by the conditions at the dredging site, by the nature of the materials dredged, and both directly and indirectly by the types of equipment used. By their action, dredges may cause a variety of negative environmental impacts to water quality and aquatic ecosystem. These include:

Water Quality

1. Increased levels of turbidity and suspended solids resulting in:

   a. the reduction of dissolved oxygen levels, primary productivity and photosynthesis.
   b. higher occurrence of gills and filter-feeding structures becoming clogged.

Aquatic Habitat

1. Changing the aquatic habitat at the dredging site.
2. Destruction of benthic organisms.
3. Altered benthic diversity following recolonization.
4. Changes in circulation patterns.
5. Modified sediment deposition.
6. Creation of either hypoxic or anoxic zones.
7. Biological uptake of released pollutants.
8. Modified behavior of organisms due to increased stress levels possibly effecting reproduction.
9. Mortality of organisms being entrained within the dredging device.

193. Water Quality. There will be short-term adverse water quality impacts during the construction period of this project. Naqvi and Pullen (1982) conclude that problems with anoxic sediments and nutrient release in the nearshore zone of a high-energy beach as a result of beach nourishment do not appear to be significant because: (1) Fine materials that are high in organics are generally moved offshore; (2) Sulfides are rapidly oxidized; and (3) Fine sediments are rapidly diluted by the high-energy mixing process. Dredging the proposed borrow areas will generate turbidity and sedimentation impacts within the immediate vicinity of the operation and does not appear to significantly impact water quality (Naqvi and Pullen, 1982). Generally, the large grain-sized material will keep the area of impact small and will ensure that there are no impacts beyond the period of construction. The construction period will last several months and localized water quality impacts will be experienced in the proposed borrow area for the duration. Similar short-term water quality impacts will occur at the nourishment sites along the seven (7) mile project shore. Fill operations will deliver a slurry of sand to the receiving shore, increasing turbidity in the immediate area. This effect, however, will not be significant since turbidity levels in the high-energy surf area are naturally high.

194. Long-term impacts to water quality are not expected to occur as a result of project

implementation. Short-term turbidity may effect organisms in several ways. Settling of sediments may bury sedentary species. Suspended matter can clog gills and filter-feeding structures, which could directly cause mortality or reduce energy efficiency and cause indirect effects such as reduction in reproduction or decreased ability to avoid predation (Sherk, 1971). In addition, turbidity may reduce light penetration lowering photosynthetic activity and dissolved oxygen content. Turbidity and associated water quality parameters at the borrow areas and placement sites will rapidly return to preconstruction levels with no lingering adverse impacts expected (Naqvi and Pullen, 1982). Periodic renourishment will produce water quality impacts similar to those generated by initial construction, but for a shorter time period (Naqvi and Pullen, 1982). Renourishment impacts are also not expected to be significant.

195. Borrow Area Biological Resources. Potential adverse impacts within any borrow area include: (1) destruction of benthic organisms; (2) altered benthic diversity following recolonization; (3) changes in circulation patterns; (4) modified sediment deposition; and (5) creation of either hypoxic or anoxic zones. Loss of benthic and epibenthic organisms will be the most direct and most immediate impact in the borrow areas for the project. Mortality will occur as organisms pass through either the dredging devise or as a result of transport to an unsuitable environment. Benthic and epibenthic organisms will be buried by resuspended and redeposited sediments. Sessile species will be eliminated by direct burial or capture while motile organisms can move away.

196. Effects on Fishery Resources. Bottom fishes should avoid the dredge and should not be impacted. Most pelagic organisms should be capable of avoiding the area during construction activities. A short-term decrease in dissolved oxygen concentration is not expected to be a problem. The resuspension of contaminants in this area may introduce unwanted pollutants into the food chain. However, the substrate in the borrow area is primarily sand with a relatively large grain size. Contaminants do not adhere to sandy soil matrices. Therefore, the presence of resuspended contaminants is expected to be minor and short term.

197. The primary impact to fisheries will be due to disturbances to benthos and epibenthos within the borrow area immediately following construction. The benthos and epibenthos population are expected to recover relatively rapidly following project completion. In addition, as indicated above, the rapid repopulation by the pioneering species would provide a more than ample base for benthic feeders (USACOE, 1991). As borrow areas and channels appear to contain higher levels of fish than the adjacent shoals (Woodhead and McCafferty, 1986), it would appear reasonable to conclude that the resource does not demonstrate any adverse impacts from the creation of borrow areas once the immediate construction period is over. Therefore, this impact to fisheries is anticipated to be short-term.

198. Effects of Beach Fill Placement on Benthic Resources. Beach and surf zone organisms are well adapted to their rigorous environment and the natural erosion and accretion cycles associated with storms and seasonal changes.

199. The temporary loss of shallow nearshore (littoral) zone will mean a direct reduction in habitat for benthic and epibenthic marine invertebrates. This loss is negligible in view of

the vast amount of existing nearshore area available. The loss in biomass will be a short-term impact, since the new sandy bottom should begin to be recolonized by benthic organisms shortly after construction ceases. However, Reilly and Bellis (1979) found that recovery was affected by failure of adult intertidal organisms to return from offshore overwintering areas, reductions in organism densities on adjacent unnourished beaches, and inhibition of pelagic larval recruitment. It is acknowledged that the new community may be somewhat different from the original community. Tidal zone organisms will have an area of habitat equivalent to that at present, and there are expected to be no major long-term impacts to these organisms.

200. Effects of Groin Rehabilitation/Construction on Marine Biota. Impacts associated with the placement of rock substrate into the intertidal zone to rehabilitate/construct groins could include the mortality of clams and other invertebrates associated with sandy habitat that would be eliminated during groin construction.

201. However, the groin structure itself, once constructed, has the potential beneficial impact of improving habitat for some tidal organisms. The crevices between the stones provide protection for the species young against larger predators. In addition, the rocks themselves provide attachment points for numerous species of invertebrates that must have solid substrate in order to survive as adults. 193. Effects of Groin Burial on Marine Biota. The effects of sand burial of groins would result in a loss of artificial rocky intertidal habitat and a permanent impact to only the landward end of existing groins. Once covered, these landward groin ends will not be available for fisherman to use nor to provide habitat for invertebrates and shorebirds. Non-mobile organisms and intertidal dwellers would be affected by burial from the placement of sand and possibly notched groin material. However, the fill placement over the groins will re-establish sandy bottomed intertidal habitat. As these creatures form the base of the detrital food-chain in this area, reduction of higher order consumers is also a short-term possibility.

202. Endangered Fish and Wildlife Resources. The nearshore waters of Long Beach Island may contain threatened and endangered sea turtles during summer and early fall months. Listed species that may be present include the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepidochelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles. Occurrences of these species in the project area would be limited to occasional transient individuals. These species would only occur as a rare transient in either the beach site or borrow area. However, NMFS indicated that the proposed project, as presently designed, would not likely adversely affect any of the cited species (NMFS, 1993). However, NMFS stated that if hopper dredges are utilized between mid-June and mid- November, NMFS-approved turtle observers must be on board to monitor the dredging activity.

203. The piping plover Federally listed as threatened, and the State endangered least tern have been known to nest along Long Beach Island (See paragraph 3.30). If fill placement coincides with the shorebirds' nesting season (April-August), suitable buffer zones with protective measures will be incorporated into the project plans. The presence of shorebird nests will be determined by surveys prepared by qualified Corps biologists. With these preventive actions, it is anticipated that there will be no major impacts on these populations.

204. Other Impacts. Noise and air impacts are restricted to site construction (generally beginning two weeks prior to dredging) and the actual placement operation. Noise is limited to one or two bulldozers (or similar equipment) used to manipulate the material during placement. Additional noise may be caused by a pumpout station, if necessary. No delays in construction are anticipated due to noise-related impacts. Air quality impacts would similarly be limited to emissions from the heavy equipment and pumpout station (if used). These impacts would end when placement is completed. No long-term significant impacts to the local air quality is anticipated.

205. A Final Environmental Impact Statement, containing a detailed discussion of the impacts of the proposed project, along with the list of coordinating agencies, has been prepared and can be found at the end of the Main Report. The construction schedule for the project has the flexibility to avoid sand placement at Lido Beach if environmental restrictions are placed on the construction of the project. The groin work at Lido Beach requires continuous construction due to the extent of work. The following list comprises the mitigative measures which will be included for the project:

a. groins will be filled to equilibrium state to encourage sand bypassing,
b. pre- and post- dredging surveys of surf clams will be conducted,
c. provision of a trained turtle observer on any hopper dredge that may be used between the months of May and November,
d. construction of the project in approximately 600-foot sections during the months of May through November to reduce impacts to the recreational season, and
e. pre-construction surveys for piping plovers and least terns,

G. Impacts to Cultural Resources

206. On the basis of current project plans, the New York District is of the opinion that this project will have no effect on historic properties located onshore. This portion of the proposed project has been coordinated with the New York State Historic Preservation Office (SHPO), who has concurred with this determination.

207. The documentary data does not indicate whether or not the 1873 transatlantic cable was removed from its original location. The deposition of sand in this area would not negatively impact any remains of the cable, but would actually help to protect it (Pickman 1993:52). According to current project plans, six new groins will be constructed on Lido Beach. The transatlantic cable crossed Long Beach between Riverside and Edward Boulevards on Long Beach, to the west of Lido Beach. This construction should not disturb any remains of the cable unless project plans change to include the construction of groins in the Long Beach portion of the project area.

208. Of the four wrecks identified by the local divers, the wreck of the Mexico may be historically significant, based upon the documentary evidence presented in the cultural resources report (Pickman 1993:38). The western wreck on the marine chart should be field checked through underwater inspections to determine if it is buried, or if it is exposed, to determine if it is eligible for the NRHP. Additional coordination with local divers regarding the remaining two wreck is ongoing. Coordination with the SHPO regarding the

evaluation of all wrecks is also ongoing.

209. If any NRHP eligible wreck lies within the beach fill or groin construction area, then additional studies, such as underwater inspections to document it, will be conducted prior to construction.

210. A literature search on the offshore borrow site was conducted during the feasibility study (Pickman 1993), which recommended a survey of the borrow area for submerged cultural resources. Current project plans have scheduled this work for the next phase of the project, which is anticipated to be the preparation of a Design Memorandum. The borrow area will be surveyed using side scan sonar and a magnetometer. At this time all targets and anomalies identified by this survey will be avoided during dredging. If the amount or size of the targets/anomalies hinders dredging, then some or all of the targets/anomalies may be inspected by underwater archaeologists. This work will also be coordinated with the SHPO.

211. Clays and silts that may be indicative of lagoonal deposits were recorded in two of the fifteen cores taken form the borrow area to a depth of 20 feet below the ocean floor. Any submerged prehistoric sites would lie below these deposits. As currently planned, dredging for this project would not reach below this depth. If the dredging is limited to 20 feet below the existing bottom, then any preserved sites in the area would not be impacted (Pickman 1993:54).

212. If the borrow site is to be dredged more than 20 feet, then additional studies should be conducted. These studies may include the taking of cores within the borrow area to a depth equal to or just below dredging depth to determine whether prehistoric deposits exist within the borrow area. These cores would have to be analyzed by a submarine geomorphologist.

H. Construction & Funding Schedule

213. An estimated schedule of expenditures by year for the Federal and non-Federal sponsors is shown on Figure 29. This schedule is based on implementation of the selected plan in October 1997, in the Federal fiscal year 1998. A separate Project Management Plan will be prepared to describe activities leading to, through and after construction of the project.

Fig. 29 – Long Beach Island Storm Damage Reduction Project Construction & Expenditure Schedule (June 1994 Price Level)

Item	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	Total First Costs
1. Approve Final Feasability Report	3/95						
2. Environmental Resource Invest.	$305000 4/95						
3. Preparation & Approval of P&S	$65k 8/95	$540,000	$64,000 11/96				
4. Management & Negotiate PCA	$49,000 4/95	$87,000	$106,000 4/97				
5. Advertise, Open, Evaluate Bids & Award Contract			$9,000 12/96 3/97				
6. Preconstruction Monitoring		$98,000	$265,000	$400,000	$462,800		
7. Real Estate Acquisition/ Admin. cost			$11,900				
8. Construction Management				$2,052,000	$2,052,000	$683,500	
9. Construction of Project:							
A) Beach Fill				$21,130,000	$21,125,400		
B) Groin Work & Revetment				$8,405,000	$8,405,000	$2,802,700	
C) Relocations					$775,400		
Total Expenditures	$419,000	$725,000	$455,900	$31,987,000	$32,820,600	$3,486,200	$69,893,700

VII. LOCAL COOPERATION

214. In accordance with Section 105 (a)(1) of WRDA 1986, the feasibility study of Long Beach island, New York was cost shared 50%-50% between the Federal Government and the State of New York. Furthermore, the local municipalities of Nassau County, Town of Hempstead and the City of Long Beach cost shared the non-Federal share (70% State/30% local). The contributed funds of the local sponsor, the New York State Department of Environmental Conservation, and the local municipalities have shown the intent to support a project for Long Beach island, New York.

215. A fully coordinated Project Cooperation Agreement (PCA) package (to include the sponsor's financing plan) will be prepared subsequent to the approval of the feasibility phase which will reflect the recommendations of the feasibility study. The non-Federal sponsor, the New York State Department of Environmental Conservation, has indicated support of the recommendations presented in this feasibility report and the desire to execute a PCA for the recommended plan. Other non-Federal interests, such as the City of Long Beach, the Town of Hempstead and Nassau County have indicated their support of the project. The local sponsor shall be required to:

1) timely provide all lands, easements, rights-of-ways, and disposal areas or any other interests, deemed necessary by the United States for initial construction and periodic nourishment for the life of the project (50 years from the date of completion of initial construction);

2) hold and save the United States free from damages due to the construction (including periodic nourishment), operation maintenance, and replacement of the project, except where such damages are due to the fault or negligence of the United States or its contractors;

3) pay the required non-Federal costs for initial construction and periodic nourishment over the project life as specified in the PCA;

4) upon completion of each project feature, maintain, rehabilitate, repair and replace the works in accordance with regulations prescribed by the Secretary of the Army. The cost of the operation and maintenance will be the sole responsibility of the non-Federal sponsor.

5) upon completion of each project feature, acquire, rehabilitate, repair, replace, operate and maintain easements for public access to areas created or enhanced by the project. The cost of the operation, and maintenance of these easements will be the responsibility of the non-Federal sponsor;

6) issue Water Quality Certificate;

7) issue Coastal Zone management consistency determination;

8) provide acceptable Public Access Plan, and provide all lands, easements and rights-of-ways necessary for conformity with public access.

216. The Town of Hempstead, City of Long Beach and Nassau County have expressed strong support for a potential project. The cooperation between the various governments indicate a strong willingness to proceed with a potential solution to the storm damage problems facing the barrier island of Long Beach. In an effort to show their commitment to the project, the Town of Hempstead and Nassau County have revised their parking fee structures to allow for public parking at several beaches within the project area.

217. In an effort to keep the sponsor and interested local municipalities informed, coordination throughout the feasibility phase was maintained. Meetings were held periodically between representatives of the Corps, NYSDEC, City, Town, County and the Village of Atlantic Beach.

218. Coordination efforts shall remain constant, including coordination of this report with other State and Federal agencies. It is currently anticipated that an informational public meeting will be held upon approval of this feasibility report.

VIII. RECOMMENDATIONS

Prefatory Statement

In making the following recommendations, I have given consideration to all significant aspects in the overall public interest, including environmental social and economic effects, engineering feasibility and compatibility of the project with the policies, desires and capabilities of the State of New York and other non-Federal interests.

Recommendation

I recommend that the plan selected herein for storm damage reduction to the barrier island of Long Beach, New York be authorized and that implementation funds be provided. A public notice shall be issued to inform all interested parties of the Federal intent to authorize and implement the plan selected herein. Federal funding should be utilized to complete all necessary engineering and design and associated management leading to execution of a Project Cooperation Agreement for the plan selected herein. The costs for these activities leading to construction shall be reimbursed by the non-Federal sponsor as a project cost shared item.

The recommended storm damage reduction plan generally extends from the eastern end of the barrier island at Point Lookout to the eastern end of the Village of Atlantic Beach (in the vicinity of Yates Avenue) and consists of:

- a dune with a top elevation of +15feet above NGVD, a top width of 25 feet, and landward and seaward slopes of 1V:5H;
- planting of dune grass and appropriate fencing to ensure the integrity of the dune;
- dune walkovers and vehicle access ramps;
- a beach berm extending 110 feet from the seaward toe of the recommended dune, thus gradually sloping approximately 1V:35H to match the existing bathymetry;
- rehabilitation of 16 of the existing groins, including the rehabilitation of the existing terminal groin and revetment at Point Lookout;
- creation of 6 additional groins west of the existing eastern groin field, spaced approximately 1200 feet apart;
- advanced nourishment to ensure the integrity of the initial fill design; and
- periodic nourishment of approximately 2,111,000 cy of fill material at 5 year intervals for the 50 year life of the project.

The Federal Government shall contribute 65% of the initial cost of the selected plan, which is currently estimated to be $69,893,700 (June 1994 price levels). Periodic nourishment of the selected plan shall be similarly cost shared.

The plan is being recommended with such modification thereof as in the discretion of the Commander, HQUSACE, may be advisable.

Disclaimer

The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of highest review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to the Congress as proposals for authorization and implementation funding. However, prior to transmittal to the Congress, the sponsor, the States, interested Federal agencies, and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

Thomas A. York
Colonel, Corps of Engineers
District Engineer

ACKNOWLEDGEMENTS

The study and preparation of the report were made under the general supervision of:

Stuart Piken, P.E.	Chief, Planning Division
Bruce A. Bergmann	Chief, Planning Division (1989-1994)
Joseph Vietri	Assistant Chief, Planning Division
Norman Blumenstein	Chief, Economics Branch, Planning Division
Simeon Hook	Chief, Environmental Assessment Branch, Planning Division
Jesse Rosen	Chief, Civil Resources Branch, Planning Division (retired)
Frank Santomauro	Deputy District Engineer for Project Management
Arthur Connolly	Chief, Engineering Division
Foster George	Chief, Real Estate Division

Overall Plan Formulation and management was provided by Eugene Brickman, Chief, Plan Formulation Branch and Thomas Pfeifer, Chief, Navigation & Coastal Section.

The report was prepared and written by:

Clifford S. Jones III	Project Manager/Civil Engineer
Lynn M. Bocamazo	Hydraulic Engineer
Stu Chase	"
Diane Rahoy	"
Christina Rasmussen	"
Walter Scott	"
Nancy Brighton	Archaeologist
Peter Weppler	Biologist
Peter Womack	Economist
Randy Williams	Real Estate, with input from Fred Engesser (Real Estate Appraiser)

The M-CACES cost estimate was prepared by John Chew,

Assisting Engineering Firms were:

URS Consultants Inc.	Michael Cannon Thomas MacAllen
Frederic R. Harris, Inc.	Edward Schmeltz David Yang
Topo-Metrics, Inc.	Doug Mitchell
Alpine Ocean Seismic Survey	Gino Mecarini William McGuinness

Coastal model studies and other technical assistance were provided by the Waterways Experiment Station, Coastal Engineering Research Center by Lee Butler, Bruce Ebersole, Mark Gravens, James R. Houston, PhD, Julie D. Rosati, W. Gray Smith and Jane M. Smith.

This report was coordinated with local municipalities, whose input, insight and cooperation were invaluable in the preparation of this report:

Roman Rakoczy	New York State Department of Environmental Conservation
Edwin Eaton	City of Long Beach, City Manager
Robert Raab	City of Long Beach, City Engineer
Thomas Doheny	Town of Hempstead, Director of Conservation & Waterways
Gino Aeillo	Town of Hempstead, Commissioner, Conservation & Waterways
Francis A. Cosgrove	Deputy Commissioner, Parks and Recreation, Nassau County
Earlene Shipper	Village of Atlantic Beach, Mayor

FINAL ENVIRONMENTAL IMPACT STATEMENT
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

FEBRUARY 1995

PREPARED BY:
UNITED STATES ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
PLANNING DIVISION
ENVIRONMENTAL ANALYSIS BRANCH
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278-0090

FINAL ENVIRONMENTAL IMPACT STATEMENT

ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

FEBRUARY 1995

The responsible lead agency is the U.S. Army Engineer District, New York.

ABSTRACT: The entire project shoreline is approximately seven (7) miles long and includes the communities of Point Lookout, Nassau Beach, Lido Beach, and the City of Long Beach, within the Town of Hempstead, in Nassau County. The Department of the Army plan addresses issues of storm induced erosion and innudation by widening the existing beach with the placement of fill hydraulically, the rehabilitation of sixteen (16) of the existing groins at Long Beach, and the construction of six (6) new groins west of Point Lookout at Lido Beach. The plan is designed to maintain a 110-foot berm width along the shoreline between west of Point Lookout to approximately Yates Avenue where it would taper into the eastern portion of the Village of Atlantic Beach.

The Department of the Army has recommended a plan for implementation, called the selected NED plan. This plan includes groin rehabilitation and new construction, beach fill with a proposed berm height of +10-feet National Geodetic Vertical Datum (NGVD), and a dune system with a height of +15-feet NGVD. The selected plan has an average berm width of 110-feet throughout the placement area and will not extend the beach west of Yates Avenue.

An offshore borrow area located approximately 1.5 miles south of the project area will be utilized as a sand source. In order to provide for initial construction and four subsequent renourishments over 50 years the selected NED plan would require 28.24 million cubic yards.

For the selected NED plan, the construction of the six new groins at Lido Beach will need approximately 100,000 tons of armor stone (6 to 9 ton range) and 30,000 tons of bedding stone. The stone volume required to rehabilitate the 16 groins at Long Beach is approximately 68,000 tons, some of it reused from the existing groins.

Environmental impacts will occur at the placement site and the borrow area. The fill site will experience short-

term loss of limited benthic habitat, which is already severely disturbed, and minor short-term water quality effects. The borrow area will suffer short-term benthic losses that will be replaced by rapid recolonization, and minimal water quality impacts that will be limited to the immediate vicinity and time of excavation. Due to the New York State Department of Environmental Conservation's Bureau of Shellfisheries concern regarding impacts to the surf clam (*Spisula solidissma*), the District is proposing to perform a pre-dredge surf clam survey to confirm the presence of commercially-viable surf clam beds within the project area at time of construction (1998) and develop, in conjunction with the Bureau of Shellfisheries, potential mitigation alternatives. Impacts to potential shipwreck sites in the borrow area will be avoided through the designation of buffer zones. The project will be constructed in sections to minimize interference with the recreational use of the project area.

SEND YOUR COMMENTS TO
THE DISTRICT ENGINEER:

If you would like further information concerning this statement, please contact: Mr. Peter Weppler, FEIS Coordinator, Environmental Analysis Branch, (212) 264-4663.

U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, New York 10278-0090

NOTE: Certain information, displays, maps, etc. discussed in the Main Report are incorporated by reference in the draft environmental impact statement.

SUMMARY

__Major Conclusions and Findings.__ The construction of the proposed +15-foot NGVD dune with 110-foot wide berm option is designated the National Economic Development (NED) plan because it satisfies the planning objectives and provides the greatest net benefit and largest benefit-cost ratio (BCR) of all the alternatives considered in detail for the subject project. The least environmentally damaging project with the least net benefits to cost ratio, would involve the construction of the no dune with existing berm option, because it would reduce the sand quantity needed for project construction, thus minimizing impacts at the offshore borrow and shore deposition sites. In view of the overall nourishment quantity to be dredged and deposited, and the expectation that benthic resources will recover within a short time, the environmental effects of implementing any given beach nourishment berm width option would be similar. The least environmentally damaging plan is not considered significantly different from the selected NED plan in terms of long-term adverse effects.

The primary impacts resulting from the implementation of any of the intermediate structural plans considered would be the disturbance/destruction of benthic resources, due to the dredging operations at the borrow area and the fill placement along the shorefront. Placement of sand along the Long Beach Island beaches would result in temporary degradation of the existing beach habitat, during initial construction and during the periodic renourishment maintenance operations. Existing benthic organisms would be buried. Use of the immediate shoreline area by fish and avian species for feeding would be disrupted. Decreased water quality and increased turbidity associated with the hydraulic placement of fill would also be expected. These impacts are anticipated to be minor and short-term due to the existing high degree of natural and human disturbance in the beachfill areas. Fish and wildlife species which utilize these areas are those adapted to the high energy, dynamic condition of the ocean shoreline. Benthic species are expected to recolonize the new beachfront with no substantial long-term impacts outside the area permanently lost by extending the beach. Fish and bird species would return following the period of disturbance. Federally-listed threatened piping plovers __(Charadarius melodus)__ currently nest at Nassau Beach, Lido Beach and Atlantic Beach. Impacts to these potential nesting sites during construction activities will be avoided through the implementation of a survey monitoring program, coordinated with the USFWS.

The existing stone groins provide habitat for aquatic invertebrates which attract birds and fish. Some of these groins (except the ones rehabilitated at Long Beach) would be buried by sand placement. However, similar habitat would be created along the seaward edges of the proposed six new groins at Lido Beach.

No historic properties eligible for the National Register of Historic Places have been identified within the sand placement area or site(s) of proposed groin work.

Areas of Controversy: The New York Department of Environmental Conservation's (NYSDEC) Bureau of Shellfisheries believes that the use of portions of the designated offshore borrow area may significantly impact commercial shellfishing (surf clam, *Spisula solidissma)* in the area. Accurate assessments can only be determined by a survey conducted within a relatively brief period before the proposed dredging activities. The New York District will conduct a pre-dredge surf clam population assessment of the borrow area to obtain the latest available information. If it is found that clam populations do not exist in economically feasible numbers, then utilization of the borrow sites would not impact that resource. As discussed between the District and NYSDEC, if areas are found to be of high surf clam use, the District will work with NYSDEC staff in developing potential mitigation alternatives. Possible alternatives include:

a. depending on the magnitude and distribution of the resource, dredge in areas of lower surf clam use when such action can be accomplished without creating isolated holes
b. harvesting the resources before dredging initiates
c. develop a monitoring program to determine actual impacts and the possibility of modifying future nourishments for them.

Unresolved Issues: The New York District is continuing coordination with the NYSDEC-Bureau of Shellfisheries regarding potential mitigation alternatives.

Environmental Requirements: The choice of a selected alternative takes into account legislation relating to the environment and seeks to balance project cost with environmental protection. Table 1A shows the environmental laws applicable to the project area and the status of compliance with these laws. Table 1B summarizes the effects of the NED plan on resources of principal national recognition.

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

TABLE OF CONTENTS
(continued)

TABLE 1A

COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS AND PROTECTION STATUTES

Federal Policies	Compliance
Abandoned Shipwreck Act of 1987	Full
Archaeological Resources Protection Act of 1979, as amended	Full
Clean Air Act, as amended	Full
Clean Water Act of 1977, as amended	Full
Coastal Barrier Resources Act	Full
Coastal Zone Management Act of 1972, as amended	Full
Endangered Species Act of 1973, as amended	Full**
Estuary Protection Act (PL 90-454)	Full
Federal Water Project Recreation Act, as amended	N/A
Fish and Wildlife Coordination Act, as amended	Full
Land and Water Conservation Fund Act of 1965, as amended	Full
Marine Protection, Research, and Sanctuary Act of 1969, as amended	Full
National Environmental Policy Act of 1969, as amended	Full
National Historic Preservation Act of 1966, as amended	Full
Rivers and Harbors Appropriation Act of 1899, as amended	N/A
Watershed Protection and Flood Prevention Act, as amended	N/A
Wild and Scenic River Act, as amended	N/A
Floodplain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	N/A
Toxic Substances Control Act (PL 94-469), as amended	N/A
Executive Orders, Memoranda, etc.	
Floodplain Management (E.O. 11988)	N/A
Protection of Wetlands (E.O. 11990)	N/A
Environmental Effects Abroad of Major Federal Actions (E.O. 12114)	Full
Impacts Upon Prime and Unique Farmlands (CEQ Memo 8-30-76)	N/A
Protection and Enhancement of the Cultural Environment (E.O. 11593)	Full

** Measures will be incorporated into the project's Plans & Specifications to ensure the protection of Endangered Species.

- Sea Turtles (15 June - 15 November): If hopper dredges will be employed during this time frame, NMFS-approved observers must be aboard the dredge vessel to monitor the material coming aboard.
- Piping plover, seabeach amaranth (15 April - 15 August): If placement of nourishment material occurs during this time frame while the abovementioned species are present, a monitoring program, fully coordinated with the USFWS-Long Island Field Office, will be instituted to ensure construction activities do not disturb the present species.

DEIS TABLE 1B

Effects of Selected Plan on Resources of Principal National Recognition

TYPE OF RESOURCE	PRINCIPAL SOURCE OF NATIONAL RECOGNITION	MEASUREMENT OF EFFECTS
Air Quality	Clean Air Act, as amended (42 U.S.C. 185h-7 et seq.).	Minor construction effects.
Areas of Particular Concern Within the Coastal Zone	Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 et seq.).	Significant effect: Beach berm will be restored along 7-mile project shoreline; Littoral drift to west will be improved.
Endangered and Threatened Species	Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.).	No adverse effect.
Fish and Wildlife Habitat	Fish and Wildlife Coordination Act (16 U.S.C. Sec. 661 et seq.).	Short-term effect: Loss of benthos in the borrow and disposal areas. Long-term effect: Creation of offshore borrow pits; Restoration of beach berm and slope; Maintenance of coastal habitats.
Floodplains	Executive Order 11988, Floodplain.	No effect.
Historic and Cultural Properties	National Historic Preservation Act of 1966, as amended (16 U.S.C. Sec. 470 et seq.). Abandoned Shipwrecks Act of 1987.	Ongoing Coordination for Borrow Area.

DEIS TABLE 1B (continued)

TYPE OF RESOURCE	PRINCIPAL SOURCE OF NATIONAL RECOGNITION	MEASUREMENT OF EFFECT
Prime and Unique Farmlands	CEQ Memorandum of August 1, 1980: Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA.	Not present in project area.
Water Quality, Water Pollution, Public Health	Clean Water Act of 1977 (33 U.S.C. 1251 et seq.).	Local short-term effects on sedimentation and turbidity. No measurable long-term sedimentation or turbidity effects; Increased public safety.
Wetlands	Executive Order 11990, Protection of Wetlands, Clean Water Act of 1977, (33 U.S.C. 251, et seq.).	Not present in project area.
Wild and Scenic Rivers	Wild and Scenic Rivers Act, as amended (16 U.S.C. 1271 et seq.).	Not present in project area.

1.00 NEED FOR AND OBJECTIVES OF ACTION

1.01 Authority: The feasibility study was authorized by the resolution of the Committee on Public Works and Transportation of the U.S. House of Representatives adopted October 1, 1986. This document is a Draft Environmental Impact Statement (DEIS), prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) which requires the preparation of an Environmental Impact Statement (EIS) whenever a major action of a Federal agency may significantly affect the quality of the human environment. This DEIS has been prepared in accordance with the Council of Environmental Quality (CEQ) regulations (November 20, 1978, 40 CFR Parts 1500-1508). Relevant environmental statutes are listed in Table 1A.

1.02 Previous Environmental Documents. An initial environmental review was included in the March 1989 Reconnaissance Report for the project. A Draft Feasibility Report including a Draft Environmental Impact Statement DEIS was prepared and circulated in December, 1994.

1.03 Problem Identification: The problems encountered in the Long Beach study area consist of the loss of sand fronting the densely populated areas due to storm induced erosion, and the deterioration of the protective coastal structures. Erosion has gradually reduced the width and height of Long Beach Island beach berm. This has increased the exposure of the heavily developed shoreline community to damage during severe storms. Natural forces which cause damage to the beach, shorefront structures, and buildings in the project area were examined individually and in combination within the mechanism(s) which tend to produce the most damage to any given structure. Damage mechanisms examined were: a) storm recession, b) inundation, and c) wave attack.

1.04 Long Term Erosion. Another coastal force that threatens the Long Beach Island beachfront communities, but to a lesser degree, is long term erosion. Long term erosion has been caused principally by alongshore losses of sand from both ends of the project area. Long term erosion is a contributor to the other damage mechanisms because with the passage of time it brings the effect of storms closer to the developed areas.

1.05 A detailed analysis of shoreline changes performed by the Corps of Engineers showed that cycles of erosion and accretion have been common along the Long Beach Island shoreline in the past.

1.06 <u>Study and Scoping Objectives.</u> Plan formulation has been directed towards developing a plan which will contribute to the National Economic Development (NED) account while being consistent with statutes which protect the nation's environment. The scoping objectives guiding the preparation of this DEIS take into account public and professional views of the environmental resources in the project area. Emphasis has been placed on the analysis of potential impacts to water quality, aquatic resources impacts, cultural resources, and longshore sand transport.

1.07 The specific planning objectives are:

a. Reduce the threat of future damage to the shoreline due to wave attack, recession and innudation from storms.

b. Mitigate or prevent the effect of long-term erosion that is now being experienced.

c. The proposed project must be economically justified (the average annual benefits must equal or exceed the annual cost of the project).

d. Preserve, restore, and maintain existing ecological resources and habitats suitable to native fish and wildlife, where possible.

e. Preserve or mitigate for the loss of historical, archaeological, and cultural resources within the project area, if present.

2.00 ALTERNATIVES TO THE PROPOSED ACTIONS

2.01 Introduction: Feasibility efforts were directed toward addressing the current problems and opportunities in the area from Jones Inlet to East Rockaway. Efforts entail the evaluation of any various alternatives, including those suggested by interest groups. Possible alternate storm damage protection measures were evaluated through a three step planning process that included:

1. Identification of possible solutions.
2. Development of alternatives.
3. Assessment of alternatives.

2.02 Preliminary Shore Protection Alternatives. The following preliminary design alternatives for a beach erosion control and storm damage protection project along nine miles of Long Beach Island were considered in the initial phases of plan formulation:

a) No Action
b) Beach Restoration
c) Beach Restoration with Groins
d) Seawall
e) Seawall with Beach Restoration
f) Bulkhead with Beach Restoration
g) Breakwater with Beach Restoration
h) Perched Beach with Beach Restoration

2.03 The preliminary screening of alternatives considered designs which provide the same level of storm damage protection. However, in optimizing the design to develop the most cost effective design, various levels of protection were considered. All of the alternatives considered recognized the severity of the eastern end of the project, which is most susceptible to the effects of long term erosion. This long term erosion diminishes the storm damage protection capability of the berm and dune. In this area it was determined that the proposed groin field, which addresses the specific needs of this area, is a more cost effective solution than the alternative of increased beachfill.

2.04 It is noted that all the above preliminary alternatives, with the exception of (a) were selected to provide similar storm damage protection. The following paragraphs summarize the objectives and evaluation of each of the preliminary alternatives.

2.05 No Action (Maintain Base Condition): The No Action alternative would involve no Federal participation in providing storm damage protection and erosion control for the project area. This alternative entails continuation of the existing serious beach erosion problem and storm damage threat, with reliance on emergency evacuation measures, floodplain regulations as required under Federal, State and Local authorities and flood insurance under Federal programs. The existing groins would continue to deteriorate, accelerating the loss of beach. In the absence of Federal participation limited state or local efforts to contain erosion and storm damage might be undertaken. However, small scale efforts would not be effective in meeting the project's needs and goals. Therefore, this alternative was eliminated from further consideration.

2.06 Beach Restoration. This alternative involved the placement of beach fill from an offshore borrow source in order to widen and stabilize the existing beach profile. This alternative developed a design template of a 110 ft wide berm at elevation +10 NGVD fronting a 25 ft. top width dune with a crest elevation +15 NGVD with 1 on 5 side slopes. The foreshore slope utilized for the eastern third of the project length matched the existing predominant slope of 1 V on 25 H and the foreshore slope for the remaining two thirds of the project length matched the existing predominant slope of 1 V on 35 H. Advanced nourishment was included in initial placement. Periodic nourishment, estimated at 2,500,000 cubic yards every 6 years, was planned to be placed throughout the 50 year project life in order to maintain the design profile. The total initial fill volume was 10,940,000 cubic yards. Existing disturbed groins that would remain protruding after the beach fill placement, were planned to be restored for stability to prevent damage to the adjacent beach fill and for safety to swimmers. This alternative would provide upland storm protection, check erosion along the shoreline, and restore historical littoral drift rates that reach down-drift beaches. The beach restoration only alternative meets all the needs and objectives of the project.

2.07 Beach Restoration with Groins. This alternative provided the same beach restoration plan as described above with the following changes: (1) a terminal groin (15 ton maximum stone) was added at the eastern end of the project adjacent to Jones Inlet for closure; (2) 7 new groins were added to 2 miles of currently ungroined project frontage near the eastern end of the project and 24 existing groins (located approximately every 1500 ft) were extended to the toe of initial fill placement (an average extension of 500 linear feet) along the remaining 7 miles of project frontage; and (3) advanced fill in initial placement and nourishment fill were reduced due to the presence of the groins which reduce the erosion rate and therefore reduce the magnitude of beach nourishment. The initial fill volume including advance fill was 10,640,000 cubic yards, with 2,200,000 cubic yards of nourishment every 6 years. The stone volume to extend 24 existing groins was 460,000 tons, the stone volume to construct 7 new groins was 245,000 tons and the stone volume for the terminal groin was 102,000 tons.

2.08 The additional stone volume required for this alternative would be much more costly than the additional sand required for the periodic renourishment of the beach restoration project.

2.09 Seawall. This alternative included the construction of a "Galveston type" seawall placed along the entire nine mile project length with a top elevation of +20 NGVD to prevent overtopping from a 100 year storm event. This structure included fronting toe scour stone protection, was pile supported and provided with underlying sheeting to reduce underseepage. The volume of concrete for the seawall was 198,000 cubic yards. This alternative would not restore any recreational beach but would provide storm damage protection consistent with the other structural alternatives. It is noted that the seawall section used is approximately 10% less costly than an equivalent stone revetment section per linear foot.

2.10 Seawall with Beach Restoration. This alternative provided the same beach restoration plan as above except that the improved dune segment fronting the Long Beach area (3.5 miles) was eliminated and replaced with the seawall to provide continuity of storm damage protection. A seawall with beach restoration was not considered for the entire shoreline, as the existing dune system to the east and west of Long Beach (which essentially has no existing dune system) already provided protection at those locations. The seawall design was able to be slightly downsized compared with the seawall described in paragraph 2.08 due to the presence of the fronting beach improvement. The required initial beach fill for this alternative was 10,740,000 cubic yards with the same nourishment as for the beach restoration plan. Concrete required for the seawall portion of this alternative was 170,000 cubic yards. While this plan meets all project needs and objectives, it was not considered for further development due to its high costs.

2.11 Bulkhead with Beach Restoration. This alternative was the same as the seawall with beach restoration except that a concrete capped steel sheet pile bulkhead was utilized to provide storm damage protection at Long Beach in lieu of the concrete seawall for cost comparison purposes. Thus 10,740,000 cubic yards were required for initial fill, 2,500,000 cubic yards were required for renourishment every 6 years. Also 868,000 square feet of steel pile bulkhead were required for the 3.5 miles fronting Long Beach. However, this plan was eliminated from further development due to extremely high costs resulting from the construction of the bulkhead and the need for continual renourishment, given the lack of groins to retain the fill. In addition, the increase in renourishment requirements would increase the frequency of impacts to water quality and benthos and require larger borrow areas.

2.12 Breakwater with Beach Restoration. This alternative consisted of constructing 39 offshore stone rubble mound structures each approximately 600 ft. long with 500 ft. gaps between structures placed, about 700 ft. offshore along the nine mile project length. Capstones, each individually weighing sixteen (16) tons, with a total weight of 2,145,000 tons would be required for each rubblemound structure. The beach restoration component was similar to the beach restoration plan above except that the dune height was reduced since the offshore breakwater will trip the 100 year storm design wave before it intercepts the improved beach; the improved beach would be subjected to a lower impinging wave environment. In addition, nourishment requirements were substantially reduced since the erosion rate would be significantly lowered by the presence of the offshore breakwaters. The initial fill placement was 8,840,000 cubic yards with 500,000 cubic yards of nourishment required every 6 years. This option would effectively check erosion, create provide storm protection and incidentally create a wider recreational beach. This alternative was eliminated from further consideration due to construction constraints, associated high-capital investment and realization that breakwaters would create navigational hazards.

2.13 Perched Beach with Beach Restoration. This preliminary alternative was similar to the beach restoration alternative above, except that a submerged stone rubble mound structure would be used to support the offshore end of the fill. This would eliminate approximately the outer 300 ft. of beach profile near its closure with ocean bottom. The volume of initial sand fill as well as nourishment volume was therefore reduced since no placement of sand would extend beyond the submerged structure. Initial sand fill including advance nourishment was estimated to be 8,600,000 cubic yards. Renourishment was estimated to be 2,000,000 cubic yards required every 6 years. The amount of stone for the submerged structure was 630,000 tons. The perched beach was not anticipated to reduce the erosion rate of the improved beach. While this alternative meets all needs and objectives of the project, it was eliminated from further analysis due to it being technically unfeasible and having an unproven track record in an ocean environment.

2.14 Comparative Impacts of Beach Restoration: Since the "Beach Restoration" alternative best met the needs and objectives of the project, it was chosen as the basis for further engineering, design and cost estimate study. All other plans failed to meet the specific needs and objectives of the project and none resulted in reduced impacts to water quality or aquatic ecosystem.

2.15 Development of Intermediate Plans: Nine plans using the concept of beach restoration and the rehabilitation of groins were considered for this project and are shown in Table 2. The nine alternatives were further analyzed to compare their

TABLE 2

ALTERNATIVE BEACH FILL PLANS

Alternative	Dune Height (in feet NGVD)	Berm Width (in feet)	Groin Rehabilitation
Plan 1	No Dune	*Existing Berm	yes
Plan 2	No Dune	110	yes
Plan 3	No Dune	160	yes
Plan 4	+15	*Existing Berm	yes
Plan 5 NED Plan	+15	110	yes
Plan 6	+15	160	yes
Plan 7	+17	*Existing Berm	yes
Plan 8	+17	110	yes
Plan 9	+17	160	yes

* Existing berm option includes 50 feet of advance nourishment only.

relative benefits and costs.

2.16 The existing berm with no dune option will have fewer adverse environmental impacts relative to the 110-foot and 160-foot berm width options. The existing berm option will limit the quantity of offshore nourishment material needed, thereby, reducing both size and depth of offshore borrow areas.

Engineering considerations of project survivability rate the existing berm option unsatisfactory. The 160-foot berm option will have greater environmental impacts than the other two alternatives. Engineering and economical considerations of project survivability and failure to acquire the optimal B/C ratio, led to the rejection of the existing berm and 160-foot berm option. While the environmentally preferred option is the existing berm alternative, the 110-foot berm option offers the greatest net economic benefit consistent with protecting the Nation's environment.

2.17 Project Costs and Benefits: A detailed presentation of the benefit analysis and the benefit-to-cost (B/C) ratio for the entire project is presented in Table 8 of the Main Report. The NED (Plan 5, 110-foot berm, +15-foot NGVD dune height) alternative has a B/C (benefit-to-cost) ratio of 1.9. The selected NED plan will yield an annual net benefit of $8,026,000. The annual cost was calculated to be $8,954,000 with annual benefits of $16,980,000.

2.18 Selected NED Plan Description: Design 5 of the beach restoration with groins alternative has been identified as the selected NED plan for storm damage protection. The selected NED plan consists of the construction of 110-foot wide berm at an elevation of +10-foot NGVD, and a +15-foot NGVD dune. In addition to beach restoration, the NED plan includes the reconstruction of the damaged outer 75 feet of the terminal groin on the western side of Jones Inlet, the construction of six new groins in the severely eroded areas of Point Lookout and Town of Hempstead beaches (Lido Beach area), and the rehabilitation of fifteen groins along the shore at Long Beach. The design berm is protected by advanced fill, tolerance fill, and overfill. The NED plan is designed to endure a 100-year or greater storm event and have a 50-year economic life that would undergo beach renourishment every 5 years. Initial beach nourishment and renourishment would be accomplished by mechanically transporting sand from identified offshore borrow areas for placement onto a beach to widen the dry beach and restore and stabilize the near-shore profile.

2.19 Fill Profile: Dune and berm fill from Point Lookout west through East Atlantic Village to Yates Avenue, (Village of Atlantic Beach not included). The NED plan will consist of a +15 foot NGVD dune 25 feet wide with side slopes of 1 on 5, and a +10 foot NGVD berm 110 feet wide with a seaward slope varying from 1 on 35 to 1 on 25. Figure 6 in the Main Report.

2.20 Advance Fill: Advance fill is needed to compensate for the littoral drift within the project area. Advance fill is a sacrificial quantity of sand placed in front of the design berm to protect its integrity. Without it, the design berm width will be compromised. Of the approximately 8,642,000 cubic yards of initial fill placement, approximately 1,760,000 is for advanced fill.

2.21 Tolerance Fill: Tolerance fill is necessary because of inherited inaccuracies due to nourishment placement techniques.

2.22 Overfill: Overfill volumes are needed to compensate for grain size differences between borrow area material and native beach material.

2.23 Dune Construction: Dune construction includes approximately 29 acres of planting of American beach grass (Ammophila breviligulata) and placement of 50,000 linear feet of sand fence for dune sand entrapment, as well as construction of ramps and walkovers for access. New York District's Planning Division, in consultation with the USFWS-Long Island Field Office, will oversee the placement of sand fencing and the planting of beach grass to avoid any potential impacts in piping plover and least tern nesting areas.

2.24 Groin Construction: Six new groins, spaced approximately 1,200 feet apart, with an average footprint 60 feet in width, are proposed at the Lido Beach area. Each groin will be approximately 700 feet in length with crest elevations varying from +10-feet NGVD at the inshore end to +3.5-feet NGVD at the outer end.

2.25 Groin Rehabilitation: Fifteen groins along the shore at Long Beach will be rehabilitated, as they will be left exposed or partially exposed after beach fill placement. In addition, the outer end of the Point Lookout terminal groin will be rehabilitated.

2.26 Borrow Area Alternatives: The scarcity of suitable offshore sand deposits limits the options of selecting borrow areas. The large quantity of sand needed for project construction precludes consideration of utilizing upland borrow sources. Sediment suitability surveys of the offshore region shows concentrations of compatible sand approximately 1.5 miles offshore. To limit potential impacts on coastal processes, dredging will be limited to 20 feet below existing bottom between approximately the 30-foot MLW line and the 60-foot MLW line. Any potential cultural resource sites in the borrow area will be avoided. There are currently four commercial clamming operations operating in the Long Beach area. The New York District is coordinating with the New York State Department of Environmental Conservation to minimize potential impacts to the shellfish and shellfish industry. For detailed discussion concerning borrow area selection refer to Appendix B in Volume II in the Feasibility Report. For further discussion of environmental effects see paragraphs 4.10-4.19 of this document.

2.27 <u>Dredging Alternatives:</u> Alternatives for dredging and deposition of sand will be determined by the distance from the borrow area to the proposed project site. The borrow area is close enough to utilize a hydraulic pipeline dredge, pumping the material directly on the beach.

2.28 <u>Summary of Environmental Effects.</u> The primary adverse impact on the environment from the implementation of any of the intermediate plans would be the disturbance/destruction of benthic resources due to the dredging operations at the borrow area, fill placement along the shorefront, and the rehabilitation and construction of groins.

2.29 Placement of sand along the Long Beach Island beaches would result in temporary degradation of the existing beach habitat during initial construction and during the renourishment operations every 5 years, as well as loss of habitat along any extended portion of beach. Existing benthic organisms would be buried. Fish and avian species use the immediate shoreline area for feeding would be disrupted. Some decreased water quality and increased turbidity levels associated with the hydraulic placement of fill would also be expected.

2.30 These impacts are anticipated to be minor and short-term relative to the high degree of natural and human disturbance which already exist in the beachfill areas. Fish and wildlife species which utilize these areas are those adapted to the high energy, dynamic condition of the ocean shoreline. Benthic species are expected to recolonize the new beachfront and borrow area surface with no substantial long-term impacts. Fish and bird species would return following the period of disturbance. The portion of benthic habitat covered by any seaward extension of the beach would, however, represent a long-term loss. Some of the existing stone groins which provide the rocky inter-tidal habitat for aquatic invertebrates that attract birds and fish, would be partially buried. Fifteen groins along the shore at Long Beach will be rehabilitated, providing similar habitat. This rocky inter-tidal habitat will also be created along the seaward edges of the proposed six new groins at the Lido Beach area and the terminal groin extension.

2.31 The employment of groins as a project component needs to be examined closer, because they can have a significant impact on the local environment and downstream from the groin field. The effects of groins include changes in littoral drift transport and beach erosion patterns, modifications to ecological habitats and visual aesthetics. Good engineering practices (proper selection of groin length, height, and spacing) coupled with nourishment activities (filling of groin compartments and downdrift beaches until a equilibrium conditions between the two develop) will decrease the amount of long-term impacts on downdrift sand supplies.

2.32 The major difference in the environmental impacts associated with each of the alternative plans would be due to their relative size. As indicated in Table 2, the smallest of the final alternative plans is the existing berm alternative (See 2.15). The duration of construction activities is a second measure of relative impact dependent on the size of the project.

2.33 Measures to Minimize Impacts: Good engineering practices will minimize adverse environmental impacts from the proposed project. The use of nourishment material with a grain size compatible with native material will minimize water quality and sedimentation impacts, and facilitate faunal recolonization similar to the pre-nourishment faunal assemblages at the placement areas. While adverse impacts to the marine fauna are not expected to be significant, the following additional measures will be incorporated into the proposed plan, through coordination with the various resource agencies:

a. The New York District will conduct a pre-project surf clam sampling, and a pot-project sampling if clams are found to be present.

b. Dredging activities will be conducted in a manner that minimizes development of degraded water quality within the borrow area.

c. The groin compartments will be filled along with the downdrift beaches in order to decrease erosion and restore historical littoral drift.

d. A piping plover and seabeach amaranth survey/monitoring program will be instituted to minimize impacts.

3.00 AFFECTED ENVIRONMENT

3.01 General Description of the Long Beach Island Project Area. The study area consists of the Atlantic Coast of Long Island between Jones Inlet and East Rockaway Inlet (See Figure 1). The area lies within Nassau County, New York and from east to west encompasses the communities of Point Lookout, Lido Beach, City of Long Beach and Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The nine mile long barrier island (Long Beach Island) varies in width from 1,500 feet to 4,000 feet and is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel. Development of Long Beach Island is primarily residential with extensive recreational facilities. Beach clubs, cooperative apartment and condominium complexes, and hotels predominate along the ocean (south) shore. The north shore is predominantly occupied by private homes and some publicly owned facilities.

3.02 Shore Development. The south shore of Long Beach Island is a continuous sand beach serving year-round residents and a vast amount of summer recreational beach users. Adjacent to the beach are several densely populated communities which are discussed below.

3.03 Point Lookout. The unincorporated community of Point Lookout extends from Jones Inlet to the east to Lido Beach to the west, a distance of 0.9 miles. Point Lookout has a rip-rap revetment along the inlet and three groins along the ocean shore, one of which is the terminal groin attached to the existing revetment. Hempstead Town Park and Malibu Beach, recreational public beach facilities, comprise the western portion of this community. The parks consist of bathhouses, cabanas, refreshment stands, comfort stations, a large public parking area for each, and supporting facilities. In recent years, the Town Park has been the most hard hit by wave attack, tidal flooding, and storm erosion. The southern-most comfort station is on the verge of falling into the surf if the erosion is not rectified. The eastern portion and bay side of Point Lookout are primarily densely populated residential areas, and include the Town of Hempstead's Department of Conservation and Waterways office headquarters.

3.04 Nassau Beach. Extending approximately 0.7 miles west of the Point Lookout is the recreational public beach facility of Nassau Beach, which is owned and operated by Nassau County and is predominantly undeveloped land.

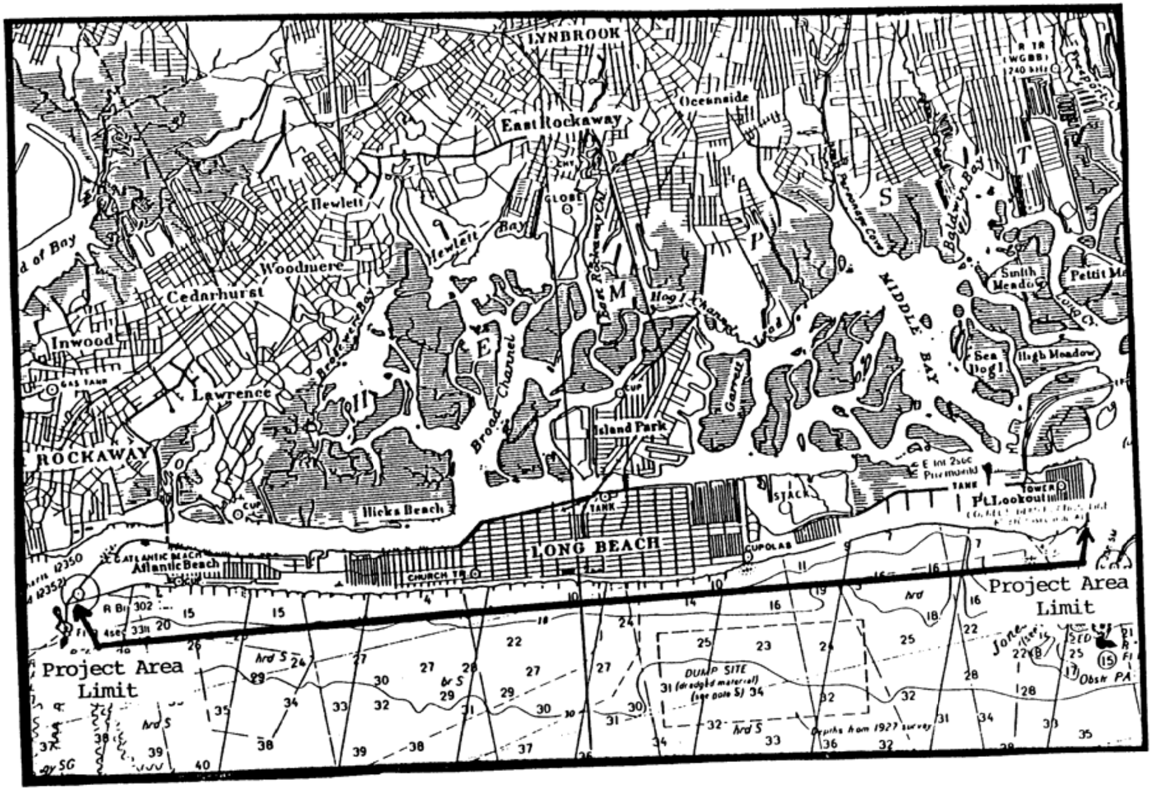


Figure 1 Portion of Marine Chart #12826 showing the project area. Scale 1" = 6666.66' (NOAA 1986).

3.05 Lido Beach. This unincorporated area extends for approximately 2.3 miles from Nassau Beach to the east to the City of Long Beach to the west. South of Lido Boulevard, the principal east-west traffic artery, the area has been developed with a hotel, closely spaced dwellings, beach clubs, and the Lido Beach Town Park which extends one-half mile along the ocean front. The area north of Lido Boulevard, originally a low-lying salt water marsh adjacent to Reynolds Channel, has undergone considerable development with closely spaced dwellings, the Long Beach High School, and a public golf course. However, the northeastern portion of the area adjacent to Reynolds Channel, still remains partially in its natural state (salt water marsh).

3.06 Long Beach. The City of Long Beach extends from Lido Beach to Atlantic Beach, a distance of 3.4 miles. It is primarily residential in character with a high concentration of commercial and public facilities. The area is almost completely developed with little space available for expansion. A boardwalk runs along almost the entire ocean front which is a continuous public beach. Along the north side of the boardwalk are many commercial establishments including retail stores, refreshment stands, hotels, and rooming houses. Most recently the area has experienced economic revitalization with a significant portion being upgraded with new high-rise cooperative apartment buildings and condominium complexes.

Physical Data

3.07 Tides. Tides in the area are semi-diurnal with a mean range of 3.6 feet. The spring tide mean range is 4.3 feet. The mean tide level for the Long Beach project area is 2.0 feet above Mean Low Water (MLW).

3.08 Climate. The climate of the project area is dominated by continental air masses directed by the westerly winds of the mid-latitudes, but the Atlantic coastal waters superimpose a moderating influence. The average annual temperature, as measured at John F. Kennedy International Airport, New York (approximately 30 miles west of Long Beach Island) is 52 degrees F, with extremes of -14 degrees F and 102 degrees F. Relative humidity is high, averaging about 70%. The average annual precipitation is approximately 44 inches. The distribution of precipitation throughout the year is rather uniform, with a slightly higher amount during the summer months. Most of the rainfall from June through September comes from brief but relatively intense showers. From October to April precipitation is generally associated with widespread storm areas, so day-long rain or snow is common.

3.09 Winds. Prevailing winds from the southwest from April through September and from the west between October through March. Most winds are of moderate velocity (14 to 28 miles per hour) and winds of greater velocities are usually from the northeast. Hurricanes, formed in tropical latitudes, are the most destructive storms affecting the Atlantic Coast shoreline. Extratropical storms, which blow from the east or northeast (locally known as "northeasters") can be nearly as destructive (i.e. Halloween Storm, 1991 & December, 1992-Northeaster), and combined with inundation are partially responsible for the erosion of the beaches within the project area.

3.10 Land Use. The land use of the project area is mixed but the predominant types of structures adjacent to the project area are medium to high rise residential apartment buildings, other residential housing, and structures associated with waterfront recreation or related uses such as boating and fishing. To the north of the waterfront areas there are areas zoned for commercial purposes to serve the local residential neighborhoods. Structures in these are generally limited to one or two floors.

3.11 Geology. The study area lies within the Atlantic Coastal Plain Province. The Atlantic Coastal Plain extends beneath the Atlantic Ocean about 100 miles offshore to the edge of the continental shelf (Pickman, 1993). The southern portion of Long Island is a low glacial outwash plain sloping gently southward towards the ocean which derives from the final stage of Pleistocene glaciation (USACOE, 1965) Two terminal moraines form the physiographic root along the northern part of Long Island. The study area is underlain by eight geological units of unconsolidated deposits and bedrock.

3.12 The geology of nearby New York Harbor is described by Bokuniewicz and Fray (1979) in a report on the sand and gravel resources in that area. Their report indicates that New York Harbor spans two major geological boundaries. The first boundary is the landward limit and separation of the younger, coastal plain sediments from the older, continental, crystalline rocks of the interior of North America. This boundary cuts northeasterly across Staten Island and Long Island, then under Long Island Sound. The older rocks, typical of the Piedmont and New England Provinces, represent ages up to 570 million years and lie to the northwest. The younger, unconsolidated Coastal Plain Province sediments, representing sedimentary layers varying in age up to 136 million years, lies to the southeast. The second geological boundary spanning the harbor is represented in the form of a glacial moraine. This moraine formed at the edge of the last great ice sheet, the Wisconsin glaciation. The moraine itself forms the northern shore of Long Island, continues west across Staten Island, and beyond into New Jersey. The typical sediments to the north of the moraine are till deposits, comprised of rocks, boulders, sand, silts and clays.

SIGNIFICANT RESOURCES

3.13 Water Quality. The New York State Department of Environmental Conservation (NYSDEC) and also the Interstate Sanitation Commission (ISC) classifies water quality to reflect its best usage. The study area water is Class SA (NYSDEC) and Class A (ISC) which defines the area safe for primary contact recreation and shellfish harvesting. Area storm water discharges are the major known sources of discharges. Also, with occasional exceptions (such as the temporary beach closings of 1987 and 1988 due primarily to the illegal dumping of medical wastes), the project beaches meet all standards for primary contact recreation.

3.14 The project site is located within the Long Island Brooklyn/Queens Aquifer System which has been designated as a sole source aquifer (SSA) pursuant to Section 1424(e) of the Safe Drinking Water Act. No significant adverse impacts to public health or ground water resources will result from the project.

3.15 Coastal Biological Resources: Coastal areas are among the most productive and critical areas for fish and wildlife resources, but some beach areas are often biologically depressed and support only those species able to cope with constantly changing ocean conditions. The project area beaches do contain productive fish and wildlife habitat. However, during the sun-bathing season, beaches within the project area are subjected to intense human activity and disturbance.

3.16 Beaches can generally be divided into upper, intertidal and nearshore subtidal zones. The upper beach zone, which extends from dune areas to just above the high water line, is dry except during storm events. Species such as ghost crabs (Ocypode spp.) and sand fleas (Talorhestia spp.) makeup a major portion of the fauna found in this strata. Where human disturbance is not significant (e.g. less populated areas of Nassau Beach), the upper and middle beach zones provide nesting and feeding areas for local shorebirds

3.17 The intertidal zone is usually submerged and influenced by tidal fluctuations. During low-tide episodes, aquatic organisms are susceptible to higher mortality due to desiccation. Because of limited adaptability to a constantly changing environment, few aquatic species reside within the middle beach zone, however, species abundance can be large. Organisms that reside in this zone include various copepods, ciliates, tardigrades, gastrotrichs and turbellarians. In addition, amphipods, annelid worms, small clams and mole crabs, as well as other molluscs and crustaceans, can be expected to inhabit this zone.

3.18 The nearshore subtidal zone is nearly continuously submerged and supports a rich and diversified fauna that includes polychaetes, crustaceans, molluscs and finfish.

3.19 The Atlantic coast of the south shore of Long Island contains high-energy beaches which receive strong wave action. This harsh ecosystem, with its shifting sands and pounding surf, supports a specialized biota termed psammom or sand dwellers. The epipsammon (shorebirds, fishes, some insects) live on the sand surface; endopsammon (snails, bivalves, crustacea) burrow beneath the sand surface; mesopsammon (diatoms, ciliates, tardigrades, turbellarians) live between the sand grains (Steimle and Stone, 1973). The beach and its biota act as an extensive food filtering system taking nourishment from incoming materials.

3.20 Naturally occurring rocky intertidal zones are absent from the project area. However, man-made structures such as seawalls, jetties, groins and bulkheads occur and provide additional suitable habitat for aquatic and avian species. Barnacles, small crustaceans, polychaetes, molluscs and a variety of shorebirds reside on, above and around these structures. The mussel, (*Mytilus* sp.), is the dominant member of this community. Finfish utilize these areas for feeding and shelter.

3.21 The affected shoreline environment includes nearshore subtidal areas down to 25 feet below MLW. This permanently submerged habitat hosts a large variety of bottom-dwelling marine organisms, including those unable to withstand the periodic desiccation and constant fluctuation of the middle and lower beach zones. Phytoplankton in this zone are an important food source for filter-feeding bivalves and benthic organisms. The fauna list also includes commercially important shellfish species. The inshore portion of the nearshore zone is periodically affected by the scour of high-energy storm waves interrupting the generally stable conditions, as well as associated successional stages of benthic faunal development.

3.22 Steimle and Stone (1973) studied the nearshore benthic macrofauna of southwest Long Island and found three types of communities based upon substrate type. The most common was a

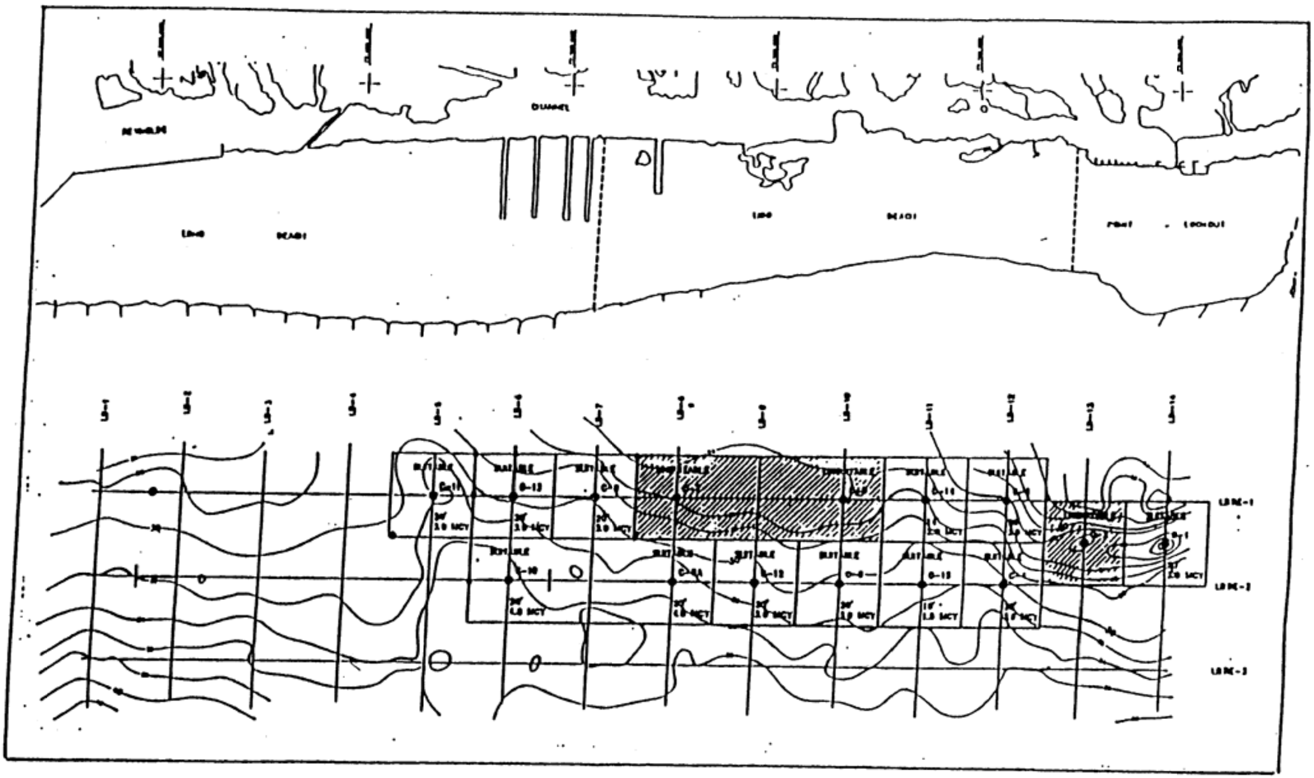


FIGURE 2 Benthic survey area from which 32 samples were taken from stations located randomly on the grid shown, excluding the shaded areas (WCH Industries, 1994)

TABLE 3 List and Description of the dominant benthic species in the 32 project samples within the borrow area. (WCH Industries, 1994)

Species	Mean density/m^2	Identification	Life form	Feeding type
Asabellides oculata	1192	polychaete	tube dwelling	selective deposit
Gammarus lawrencius	1023	amphipod crustacean	motile epifauna	omnivore
Mytilus edulis spat	258	bivalve	sessel epifauna	suspension
Protohaustorius deichmannae	177	amphipod crustacean	free burrowing	suspension within sand
Tellina agilis	160	bivalve	burrowing	suspension/ surface deposit
Tharyx acutus	112	polychaete	free burrowing	selective deposit
Ensis directus	104	bivalve	burrow	suspension
Magelona rosea	65	polychaete	tube dwelling	selective deposit
Spiophanes bombyx	65	polychaete	tube dwelling	selective deposit
Spisula solidissima	51	bivalve	burrow	suspension
Amatigos caperatus	43	polychaete	burrowing	non-selective deposit
Acanthohaustorius millsi	41	amphipod crustacean	free burrowing	suspension within sand
Pseudunciola obliquua	35	amphipod crustacean	burrow	suspension/ scavenger
Nephtys picta	27	polychaete	free burrowing	predator
Oligochaete sp.	23	oligochaete	burrow	selective deposit
Cancer megalopa	18	decapod crustacean	motile epifauna	matures to predator
Siliqua costata	18	bivalve	burrow	suspension

medium-coarse grain sand community dominated by the surf clam (*Spisula solidissima*), tellin shells (*Tellina agilis*), the sand dollar (*Echinarachnirs parma*), amphipods (*Protohaustarius deichmannae*) and (*Unicola irrorata*), and polychaetes (*Sthenalais limicola*, *Lumbrineris fragilis*, and *Spiophanes bombyx*). Hard substrates (including groin field areas) were dominated by the blue mussel (*Mytilus edulis*). Thirdly, a silty-sand community was found containing a clam (*Nucula proxima*) and a polychaete (*Nephrys incisa*).

3.23 The surf clam is the primary commercial shellfish in the nearshore zone south of Long Beach Island. There are currently four commercial clamming operations in the Long Beach area. These clams are found in the general vicinity of Jones Inlet at the eastern limit of the project area.

3.24 Borrow Area Biological Resources. The important biological resources of the proposed borrow area are the benthos (bottom fauna) and fin-fisheries. The diverse benthic fauna provides food for demersal fish species. The nearshore area provides a migratory pathway and spawning, feeding and nursery area for many species common to the mid-Atlantic region. The borrow area lies approximately 1.5 miles south of Long Beach Island between 25 feet MLW and about 60 feet MLW.

3.25 Phytoplankton in this zone are an important food source for filter-feeding bivalves. A sand fauna community is found in the proposed borrow area sediments. In June of 1993, the New York District conducted benthic invertebrate sampling within the proposed borrow area. See Figure 2 which identifies the proposed sand borrow sites in relation to the benthic sampling points. Table 3 lists the dominant species that were collected during this sampling period. Seventy-five taxa (species) mostly were found during the course of the sampling, which indicated a clear positive correlation between number of taxa and percent silt/clay of sediments (WCH Industries, 1994). The presence of high proportions of juveniles and of species with short life cycles suggest that populations undergo large seasonal variations in this habitat (WCH Industries, 1994). Polychaete worms and blue mussels are the most numerous macrobenthic organisms. The most numerous species in the survey was the tube-dwelling polychaete (*Asabellides oculata*).

3.26 Shellfish also occur in the proposed borrow area. The most important bivalve species are the surf clam (*Spisula solidissima*), the tellin (*Tellina agilis*), and the razor clam (*Ensis directus*) (Steimle and Stone, 1973). According to the New York Department of Environmental Conservation (NYSDEC) Bureau of Shellfisheries, the area around and including parts

TABLE 4 Finfish community caught over the year 1985-86 in the Lower Bay of New York Harbor Complex

(Source: NYSOGS,1992)

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
LAMPREY	lamprey	Petromyzon marinus
SM DOGF	smooth dogfish	Mustelus canis
SP DOGF	spiny dogfish	Squalus acanthias
LI SKATE	little skate	Raja erinacea
RS SKATE	rosette skate	Raja garmani
W SKATE	winter skate	Raja ocellata
TH SKATE	thorny skate	Raja radiata
AT STURG	Atlantic sturgeon	Acipenser oxyrhinchus
AMER EEL	American eel	Anguilla rostrata
CON EEL	conger eel	Conger oceanicus
BB HERRG	blueback herring	Alosa aestivalis
ALEWIFE	alewife	Alosa pseudoharengus
AM SHAD	American shad	Alosa sapidissima
AT MENHD	Atlantic menhadden	Brevoortia tyrannus
AT HERRG	Atlantic herring	Clupea harengus
RND HERR	round herring	Etrumeus teres
BAY ANCH	bay anchovy	Anchoa mitchilli
STR ANCH	striped anchovy	Anchoa hepsetus
TOADFISH	oyster toadfish	Opsanus tau
GOOSEF	goosefish	Lophius americanus
4 ROCKLG	fourbeard rockling	Enchelyopus cimbrius
SL HAKE	silver hake	Merluccius ~~bilinearis~~
TOMCOD	tomcod	Microgadus tomcod
POLLOCK	pollock	Pollachius virens
SPT HAKE	spotted hake	Urophycis regius
W/R HAKE	white/red hake mixed	Urophycis tenuis/chuss
CUSKEEL	cuskeel	Lepophidium cervinum
CORNETF	cornetfish	Fistularia tabacaria
A SILVER	Atlantic silverside	Menidia menidia
3 STICKL	3 spine stickleback	Gasterosteus aculeatus
SEAHORSE	lined seahorse	Hippocampus erectus
PIPEFISH	northern pipefish	Syngnathus fuscus
SEA RAVN	sea raven	Hemitripterus americanus
GRUBBY	grubby	Myoxocephalus aenus
LN SCULP	longhorn sculpin	M. octodecemspinosus
SH SCULP	shorthorn sculpin	Myoxocephalus scorpios
BL SEABS	black seabass	Centropristis striata
GRY SNAP	grey snapper	Lutianus griseus
STR BASS	striped bass	Morone saxatilis
LEPOMIS	sunfish	Lepomis sp.
BLUEFISH	bluefish	Pomatomus saltatrix
CREV JCK	crevelle jack	Caranx hippos
LOOKDOWN	lookdown	Selene vomer
RH SCAD	rough scad	Trachurus trachurus
SLPERCH	silverperch	Bairdiella chrysura
WEAKFISH	weakfish	Cynoscion regalis
SPOT	spot	Leiostomus xanthurus

of the borrow area is responsible for the majority of New York's surf clam harvesting. Surf clam surveys conducted immediately west of the borrow area, off the Rockaway Beach Peninsula, have been shown to produce a harvest valued at approximately $100,000 per 100 acres (NYSDEC, 1994). In addition to the above there are gastropods, amphipods, isopods, sand dollars, starfish, and decapod crustaceans. This assemblage was also sampled in the June, 1993 New York District survey (WCH Industries, 1994). Common decapod species include blue claw crab, (Callinectes sapidus), American lobster (Homarus americanus), rock crab (Cancer irroratus), hermit crab (Pagurus longicarpus), and lady or calico crab (Ovalipes ocellatus).

3.27 Important recreational species found in the proposed borrow area include Atlantic mackerel (Scomber scomblrus), black sea bass (Centropristes striatus), winter flounder (Pseudopleuronectes americanus), summer flounder [fluke] (Paralichthys dentatus), and scup (Stenotomus chrysops).

3.28 Shipwrecks, obstructions and large rocks in the borrow area and nearshore zone provide habitat for attaching organisms not found on sandy bottoms. Within the project area shipwrecks may exist within one mile of the shore or within the borrow area (see paragraph 3.43 of this DEIS). Shipwrecks and artificial reefs (such as the existing groins) provide shelter for fish and invertebrates. Hydroids, sponges, barnacles, mussels, polychaetes, crabs and lobsters are some of the organisms expected to use shipwrecks, artificial reef structures and irregular bottoms. Atlantic cod, pollock, hake and black sea bass are among the common species associated with high profiles and thus these areas are important to both recreational and commercial fisheries.

3.29 Regional Fishery Resources. A variety of fish species with recreational and commercial importance (See Table 4) can be found in the vicinity of the Long Beach Island beaches and East Rockaway and Jones Inlet areas. Many species of marine fish use the shallow nearshore waters as feeding areas. Important recreational species include Atlantic mackerel (Scomber scomblrus), black sea bass (Centropristes striatus), winter flounder (Pseudopleuronectes americanus), summer flounder [fluke] (Paralichthys dentatus), and scup (Stenotomus chrysops). The principal species using this area include tautog (Tautoga onitis), northern puffer (Sphoeroides maculatus), black sea bass, striped bass (Morone saxatilis), weakfish (Cynoscion regalis), and bluefish (Pomatomus saltatrix). Species commonly found in the more protected inlet waters to the east include scup, windowpane (Scophthalmus aquosus), summer flounder, winter flounder, and American eel (Anguilla rostrata).

TABLE 5

Birds associated with beach environments in the south shore of Long Island, New York.[1]

Common Name	Scientific Name
American Kestrel	*Falco sparverius*
American Oystercatcher	*Haematopus palliatus*
Bald Eagle	*Haliaeetus leucocephalus*
Black-bellied Plover	*Pluvialis squatarola*
Black Scoter	*Melanitta nigra*
Black Skimmer	*Rynchops niger*
Bonaparte's Gull	*Larus philadelphia*
Common Eider	*Somateria mollissima*
Common Loon	*Gavia immer*
Common Tern	*Sterna hirundo*
Dunlin	*Calidris alpina*
Forster's Tern	*Sterna forsteri*
Glaucous Gull	*Larus hyperboreus*
Great Black-backed Gull	*Larus marinus*
Great Cormorant	*Phalacrocorax carbo*
Gull-billed Tern	*Gelochelidon nilotica*
Herring Gull	*Larus argentatus*
Horned Grebe	*Podiceps auritus*
Horned Lark	*Eremophila alpestris*
Iceland Gull	*Larus glaucoides*
Least Tern	*Sterna albifrons*
Merlin	*Falco columbarius*
Oldsquaw	*Clangula hyemalis*
Osprey	*Pandion haliaetus*
Peregrine Falcon	*Falco peregrinus*
Piping Plover	*Charadrius melodus*
Purple Sandpiper	*Calidris maritima*
Red-breasted Merganser	*Mergus serrator*
Red Knot	*Calidris canutus*
Red-throated Loon	*Gavia stellata*
Ring-billed Gull	*Larus delawarensis*
Roseate Tern	*Sterna dougallii*
Ruddy Turnstone	*Arenaria interpres*
Sanderling	*Calidris alba*
Savannah Sparrow	*Passerculus sandwichensis*
Semipalmated Plover	*Charadrius semipalmatus*
Snow Bunting	*Plectrophenax nivalis*
Snowy Owl	*Nyctea scandiaca*
Spotted Sandpiper	*Actitis macularia*
Surf Scoter	*Melanitta perspicillata*
White-rumped Sandpiper	*Calidris fuscicollis*
White-winged Scoter	*Melanitta deglandi*
Willet	*Catoptrophorus semipalmatus*

1 from Howe, M. A., R. B. Clapp, and J. S. Weske. 1978. Marine and Coastal Birds. In MESA New York Bight Atlas, Monograph 31. New York Sea Grant Institute, Albany. 87 pp.

3.30 Regional Wildlife Resources. Within the project area itself, the high public recreational use of beaches and development of adjacent lands limits the area's value to wildlife species. Gulls, terns, skimmers, and sandpipers typically use such areas for resting and feeding. Many species of waterfowl including geese, dabbling ducks, and diving ducks overwinter in the bays, inlets, and harbors along the south shore of Long Island (See Table 5). Many birds utilize the Jamaica Bay Wildlife Refuge and Gateway National Recreation Area located west of the project area. These birds would, therefore, be expected to occur in the Long Beach Island vicinity on occasion. Terrestrial birds such as the rock dove (Columba livia), mourning dove (Zenaida macroura), tree swallow (Iridoprocne bicolor), barn swallow (Hirundo rustica), European starling (Sturnus vulgaris), American robin (Turdus migratorius), common grackle (Quiscalus quiscula), house sparrow (Passer domesticus), and house finch (Carpodacus mexicanus), would be common in the residential area adjacent to the beaches. The Federally-listed threatened piping plover (Charadarius melodus) and State-listed endangered least tern (Sterna antillarum) currently nest at Nassau Beach, Lido Beach, and Atlantic Beach. Nesting occurred at Point Lookout until 1991, when erosion due to storms eradicated the available nesting sites. Mammalian species likely to be found in these areas include gray squirrel (Sciurus carolinensis), house mouse (Mus musculus), Norway rat (Rattus norvegicus), eastern cottontail (Sylvilagus floridanus), and feral cat (Felis catus).

3.31 Terrestrial Endangered and Threatened Species. As stated above, the piping plover, Federally listed as threatened and the least tern, State listed as endangered have been known to nest along Long Beach Island. See Table 6 and Figure 3 for piping plover nest information. Some of the least tern and piping plover nesting sites receive protection from human disturbance through the Tern Steward Program of the Nature Conservancy, which monitors these sites throughout the island. The Town of Hempstead and Nassau County also provides protection programs for the nesting sites. The New York State Department of Environmental Conservation (NYSDEC) has nominated portions of Long Beach Island as Critical Habitat for piping plover under the Endangered Species Act.

3.32 The Federally listed plant species, seabeach amaranth (Amaranthus pumilus) has not been detected on Long Beach Island. However, the plant species has been sighted on adjacent Jones Beach Island and the Rockaway Beach Peninsula.

3.33 Significant Coastal Habitat. In the project area, Nassau Beach is listed as significant coastal fish and wildlife habitat by the New York State Department of State (1987). Nassau Beach is located approximately one mile west of Point Lookout. The beach is located within Nassau Beach County Park, in the Town of Hempstead, Nassau County. The significant habitat consists of approximately 15

Table 6: Piping Plover Nesting Sites Along Long Beach Island (Information collected from TNC, 1987, NYSDEC, 1993, USFWS, 1994)

PIPING PLOVER NEST SITES	HISTORY OF USE	PROPERTY OWNER
Silver Point Jetty	1983-1993	Nassau County
Ocean Beach Club	1988,89,92	Private
Lido Beach Town Park	1985-89,92,93	Town of Hempstead
Lido Beach Townhouse	1988,1993	Not Known
Nassau Beach	1986-93	Nassau County
Point Lookout	1988,89,91	Town of Hempstead

acres of sparsely vegetated dunes and the adjacent shell and pebble area inland and north of the dunes. Although the beach receives heavy recreational use during the summer months, the habitat area is generally located behind the open beach, and receives little disturbance. The Town of Hempstead actively posts and protects the area.

3.34 The habitat area is an undeveloped barrier beach ecosystem (a rare occurrence in Nassau County) despite the heavy development associated with the project area. Careful utilization of the nearby recreation areas has resulted in little degradation to the habitat.

3.35 This area serves an important nesting area for the State-listed endangered least tern (*Sterna albifrons*) and Federal-listed threatened piping plover (*Charadrius melodus*). In 1993, there were 6 piping plovers and 0 least terns recorded in the area; a marked decrease from 8 piping plovers and 148 least terns in 1992 (NYSDEC, 1994). This drop appears to correlate with the severe erosion taking place at the project area.

3.36 Marine Threatened and Endangered Species. The nearshore waters of Long Beach Island may contain threatened and endangered sea turtles during summer and early fall months. Listed species that may be present include the threatened loggerhead (*Caretta caretta*) and endangered Kemp's ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*), and green (*Chelonia mydas*) sea turtles. These species are under the jurisdiction of the National Marine Fisheries Service (NMFS), and would also only occur as an occassional transient at either the beach site or borrow area.

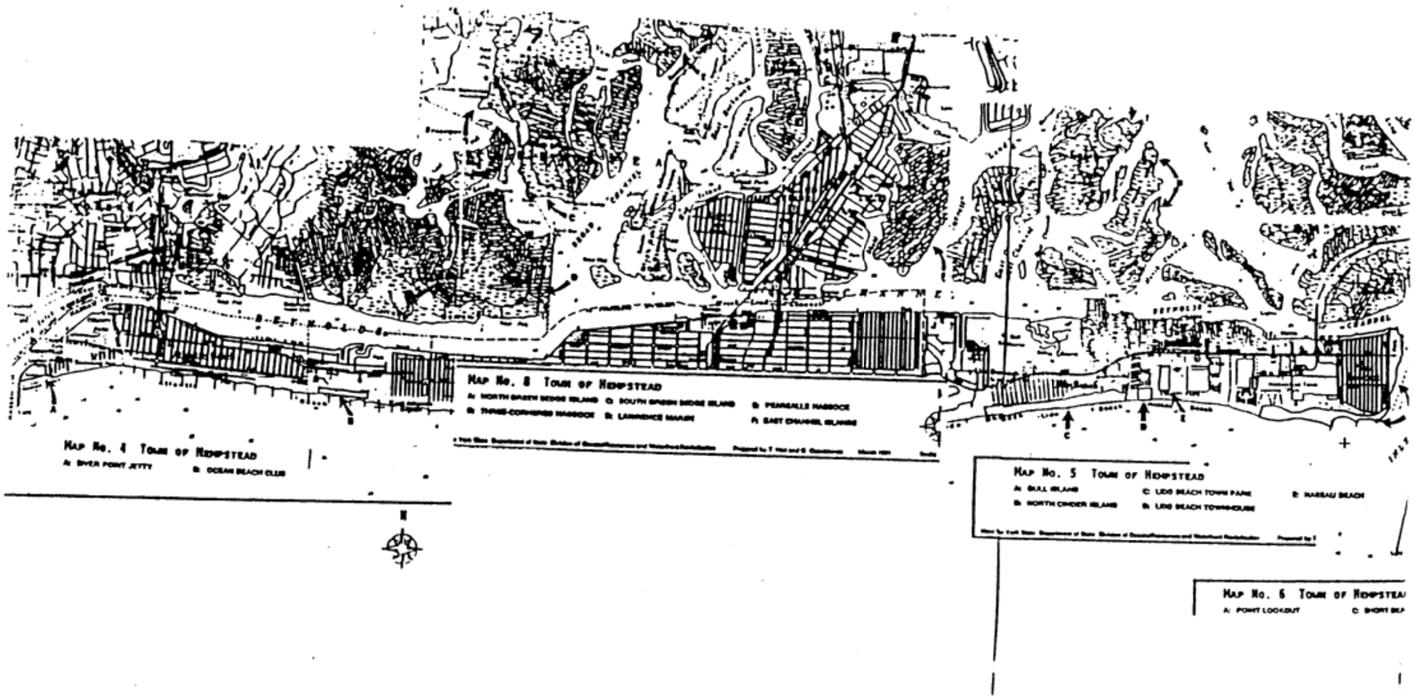


FIGURE 3 Long Beach Island Piping Plover Nesting Areas(Six site total)
(Source: The Nature Conservancy, 1991)

3.37 Further coordination with NMFS has also indicated that the proposed project, as currently designed, is not likely to adversely affect any federally listed species, other than the sea turtles listed in paragraph 3.35 above, under that agency's jurisdiction. In a letter dated June 1, 1993, NMFS confirmed this understanding.

3.38 Beach Recreation. The project site is located within the New York metropolitan area. The entire project area receives heavy recreational use during the summer season. To encourage use, public access to the beach areas is easy and convenient. A boardwalk, which extends along the City of Long Beach's boundaries, facilitates walking, jogging, and biking activities. Gift shops, fast food stores, and residences dominate the immediate surroundings in support of recreational bathing.

3.39 Cultural Resources. In preparing the DEIS, the New York District has consulted with the New York State Historic Preservation Officer (SHPO) and other interested parties to identify and evaluate historic properties, in order to fulfill its cultural resources responsibilities according to the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR Part 800. As part of this work, an extensive history and prehistory of the Long Beach Island area was compiled and a pedestrian survey of the onshore portion of the project area was conducted (Pickman, 1993). This consultation is ongoing and will be finalized prior to the implementation of any project actions.

3.40 Prehistoric Resources. The cultural resources study found that there were no known prehistoric or contact period archaeological sites located on Long Beach Island (Pickman, 1993). Native Americans living on the main portion of Long Island may have visited Long Beach Island for brief periods of time to collect fish and shellfish (Pickman, 1993). The island, however, would not have been attractive to Native Americans for permanent or semi-permanent settlement because of its exposure to the wind and weather from the Atlantic Ocean. Long Beach would have been especially uninviting to Native American occupation because there was no source of fresh water available on the island (Pickman, 1993).

3.41 Historic Resources. The first European settlers arrived on Long Island during the first half of the 17th century. It was not until the middle of the 19th century, however, that Long Beach was occupied by Euro-Americans. According to local histories, no structures were located on Long Beach Island until after 1849. Residents of the mainland used the island primarily for pasturage of their livestock. In 1849 a Life Saving Station was constructed on Long Beach to house surf boats, lifesaving apparatus and a crew of six to seven men.

3.42 Between 1849 and 1879, only a few buildings were constructed on Long Beach. The development of the island began in 1880 with the construction of a railroad from Lynbrook to Long Beach and the construction of the first large resort hotel and bathing pavilion on the island. This was followed by the construction of a number of other hotels in the 1880's and 1890's and during the first two decades of the 20th century. Summer homes and permanent residences were also built on the island during the 20th century. The location of these structures was well north of the present boardwalk and beach zone (Pickman, 1993). No significant remains of the project area's history are situated along the site of the present beach.

3.43 Two structures located in the vicinity of the project area, the Granada Towers and the United States Post Office, are listed on the National Register of Historic Places. One private residence, located on Washington Boulevard and thought to be one of the first private homes on Long Beach, is listed on the historic structures inventory maintained by the New York State Office of Parks, Recreation and Historic Preservation. None of these structures will be affected by the proposed project.

3.44 <u>Shipwrecks.</u> The cultural resources study also examined the potential for shipwrecks to be located in the near-shore placement area and within the boundaries of the offshore borrow area. Marine charts of the project area show the location two wrecks within the near-shore sand placement zone near Lido Beach and Point Lookout (Pickman, 1993). The eastern wreck has been identified as the <u>Mexico</u>, an American bark that was wrecked in 1837 (Pickman, 1993). The western wreck is unidentified, but is thought to be buried. A knowledgeable local diver also identified two other wrecks, a small tugboat and a barge that may lie within the nearshore portion of the project area.

3.45 <u>Submerged Prehistoric Sites.</u> During the last glacial period, the sea level was up to 120 meters lower than current levels. The shoreline at this time lay at the outer edge of the continental shelf, approximately 100 miles from the present shoreline. According to area studies, the sea level rose at a steady pace between ca. 7000 B.P. and 3000 B.P., with a slower rate of increase after ca. 3000 B.P. Cores taken adjacent to the project area indicate the presence of peat, silt, and clay deposits that are the remains of the lagoons that formed behind the barrier islands that were created off the present Long Island shoreline at this time (7000 B.P. and 3000 B.P.). The presence of these lagoonal deposits may mean that the inundation of the ground surface permitted prehistoric sites located in the near shore area to survive any disturbance. These deposits consist of organic peat and/or organic silts and clays (Pickman, 1993).

3.46 The proposed borrow area may also contain prehistoric landsurfaces. The borrow site would have been available for human occupation until some time after 7000 B.P. Two of fifteen cores taken from within the borrow site to a depth of 20 feet below the ocean floor contained a clay layer. It is possible that these two cores taken within the borrow site may represent landsurfaces that would lie on top of prehistoric deposits (Pickman, 1993).

4.00 ENVIRONMENTAL EFFECTS

4.01. Dredging Impacts in General. Dredging has been defined as "an earth-moving process specialized to remove bottom material from under water to increase the water depth or gain the bottom material" (USACOE, 1991). Impacts associated with dredging at the proposed borrow area site in order to provide a clean source of sand for project beaches, and fill placement of the resultant material, are the major subjects of this section.

4.02 Dredging for this type of beach nourishment project can be accomplished by either a hopper dredge or a hydraulic (cutterhead) dredge. The costs for this project are based on the use of both of these dredges. The use of both dredges is anticipated to maximize dredging production time. Although the District cannot predict the types of dredge(s) that will be bid for the specific project or awarded a contract, history has shown that these dredges are readily available with sufficient capability to perform the proposed project work. Hopper dredges normally perform at maximum production when the dredging to placement distances exceed three miles. Hydraulic dredges are usually used within the three mile distance. Even though the borrow site is approximately one-half mile offshore, the distance of the placement area is approximately seven miles. Therefore, the most cost-effective solution is to use both types of dredges.

4.03 A hopper dredge behaves as an underwater "vacuum cleaner", in that it moves along the ocean floor and inhales sediment through a pipeline which deposits the material into the vessel's hopper. The sediment, in each pass, is taken up in less than two foot increments until the hopper is full or the maximum dredging depth is met. The hopper dredge will normally transverse a large area, to minimize turns, and will incrementally dredge the entire area before the second pass is executed.

4.04 Conversely, the hydraulic dredge will dredge from a stationary position and continue until the limited depth is reached. The dredge will then position itself to another site to continue the process.

4.05 Although the techniques may differ, the outcome is the same: a specified area will be dredged to a depth (not to exceed twenty foot below existing ocean bottom) which will provide sufficient material to meet the necessary volumetric beachfill requirements.

4.06 It is further noted that there are other types of dredging vessels that may become available for use on the proposed project. The Federal objective (construction of the proposed project) will be the same, and whichever type of dredge can perform the required work at least cost (low-bid), will fulfill the objective. If the State (project co-sponsor) has dredging restrictions that result in an increased cost to the Federally proposed dredging, the increased costs shall be the responsibility of the State.

4.07 Standard dredging practices aim to avoid disturbing and dredging sediment types that are of high benthic quality and that are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized. Also, as standard practice, the District tries to dredge borrow areas to the minimum depth required with gently sloping sides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

4.08 It should be noted that the Dredged Material Research Program at the United States Army Engineers Waterways Experiment Station at Vicksburg, Mississippi has resulted in the publication of several hundred reports concerning dredging and dredged material disposal impacts. The information provided below can only summarize some of the great volume of information available.

4.09 <u>Beach</u> <u>Restoration.</u> Restoration of a beach is the process of replenishing sand lost to erosion. Beach replenishment or renourishment may occur naturally by longshore transport or artificially by the placement of sand. Sand for such operations is trucked from a land source or dredged from the seafloor. Suitable material may also be available from new sea-navigation channel construction and existing channel maintenance dredging projects.

4.10 Through its civil works, the U.S. Army Corps of Engineers has had a long and extensive involvement with the use of marine sand for beach replenishment. Nationally, potential fill requirements total millions of cubic yards annually, combining both initial sand placement and annual maintenance. Beginning in 1971 and continuing to the present, the Corps of Engineers Coastal Engineering Research Center and the Environmental Laboratory located at Vicksburg, Mississippi have supported research on the ecological effects of beach replenishment, examining both the depositional areas of the beach, above and below water, and the offshore sand source areas.

4.11 The effects on the environment of the operation of dredging and fill placement are materially influenced by the conditions at the dredging site, by the nature of the materials dredged, and, both directly and indirectly by the types of equipment used. By their action, dredges may cause a variety of negative environmental impacts to water quality and aquatic ecosystem. These include:

Water Quality

1. Increased levels of turbidity and suspended solids resulting in:

   a. the reduction of dissolved oxygen levels, primary productivity and photosynthesis.

   b. higher occurrence of gills and filter-feeding structures becoming clogged.

Aquatic Habitat

1. Changing the aquatic habitat at the dredging site.
2. Destruction of benthic organisms.
3. Altered benthic diversity following recolonization.
4. Changes in circulation patterns.
5. Modified sediment deposition.
6. Creation of either hypoxic or anoxic zones.
7. Biological uptake of released pollutants.
8. Modified behavior of organisms due to increased stress levels possibly effecting reproduction.
9. Mortality of organisms being entrained within the dredging device.

4.12 The material from the borrow area is predominantly sand and gravel mixtures (> 90%). Borrow area investigations revealed that a clay layer exists below the delineated borrow area. As currently planned, dredging for this project would not reach below this depth therefore, not impacting the clay layer. Silicon particles are believed to have no substantial chemical attraction to heavy metals and organics, and under ocean disposal testing guidance (USACOE & EPA, 1990), it is assumed to be contaminant free and therefore, testing of the sediments has not been done. No hazardous, toxic and radiological wastes are known to exist within the project limits, however New York Harbor is located nearby.

4.13 Water Quality. There will be short-term adverse water quality impacts during the construction period of this project. Naqvi and Pullen (1982) conclude that problems with anoxic sediments and nutrient release in the nearshore zone of a high-energy beach as a result of beach nourishment do not appear to be significant because: (1) Fine materials that are high in organics are generally moved offshore; (2) Sulfides are rapidly oxidized; and (3) Fine sediments are rapidly diluted by the high-energy mixing process. Dredging the proposed borrow areas will generate turbidity and sedimentation impacts within the immediate vicinity of the operation, and does not appear to significantly impact water quality (Naqvi and Pullen, 1982). Generally, the large grain-sized material will keep the area of impact small and will ensure that there are no impacts beyond the period of construction. The construction period will last several months and localized water quality impacts will be experienced in the proposed borrow area for the duration. Similar short-term water quality impacts will occur at the nourishment sites along the seven (7) mile project shore but these impacts should not alter the Class SA and Class A water quality classifications set by the NYSDEC and ISC. Fill operations will deliver a slurry of sand to the receiving shore, increasing turbidity in the immediate area. This effect, however, will not be significant since turbidity levels in the high-energy surf area are naturally high.

4.14 Long-term impacts to water quality are not expected to occur as a result of project implementation. Short-term turbidity may effect organisms in several ways. Settling of sediments may bury sedentary species. Suspended matter can clog gills and filter-feeding structures, which could directly cause mortality or reduce energy efficiency, and cause indirect effects such as reduction in reproduction or decreased ability to avoid predation (Sherk, 1971). In addition, turbidity may reduce light penetration, lowering photosynthetic activity and dissolved oxygen content. Turbidity and associated water quality parameters at the borrow areas and placement sites will rapidly return to preconstruction levels with no lingering adverse impacts expected (Naqvi and Pullen, 1982). Periodic renourishment will produce water quality impacts similar to those generated by initial construction, but for a shorter time period (Naqvi and Pullen, 1982). Renourishment impacts are also not expected to be significant.

4.15 Based on the aforementioned studies, as well as a general review of dredging operations across the country (LaSalle, 1986) it is reasonable to conclude that, except for special or unusual circumstances, dredging does not produce a long-term significant adverse impact to water quality.

4.16 <u>Borrow Area Biological Resources.</u> Potential adverse impacts within any borrow area include: (1) destruction of benthic organisms; (2) altered benthic diversity following recolonization; (3) changes in circulation patterns; (4) modified sediment deposition; and (5) creation of either hypoxic or anoxic zones. Loss of benthic and epibenthic organisms will be the most direct and most immediate impact in the borrow areas for the project. Mortality will occur as organisms pass through the dredging device or are transported to an unsuitable environment. Benthic and epibenthic organisms will be buried by resuspended and redeposited sediments. Sessile species will be eliminated by direct burial or capture while motile organisms can move away (See 4.21 & 4.22).

4.17 Habitat changes brought about by dredging within borrow areas may include changing the bottom circulation patterns on where newly-dredged pits are created. This may create conditions whereby fine sediments are deposited replacing the sandy bottom, thus leading to either hypoxia or anoxia within the pits. Because many species are substrate-specific or nearly so, biological communities can be altered as a result of these changes. Filter-feeding organisms are most susceptible to fine sediments, and a change from a filter-feeding community to a deposit-feeding community in the area of borrow pits can develop. Data from borrow pits in lower New York Bay do not suggest that the proposed impacts will impede the recovery of the borrow area benthic and epibenthic communities (USACOE, 1991b).

4.18 Woodward-Clyde Consultants (1975) studying the lower New York Harbor found rapid repopulation of the Rockaway Beach borrow area to occur particularly by transient colonizing species [such as _(Mulinia lateralis),_ _(Polydora ligni),_ and _(Capitella capitata)_]. In comparing borrow areas to undisturbed shoals, Cerrato and Scheier (1983) report concentrations of pioneering species with rapid return to more stable communities within a short distance from dredged areas. These colonizing species are suitable for fish food, and thus provide a substantial short-term resource (to an extent mitigating a period of lower productivity) until the normal fauna is re-established. Past studies report that many features typical of "undisturbed" or normal benthic communities should be attained within one year following the dredging operations.

4.19 _Dredge Tolerant Species._ The Woodward-Clyde Consultants (1977) study found that several species were appreciably more abundant in October 1975 than in June 1976 or September, 1976, indicating a possible positive response to increased suspended materials loads. These species included: _(Magelona obockensis),_ _(Magelona spp.),_ _(Nephtys spp.),_ _(Acanthohaustorius millsi),_ _(Parahaustorius longimerus),_ _(Protohaustorius deichmannae),_ and _(Trichophoxus espistomus)_ in the Shipek samples and _(Ovalipes ocellatus)_ in the trawl samples. However, most of these species were concentrated at one or two stations, suggesting a local rather than some widespread effect of dredging. _(Magelona obockensis)_ was outside the borrow site, _(Nephtys spp.)_ was in the dredged borrow area, _(Acanthohaustorius millsi)_ and _(Parahaustorius longimerus)_ were in the undredged borrow area, (Protohaustorius deichmannae) and (Trichophoxus epistomus) were throughout the borrow area, and (Ovalipes ocellatus) was in the south reference area (outside of the Rockaway borrow area). (Magelona spp.) was widespread (found at all 11 stations and in 24 if 33 replicates) and numerically prominent only in October 1975 (173 of 177 individuals found). This species may be the only possible indicator of a widespread effect of dredging, based on increases among organisms that do better when water quality is poor. Possible dredging-sensitive species identified included sand shrimp, which were more abundant in June and September than during October, and (Streptosyllis spp.) and (Gammarus spp.), which were more abundant during September than during June or October. Both (Streptosyllis spp.) and (Gammarus spp.) were localized to only some of the sampled areas, suggesting possible local factors. Sand shrimp may well have avoided the borrow vicinity during dredging operations.

4.20 In Brinkhuis' 1980 assessment of the potential biological effects of sand and gravel mining in the Lower Bay of New York Harbor based on the literature, he concluded that the probable effects of sand mining operations on biota per se appear to be minimal.

4.21 Effects on Shellfish. Coordination with the USFWS and NYSDEC have shown a commercially exploitable surf clam population located within part of the borrow area. In anticipation of potential surf clam impacts, the New York District in consultation with the NYSDEC, will survey the borrow area prior to initiating dredging activities. If the survey confirms the presence of commercially-viable surf clam beds within the project area at time of construction (1998) and develop, in conjunction with the Bureau of Shellfisheries, a contingency plan to either harvest all areas before construction activity begins or dredge within areas of least surf clam use. However. it is the District's position that no significant impacts to surf clams are expected because of the availability of surf clams from surrounding suitable areas, and because surf clam recovery is anticipated to be in a manner similar to recovery following commercial harvesting or naturally induced disturbances. Since the water quality condition and bottom substrate within the borrow area should not be significantly altered from the present, post-dredging assemblage is expected to resemble pre-dredging assemblage (Applied Biology, Inc. 1979; Culter and Mahadevan, 1982; Saloman, et al., 1982; Tuberville and Marsh, 1982), with complete faunal recovery expected to take about one year. The borrow area can be potentially recruited by adjoining juvenile surf clams from the surrounding offshore area.

4.22 Effects on Fishery Resources. Bottom fish should avoid the dredge and should not be impacted. Most pelagic organisms should be capable of avoiding the area during construction activities. A short-term decrease in dissolved oxygen concentration is not expected to be a problem. The resuspension of contaminants in this area may introduce unwanted pollutants into the food chain. However, the substrate in the borrow area is primarily sand with a relatively large grain size. Contaminants do not adhere to sandy soil matrices. Therefore, the presence of resuspended contaminants is expected to be minor and short term.

4.23 The project will have no serious direct impact on marine fisheries. Some bottom fish may be entrained in the intake stream of the hydraulic dredge, but most fish are active swimmers and can avoid areas of disturbance. There will be little impact to fish eggs and larvae because the offshore dredge areas are not sites where these life stages are concentrated.

4.24 The primary impact to fisheries will be due to disturbances to benthos and epibenthos within the borrow area immediately following construction. The benthos and epibenthos populations are expected to recover relatively rapidly following project completion. In addition, as indicated above, the rapid repopulation by the pioneering species would provide a more than ample base for benthic feeders (USACOE, 1991). As borrow areas and channels appear to contain higher levels of fish than the adjacent shoals (Woodhead and McCafferty, 1986), it would appear reasonable to conclude that the resource does not demonstrate any adverse impacts from the creation of borrow areas once the immediate construction period is over. Therefore, this impact to fisheries is anticipated to be short-term.

4.25 Effects of Beach Fill Placement on Benthic Resources. Beach and surf zone organisms are well adapted to their rigorous environment and the natural erosion and accretion cycles associated with storms and seasonal changes.

4.26 The temporary loss of shallow nearshore (littoral) zone will mean a direct reduction in habitat for benthic and epibenthic marine invertebrates. This loss is negligible in view of the vast amount of existing nearshore area available. The loss in biomass will be a short-term impact, since the new sandy bottom should begin to be recolonized by benthic organisms shortly after construction ceases. Since faunal recolonization should be completed within 1-2 seasons following the end of construction (Reilly and Bellis, 1978; Parr, Diener and Lacy, 1978; Cerrato and Scheier, 1983; Saloman, 1974; Taylor Biological Company, 1978; Marsh, et al., 1980; Culter and Mahadevan, 1982) the need for long-term impact assessments is not expected. Naqvi and Pullen (1982) stated that communities are likely to recover rapidly due to high reproductive potential and recruitment from planktonic larvae and mobile macrofauna from nearby unaffected areas. However, Reilly and Bellis (1979) found that recovery was affected by failure of adult intertidal organisms to return from offshore overwintering areas, reductions in organism densities on adjacent unnourished beaches, and inhibition of pelagic larval recruitment. It is acknowledged that the new community may be somewhat different from the original community. Tidal zone organisms will have an area of habitat equivalent to that at present, and there are expected to be no major long-term impacts to these organisms.

4.27 Effects of Beach Fill Placement on Non-motile Biological Resources. Organisms composing the adjacent offshore or subtidal benthic community members are not capable of avoiding the impacts associated with beach replenishment. Direct burial of non-motile forms would generally be lethal, although some burrowing clams and crustaceans can migrate upward. It has been found that under certain laboratory conditions some benthic animals could migrate vertically through more than 30 cm. of deposited sediment (Hurme and Pullen 1988). Although the immediate impact of renourishment in these zones is to reduce species diversity and number of animals, recovery is rapid once operations have ceased. (Hurme and Pullen 1988; Woodward and Clyde, Inc. 1977). Indeed, faunal enrichment, primarily related to the invasion of opportunistic species, is often the result (Woodward and Clyde, Inc. 1977). Readjustment to a more stable population, displacing the opportunists, is probably similar to that following a major natural disturbance. Macrofauna recover quickly because of short life cycles (1 to 2 years), high reproductive potential, and planktonic recruitment from unaffected areas. However, the recolonization community may differ considerably from the original community. Recolonization depends on the availability of larvae, suitable conditions for settlement and mortality. Once established, it may be difficult for the original community species to displace the new colonizing species.

4.28 Effects of Beach Fill Placement on Motile Biological Resources. Courtenay, et al. (1972 and 1980), Parr, Diener and Lacy (1978), Reilly and Bellis (1978), Holland, Chambers and Blackman (1980) concluded that motile fauna are generally not affected severely by beach nourishment. Most long-term studies have shown that moderate to complete recovery of motile animals will occur within less than a year (Naqvi and Pullen, 1982). Motile organisms such as fish appear to be the least affected by beach replenishment as they can avoid temporary unsuitable conditions (Hurme and Pullen 1988). The major concern with these animals is the long-term destruction of habitat, including spawning areas. However, the near shore area impacted by fill placement is not utilized as a primary spawning area by the species found in the project area (see species list in Table 4). Scavenging species often move in to feed on organisms transported from the borrow site. This may partially offset any burying of food organisms by deposition.

4.29 Under certain situations, there is a potential for more prolonged or permanent effects to mobile organisms. Large quantities of material that are either fine-grained or physically capable of degrading into fine particles may create prolonged, increased suspended sediments. Increased suspended sediments, particularly in conjunction with the deposition of fine material on bottoms composed of coarser sediments, can change the quality of habitat for motile species as well as for the non-motile benthic species discussed earlier. Geomorphic studies were conducted for this project to confirm that the sediments in the proposed borrow area are composed of the larger grain sizes of sand. Therefore, the sediments temporarily suspended by dredging activities will be coarse and are not anticipated to have any of the adverse effects associated with the suspension of fine-grained materials. Laboratory studies have shown that some fish, filter-feeders in particular, suffer gill damage or blockage under rigorous experimental conditions. These conditions use abrasive sediments in confined conditions where escape or avoidance is not possible, a situation that will not be typical at the project area.

4.30 Below the mean high water line on the lower beach and in the surf zone, motile organisms are well adapted to a changing environment. Even though the adjacent offshore (subtidal) area is generally the most sensitive to perturbation, most motile forms in the zone are able to evacuate the area and return when conditions are again suitable. Several long-term studies have found no permanent damage to motile animals.

4.31 <u>Effects of Groin Rehabilitation/Construction on Marine Biota.</u> Impacts associated with the placement of rock substrate into the intertidal zone to rehabilitate/construct groins could include the mortality of clams and other invertebrates associated with sandy habitat that would be eliminated during groin construction.

4.32 However, once constructed, the groin structure itself, has the potential beneficial impact of improving habitat for some tidal organisms. The crevices between the stones provide protection for the species young against larger predators. In addition, the rocks themselves provide attachment points for numerous species of invertebrates that must have solid substrate in order to survive as adults.

4.33 Organisms that would benefit from groin construction are bluefish, Northern puffer, striped bass, and blue mussels.

4.34 Effects of Groin Burial on Marine Biota. The effects of sand burial of groins would result in a loss of artificial rocky intertidal habitat and a permanent impact only to the landward end of existing groins. Once covered, these landward groin ends will not be available for use by fishermen or to provide habitat for invertebrates and shorebirds. Non-mobile organisms and intertidal dwellers would be affected by burial from the placement of sand and, possibly notched groin material. However, the fill placement over the groins will re-establish sandy bottomed intertidal habitat. As these creatures form the base of the detrital food-chain in this area, reduction of higher order consumers is also a short-term possibility.

4.35 Endangered Fish and Wildlife Resources. The nearshore waters of Long Beach Island may contain threatened and endangered sea turtles during summer and early fall months. Listed species that may be present include the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepidochelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles. Occurrences of these species in the project area would be limited to occasional transient individuals. These species would only occur as a rare transient in either the beach site or borrow area. However, the National Marine Fisheries Service (NMFS) indicated that the proposed project, as presently designed, would not likely adversely affect any of the cited species (NMFS, 1993). However, NMFS stated that if hopper dredges are utilized between mid-June and mid-November, NMFS-approved turtle observers must be on board to monitor the dredging activity.

4.36 The piping plover Federally listed as threatened, and the least tern State listed as endangered, have been known to nest along Long Beach Island (See paragraph 3.30). If fill placement coincides with the shorebirds' nesting season (April-August), suitable buffer zones with protective measures will be incorporated into the project plans. The presence of shorebird nests will be determined by surveys conducted by qualified New York District biologists. With these preventive actions, it is anticipated that there will be no major impacts on these populations. Also, concurrent with the shorebird survey, seabeach amaranth, a Federally listed threatened plant species will also be surveyed to ensure the plant's protection from adverse impacts.

4.37 Recreation. As a secondary benefit, the proposed project will significantly improve opportunities for recreational beach use. Presently narrow sections of beach will be replaced by a usable recreational beach at least 200 feet wide will replace them and stretch along the project shore (7 miles). This will draw additional visitors to the Long Beach area. Recreational shore and surf fishing will be temporarily affected by the project, since the public will not be allowed to enter actual work areas. However, since the project will be constructed in sections, only those sections actually under construction will be closed to the public. Impacts to shore and surf fishing access will be localized and relatively short-lived. A minor impact to recreational fishing will result from covering some the existing groins with sand. However, this impact will be offset by the rehabilitation of the fifteen (15) groins at Long Beach and the terminal groin at Point Lookout, and the construction of six (6) new groins at the Lido Beach area.

4.38 Project Impact Areas for Cultural Resource Review. Cultural resource review identified three impact areas associated with the project. These are the existing beach, the near shore sand placement area, and the offshore borrow area. In the existing beach and near shore sand placement area impacts to cultural resources could be associated with groin construction or modification as well as the placement and compaction of sand. In the borrow area, impacts to historic properties could occur through dredging activities.

4.39 Impacts to Cultural Resources. On the basis of current project plans, the New York District is of the opinion that this project will have no effect on historic properties located onshore. Additional studies are necessary before determinations can be made regarding the near-shore sand placement and offshore borrow areas. Consultation with the New York State Historic Preservation Office, as pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, is ongoing.

4.40 One potential historic property in the project area is the 1873 Transatlantic cable. Documentary data do not indicate whether or not the cable was removed from its original location. The deposition of sand in this area would not negatively impact any remains of the cable, and could actually help to protect it from erosion (Pickman, 1993). According to current project plans, six new groins will be constructed at the Lido Beach area. The Transatlantic cable crossed Long Beach between Riverside and Edward Boulevards to the west of Lido Beach. Therefore construction should not disturb any remains of the cable unless project plans change to include the construction of groins in the Long Beach portion of the project area.

4.41 <u>Beach Area.</u> No properties listed on or eligible for listing on the National Register of Historic Places (NRHP) were identified within the existing beach area.

4.42 <u>Near Shore Area.</u> Of the four wrecks located in the nearshore placement area, the wreck of the *Mexico* may be historically significant, based upon the documentary evidence presented in the cultural resources report (Pickman, 1993). The western wreck identified on the marine chart should be field checked through underwater inspections to determine if it is buried, or, if exposed, to determine if it is eligible for the NRHP. Additional coordination with local divers regarding the remaining two wrecks is being conducted (See Pertinent Correspondence). Coordination with the SHPO regarding the evaluation of all wrecks is also underway.

4.43 If any NRHP eligible wrecks are found to lie within the beach fill or groin construction area, then additional studies, such as underwater inspections to document them, will be conducted prior to construction.

4.44 <u>Offshore Borrow Area</u>. Documentary research has indicated that a number of ships may have been wrecked off the coast of Long Beach and may lie within the borrow site. The offshore borrow site will be surveyed for submerged cultural resources using a side scan sonar and magnetometer. Currently project plans call for the avoidance of all targets and anomalies identified by the survey. Buffer zones, areas around the targets in which dredging will be prohibited, will be developed. If the amount or size of the targets/anomalies hinders dredging, then some or all of the targets/anomalies may be inspected by underwater archaeologists. This work will be coordinated with the SHPO.

4.45 Clays and silts that may be indicative of lagoonal deposits were recorded in two of the fifteen cores taken from the borrow area to a depth of 20 feet below the ocean floor. Any submerged prehistoric sites would lie below these deposits. As currently planned, dredging for this project would not reach below this depth. If the dredging is limited to the 20 foot depth, then preserved sites in the area would not be impacted (Pickman, 1993).

4.46 If the borrow site is to be dredged deeper than 20 feet, then additional studies should be conducted. These studies may include the taking of additional cores within the borrow area to depth equal to or just below dredging depth to determine whether prehistoric deposits exist within the borrow area. These cores would be analyzed by a geomorphologist with experience in studying marine deposits.

4.47 <u>Cumulative Impacts.</u> The proposed project is one of several Federal projects within the Atlantic coast of the south shore of Long Island. The impacts of this project, therefore, may be considered to be additive to the impacts resulting from the total Federal activity in the region. The proposed project is west of the Jones Inlet Navigation project and east of 1) the East Rockaway Inlet Navigation Project and 2) the Atlantic Coast of New York City, East Rockaway Inlet to Rockaway Inlet and Jamaica Bay, New York (Rockaway Beach) Storm Reduction Project.

4.48 To address cumulative impacts comments during the DEIS comment period, New York District staff District staff determined the approximate amount of borrow area acreage to be impacted by the proposed south shore of Long Island beach nourishment projects in comparison to the overall available acreage between the -18 foot and -60 foot contour lines from Breezy Point to Montauk Point. Please refer to the table below for the corresponding acreages.

PROJECT	BORROW AREA(acres) set aside for the entire life of project
Coney Island	528.0
East Rockaway	
Area 1A	73.5
Area 1B	82.6
Area 2	365.0
Long Beach	1193.8
Westhampton	308.5
Fire Island - Montauk Point total anticipated to be used	4,754.1
BORROW AREA TOTAL	7,000.9 acres
SOUTH SHORE OFFSHORE TOTAL	183,655.0 acres

4.49 If all the acreage between -18 foot MLW and -60 foot MLW contours from Breezy Point to Montauk Point is utilized, 4% of the south shore of Long Island will be impacted. This is the worse case projection for 50 years. Actual use per year would be significantly less. Renourishment cycles occur approximately 3-6 years. Long Beach's borrow area will use less than 1% of the total available area.

4.50 The District is undertaking a coordinated major nearshore monitoring effort the Atlantic Coast of New Jersey. The goal is to better understand the degree to which each habitat is utilized and how best one can enhance or possibly even direct the recovery of the resource for future projects. The results of this program will be very pertinent to Long Island projects, and will be utilized to the extent practical. However, all evidence and reasonable interpretations lead us to believe that impacts to the beach site will be short-term and minimal, while returning the area to previous conditions.

4.51 The use of the borrow area for this project may have the potential to have cumulative impacts along with the use of the borrow areas utilized for maintenance renourishments of the Rockaway Beach Project. Due to the distance between the borrow areas and that the sand volume required for construction of this project will not need to encroach into East Rockaway's borrow areas, no significant long-term impacts either individually or cumulative are expected.

4.52 In addition to the nearshore monitoring, the District is also conducting a comprehensive borrow area monitoring program along the Atlantic Coast of New Jersey as well as a separate program at the Coney Island Storm Damage Protection Project Borrow Area in New York. These monitoring programs (which are scheduled to continue four years after project completion) includes the assessment of the impacts of dredging on: benthic resources and fish habitat utilization (via BRAT analysis), and water quality.

4.53 The proposed project will not impact the Operations and Maintenance of the Jones Inlet Navigation Project.

4.54 As discussed in the Main Report, the implementation of the proposed project will increase the amount of material being deposited via littoral drift into East Rockaway Inlet. Therefore, the Operations and Maintenance of the inlet will be increased. Due to the low benthic quality of the inlet, no additional impacts other than those associated with maintenance dredging, are expected

4.55 The use of the borrow area for this project may have the potential to have cumulative impacts along with the use of the borrow areas utilized for maintenance renourishments of the Rockaway Beach Project. Due to the distance between the borrow areas and that the sand volume required for construction of this project will not need to encroach into East Rockaway's borrow areas, no significant long-term impacts either individually or cumulative are expected.

4.56 <u>Other Impacts.</u> Noise and air impacts are restricted to site construction (generally beginning two weeks prior to dredging) and the actual placement operation. Noise is limited to that of one or two bulldozers (or similar equipment) used to manipulate the material during placement. Additional noise may be caused by a pumpout station, if necessary. No delays in construction are anticipated due to noise-related impacts.

4.57 The project area is in the New York State Department of Environmental Conservation's Region I Metropolitan Air Quality Control Region (NYSDEC, 1992). According to the NYSDEC, all of New York City, plus Nassau and Westchester Counties are in areas of non-attainment. Air quality impacts would similarly be limited to emissions from the heavy equipment and pumpout station (if used). These impacts would end when placement is completed. No long-term significant impacts to the local air quality is anticipated. Please find attached a Statement of Conformity in accordance with the Clean Air Act (40 CFR: 6, 51, and 93 Federal Register 30 November 1993) in the Pertinent Correspondence Appendix.

4.58 After reviewing the information received by the National Geodetic Survey during the DEIS comment period, the District has concluded that the proposed project has the potential of disturbing geodetic control **Monument Number-KU3186**. If relocation activities are needed, they will be incorporated into the proposed project's Plans and Specifications. The National Geodetic Survey office will be notified if the necessary relocation activities are undertaken.

4.59 Based on literature sources which include information developed for the subaqueous borrow pits (1984-1986), and a dredging monitoring sampling study conducted for the Rockaway Beach, New York beach erosion control project (1974-1977) borrow area (Woodward and Clyde, 1977), and the sampling for the project area (WCH Industries, 1993), the New York District's staff believes that adequate information is available to fully assess project impacts due to the proposed project.

4.60 <u>Mitigation Measures.</u> The following set of preliminary measures are proposed for implementation in this project to minimize or mitigate for project impacts to the environmental resources of the project area:

a. To minimize interference with the recreational use of the existing beach areas (particularly during the period of June through September), the placement of beach fill will be accomplished in sections approximately 600 feet in length. Construction activity will advance to an adjacent section only when work on earlier sections is complete. Also the hydraulic pipeline will be placed offshore, to the maximum extent practicable, along identified piping plover use areas to allow plover chicks unobstructed access to foraging habitat.

b. To minimize potential impacts from noise, suspended sediments, and oil and grease leakage, heavy machinery will be properly fitted with approved muffling apparatus.

c. To ensure the quality of the material placed, comparisons of various available sand sources were conducted. To assess the implementation of the proposed project, the District will conduct a coastal processes monitoring program consisting a survey of beach profile lines, sediment sampling of the beach and borrow areas, and aerial photography of the project area. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment (See Volume II, Appendix H). The coastal monitoring program has been coordinated with the New York Department of Environmental Conservation, New York Department of State, and the Town of Hempstead.

d. The New York District will conduct pre- and post-project surf clam sampling.

e. If construction activities are accomplished within the piping plover nesting season (APRIL 1 TO SEPTEMBER 1), the New York District will institute a monitoring program designed to assure the protection of the piping plovers and least terns. The program shall consist of:

1. Pre-Construction Survey Phase - Prior to initial construction and future renourishment efforts, the Corps of Engineers in consultation with the USFWS will identify, delineate and symbolically fence previously utilized piping plover territorial, courtship, nesting, and brood rearing areas. Construction activities shall not occur within 300 feet of the posted areas. If no plovers/least terns are present within the posted by July 1, the Corps after consultation with the USFWS, may initiate construction activities within these areas.

2. <u>Concurrent-Construction</u> <u>Survey/Monitor</u> <u>Phase</u> - Beginning on April 1 or two weeks prior to any construction activity, and continuing September 1, or the date of last fledging (marking the conclusion of the piping plover season), The following survey/monitor activities shall be established:

a. A Corps of Engineers biologist, or designated representative (monitor) will survey (identify and delineate bird use areas) for four days each week, not to exceed 2 consecutive days at any time, all action areas (landing, staging, beach placement, etc.) for the occurrence of territorial, courting or nesting piping plovers/least terns. If plovers/least terns are not detected in these areas, then surveying can be discontinued on July 1. When unfledged chicks are within 3,280 feet (1000 meters) of moving equipment, monitoring shall occur daily in those areas.

b. Surveying within the remaining sections of the project area shall occur at a frequency of one day per week. If plovers/least terns are not detected in these areas, then surveying can be discontinued on July 1. If plovers/least terns are detected in these areas, then the protocol described in **a.** above will be implemented. Symbolic fencing shall also be erected in these areas. When unfledged chicks are within 3,280 feet (1000 meters) of moving equipment, monitoring shall occur daily in those areas.

4. <u>Post-Construction Surveys</u> - For three seasons after initial project completion (until first nourishment cycle), New York District will survey shorebird use in the project area for the occurrence of territorial, courting or nesting piping plovers/least terns, on a biweekly basis for two consecutive days each time until nests are discovered. If nests are detected monitoring will become weekly and continue until all plover/tern chicks are fledged or lost. If no nests are established, by July 15, monitoring will be concluded.

5. <u>System</u> <u>of</u> <u>Notification</u> - The District shall notify the USFWS-Long Island Field Office within 25 hours, if plovers/terns are observed during any of the surveys. Maps shall be prepared to record all observations. The maps will be provided to the USFWS on a weekly basis. Information from this survey could be the grounds for recommendations on future maintenance work, as well as other similar dredging/beach nourishment projects that may occur

along the south shore.

In the event that it appears that disturbance to the piping plovers/least terns cannot be avoided, the New York District will notify the USFWS, and the NYSDEC, by close of business that day. The on-site contractors shall be directed by the District to adjust or halt construction activities to avoid the disturbance to the extent practicable. Further consultation under the Endangered Species Act will be initiated.

The rehabilitation of the groins could also impact the plovers/least terns by disturbing possible nesting activities. To minimize the duration of these impacts, work is being scheduled as a single continuous action, to avoid a second season of impacts. Work is scheduled to begin in Fiscal Year 1998, and to be completed before the spring 1999 nesting season. In the event that work on the groins is extended into the breeding season, nesting sites would be identified and measures taken to isolate them from the contractor's work. The section of groins requiring repair is now underwater, therefore repair work on it would have minimum impact on plovers/least terns. However, the construction of the six (6) new groins near Point Lookout will occur on land. All previously discussed protective measures for beach placement activities will be instituted to minimize/avoid impacts.

f. Piping plovers/least terns that currently utilize the project area may experience possible **indirect** impacts as the result of increased human recreational activity. To reduce this impact, the New York District will approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of briefing them regarding the USFWS Protection Agreement and protective measures that could be employed to minimize future problems.

g. If construction activities are accomplished within the seabeach amaranth growing season (MAY 1 TO NOVEMBER 1), the New York District will institute a monitoring program designed to assure practicable protective measures of the species.

5.0 Public Involvement

5.01 Public Involvement Program. The process of preparing the Draft Environmental Impact Statement (DEIS) and the draft main project report (and Appendices) involved coordination with several federal, state and or local agencies, as well as public input. The New York District prepared and published "A Notice of Intent to prepare a Draft Environmental Impact Statement". The notice appeared in the Federal Register dated June 29, 1992 (Volume 57, No. 125, pages 28841-28842). The preparation of the DEIS included the development of background information regarding fish and wildlife resources in coordination with the U.S. Fish and Wildlife Service, as well as contact with other Federal, state, and local agencies for background input.

5.02 The Draft Environmental Impact Statement was filed in the Federal Register on Wednesday, December 21, 1994 and the 45-day public review period ended, February 6, 1995. The document was sent to the government agencies and interested agencies or groups listed below for comment and review. Copies will also be sent to individuals who have so requested or who have indicated an interest in the subject project.

Federal Agencies and Officials:

Advisory Council of Historic Preservation
Environmental Protection Agency
    Office of Federal Activities
    Region II
Department of Agriculture
    Forest Service
    Soil Conservation Service
Department of Commerce
    National Oceanic and Atmospheric Administration
        Office of Ecology and Conservation
        Deputy Assistant Secretary of Environmental Affairs
        National Marine Fisheries Service
            Habitat and Protected Resources Division
            Milford, Connecticut Field Office
Department of Energy
Department of Health and Human Services
    Office of the Secretary
    Public Health Service-Center for Disease Control
Department of the Interior
    Office of Environmental Affairs
    Cortland, New York Field Office
    Islip, Long Island Field Office
Department of the Navy
    Deputy Chief Naval Operations
Department of Housing and Urban Development
    Regional Environmental Office

Department of Transportation
Federal Highway Administration
U.S. Coast Guard
Federal Emergency Management Administration
Senator Alfonse M. D'Amato
Senator Daniel P. Moynihan
Congressman Floyd H. Flake
Congressman George J. Hochbrueckner
Congressman Peter T. King
Congressman Rick A. Lazio
Congressman David A. Levy

Regional Agencies:

Interstate Sanitation Commission
Port Authority of New York and New Jersey

New York State Agencies and Officials:

Governor
Lieutenant Governor
Senators
Assemblymen
New York Department of State
Secretary of State Gail S. Shaffer
Coastal Zone Management
New York State Department of Environmental Conservation
Division of Coastal Resources
Bureau of Flood Protection
Division of Fish, Game and Wildlife
Division of Marine Fisheries
Bureau of Shellfisheries
Division of Regulatory Affairs
New York State Department of Parks, Recreation, and Historic Preservation
NYS Historic Preservation Officer

Nassau County Offices and Officials:

Nassau County Supervisor

Municipal Offices and Officials:

City of Long Beach, City Manager
Town of Hempstead Supervisor
Town of Hempstead Planning Department
Town of Hempstead Division of Conservation and Waterways

Private Organizations and Individuals:

American Littoral Society
Environmental Defense Fund
National Wildlife Federation
Natural Resources Defense Council
The Nature Conservancy, Eastern Regional Office
New York Audubon Society
Marine Sciences Research Center, SUNY at Stony Brook
Clean Ocean Action

John Geddie
8040 Bellamah Ct. N.E.
Albuquerque, New Mexico 87110

Mr. Daniel Berg
Aqua Explorers, Inc.
P.O. Box 116
East Rockaway, New York 11518

Mr. Fred Jackson
Tetra Tech, Inc.
4700 King Street, Suite 500
Alexandria, Virginia 22302

Mr. Eric Atkeson
STRA, Inc.
1100 Wilson Blvd., Suite 1700
Arlington, Virginia 22209

Mr. Dennis Sweeny
139 Freeport Avenue
Box 225
Point Lookout, New York 11569

Ms. Felicia Solomon
175 School Lane
Lido Beach, New York 11561

Mr. Harvey Thurm
National Weather Service
W/ER1X4-Eastern Region
630 Johnson Avenue
Bohemia, New York 11716

Mr. Andrew Haines
Roy F. Weston, Inc.
1 Weston Way
West Chester, Pennsylvannia 19380-1499

Mr. Allam Parolini
TNRCC - MC139
P.O. Box 13087
Austin, Texas 78711-3087

5.03 Comments to the DEIS are included in Appendix C of this FEIS. Corps responses are also provided in the appendix.

5.04 Upon request, copies can be sent to individuals, organizations and/or agencies not mentioned above. Copies can be obtained by written request to the U.S. Army Corps of Engineers, New York District Engineer.

TABLE 7

LIST OF PREPARERS

The following people were primarily responsible for preparing this Draft Environmental Impact Statement:

NAME	POSITION	ROLE IN DEIS
Peter Weppler	Biologist NY District	Primary Author DEIS Coordinator
Jeffrey Fry	Biologist	Borrow Area Resource Analysis
Nancy Brighton	Archaeologist NY District	Cultural Resource Analysis
Clifford Jones	Civil Engineer NY District	Project Manager
Stuart Chase	Hydraulic Engineer NY District	Project Development
Lynn Bocamazo	Hydraulic Engineer NY District	Hydraulic Studies
Diane Rahoy	Hydraulic Engineer	Hydraulic Studies
Chris Rasmussen	Hydraulic Engineer NY District	Hydraulic Studies
Walter Scott	Hydraulic Engineer NY District	Hydraulic Studies
Peter Womack	Economist NY District	Economic Studies

DEIS REFERENCES CITED

Applied Biology, Inc. 1979. Biological Studies Concerning Dredging and Beach Nourishment at Duval County, Florida, with a Review of Pertinent Literature. Prepared for: USACOE, Jacksonville District.

Bokuniewicz, H., and C.T. Fray. 1979. The Volume of Sand and Gravel Resources in the Lower Bay of New York Harbor. Manuscript, Special Publication 32.

Bokuniewicz, H., R. Cerrato and D. Hirshberg. 1985. Studies in the Lower Bay of New York Harbor Associated with the Burial of Dredged Sediment in Subaqueous Borrow Pits. Manuscript Prepared for: USACOE, New York District

Brinkhuis, B.H. 1980. Biological Effects of Sand and Gravel Mining in the Lower Bay of New York Harbor: An Assessment from the Literature. Manuscript, Special Publication 34 Sea Grant ref. no. 30-1.

Cerrato, R.M. and F.T. Scheier. 1983. Effect of Borrow Pits on the Distribution and Abundance of Benthic Fauna in the Lower Bay of New York Harbor. Prepared for: USACOE, New York District. 255 pp.

Courtenay, W.R., Jr., et al. 1972. Ecological Monitoring of Two Beach Nourishment Projects in Broward County, Florida. Journal of Shore and Beach, Vol. 40, No. 2, 8-13 pp.

Courtenay, W.R., Jr., Hartig, B.C. and Loisel, G.R. 1980. Evaluation of Fish Populations Adjacent to Borrow Areas of Beach Nourishment Projects at Hallandale (Broward County), Florida, Vol. 1. Prepared for: USACOE, CERC. 23 pp.

Culter, J.K. and Mahadevan, S. 1982. Long-Term Effects of Beach Nourishment on the Benthic Fauna of Panama City Beach, Florida. MR 82-2. Prepared for: USACOE, CERC. 94 pp.

Gustafson, J.F., 1972. Ecological Effects of Dredged Borrow Pits. Journal of World Dredging and Marine Construction. Vol. 8, No. 10, 44-48 pp.

Holland, T.H., Chambers, J.R. and Blackman, R.R. 1980. Effects of Dredging and Filling for Reach Erosion Control on Fishers in the Vicinity of Lido Key, Florida. Prepared for: USACOE, Jacksonville District.

LaSalle, M.W. 1986. Seasonal Restrictions on Dredging and Disposal Techniques, WES Draft Report J650-86-007/1366

Maragos, J.E., et al. 1977. Environmental Surveys 5 Years After Offshore Marine Sand Mining Operations at Keauhou Bay, Hawaii. Prepared for: USACOE, POD.

Marsh, G.A., et. al., 1980. Evaluation of Benthic Communities Adjacent to a Restored Beach, Hallandale (Broward County), Florida. Vol. II, MR 80-1. Prepared for: USACOE, CERC..

Naqvi, S.M. and E.J. Pullen. 1982. Effects of beach nourishment and borrowing on marine organisms. MR No. 82-14. Prepared for: USACOE, CERC. 43 pp.

Parr, T., Diener, E. and Lacy, S. 1978. Effects of Beach Replenishment on the Nearshore Sand Fauna at Imperial Beach, California. MR 78-4. Prepared for: USACOE, CERC.

Pickman, Arnold. 1993. Cultural Resource Reconnaissance Atlantic Coast of Long Island Jone Inlet to East Rockaway Inlet Long Beach Island Nassau County, New York. Prepared for: USACOE, New York District.

Reilly, F.J., Jr. and V.J. Bellis. 1978. A Study of the Ecological Impact of Beach Nourishment with Dredged Materials on the Intertidal Zone. Institute for Coastal and Marine Resources Technical Report No. 4. East Carolina University, Greenville, NC. 107 pp.

Sherk, J.A., Jr. 1971. The Effects of Suspended and Deposited Sediments on Estuarine Organisms: Literature summary and research needs. Chesapeake Biol. Lab. Contrib. No. 443. Solomons, MD. 73 pp.

Saloman, C.H. 1974. Physical, Chemical and Biological Characteristics of Nearshore Zone of Sandy Key, Florida, Prior to Beach Restoration. Prepared for: USACOE, CERC.

Saloman, C.H., Naughton, S.P. and Taylor, J.L. 1982. Benthic Community Response to Dredging Borrow Pits, Panama City Beach, Florida. MR 82-3. Prepared for: USACOE, CERC.

Steimle, F. and R. Stone. 1973. Abundance and Distribution of Inshore Benthic Fauna of Southwestern Long Island, New York. NOAA Tech. Ref. NMFS SSRF-673.

Taylor Biological Company. 1978. Ecological Comparison of Beaches, Offshore Borrow Sites and Adjacent Bottom at Anna Maria Island and Treasure Island, Florida. Prepared for: USACOE, Jacksonville District.

Turbeville, D.B. and Marsh, G.A. 1982. Benthic Fauna of an Offshore Borrow Area in Broward County, Florida. MR 82-1. Prepared for: USACOE, CERC.

U.S. Army Corps of Engineers. 1989. Reconnaissance Report. Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, New York. Volume 1 and 2.

U.S. Army Corps of Engineers, New York District. 1991. Final Supplemental Environmental Impact Statement. Atlantic Coast of New York - Roakaway Inlet to Norton Point, Coney Island Area Shore Protection Project.

U.S. Army Corps of Engineers, New York District. 1991b. Final Environmental Impact Statement. Use of Subaqueous Borrow Pits for the Disposal of Dredged Material from the Port of New York-New Jersey.

U.S. Environmental Protection Agency and USACOE. February 1991. Evaluations of Proposed Discharge of Dredged Material into Ocean Waters.

U.S. Fish and Wildlife Service. 1989. Planning Aid Report. Environmental Effects of Beach Nourishment at Nine Selected Virginia Beaches. White Marsh, VA. 15 pp.

Woodhead, P.M.J. and S.S. McCafferty. 1986. Report on the Fish Community of Lower New York Harbor in Relation to Borrow Pit Sites. MSRC Report prepared for the New York Distrtict.

Woodward-Clyde Consultants. 1975. Results of Phase I Pre-Dredging Study. Rockaway Beach Erosion Control Project Dredge Material Research Program-Offshore Borrow Area. Report prepared for the New York District.

Woodward-Clyde Consultants. 1977. Final Report. Rockaway Beach Erosion Control Project Dredge Material Research Program-Offshore Borrow Area: Phase II Dredging Study. Report prepared for the New York District.

APPENDIX A

APPENDIX A

FINAL ENVIRONMENTAL IMPACT STATEMENT
FINAL 404(B)(1) EVALUATION REPORT
ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY SHORE PROTECTION PROJECT, LONG BEACH ISLAND, NEW YORK

I. PROJECT DESCRIPTION

(a) Location: The study area consists of the Atlantic Coast of Long Island between Jones Inlet and East Rockaway Inlet. The area lies within Nassau County, New York and from east to west encompasses the communities of Point Lookout, Lido Beach, City of Long Beach and Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The nine mile long barrier island (Long Beach Island) varies in width from 1,500 feet to 4000 feet and is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel.

(b) General Description: The New York District has investigated public concerns within the project area related to beach erosion control and wave attack.

The selected National Economic Development (NED) plan consists of the construction of 110-foot wide berm at an elevation of +10-feet National Geodetic Vertical Datum (NGVD), and a +15-foot NGVD dune along Approximately seven (7) miles of beach. In addition to beach restoration, the NED plan includes the reconstruction of the damaged outer 75 feet of the terminal groin on the western side of Jones Inlet and the construction of six new groins in the severely eroded areas of Point Lookout and Town of Hempstead beaches. The design berm is protected by advanced fill, tolerance fill, and overfill. The NED plan is designed to endure a 100-year or greater storm event and have a 50-year economic life that would undergo beach renourishment every 5 years. Initial beach nourishment and renourishment would be accomplished by mechanically transporting sand from identified offshore borrow areas for placement onto a beach to widen the dry beach and restore and stabilize the near-shore profile.

In addition to beach fill, the plan includes rehabilitating fifteen (15) groins and the terminal groin at Point Lookout.

A borrow area located about 1 mile south of the project area will be utilized as a sand source. The volume of sand needed to construct the selected plan is about 28.24 million cubic yards (mcy). This quantity is the total amount estimated for nourishment of the project beach for the 50-year project life this includes an initial placement plus eight (8) cycles based on a 5-year renourishment cycle rate over a 50-year timeframe.

The NED plan is designed to generally maintain a 110-foot berm width along the entire seven-mile shoreline.

(c) Authority: Project construction is authorized by a resolution by the Committee on Public Works and Transportation of the United States House of Representatives, adopted October 1, 1986, which reads:

> Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors is hereby requested to review the previous report on the Atlantic Coast of Long Island, New York, Jones Inlet to East Rockaway Inlet, authorized by resolution of the Committee on Public Works and Transportation, adopted March 20, 1963, and June 19, 1963, respectively, and also in response to Public Law 71, 84th Congress, First Session approved June 15, with a view to determining the feasibility of providing storm damage protection works for Long Beach Island.

(d) General Description of Fill Material

(1) General Characteristics of Material.

The excavated material would consist primarily of medium-fine, glacially outwashed gray sands. These sands are found to a depth of -25 ft MLW (mean low water) at the borrow area's western boundary and -60 ft MLW at its eastern boundary. Seismic data suggest that the sands are fairly homogeneous with little change in sediment characteristics other than compaction and slight gradual changes in grain-size. The limits of the borrow area were delineated on the basis of seismic profiles and sediments samples taken from vibratory cores of the area. The stones used for the proposed groin construction/rehabilitation will be granite and will consist of various sizes depending upon the design parameters of the layer(s) involved (armor, under layer, core and bedding layers). (2) Quantity of Material:

Approximately 28.24 million cubic yards (mcy) of material will be dredged from the proposed borrow area over the 50 year project life. The stone volume to required to rehabilitate some of the existing groins is approximately 68,000 tons, some of it reused from the existing groins. For the construction of six new groins at Lido Beach there will approximately 100,000 tons of armor stone (6 to 9 ton range) and 30,000 tons of bedding stone.

(3) Source of Materials:

Loss of sand during hydraulic fill placement operations.

(e) <u>Description of the Proposed Discharge Site</u>

(1) Location:

Project area as described in Ib, above.

(2) Size:

Hydraulic placement along the seven-mile shoreline will take place in approximately 600 foot sections while constructing a 110-foot berm sloping to the existing sea floor.

(3) Type of Sites/Habitat:

Hydraulic placement will be in a beach habitat. Surface water classifications in the vicinity of the study area are: SA as designated by the New York State Department of Environmental Conservation (NYSDEC) and A by the Interstate Sanitation Commission (ISC) These classifications permit fishing and secondary contact recreation, and shellfish for marketing purposes.

(4) Time and Duration of Disposal:

For the plan, the construction works would be completed within an estimated 24 month period. Use of this period has the flexibility to avoid partial sand placement at Lido Beach during May through September for environmental reasons. The groin work at Point Lookout and Lido Beach estimated to take 16 months and requires continuous construction. The placement of all the fill material will take approximately 18 months. The disposal date is unknown, but will likely proceed throughout the period of construction. f.

<u>Description of Disposal Methods</u>:

Hydraulic dredging equipment depending upon the construction methods selected by the contractor(s).

II. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope: Average onshore slope of 1 on 25 for the easternmost 5,000 linear feet of the project, a 1,500 linear foot transition, a 1 on 35 slope for the remaining 34,000 linear feet of the project.
No major impacts, modified beach slope will return to a natural slope seaward of the new MHW line.

(2) Sediment Type: No major impacts, sediments similar to those present in the area will be utilized.

(3) Dredged/Fill Material Movement: No major impacts, minor since normal shore processes would continue.

(4) Physical Effects on Benthos: Some benthic forms may be smothered by burial. Long-term effects are not anticipated.

(5) Other Effects: Not applicable (N/A).

(6) Actions Taken to Minimize Impacts: Not applicable (N/A).

b. Water Circulation, Fluctuation and Salinity Determinations

(1) Water. Consider effects on:

(a) Salinity - Not applicable (N/A).
(b) Water Chemistry (Ph, etc.) - No major impacts.
(c) Clarity - Temporary increases in turbidity during hydraulic dredging and placement of sand on the beaches.
(d) Color - Possible minor short-term change.
(e) Odor - Not measurable.
(f) Taste - N/A.

(g) Dissolved Gas Levels - Possible short-term variations due to turbulence caused by barge overflow, and dredging operations.
(h) Nutrients - Potential short-term increase.
(i) Eutrophication -N/A.
(j) Others as Appropriate -N/A.

(2) Current Pattern and Circulation:

(a) Current Pattern and Flow - (due to fill placement) Sediment transport is dominated by wave driven, long shore currents which tend to move sediment, over much of the project length.

(b) Velocity - No major impacts (due to discharge/ fill placement operations).

(c) Stratification - N/A.

(3) Normal Water Level Fluctuations: The proposed action will shift the high-water line offshore from its present location, but will not alter water levels or tidal changes.

(4) Salinity Gradients: No impacts are anticipated.

(5) Actions Taken to Minimize Impacts: N/A.

c. <u>Suspended Particulate/Turbidity Determinations</u>

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site(s): Temporary increases in turbidity due hydraulic pumping. However, the existing environment at the placement area is highly turbid, and therefore, any increase in turbidity will not be noticeable.

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

(a) Light Penetration - Particles will settle fairly rapidly. Minor impacts are anticipated.

(b) Dissolved Oxygen - Possible short-term reduction at the borrow areas.

(c) Toxic Metals and Organics - No adverse effects are anticipated.

(d) Pathogens - N/A.

(e) Aesthetics - Temporary short-term increase in turbidity.

(f) Others as Appropriate - N/A.

(3) Effects on Biota:

(a) Primary Production, Photosynthesis - Minor short-term impacts at the borrow areas are anticipated. No major impacts are expected.

(b) Suspension/Filter Feeders - Minor short-term impacts are anticipated.

(c) Sight Feeders - Fish and motile invertebrates generally can avoid or leave areas of degraded water quality; therefore, there will be no significant effects.

(4) Actions taken to Minimize Impacts:

N/A.

d. <u>Contaminant Determinations</u>

Testing of the sediments has not been done. The material from the borrow area is predominantly sand and gravel mixtures (> 90%). Borrow area investigations revealed that a clay layer exists below the delineated borrow area. As currently planned, dredging for this project would not reach below this depth therefore, not impacting the clay layer. Silicon particles are believed to have no substantial chemical attraction to heavy metals and organics, and under ocean disposal testing guidance (EPA, 1990), it is assumed to be contaminant free.

e. <u>Aquatic Ecosystem and Organism Determinations:</u>

(1) Effects on Plankton - No major impacts are anticipated.

(2) Effects on Nekton - There may be some blockage of gills among the nekton.

(3) Effects on Benthos - Some benthic forms and the eggs/juveniles of nektonic species may be buried by dredging operations. (4) Effects on Aquatic Food Web - Long-term adverse effects are not anticipated.

(5) Effects on Special Aquatic Sites:

(a) Sanctuaries and Refuges - N/A.
(b) Wetlands - N/A.
(c) Mud Flat - No impacts.
(d) Vegetated Shallows - N/A.
(e) Coral Reefs - N/A.
(f) Riffle and Pool Complexes - N/A.

(6) Threatened and Endangered Species:

No Federal or State endangered or threatened species will be impacted. (Terrestrial or coastal species would not be affected). The Federal-listed Threatened piping plover (*Charadrius melodus*) and Endangered least tern (*Sterna albifrons*) are known to utilize the habitat. Practical protective measures will be taken if the shorebirds are found to be present during construction (See DEIS 4.33) One of this project's secondary benefits is the restoration of potential colonial waterbird habitat.

No adverse impacts to occasionally occurring transient sea turtles are expected. If hopper dredges are utilized between mid-June and mid-November, NMFS-approved turtle observers will be on board.

(6) Other Wildlife:

The borrow area is within a known surf clam harvest area.

(7) Actions to Minimize Impacts:

A pre-project survey of the borrow area will be undertaken to dredge sand from the least populated shellfish areas first.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination: Because of the short-term duration of the effects, the vertical and horizontal mixing zones are negligible.

(2) Determination of Compliance with Applicable Water Quality Standards: The NY State Department of Environmental Conservation classifies this study area as SA waters. State water quality standards should not be exceeded by the proposed action.

(3) Potential Effects on Human Use:

(a) Municipal and Private Water Supply - N/A.

(b) Recreational and Commercial Fisheries - No commercial fishery is affected. Four offshore clamming operations exist. Measures will be taken to minimize impacts. Minimal adverse impacts to sport fishery.

(c) Water-Related Recreation - Increased opportunities due to expanded beach areas.

(d) Aesthetics - Natural setting of undeveloped areas along the study area shoreline have been altered by past human activities, as has existing water quality.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves - No adverse effects.

g. Determination of Cumulative Effects on the Aquatic Ecosystem:

The cumulative effect of the proposed discharge will be to reduce storm damage by restoring a functional beach berm and dune system. In so doing, historical littoral drift patterns will be recreated. The proposed project will protect the shores from beach erosion with no serious disadvantage to water quality or the aquatic ecosystem. Impacts associated with hydraulic dredging and placement are anticipated to be short-term.

h. Determination of Secondary Effects on the Aquatic Ecosystem:

The secondary impacts of the proposed placement activity include impacts resulting from dredging the proposed offshore borrow areas. Potential impacts include changes in bathymetry, sediment type, water circulation and current patterns, turbidity, benthos and epibenthos. Borrow area design has incorporated these concerns to minimize physical and biological impacts. The proposed dredging will limit changes in bathymetry to minimize possible circulation and sedimentation impacts. Borrow area benthic populations have been found to be of low use.

Increase in recreational use of the shoreline will be another secondary impact, but the existing infrastructure is adequate to accommodate the increased activity without any significant adverse effects. Little land in the project area remains undeveloped. Therefore, there will be minimal induced development impacts from this project.

III. FINDING OF COMPLIANCE OR NONCOMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

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

b. Several alternatives to the alleviation of the beach erosion problem in the study area were considered. There are no practicable alternatives under the jurisdiction of Section 404 (b)(1) guidelines (see DEIS Section 2).

c. The proposed action does not appear to violate applicable state water quality standards or effluent standards.

d. The proposed dredged material placement will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. The proposal will have no adverse impact on endangered species or their critical habitats. (Endangered Species Act of 1973).

f. The proposal will have no impact on marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972.

g. The proposed discharge of dredged material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Significant adverse effects on aquatic ecosystem diversity productivity and stability are not expected. Impacts to recreational, aesthetic and economic values will be for the most part beneficial.

h. Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems include good engineering practices and use of dredged material which is compatible with the sediments on the receiving shores.

i. On the basis of the guidelines, the proposed discharge site for dredged or fill material is specified as complying with the requirements of these guidelines.

APPENDIX B

NEW YORK STATE COASTAL MANAGEMENT PROGRAM
CONSISTENCY DETERMINATION

Project: Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Applicant: U.S. Army Corps of Engineers, New York District.

Applicable Policies: Based on a review of the Coastal Management Program policies for New York, 18 were found to be potentially applicable to the proposed project. These policies are listed below.

Consistency Determination: Each of the 18 applicable policies were evaluated with respect to the project's consistency with their stated goals. The project has been found to be consistent with each policy.

POLICY 1 Restore, revitalize and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational and other compatible uses.

Determination: By restoring the project shoreline, the project would allow for the revitalization of the area's recreational beaches and waterfront areas (see DEIS Section 1.0) and protect the existing public infrastructure.

POLICY 2 Facilitate the siting of water dependent uses and facilities on or adjacent to coastal waters.

Determination: The existing recreational beach area is heavily utilized by the public as a water-dependent recreational facility and will be increased and greatly enhanced aesthetically by the proposed project.

POLICY 5 Encourage the location of development in areas where public services and facilities essential to such development are adequate.

Determination: The restoration of the project's shoreline is necessary and ideal for the location's already existing recreation and public services.

POLICY 7 Significant coastal fish and wildlife habitats will be protected, preserved and where practical, restored so as to maintain their viability as habitats.

Determination: There is one significant coastal fish and wildlife habitat listed in the New York State Department of State Public Notice within the project area, Nassau Beach. Nassau Beach is located approximately one mile west of Point Lookout. The beach is located within Nassau Beach County Park, in the Town of Hempstead, Nassau County. The significant habitat consists of approximately 15 acres of sparsely vegetated dunes and the adjacent shell and pebble area inland and north of the dunes. Although the beach receives heavy recreational use during the summer months, the habitat area is generally located behind the open beach, and receives little disturbance. The Town of Hempstead actively posts and protects the area (NYSDOS, 1991).

The habitat area represents an undeveloped barrier beach ecosystem, a rare occurrence in Nassau County. However, development and use of the recreation areas has resulted in little degradation to the habitat.

This area serves an important nesting area for the State-listed endangered least tern (*Sterna albifrons*) and Federal-listed threatened piping plover (*Charadrius melodus*). In 1993, there were 6 piping plovers and 0 least terns down from 8 piping plovers and 148 least terns in 1992 (NYSDEC, 1994). The primary cause of the decrease in the number of nests is the severe erosion taking place at the project area.

Unregulated placement of dredged material would be detrimental to the habitat. However, for this project, a coordinated (with the USFWS, NYSDEC, and Town of Hempstead) survey/monitoring program will be instituted to insure the protection of the shorebirds. A secondary benefit of the proposed project would be the creation of more and enhanced shorebird habitat. Therefore, no significant negative impacts are anticipated to the shorebirds or their habitat.

POLICY 12 Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.

Determination: The project's major goals are storm dame reduction through the creation of a continuous dune system and widening of the existing. Borrow site selection incorporated data to identify areas of low benthic use in order to minimize offshore impacts to natural resources.

POLICY 13 The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.

Determination: The construction and maintenance of the erosion protection structures, (six new groins at Lido Beach, plus beachfill, with periodic renourishment and the rehabilitation of existing groins) for the selected NED plan will provide erosion control for the 50 year project life.

POLICY 14 Activities and development including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.

Determination: The construction and maintenance of the six new groins at Lido beach and the rehabilitation of the existing groins are expected to reduce erosion and will not cause any measurable increases in flooding while restoring the historical littoral drift.

POLICY 15 Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.

Determination: The potential for increased shoreline erosion on Long Beach Island due to dredging in the project borrow area (located approximately 1.5 miles offshore) was modelled by the Corps. Simulated modifications to the borrow area bathymetry were made to reflect post dredging conditions. The resulting calculated wave conditions were compared to pre-dredging conditions. No negative impacts were found (Harris, 1992)

POLICY 16 Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.

Determination: The public benefits outweigh the long term costs in that there will be a significant reduction in damages to the public beach, shorefront structures, buildings and wildlife habitat in the project area due to natural forces. The project is designed to provide storm damage protection in the shoreline areas located between Jones Inlet to the east and Yates Avenue to the west. A small degree of protection incidental to the design protection, would be provided west of Yates Avenue at the Village of Atlantic Beach.

POLICY 18 To safeguard the vital economic, social and environmental interests of the State and of its citizens, proposed major action in the coastal area must give full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas.

Determination: The proposed action would provide a means of protecting an important public recreational area and adjacent commercial and residential properties with minimal short-term impacts to natural resources.

POLICY 19 Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.

Determination: The benefits of the proposed project include the protection, maintenance, and enlargement of the recreational beach area which will enhance the aesthetics of fully public accessible Long Beach Island.

POLICY 20 Access to publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.

Determination: Access to the publicly-owned lands already exists within the project area. The proposed project will continue to provide public access.

POLICY 21 Water dependent and water enhanced recreation will be encouraged and facilitated, and will be given priority over non-water related uses along the coast.

Determination: The construction of the six new groins at Lido Beach, the extension of the terminal groin at Point Lookout, and the beach nourishment plan will not only provide storm damage protection, but will greatly enhance water dependent recreation. Impacts associated with the placement of beach fill during the recreation period will not be significant as the work will be accomplished in sections to minimize the area of active disturbance.

POLICY 22 Development when located adjacent to the shore will provide for water-related recreation whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.

Determination: One of the secondary benefits of the proposed storm protection project is enhancing the Long Beach Island beachfront area. The proposed project does not include additional development of the upland area.

POLICY 24 Prevent impairment of scenic resources of statewide significance.

Determination: The proposed project will protect and enhance the Long Beach Island beachfront area, without adversely affecting the scenic resources (boardwalk) for which it is well known.

POLICY 25 Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance, but which contribute to the overall scenic quality of the coastal area.

Determination: The proposed action will protect the Long Beach Island beachfront from any further damage while restoring the existing beach to appropriate widths.

POLICY 35 Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing State dredging permit requirements and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands and wetlands.

Determination: The dredging will be undertaken in a manner consistent with the allowable practices. No significant fish and wildlife habitats will be impacted and the proposed sites will be chosen to minimize impacts. When the beach is nourished, wetlands (intertidal and littoral zones) will be minimally impacted. Wetland areas will recover shortly after the project completion.

POLICY 44 Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

Determination: After the initial beach nourishment disturbance (and the following renourishments), the intertidal areas and littoral zones will return to "before project" status.

References:

Harris, Frederick, R. Inc. 1992. Total Feasibility, Engineering, and Design - Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long

Beach Island, New York - Detailed Investigation of Borrow Areas; prepared for the New York District.

New York State. Department of Environmental Conservation. 1994. 1992-93 Long Island Colonial Waterbird and Piping Plover Survey. Unpublished. Preliminary Tables. May.

New York State. Department of State. 1987. Public Notice: Significant Coastal Fish and Wildlife Habitats in Nassau and Suffolk Counties. February.

New York State. Department of State. 1991. Division of Coastal Resources and Waterfront Revitalization and The Nature Conservancy. (Draft) Long Island's Beach-Nesting Shorebird Habitat: Protection and Management of a Vulnerable Resource.

APPENDIX C
Response to Comments

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT. CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

April 11, 1995

Environmental Analysis Branch
Environmental Assessment Section

Dr. Julian Kane
109 Hicks Lane
Great Neck, New York 11024

Dear Dr. Kane:

This is in reference to your January 5, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Please find our responses to your comments (Enclosure 2) and the proposed project's Public Notice, dated March 31, 1995 (Enclosure 3).

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Joseph Vi

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

Response to Julian Kane's Comments
on the DEIS and Draft Feasibility Report for the
proposed Atlantic Coast of Long Island, Jones Inlet to
East Rockaway Inlet, Long Beach Island, New York
Storm Damage Reduction Project

Paragraph 2: The loss of project beachfill into the proposed borrow area when the borrow area is dredged, is doubtful. The design beach slope will imitate the natural beach slope present along the barrier island, which from existing shoreline comparisons, remains stable for this area. This, in conjunction with the borrow area being located a minimum of 2000 feet from the toe of the design slope, should pose no significant threat of fill material moving in to the dredged area by slumping, sliding, or slope failure. However, to prevent the possibility of fill moving into the borrow area, the northeastern corner (6,000 feet long by 1,000 feet wide) of the borrow area will not be dredged. This action provides a minimum distance of 3,000 feet between the toe of the beachfill and the landward edge of the borrow area for the length of the project area.

Paragraph 3: The Corps does not intend to use the Long Beach Island Borrow Area for the disposal of toxic harbor dredge material or any other material. The area designated as the borrow site is to be used as beachfill, which is to be dredged from the borrow area and hydraulically pumped onto the Long Beach barrier island. The Long Beach borrow program is intended to avoid the formation of deep pits.

Paragraph 4: The sand bypassing program described in your letter is economically unfeasible for inlets wider than approximately 500 feet in width. Past experience has shown that the maintenance necessary for mechanical sand bypassing systems associated with wider inlets is costly with breakdowns being common. The New York District is currently working with the State of New York to ensure that suitable material dredged from Jones Inlet is placed onto the downdrift beaches. The Long Beach feasibility report for storm damage reduction demonstrated that this practice in the with-project condition would represent a net cost savings in lieu of ocean disposal of the dredged material. The feasibility report also includes a discussion of the effects of Jones Inlet. It is noted that prior to the jetty construction, the Point Lookout area was very dynamic, and therefore, a direct comparison to erosion rates before and after jetty construction should not be made. After jetty construction the Point Lookout area actually stabilized.

Paragraph 5: In addition to the proposed groins (which are only proposed in the most erosive portion of the barrier island), the proposed project contains a sufficient amount of sand fill to increase longshore littoral transport. This sandfill is required to be renourished to ensure the integrity of the project design. This project will neither exacerbate erosion problems along the shoreline nor shift them further down the shoreline. A monitoring plan is included within the project that will periodically inspect and compare the project design with its predicted functioning.

Paragraph 8: The Corps is only rehabilitating the groins which are in need of repair and that are not going to be buried by the placement action. The repair is intended to restore the groins to their formal level of function, and not increase the groins' ability to retain sand. History has shown that these groins have proven to function effectively. The remainder of the groins are in sound condition, and are functioning at a level similar to that of the proposed restored groins. The existing groin field extends almost across the entire island shore, up to the point of accretion existing at the sand fillet created by the East Rockaway Jetty.

Tapering of the existing groin field to prevent the accretion updrift, and erosion downdrift, is not necessary because the sand is currently moving east to west efficiently along the shoreline.

The new groin field to be constructed will essentially be tapered, due to the curvature of the existing shoreline and to the positioning of the groins landward. The three westernmost groins, while being the same overall length, are to be located such that their seaward ends are progressively further north. Additionally, the shoreline immediately downdrift of the last new groin curves southward, providing a natural tapering effect.

Paragraph 9: The GENESIS computer model shows that the net affect of the proposed project on Long Beach will be to increase the sand transport off of Long Beach Island westward toward Rockaway. This impact is accounted for by estimating the increased dredging needed in East Rockaway Inlet. Sand losses on Rockaway will not be exacerbated by the Long Beach project.

109 Hicks Lane Great Neck, NY 11024   516-466-0797

Mr. Peter Weppler, DEIS Coordinator
US Army Corps of Engineers, CENAN-PL-EA
26 Federal Plaza, NY, NY   10278-0090
(212-264-4663)

January 5, 1995

Re: Long Beach Island,NY: Draft Feasibility Report and DEIS Storm Damage Reduction Project, Sept. 1994

Dear Mr. Weppler:

The beach berm and dune restoration portions of the project are fine; provided they conform to the natural coastal alignment with minimal departures to account for structural changes.

The source of the sand, however, should not be located closer than two miles offshore to prevent subsequent sliding and loss of beach sand into the source depressions.

The Corps should disclose whether it intends to use the source area as *Borrow Pits* for future disposal of toxic harbor dredgings. If so, they should be located beyond the Shelf Break, approximately 100 miles offshore.

An excellent source of sand that was overlooked by the Corps is the sand trapped by the Jones Inlet Jetty that has made the West End-2 beach and dune field excessively large. The excess sand could be transported to Point Lookout by an inlet bypass pipe across Jones Inlet that would restore much of the natural littoral drift sand which the West End-2 Jetty has inhibited over the past half-century. Although the Jetty helped keep the Inlet open, it also is the major cause of 50 years of erosion at Point Lookout and farther west along the barrier.

The groin portion of the Report, moreover, is flawed in several aspects. Far from solving erosional problems, groins have exacerbated them and shifted them farther downcurrent along the coast.

Page A-1, Volume-2 of your Report lists 102 groins having been constructed over a 25-year period, 1928-1953, on the Long Beach Barrier Island between East Rockaway Inlet and Jones Inlet.

Page A-18 and Table A10 lists 50 groins or remnants existing in 1993, with the other 52 presumably totally destroyed, buried or eroded. Of the 50 remaining groins, most are described as being in "Poor" condition, with only 17 of the total 102 constructed groins being in "Good" condition.

The Corps proposes to repair 16 of the existing 50 groins, and also to construct 6 new groins on the barrier island. None of the groin fields are to be tapered or otherwise patterned to prevent overtrapping of sand on the eastern upcurrent sides of the groins that creates erosion on the western downcurrent sides of the groins.

The Report fails to consider the downcurrent erosional effects of 39 large groins, plus the East Rockaway Jetty, on the beaches and developments west or downcurrent of the Long Beach Barrier Island, which is the Rockaway Barrier Spit. The latter already is experiencing severe sand loss downcurrent of the Rockaway groin field west of Beach 86 Street, as the Corps is well aware, inasmuch as it has been involved in extensive beach nourishment projects there for two decades.
Please advise when the next hearings or meetings are scheduled on this.

Sincerely, Julian Kane

Julian Kane, Professor of Geology
Hofstra University

Pfeiler

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

April 7, 1995

Planning Division
Coastal Section

Morris Kramer
Environmentalist
Box 444
Atlantic Beach, NY 11509

Dear Mr. Kramer:

This letter is in response to your comments submitted by letter dated February 2, 1995 regarding the Draft Feasibility Report for Long Beach Island, New York.

First, let me clarify that the project's purpose was, and is, to reduce ocean storm damage provided that the cost of any such protective measures are outweighed by the associated benefits of storm damage reduction. The objective of the reconnaissance study was to determine the Federal interest, if any, in participating in the cost to provide storm damage protection. In July 1989, the Headquarters of the U.S. Army Corps of Engineers certified the reconnaissance report which identified one possible solution to the problem without consideration of alternative plans or any separable components of the identified plan. The feasibility study objective is to determine the most cost effective solution. The feasibility report demonstrates the cost effectiveness of each and every component of the proposed project.

This project proposes a low profile groin field <u>with</u> beachfill to address the accelerated and localized erosion at the eastern end of the project. The proposed project includes beachfill, as necessary, to provide a contiguous protective dune and beach berm to the approximately seven mile long project area. The proposed project includes subsequent renourishment to ensure the integrity of the design. The proposed monitoring program, which is being coordinated with the State of New York, provides a mechanism to evaluate the effectiveness of the design throughout the life of the project.

The attached pages provide specific responses to your concerns. I have also included a copy of the Division Engineers Public Notice for your review. The District is proceeding with the necessary engineering and design of the plan identified in the Feasibility Report. After the final review process is completed, I will send you a copy of the final report.

If you have any further questions or comments, please contact me or Mr. Clifford Jones at 212-264-9079.

Stuart Piken, P.E.
Chief, Planning Division

Response to Morris Kramer's Comments regarding the Draft Feasibility Report for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project

1. <u>Lengthening the terminal groin at Point Lookout</u> was compared to a tapered beachfill in the existing groin compartment in this area. The tapered fill design was determined to be a more cost effective solution with no anticipated increase in material into Jones Inlet. Construction of an extended terminal jetty on the west side of Jones Inlet would have major impacts on the inlet system, and downdrift shoreline, while providing minor benefits. One of these impacts would be to move the inlet components further offshore. The ebb shoal would be forced south into deeper water, and would be enlarged in order to pass around the lengthened terminal jetty. Experience at other inlets indicate that these adjustments could take decades to occur, resulting in a sediment sink for many years, which would contribute greatly to the sediment deficit on Long Beach Island, and could increase downdrift shoreline erosion. The location of severe erosion on Long Beach Island would be shifted westward as the ebb shoal enlarged. Other impacts include possible relocation of the navigation channel, alterations to tidal current channels, and changes to shoaling patterns.

The proposed plan, which includes a sand taper in Pt. Lookout, places less sand in that reach than the Reconnaissance Plan which called for a lengthened terminal groin. the amount of sand placed in Pt. Lookout in the Feasibility recommended plan is well below the large accumulation which occurred about 1972 when shoal welding and fill operations pushed this portion of the shoreline beyond the capacity of the existing groins. Any increased shoaling in Jones Inlet due to the recommended plan, therefore, will be less than that which occurred in the last 22 year period. Since no increase in shoaling will result from the project as compared to that which occurred in the past, a lengthened jetty to preclude such shoaling is not necessary.

The benefit of lengthening the terminal jetty would be in providing a larger design berm section in the easternmost groin compartment in Pt. Lookout. The length of shoreline which would benefit extends approximately 750 ft., whereas negative impacts could affect 8000 ft. of shoreline or more, as well as potentially impacting the navigation channel. The Recommended Plan for this compartment provides the design dune section, a fronting berm, and renourishment of the berm at the project's five-year renourishment cycle, which provides and increased level of protection. In addition, the easternmost groin will be refurbished, as well as the revetment along the western side of the inlet (see item #3).

Recommendation of a terminal groin at the Reconnaissance Phase of study indicates only that alternative would be economically justified, using Reconnaissance level data and analysis. The

Feasibility Study examined inlet effects, shoreline history, and impacts of each proposed plan on the overall shoreline, as well as providing a refined costs and benefit analysis. Additional study showed that the terminal groin option is a possible solution, but not the best solution for storm damage reduction and erosion control for Long Beach Island.

2. <u>The proposed new groins at Point Lookout and Lido Beach</u> are designed to address the accelerated and localized erosion at the eastern end of the project. All of the approximately seven mile long project area will be provided with dune and beachfill, and subsequently nourished to ensure the integrity of the design. There are no "gaps" in the proposed design since the beachfill is designed to be uniform throughout the project area. The proposed groin field is designed to reduce the volume of material required for periodic nourishment.

The severe erosion zone currently existing west of the last groin in Pt. Lookout is due to two factors. The primary factor is a sediment deficit caused by a loss of littoral drift material to Jones Inlet. The second factor is the absence of wave sheltering by the ebb shoal and, to some extent, by the Jones Inlet east jetty. The absence of wave sheltering establishes the location where severe erosion begins. The erosion itself is the result of insufficient material being carried by wave forces. More material is removed from that portion of the shoreline than is brought to it by littoral transport, resulting in a net loss. As the longshore current travels westward, the sediment deficit is gradually corrected by shoreline losses until equilibrium is reached.

Construction of a groin field will not translate the location of wave sheltering provided by the inlet or the resulting point at which severe erosive forces begin to impact the beach. Translation of the severe erosive zone to the downdrift side of the groin field would only occur if the sediment deficit is not overcome within the groin field. The recommended plan provides sufficient advanced nourishment and renourishment to overcome the inlet-induced sediment deficit without impacting the design berm within the groin field or downdrift of the groin field.

A longer groin field would add cost to the project beyond what is necessary to minimize the beach nourishment losses in the severe erosion zone.

3. <u>Silver Point Park at the western tip of the barrier beach</u> is accessible only to Hempstead residents through the Atlantic Beach Park area. Atlantic Beach has indicated that they do not wish to participate in the proposed project. Any concerns related to their participation must be addressed to the State, Town, County or the Village. Since the Village has opted not to participate, the Silver Point area becomes a separable element of the proposed project. As stated in your letter, the specific area at Silver Point is

designated as environmental habitat, and does not provide significant storm damage protection benefits. Storm damage reduction benefits are defined by Federal regulation as "benefits from prevention of damages to Federal and public property and facilities (i.e., lands and/or structures, except non-Federal public lands dedicated to part and conservation uses) and developed private property and facilities due to shore erosion and/or tidal inundation." Separate authority is currently being considered to investigate the potential for the protection of environmental habitat. The jetty reconstruction and fill placement at this westernmost area compounded with the fill that will inevitably drift from the proposed project adds to the long term erosion protection of Silver Point.

4. Rehabilitation of the Point Lookout revetment. Based upon a recent inspection of the condition of the existing terminal groin and revetment, the Corps has determined that deterioration of this revetment could lead to flanking of the easternmost groin, which would negatively impact the purpose of the project. The selected plan includes the rehabilitation of these shore structures. The condition of the terminal groin and the sand flow will be monitored throughout the life of the project.

MORRIS H. KRAMER
ENVIRONMENTALIST
BOX 444
ATLANTIC BEACH NY 11509
TEL/FAX (516) 889-6323

February 2, 1995

COMMENTS OF ENVIRONMENTALIST MORRIS KRAMER, CONCERNED UNITED STATES CITIZEN RESIDENT OF NEW YORK STATE, NASSAU COUNTY REGARDING THE DRAFT FEASIBILITY REPORT, VOLUME 1 DRAFT MAIN REPORT AND DRAFT ENVIRONMENTAL IMPACT STATEMENT, SEPTEMBER 1994, U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT, NORTH ATLANTIC DIVISION - ATLANTIC COAST OF LONG ISLAND ---- JONES INLET TO EAST ROCKAWAY INLET (EMPHASIS MINE)

SUMMARY:

The project's original purpose was to protect the entire 9 mile barrier beach from Jones Inlet to East Rockaway Inlet. It would have been the Corps. of Engineers showcase example to the Nation how the Corps. can control erosion. It would have won praise for the Corps. which would then be sought after for future erosion projects along our coasts.

This DEIS, however, shows a desperately needed project that has 3 MAJOR FLAWS, which if implemented, will cause major damage to the barrier beach, Jones and East Rockaway Inlets, Reynolds Channel and low lying communities North of the Barrier Beach.

Those few of us who really know, realize that the Corps. was inaccurately and unfairly blamed for the problem at Westhampton Beach Long Island. The general public, public and elected officials, however, still believe the Corps. was at fault.

This project, if implemented, according to this DEIS will create another Westhampton on Long Island. (The U.S. Fish and Wildlife Service raises concern about erosion from the incomplete groin field 4 times in this DEIS.) THE ENTIRE BLAME AND POTENTIAL LEGAL LIABILITY BE BE PLACED ON THE CORPS.

Worse, however, the debacle will be so blatant and obvious , the the public, public and elected officials will lose all faith that the Corps. can control beach erosion. The negative publicity will be 1,000 times worse than at Westhampton. The Corps. instead of being praised, will be the subject of derision, scorn and the butt of jokes.

This will result in diminished funds for Corps. projects and diminished funds for the Corps. itself.

The original plan from the Reconnaissance Study for 9 plus mile barrier beach island is now down to 7 miles in this DEIS. It will also leave an area about 2 1/2 miles worse off than before, accelerating erosion and causing a breach. Add to this the problems that will be caused by not lengthening the Terminal Jetty at Point Lookout. So, the Corps. is spending all this money to protect 4 1/2 miles instead of nine.

COMMENTS OF ENVIRONMENTALIST MORRIS KRAMER, PAGE TWO CONTINUED

Additionally, the Corps. is so locked into some of its models and programs that it cannot see the interrelationship of various Corps. projects to each other and the ensuing cost/benefits that will accrue. Unfortunately, this lack of perspective will damage other Corps. projects and increase costs.Accordingly, this project which I so strongly support* should be delayed until the major flaws are corrected. New York State, Nassau County and the Town of Hempstead should withdraw their financial participation from this project until the flaws are corrected, EXCEPT FOR LONG BEACH, Congressional intervention may become necessary if the Corps. insists on forcing the plan's acceptance on a take it or leave it on an "as is" basis.

* See comments in Section on Writer's Background

WRITER'S BACKGROUND:

The writer, a long term environmentalist, with involvement in many environmental issues, helped save the Reconnaissance Study for this project by publicly disclosing that funds for the Study had been frozen by the New York State Legislature. (Newsday January 1991). The write then spent considerable time, energy and personal funds cajoling and using whatever other means possible to have the funds freed so the Study could proceed. As such, the reader might assume that this would mean unequivocal support for the project as discussed in this DEIS.

Unfortunately, this is wrong. The DEIS is so seriously flawed in sever areas, that this desperately needed project should not commence until the flaws are eliminated, or that the Corps. assume responsibility and liability in the event things will go wrong, as they most certainly will. Such responsibility to include Island Park, Bay Park, East Rockaway, portions of the Five Towns and other low lying communities, and well as low lying areas of the barrier beach.

WHAT IS SO WRONG WITH THIS DEIS?

There are three major flaws which must be corrected:

1. In direct contrast to the Reconnaissance Study, the Terminal Jetty at Point Lookout will not be lengthened.
2. The new groins at Point Lookout - Lido are not connected to the groins in the City of Long Beach. This over 2 mile gap will accelerate erosions, create a new Westhampton which will be blamed solely on the Corps. Indeed, this same DEIS, the U.S. Fish and Wildlife Service repeatedly expressed its concerns about erosion West of the new groin field.
3. Silver Point Park at the Western tip of the barrier beach is not included in this project.

ABOUT COMPUTER MODELS:

The Corps. is basing its assumptions on a computer model. I assert that no computer model could have predicted the path of the Halloween Storm which was influenced by the remnants of Hurricane Grace, nor the path of last year's Hurricane Gordon. While computer projections are certainly worthwhile, they are not on a Beach, certain things are left out that they do not know, and hence should not be relied upon completely.

Additionally, those of us who live on a beach and experience the beach over many years may have a better knowledge of what the ocean is doing and is going to do. Similarly, the Ocean itself is unpredictable and changes. Fortify a beach in one area, and the ocean will change and exploit a weakness elsewhere. Finally, there have been oceanic changes along the barrier beach which I believe are not known by the Corps. and its' computer. The latter will be discussed in a separate Section of my comments.

THE INCOMPLETE GROIN FIELD AT POINT LOOKOUT:

Undoubtedly, a groin field in this area is needed. The problem, however, is that it does not extend to the groin field at the Eastern end of the City of Long Beach. This leaves an approximate two and half miles area downdrfit of the new groins. It is an already unstable area. At the Western end of this area, (the Eastern end of Long Beach), it must be noted that I brought to official attention many years ago that the beach front apartment building, known as the Summit, 840 Shore Road in Long Beach had its foundation slightly undermined by the Ocean.

Lack of major storms alleviated this situation since then. The December 1992 Nor'easter, however, sent sustained wave action against this building and the outer protective wall of the adjacent Executive Towers.

If, in the future, these buildings are damaged by the Ocean, it will adversely affect the entire barrier beach front and also the entire barrier beach.

1. Example: FEMA will significantly raise Federal Flood Insurance Rates along the ocean front and throughout these communities. Proposed Congressional legislation along these lines was blocked several years ago. Indeed, a failed Corps. project will revise this issue.

2. Property and Casualty insurance companies have already been reducing their coverage along the coast and in this particular area. They will flee altogether.

3. Banks will be more reluctant to provide mortgages in this area.

4. Municipal bond offerings will become more difficult to place and may become prohibitive.

The area immediately West of the new Westernmost Groin (F) will suffer beach sand erosion. Historically, this has been a long term unstable area. TWO OCEANIC CLOCKWISE GYRES WILL ALSO ADVERSELY AFFECT THIS AREA!!!!

COMMENTS OF ENVIRONMENTALIST MORRIS KRAMER, PAGE FOUR CONTINUED

First, is the clockwise Gyre that comes out of Jones Inlet, which winds around and comes back along the beach in this area. Second, it was widely established in the mid 1970s that a major clockwise Gyre exists by the Christansen Basin that spins water toward Atlantic Beach, then Eastward to about the Jones Beach Water tower and then southerly .

The confluence of these two Gyres push stronger waters toward the affected area and will sweep out the beach area.

This amounts to a double negative, sand starvation from the East and the the beach being washed out from the West. The dune areas will be eroded as will the nourishment from the project. The question then remains can the beach be renourished on a timely enough basis to prevent property damage and a breach from a storm or hurricane. It is my belief that the area will not be able to be renourished soon enough or sufficiently enough.

Let us reexamine the U.S. Fish and Wildlife Coordination Act Report, Section 2b, April 1994 which is part of this DEIS.

Page 23 "...The effect of new groins on down drift beaches to the west and nearshore currents needs to be assessed in order to avoid transference of beach erosion westward."

PAGE 25 ITEM 3 New Groin Construction

"...The construction of new groins at the eastern end of the project area should avoid adversely affecting sand accretion do down drift beaches west of the new groin field...." Page 27 New Groin Construction Area

"...The Corps should develop remedial action plans should the new groins be proved to negatively impact beaches west of the new groin field."

Page 31 Summary

""...However, new groin construction can also transfer beach erosion problems west of the proposed new groin field. **The Corps needs to assure that this will not happen.**" (Emphasis mine)

Clearly, there is a strong message here. The Corps like the Emperor has no clothes in this instance.

There is a dire need for additional groins to connect the new groin field to the City of Long Beach. The property damage in the non-groin area as described in the DEIS would be much more severe than the damage at Point Lookout.

THE TERMINAL JETTY AT JONES INLET/POINT LOOKOUT:

The Reconnaissance Study recommended lengthening this Jetty by about 500 feet. A guess is that this would cost about $1 million. But, it is not included in this DEIS. It also highlights the inability of the Corps to see the interrelationships of various nearby Corps projects, how they can help each other, but in this DEIS, will actually harm each other to the detriment of:

1. All the affected Corps. projects,
2. The barrier beach
3. Low lying communities
4. Jones Inlet
5. Reynolds Channel and the State Boat Channel

By not lengthening the jetty, currents will push more sand into what is already well known to be a dangerous Jones Inlet. And, since there will be additional sand in this area than is at the present time, even more sand will be pushed into the Inlet.

The Corps. which continually dredges Jones Inlet to maintain navigation will have substantially increased costs from dredging more sand, a probably from more frequent dredging. These additional costs will exceed by magnitudes the estimated $1 million cost of extending the Point Lookout Terminal Jetty 500 feet.

Additional sand will also be washed into Reynolds Channel and the State Boat Channel.

This will counter the Corps. federalizing of the channels, resulting again in more dredging and more frequent dredging, again, exceeding the cost of lengthening the Jetty.

Beach erosion at Point Lookout by the terminal jetty. Sand will be sculpted out of the beach in a somewhat similar pattern to that described in the section on the new groin field, requiring more frequent and costly nourishment.

One can no longer say, well, those are separate projects and will be taken care of separately. These projects have become intertwined.

Failure to look at these projects in this manner will be detrimental to the Corps. the environment, commerce, and the general public.

The funds that were originally planned for the Village of Atlantic Beach's participation in this project can instead be applied to lengthening the Jetty.

SILVER POINT PARK - ATLANTIC BEACH - NASSAU COUNTY:

This Nassau County owned property serves as a critical nesting habitat for the Federally endangered Piping Plover and the New York State endangered Least Terns.

This DEIS omits as does U.S. Fish and Wildlife that there is a second Piping Plover nesting area in the park ie: the dune area between the Silver Point Beach Club and the Sun & Surf Beach Club.

I was the person primarily responsible for twice saving this property from development. Additionally, I brought to Corps attention in December 1991 the disrepair of the Silver Point/East Rockaway Inlet Jetty. Reconstruction of a substantial portion at the western end is nearly complete at this time. Additionally, I suggested that the Cove at the back of Silver Point Park be blocked off to protect the property and also the Jetty from being flanked. Also, the Corps should be praised for rebuilding the main Piping Plover area near the Jetty.

I believe that my having more than 40 years experience with this land parcel that my comments should receive extra weight.

COMMENTS OF ENVIRONMENTALIST MORRIS KRAMER, PAGE SIX CONTINUED

Silver Point Park was originally included in plan for nourishment and renourishment over the life of the project. But, had it not been for what is in my opinion, the absolute negligence and incompetence, despite knowledge to the contrary by the Village of Atlantic Beach in refusing to participate in the project, Silver Point Park would still be part included in this project.

Now, for vastly insufficient reason and justification, the Corps is excluding Silver Point Park from this project.

While the Village of Atlantic Beach may, in my opinion, have questionable legal right to opt out of this project, and to commit fiscal and physical suicide, it does not mean that Nassau County has to sacrifice Silver Point Park because it is not contiguous with the rest of the project.

Silver Point Park serves a number of functions that the Corps is omitting from its cost/benefit ratios.

1. Serves as nesting site(S) for Piping Plovers and Least Terns in TWO areas, not one as discussed in the DEIS.

2. Serves as an important income producer for Nassau County. The two beach clubs pay substantial rent to the County.

3. Serves as a recreational area with substantial Summer employment.

4. Serves as a buffer to prevent shoaling of Reynolds Channel north of Silver Point Park (not including East Rockaway Inlet at this time) to keep the navigational channel open for oil tankers which supply oil to most of the homes on the South Shore in this area.

An oil spill will threaten 5,000 acres of protected wetlands east of the Atlantic Beach Bridge and may close ocean beaches in the summer while also damaging marine and bird habitats and disrupting the local and regional economy.

5. Serves as protection for the Corps owned East Rockaway Inlet Jetty. This jetty stretches 4,250 feet from the Village of Atlantic Beach's western border along the Park's northern perimeter and curves southward into the Ocean. The Corps is nearing completion of reconstruction of 1200 of the last 1700 feet of Jetty.

The remaining 2500 feet of the Jetty is nearly 60 years old and portions of it have seen their best days. Had it not been for rubble from and old hotel placed against the Jetty, we would have had breaks in the Jetty years ago.

Thus, the Park protects the Jetty and the ensuing shoaling chain reaction that will occur if the jetty fails or is breached via a storm. Accordingly, the more the Park is protected, the more the Jetty is protected, thereby reducing or delaying Jetty repair costs for the Corps. and also dredging costs for the Corps in the Channel and subsequently in East Rockaway Inlet.

6. There have been repeated overwashes at Silver Point. The additional water that goes into Reynolds Channel which at times of Nor'easters, floods low lying communities on the barrier beach and also low lying communities north of Reynolds Channel.

The beach sand area in the Park's Northeast quadrant and the sand area north of the main Piping Plover nesting sites serve as part of the Atlantic Flyway for migrating bird life. I refer to the U.S. Fish and Wildlife comments in the DEIS.

SILVER POINT PART SUMMARY:

A strong Category 1 hurricane will overwash much of Silver Point Park. The following will occur:

1. Severe erosion will destroy the TWO critical nesting habitats for the Piping Plovers and Least Terns.

2. Severe beach erosion will clog East Rockaway Inlet stopping oil tanker traffic.

3. Sand on Silver Point Park will wash over the Jetty or through the damaged Jetty into Reynolds Channel and clog the channel. By blocking oil tankers and or making their approach to the nearby Atlantic Beach Bridge more difficult, the possibility of striking the bridge in the upright position will be increased by magnitudes. It has been well publicized that if the bridge's mechanisms are knocked out of line 1/4 inch, the mechanism will not be usable for months.

4. A late season strong Category 1 hurricane would block oil supplies to the 5th largest oil terminal on the East Coast. Would there be timely dredging capability and availability to correct such a problem. Homes would not be able to obtain oil and the risk of frozen pipes, and the resulting damage would soar, as well as the human suffering and economic disruption.

5. The overwash would supplement the extraordinary waters entering Reynolds Channel via the Inlets and further exacerbate damages to homes, businesses and infrastructure in low lying communities on the barrier beach and communities such as Island Park, Bay Park, East Rockaway, low lying areas of the Five Towns and other low lying communities.

6. Washovers or breakthroughs at Silver Point Park will result in clogging Reynolds Channel which will be completely contrary to the Corps proposed Federalizing of the Channel. It will mean larger and more frequent dredging resulting in higher costs for the Corps.

7. The same will apply to East Rockaway Inlet.

8. An accompanying overwash via the Village of Atlantic Beach because it is not participating in the project will cause additional damage and possible legal liability. The Corps should consider distancing itself legally from the Village of Atlantic Beach.

For all of the above reasons, a one time nourishment of Silver Point Park is not enough. Silver Point Park must be included in this project and renourished over the life of the project.

The benefits as I have discussed above in protecting:

1. Silver Point Park
2. The Corps. owned Jetty
3. The Corps maintained East Rockaway Inlet
4. The expected Corps Federalized Reynolds Channel

WILL FAR OUTWEIGH ANY COSTS ATTRIBUTED TO THIS PROJECT.

ROCKS:

The DEIS states that many of the existing groins along the beach will be buried.

These rocks, however, are too valuable a resource to bury and abandon.

The rocks should be gathered for the following purposes:

1. The new groin field. The groins do not extend all the way to the rear. They are subject to flanking. Placing the rocks in the unfilled areas, especially Groin F will prevent some flanking.

2. The rocks should be stored on Town, County or State property to be available for emergency use.

Example: When severe erosion becomes a reality west of the new groin field, local interests can place "instant" temporary groins to try and arrest the erosion until the Corps can install permanent groins. The latter may take years, if indeed such is possible.

Example: The rocks can serve as armament in a last ditch effort to protect property that will be destroyed west of the new groin field as the area is washed out as previously discussed.

Example: In the event of a breach, west of the new groin field, or anywhere, the rocks can be used immediately to try and close the breach or block it from expanding.

OCEANIC OBSERVANCES:

The writer, a long term over 45 year beach goer at Atlantic Beach and a ocean distance swimmer from May through October until injuries from car accident forced a stop, has observed some changes along the ocean front in the past 5 years.

1. That there have been higher tides than normal more frequently than in previous years.

2. That many of these high tides stay higher for much longer time periods than in the past.

3. That mild storm action seems to be more severe along the beach front than in previous years. Indeed, the Weather Service might not even mention the word storm, and the ocean will look like a storm is happening.

4. Concurrently, the writer has noticed that tides in Reynolds Channel seem higher and stay higher longer than in previous years.

The writer basically kept these observations to himself in order to avoid suggestibility to others.

In more recent years, he has discussed his findings with whom he considers expert and unbiased observers. They seem to confirm his findings.

The writer does not know the cause of this, be it cyclical, a change in wind conditions resulting in a longer fetch, sea level rise and global warming, or what. But, it does seem real and should not be ignored.

REVISING COST/BENEFIT RATIOS:

The cost/benefit ratios and justification for this project should be revised to include flooding of low lying communities north of the barrier beach. Unlike Westhampton, for example, where Remsenburg is several miles north of the barrier, **Island Park for example is 1/8th of a mile north of the barrier beach.**

Overwashes from the barrier in addition to waters in Reynolds Channel from the Inlets will flood this community.

Accordingly, the project's benefits should be revised to include Island Park, etc. By so doing, the project will be more justified, and its serious flaws can be corrected easier.

GLOBAL WARMING AND SEA LEVEL RISE:

The writer believes that he was the first person to ask the question did Global Warming add to the Halloween Storm? He pointed to the evolution of a warm water highway along the Atlantic Coast and which seems to be continuing. The effect that warmer water can have in increasing storm frequency and strength.

In recent weeks, three agencies throughout the world have commented that the world climate is warming.

The potential for increased damage caused by global warming must be included in this report and given a higher weight than in the past.

Please note some of my comments attached.

New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, New York 11790-2356
Phone (516) 444-0295
Fax # (516) 444-0373

Langdon Marsh
Commissioner

January 10, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Weppler:

This letter is in response to the Army Corps of Engineers December 27, 1994 request for comments on the Long Beach Island Draft Feasibility Report and the DEIS.

The major concern that the New York State Department of Environmental Conservation (Department) has with the proposed project is the impacts to the marine resources within the borrow area.

The proposed offshore borrow area has an extensive population of surf clams (Spisula solidissima). This area lies within the most heavily exploited area by commercial harvesters. The area west of Jones Inlet within three miles of shore produces the bulk of New York's commercial landings. The Department believes that utilizing this offshore borrow area will cause extensive damage to the commercial fishery and the economy of the industry.

Specific DEIS comments are as follows:

Section 4.15 Effects on Shellfish:

The DEIS states that dredging will not occur until the area has been surveyed for surf clams. This activity must occur before you can even determine the feasibility of utilizing the area. If the majority of the proposed borrow area is found to contain an abundance of surf clams then an alternate site may have to be considered.

The DEIS states that dredging will take place in areas of least surf clam use. Depending upon the abundance of surf clams within the borrow area, this may leave only small cell area that can be dredged. This method of dredging is contrary to creating a large shallow area with sloping sides that is devoid of isolated holes. Creation of isolated holes will not be authorized because of their tendency to become anoxic sinks for fine organic sediments.

At present, the Department disagrees with the District's position that there will not be a significant impact to the surf clam industry.

The DEIS states that the surf clam recovery would be expected to be similar to the recovery after commercial harvesting or natural disturbances. This statement is not accurate because of the circumstances of repeated dredging over the 50 year life of the project. Depending upon the frequency of dredging within the borrow area, a stable benthic community may never re-establish itself. Also, elimination of the surf clam population within the borrow area will put increased harvesting pressure on the adjacent clam population which may potentially reduce the ability of that population to contribute juveniles to the borrow area.

Section 4.41 Cumulative Impacts:

The DEIS states that the impacts are additive to the impacts resulting from all Federal Projects within the area (i.e. the south shore of Long Island). However, the DEIS does not address what measures must be done to reduce these cumulative impacts. For example, the Rockaway, Long Beach Island, and Westhampton Beach borrow areas are located within productive surf clam areas but yet the District position is that there will be no significant impacts to this fishery. A closer investigation of all of these areas must be looked at collectively and not individually as each project is developed.

The first thing that needs to be re-assessed is the location of all offshore borrow areas. Each area must then be surveyed to determine the benthic composition and the finfish utilization of these areas. Standard sampling protocol must be developed for pre-dredging, dredging, and post-dredging sampling of the benthos, finfish, and water quality parameters so that all areas can be assessed for impacts and the data compared to other borrow areas. Sampling that was done more than 3-5 years ago is not too relevant except for comparative purposes.

If you have any questions, please do not hesitate to contact me at the above phone number.

Sincerely,

Louis A. Chiarella

Louis A. Chiarella
Regional Manager, Bureau of Marine
Habitat Protection - Region 1

cc: Chuck Hamilton, Gordon Colvin, Rob Greene

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

February 27, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Louis A Chiarella
Regional Manager,
Bureau of Marine Habitat Protection
New York State Department of
Environmental Conservation
Building 40 - SUNY Campus
Stony Brook, New York 11790-2356

Dear. Mr. Chiarella,

This is in reference to your January 10, 1995 comments (Enclosure 1) and the February 15, 1995 conference telephone call between New York District and NYSDEC staffs on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Please find our responses to your comments attached (Enclosure 2).

We will continue to work with you in finalizing the potential mitigation alternatives. Any questions concerning this matter should be addressed to Mr. Howard Ruben or Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Joseph Vietri

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

cc: Rackoczy, NYSDEC-Flood Protection

New York State Department of Environmental Conservation
Building 40 - SUNY, Stony Brook, New York 11790-2356
Phone (516) 444-0295
Fax # (516) 444-0373

Langdon Marsh
Commissioner

January 10, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Weppler:

This letter is in response to the Army Corps of Engineers December 27, 1994 request for comments on the Long Beach Island Draft Feasibility Report and the DEIS.

The major concern that the New York State Department of Environmental Conservation (Department) has with the proposed project is the impacts to the marine resources within the borrow area.

The proposed offshore borrow area has an extensive population of surf clams (Spisula solidissima). This area lies within the most heavily exploited area by commercial harvesters. The area west of Jones Inlet within three miles of shore produces the bulk of New York's commercial landings. The Department believes that utilizing this offshore borrow area will cause extensive damage to the commercial fishery and the economy of the industry.

Specific DEIS comments are as follows:

Section 4.15 Effects on Shellfish:

The DEIS states that dredging will not occur until the area has been surveyed for surf clams. This activity must occur before you can even determine the feasibility of utilizing the area. If the majority of the proposed borrow area is found to contain an abundance of surf clams then an alternate site may have to be considered.

The DEIS states that dredging will take place in areas of least surf clam use. Depending upon the abundance of surf clams within the borrow area, this may leave only small cell area that can be dredged. This method of dredging is contrary to creating a large shallow area with sloping sides that is devoid of isolated holes. Creation of isolated holes will not be authorized because of their tendency to become anoxic sinks for fine organic sediments.

At present, the Department disagrees with the District's position that there will not be a significant impact to the surf clam industry.

The DEIS states that the surf clam recovery would be expected to be similar to the recovery after commercial harvesting or natural disturbances. This statement is not accurate because of the circumstances of repeated dredging over the 50 year life of the project. Depending upon the frequency of dredging within the borrow area, a stable benthic community may never re-establish itself. Also, elimination of the surf clam population within the borrow area will put increased harvesting pressure on the adjacent clam population which may potentially reduce the ability of that population to contribute juveniles to the borrow area.

Section 4.41 Cumulative Impacts:

The DEIS states that the impacts are additive to the impacts resulting from all Federal Projects within the area (i.e. the south shore of Long Island). However, the DEIS does not address what measures must be done to reduce these cumulative impacts. For example, the Rockaway, Long Beach Island, and Westhampton Beach borrow areas are located within productive surf clam areas but yet the District position is that there will be no significant impacts to this fishery. A closer investigation of all of these areas must be looked at collectively and not individually as each project is developed.

The first thing that needs to be re-assessed is the location of all offshore borrow areas. Each area must then be surveyed to determine the benthic composition and the finfish utilization of these areas. Standard sampling protocol must be developed for pre-dredging, dredging, and post-dredging sampling of the benthos, finfish, and water quality parameters so that all areas can be assessed for impacts and the data compared to other borrow areas. Sampling that was done more than 3-5 years ago is not too relevant except for comparative purposes.

If you have any questions, please do not hesitate to contact me at the above phone number.

Sincerely,

Louis A. Chiarella

Louis A. Chiarella
Regional Manager, Bureau of Marine
Habitat Protection - Region 1

cc: Chuck Hamilton, Gordon Colvin, Rob Greene

Response to NYSDEC-Marine Protection Comments
on the DEIS and Draft Feasibility Report for the proposed
Atlantic Coast of Long Island,
Jones Inlet to East Rockaway Inlet,
Long Beach Island, New York
Storm Damage Reduction Project

In addition to the January 10, 1995 letter, general questions regarding the dredging process for the proposed beach nourishment project were raised up by the NYSDEC during the February 15, 1995 conference call. Dredging for this type of beach nourishment project can be accomplished by either a hopper dredge or a hydraulic (cutterhead) dredge. The costs for this project are based on the use of both of these dredges. The use of both types of dredges is anticipated to maximize dredging production efficiency. Although the District cannot predict the types of dredge(s) that will be bid for the specific project or awarded a contract, history has shown that these dredges are readily available with sufficient capability to perform the proposed project work. Hopper dredges normally perform at maximum production when the dredging to placement distances exceed three miles. Hydraulic dredges are usually used within the three mile distance. Even though the borrow area is approximately one-half mile offshore, the distance of the placement area is approximately seven miles. Therefore, the most cost-effective solution is to use both types of dredges.

The following discussion of dredging techniques will be included in the FEIS under **Section 4.00 Environmental Effects:**

> A hopper dredge behaves as an underwater "vacuum cleaner", in that it moves along the ocean floor and inhales sediment through a pipeline which deposits the material into the vessel's hopper. The sediment, in each pass, is taken up in less than two foot increments until the hopper is full or the maximum dredging depth is met. The hopper dredge will normally transverse a large area, to minimize turns, and will incrementally dredge the entire area before the second pass is executed.
>
> Conversely, the hydraulic dredge will dredge from a stationary position and continue until the limited depth is reached. The dredge will then position itself to another site to continue the

process.

Although the techniques may differ, the outcome is the same: a specified area will be dredged to a depth (not to exceed twenty foot below existing ocean bottom) which will provide sufficient material to meet the necessary volumetric beachfill requirements.

It is further noted that there are other types of dredging vessels that may become available for use on the proposed project. The Federal objective (construction of the proposed project) will be the same, and whichever type of dredge can perform the required work at least cost (low-bid), will fulfill the objective. If the State (project co-sponsor) has dredging restrictions that result in an increased cost to the Federally proposed dredging, the increased costs shall be the responsibility of the State.

Standard dredging practices aim to avoid disturbing and dredging sediment types that are of high benthic quality and that are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized. Also, as standard practice, the District tries to dredge borrow areas to the minimum depth required with gently sloping sides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

Section 4.15 Effects on Shellfish

Single project or cumulative impacts to surf clams will be dependent on the productivity of each individual borrow area. Accurate assessments can only be determined by a survey conducted within a relatively brief period before the proposed dredging activities. As stated in the DEIS, the District will conduct a pre-dredge surf clam population assessment of the borrow area to obtain the latest available information. If it is found that clam populations do not exist in economically feasible numbers, then utilization of the borrow sites would not impact that resource. And as discussed, If areas are found to be of high surf clam use, the District will work with your staff in developing potential mitigation alternatives. Possible alternatives include:

a. depending on the magnitude and distribution of the resource, dredge in areas of lower surf clam use when such action can be accomplished without creating isolated holes
b. harvesting the resources before dredging initiates
c. develop a monitoring program to determine actual impacts and the possibility of modifying future nourishments for them.

In respect to the repeated dredgings over 50 year project life affecting surf clam populations, renourishment cycles are in general, much longer than current intervals of surf clam population change, making it unlikely that a properly dredged borrow site would sustain long term impacts. Periodic nourishment is designed to protect the integrity of the project. The proposed nourishment requirements are based on anticipated erosion rates and other expected losses. The Corps' modeling programs have determined that the appropriate maintenance cycle which would optimize the fill requirements is every 5 years. Also, the other beach nourishment projects in the south shore of Long Island will be staggered sequentially, preventing any widespread impacts to the resource.

Section 4.41 Cumulative Impacts

In regards to your comment about cumulative impacts of storm damage protection projects on the Atlantic Coast of Long Island, District staff determined the approximate amount of borrow area acreage to be impacted by the proposed south shore of Long Island beach nourishment projects in comparison to the overall available acreage between the -18 foot and -60 foot contour lines from Breezy Point to Montauk Point. Please refer to the table below for the corresponding acreages.

PROJECT	BORROW AREA(acres) set aside for the entire life of the project
Coney Island	528.0
East Rockaway	
Area 1A	73.5
Area 1B	82.6
Area 2	365.0
Long Beach	1193.8
Westhampton	308.5
Fire Island - Montauk Point anticipated to be used	4,754.1
BORROW AREA TOTAL	7,000.9 acres
SOUTH SHORE OFFSHORE TOTAL	183,655.0 acres

If all the borrow area acreage between -18 foot MLW and -60 foot MLW contours from Breezy Point to Montauk Point is utilized, only **4%** of the south shore of Long Island will be impacted. This is the worst case projection for 50 years. Actual use per year would be significantly less, allowing areas to recover while other areas are being utilized. Renourishment cycles occur approximately every 3-6 years. Over the proposed project's entire life, Long Beach's borrow area will use less than **1%** of the total habitat available.

To ensure the quality of the material placed, comparisons of various available sand sources were conducted. To assess the implementation of the proposed project, the District will conduct a coastal processes monitoring program consisting of a survey of beach profile lines, sediment sampling of the beach and borrow areas, and aerial photography of the project area. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment (See Volume II, Appendix H). The coastal monitoring program has been coordinated with the New York Department of Environmental Conservation, New York Department of State, and the Town of Hempstead.

The District is conducting a comprehensive borrow area monitoring program along the Atlantic Coast of New Jersey as well as a separate program at the Coney Island Storm Damage Protection Project Borrow Area in New York. These monitoring programs (which are scheduled to continue four years after project completion) includes the assessment of the impacts of dredging on: benthic resources and fish habitat utilization (via BRAT analysis), and water quality. The data collected from those ongoing studies will be used to modify future beach renourishment actions and to further minimize and/or mitigate impacts.

INTERSTATE SANITATION COMMISSION

A TRI-STATE ENVIRONMENTAL AGENCY
311 WEST 43rd STREET • NEW YORK, N.Y. 10036
212-582-0380 FAX: (212) 581-5719

January 5, 1995

Mr. Peter Weppler
DEIS Coordinator
US ACOE
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler,

The Commission has reviewed the Draft Feasibility Report including the DEIS for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York - Storm Damage Reduction Project and offers comments thereon as follows:

DEIS-16 SIGNIFICANT RESOURCES

Paragraph 3.13 Water Quality: The document is deficient in that it takes into account only New York State water quality classifications. The Atlantic Ocean and the estuaries and tidal waters thereof west of the easterly side of Fire Island Inlet and continuing into lower New York Bay is classified by the Commission as Class A waters. This classification denotes primary contact recreation and shellfish harvesting, where suitable.

Accordingly, the document also state that it is necessary for water quality in the project location to meet the Water Quality Regulations of the Interstate Sanitation Commission.

For the convenience of the record, a copy of the Commission's Organization and Regulations is enclosed.

Sincerely,

Howard Golub

Howard Golub
Acting Director &
Acting Chief Engineer

PLS:HG:afb
Enclosure

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

January 19, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Howard Golub
Acting Director/Chief Engineer
Interstate Sanitation Commission
311 West 43rd Street
New York, New York 10036

Dear Mr. Golub:

This is in reference to your January 5, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

The following language regarding the Interstate Sanitation Commission's water quality classification will be incorporated in Sections 3.13 and 4.07 Water Quality of the Final Environmental Impact Statement (FEIS):

"3.13 Water Quality. The New York State Department of Environmental Conservation (NYSDEC) and also the Interstate Sanitation Commission (ISC) classifies water quality to reflect its best usage. The study area water is Class SA (NYSDEC) and Class A (ISC) which defines the area safe for primary contact recreation and shellfish harvesting. With the exception of area storm water discharges there are no other known major sources of discharges. Also, with occasional exceptions (such as the temporary beach closings of 1987 and 1988 due primarily to the illegally dumping of medical wastes), the project beaches meet all standards for primary contact recreation."

"4.07 Water Quality. ... Similar short-term water quality impacts will occur at the nourishment sites along the seven (7) mile project shore but these impacts should not violate the Class SA and Class A water quality classifications set by the NYSDEC and ISC."

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

GEORGE E. PATAKI
GOVERNOR

STATE OF NEW YORK
EXECUTIVE DEPARTMENT
OFFICE OF GENERAL SERVICES
MAYOR ERASTUS CORNING 2ND TOWER
THE GOVERNOR NELSON A. ROCKEFELLER EMPIRE STATE PLAZA
ALBANY, N.Y. 12242

RAYMOND W. CASEY
FIRST DEPUTY COMMISSIONER
JOHN J. SIGNORELLI
DIRECTOR
REAL PROPERTY PLANNING
AND UTILIZATION GROUP
JOSEPH F. STELLATO
ASSISTANT DIRECTOR
REAL PROPERTY PLANNING
AND UTILIZATION GROUP
ROBERT J. STAPF
CHIEF, BUREAU OF
LAND MANAGEMENT

January 25, 1995

Mr. Peter M. Weepler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-FL-EA
26 Federal Plaza
New York, NY 10278-0090

Re: Storm Damage Reduction Project

Dear Mr. Weepler:

The New York State Office of General Services (OGS), Bureau of Land Management, Submerged Lands and Natural Resources Unit has received the Draft Feasibility Report with Environmental Impact Statement (EIS) for the proposed Storm Damage Reduction Project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet. This office is the State agency mandated with the management of the State-owned lands underwater. As such, OGS is an involved agency if the action includes the removal or deposition of bottom materials, including the proposed use of borrow materials for beach nourishment or rehabilitation. The New York State Department of Environmental Conservation (DEC) must secure a permit from this office for the removal or deposition of bottom materials. The environmental effects of withdrawal from the borrow and deposition to the marine bottom (including in the borrows) from eroded beach materials should be considered in the EIS. Any action to remove or deposit materials to the bottom should be presented to this office for review and appropriate action.

Please do not hesitate to contact this office at (518) 473-1288 if there are questions or comments.

Sincerely,

Alan C. Bauder

Alan C. Bauder, P.L.S.
Submerged Lands & Natural
Resources Manager

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

February 13, 1995

REPLY TO
ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Mr. Alan C. Bauder, P.L.S.
Submerged Lands and
Natural Resources Manager
New York State Department of State
Office of General Services
Empire State Plaza, 2nd Tower
Albany, New York 12242

Dear Mr. Bauder:

This is in reference to your January 25, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

The environmental effects of the proposed project on the offshore borrow area and placement were assessed in the above referenced DEIS under Section **4.00 ENVIRONMENTAL EFFECTS.** A copy of the Final EIS will be forwarded for your review and comment when finalized. As stated in your January 25, 1995 correspondence, the New York State Department of Environmental Conservation (NYSDEC) will be responsible for acquiring the necessary permit for the utilization of the proposed borrow area.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

cc: Roman Rakoczy, NYSDEC-Albany, Flood Protection

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11790-2356

Telephone (516) 444-0365
Facsimile (516) 444-0373

Langdon Marsh
Commissioner

February 1, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

RE: Long Beach Island Draft
Feasibility Report and DEIS

Dear Mr. Weppler:

It is requested that you consider the following comments provided by the New York State Department of Environmental Conservation's Bureau of Shellfisheries. Comments from the Department's Coastal Erosion Management and Bureau of Marine Habitat have been forwarded directly to your office.

Comments by NYSDEC's Bureau of Shellfisheries were made as follows:

The Feasibility report references four surf clamfishing operations. This may be out of date information. Our information indicates that up to 25 operations may be impacted. The Bureau of Shellfisheries believes there may exist the need to monitor for toxic dinoflagellates, Paralytic Shellfish Poison (P.S.P.).

Thank you for submitting the Draft Feasibility Report and DEIS to the Department of Environmental Conservation in your review process.

If you have any questions, please call me at 444-0365.

Very truly yours,

Marilyn Peterson

Marilyn E. Peterson
Environmental Analyst I

MEP:cg

cc: Roman Rakoczy

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Peter Weppler	From MArilyn Peterson
Co. US Army Corps	Co. NYSDEC
Dept. 26 Federal Plaza NYC	Phone # 516 444-0365
Fax # 212 264-5472	Fax # 444-0373

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

February 15, 1995

REPLY TO
ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Ms. Marilyn E. Peterson
Regulatory Affairs
New York State Department of
Environmental Conservation
SUNY Campus, Building 40
Loop Road
Stony Brook, New York 11790

Dear Ms. Peterson:

This is in reference to your February 1, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

The DEIS's reference to the number of surf clam operations included the only the operators working out of Point Lookout. The District requests that the Bureau of Shellfisheries send the most recent information regarding the number of surf clamfishing operations utilizing the proposed project area.

Regarding the toxic dinoflagellates, Paralytic Shellfish Poison (P.S.P.), the District does not understand the purpose and relevance of monitoring P.S.P in relation to beach nourishment activities. The District has not encountered P.S.P. in any of its previously constructed navigation and shore protection projects.

Any questions concerning this matter should be addressed to Mr. Peter Weppler or Mr. Howard Ruben at (212) 264-4663.

Sincerely,

Joseph R. Vietri

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

cc: Roman Rakoczy, NYSDEC-Albany, Flood Protection
Richard Fox, NYSDEC-Region I, Shellfisheries

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
408 Atlantic Avenue - Room 142
Boston, Massachusetts 02210-3334

February 3, 1995

ER 95/10

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

Thank you for providing the Department of the Interior with the opportunity to review the Draft Environmental Impact Statement (DEIS) for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, Nassau County, New York. The Department has no comment on the DEIS at this time.

Sincerely,

Andrew L. Raddant
Regional Environmental Officer

Your comments have been noted.

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION ONE

NEW YORK DIVISION
LEO W. O'BRIEN FEDERAL BUILDING, 9TH FLOOR
ALBANY, NEW YORK 12207

February 2, 1995

IN REPLY REFER TO:

HA-NY

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

In response to your December 27, 1994 letter, we have reviewed the Draft Feasibility Report, which included the Draft Environmental Impact Statement for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York - Storm Damage Reduction Project. We have no comment on this report.

Sincerely,

Harold J. Brown
Division Administrator

Your comments have been noted.

United States Department of Agriculture
Forest Service
Northeastern Area State & Private Forestry
5 Radnor Corp Cntr, Ste 200
PO Box 6775
Radnor, PA 19087-8775

File Code: 1950-1

Date: February 2, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

Thank you for the opportunity to review the draft feasibility report for Jones Inlet. We have no comment at this time, but have forwarded the draft to our partner organization, the NY State Department of Environmental Conservation, Division of Lands and Forests, Robert Bathrick, State Forester.

Sincerely,

Dave Welsch

Dave Welsch
Forester/Watershed Program Manager

cc:
R. Bathrick

Your comments have been noted.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

February 9, 1995

Colonel Thomas A. York
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Attention: Mr. Peter Weppler

Dear Colonel York:

This letter is in reference to the proposed "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Protection Project". These comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 401., as amended; 16 U.S.C. 1531 et seq.).

The U.S. Fish and Wildlife Service (Service) originally addressed potential project-related impacts upon the Federally listed (threatened) piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) within our April 29, 1994, draft 2(b) Fish and Wildlife Coordination Act Report. The U.S. Army Corps of Engineers (Corps) responded to the Service's recommendations to minimize and avoid impacts to plovers as discussed in their mitigation and monitoring plan that was provided in their September 1994 draft feasibility report for the Long Beach Island project. Upon further consideration of our original recommendations and the Corps' proposed mitigation and monitoring plan, the Service is unable to conclude, at this point in time, that the proposed project is not likely to adversely affect piping plovers or seabeach amaranth.

Consequently, in order to ensure that the proposed project is not likely to adversely affect piping plovers and seabeach amaranth, the following recommendations must be incorporated into the project plans.

1) Prior to the <u>initial construction project and future re-nourishment efforts</u>, the Corps shall consult with the Service in order to identify, delineate, and symbolically fence previously utilized piping plover territorial, courtship, nesting, and brood rearing areas. Beach nourishment activities and groin construction and/or rehabilitation activities shall not occur during the piping plover nesting season (April 1 to September 1) within a symbolically fenced 91.4 meter (300 feet) buffer distance from these identified areas, except as follows. By July 1, if plovers have not utilized any previously designated piping plover territorial, courtship, nesting, or brood rearing area, the Corps, after consultation with the Service, may be authorized to initiate construction activities within these areas. Any on-going construction work within the plover territorial, courtship,

6) The Corps shall survey the project area[1], during both the initial construction project and subsequent renourishment activities, during the seabeach amaranth growing season (May 1 to November 1).[2]

7) Qualified endangered species plant monitor(s), from a list preapproved by the Service, shall be retained prior to commencement of the initial construction project and subsequent renourishment activities through project completion but not beyond November 1 (see footnote 2 below). Seabeach amaranth surveying activities within the project area shall be conducted both mid-season (June/July) and late season (September/October). Upon the identification of any seabeach amaranth within the project area, the Corps shall reinitiate Section 7 consultation with the Service and shall protect seabeach amaranth habitat with symbolic fencing.[3] Symbolic fencing shall be erected in a 3 meter (approximately 10 feet) radius around individual plants, or erected in a 3 meter zone in any direction around groups of plants. No fill shall be placed on seabeach amaranth between May 1 and November 1 in any given year. Consultation with the Service will be necessary to determine if this time of year work restriction is appropriate.

8) System of Notification: The Service (Long Island Field Office- phone: (516) 581-2941, fax: (516) 581-2972) shall be notified of piping plovers or seabeach amaranth that are detected during their appropriate surveys. At the initiation of the initial construction project and subsequent renourishment activities, maps indicating the location of plover courtship, nesting, and brood rearing areas, and seabeach amaranth, as well as locations of construction activities, shall be generated by the Corps. The maps will be revised on a weekly basis during the construction season and delivered to the Service after each revision.

9) In the event that disturbance to piping plovers or seabeach amaranth occurs despite implementation of conditions discussed above, the on-site contractor shall be

---

[1] In the five years between 1990 and 1994, seabeach amaranth surveys on Long Beach Island were only conducted during the 1991 and 1993 growing season. While seabeach amaranth was not detected on Long Beach Island during these two surveys, seabeach amaranth is present on adjacent Jones Beach Island and Rockaway Beach Peninsula.

[2] Seabeach amaranth may persist after November 1 depending upon temperatures and frost events.

[3] If seabeach amaranth is identified within the project area, the Corps will need to consult with the Service to ensure that the project will not be likely to adversely affect seabeach amaranth. Beach nourishment can adversely affect seabeach amaranth through direct placement of sand onto the plant species and construction machinery can crush plants and seeds. The effects of such impacts can result in mortality of individual plants and reduced or zero seed production.

directed by the Corps to immediately adjust or halt construction activities to eliminate the disturbance. The Corps shall, by close of business that day, contact the Service in regard to any such incidents.

10) The beach disposal area(s) in front of the dunes shall be finished to a natural grade and contour to maintain suitable nesting habitat for piping plovers.

11) The dredged material to be disposed of in the beach nourishment area shall conform with the already existing substrate on the beach or consist of material that is capable of maintaining suitable piping plover habitat.

12) The contractor and employees shall be adequately informed of Endangered Species Act concerns.

13) In order to assess the need for additional protective measures for piping plover and seabeach amaranth, the Corps shall ensure that the project area is surveyed for three seasons following initial project completion. The objectives of these surveys shall be to estimate the number of breeding pairs of plovers, to estimate overall productivity, and to estimate the number of seabeach amaranth plants. Yearly survey reports shall be sent to the Service by October 1 during each of the three years following initial project completion.

14) A stated secondary benefit of the proposed project will be the significant improvement of opportunities for recreational beach use. Increases in recreational use of beaches can also result in increased adverse impacts to piping plovers and seabeach amaranth that occur on these beaches. To avoid such impacts, the protection of piping plover and seabeach amaranth habitats shall be assured prior to project implementation. This shall occur by educating residents, landowners or beach managers of the management requirements discussed below, and, prior to project commencement, by seeking a written agreement from residents, landowners or beach managers for full cooperation with the Corps and the Service, or mutually agreed upon designated representatives (the New York State Department of Environmental Conservation, The Nature Conservancy, etc.).

A) Provide access to the project beaches to the Service, the Corps, or their mutually agreed upon designated representatives, to survey, monitor, post, and/or symbolically fence seabeach amaranth habitat and piping plover courtship, nesting, and brood rearing areas, and erect predator exclosures (as needed) for nests during the plover breeding season (April 1 to September 1). Access should be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purposes stated above.

The symbolic fencing may be placed in a 50 meter radius (approximately 163 feet) around plover nest sites, and in a 3 meter radius or zone around seabeach amaranth plant(s) where pedestrians, joggers, picnickers, fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers and their eggs and seabeach amaranth.

B) Prohibit off-road vehicular traffic, including all terrain vehicles, on the beach in accordance with the Service's April 15, 1994 Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act (see enclosure 1). Prohibit off-road vehicles from entering symbolically fenced seabeach amaranth areas during the growing season between May 1 and November 1.

C) Prohibit the removal of natural organic material deposited on the beach by the tides (wrack) during brood rearing in the areas used by plovers in order to preserve plover feeding habitat. Prohibit mechanical beach cleaning of any kind; however, trash and litter may be manually removed from the wrackline.

D) Prohibit fireworks on beaches where piping plovers nest from April 1 to September 1, or the date of last fledging.

E) Prohibit kite flying within 200 meters (approximately 656 feet) of territorial or nesting adults or unfledged juvenile piping plovers from April 1 to September 1.

F) Leash pets at all times from April 1 to September 1 on beaches in the action area where piping plovers are present because dogs and cats are common predators of piping plover eggs and chicks

G) Prohibit feeding of raccoons, gulls, or other wildlife to minimize predation on plovers.

15) In order for the Service to be kept informed of actions taken in regard to items discussed in section 14 above, the Service is requesting to be notified of the implementation of any of these measures.

With incorporation of these measures into the project plans, the proposed project would not be likely to adversely affect the piping plover or seabeach amaranth. Should these measures not be implemented throughout the life of the project, a biological assessment or further consultation pursuant to Section 7(a)(2) of the Endangered Species Act will be required to evaluate potential adverse effects of project implementation on the piping plover, seabeach amaranth, and their habitats, and to determine if formal consultation is necessary. Should project plans change or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

Please have your staff contact Mr. Robert Murray, at my Long Island Field Office, at (516) 581-2941 should you have any questions or comments.

Sincerely,

for John T. Hickey

Sherry W. Morgan
Field Supervisor

nesting, and brood rearing areas and designated buffer areas shall cease by April 1 of any given year.

2) To establish the symbolically fenced buffer areas, determine the area within 91.4 meters (300 feet) of either side of the territory, courtship, nesting, and brood rearing areas from a line drawn perpendicular to the long axis of the beach. The resulting area should extend from the ocean side low water line to the bayside low water line, or to the furthest extent of a natural or man-made feature which would prohibit piping plover chicks from traversing the area (e.g. scarp, dune, road, house).

3) Qualified endangered species bird monitor(s), from a list preapproved by the Service, shall be retained for a period prior to commencement of the initial construction project and subsequent renourishment activities through project completion but not beyond September 1, or the date of last fledging.

4) Beginning on April 1, and prior to commencement of <u>both the initial construction project and subsequent renourishment activities</u>, and continuing through September 1, or the date of last fledging (marking the conclusion of the piping plover breeding season), the following survey/monitor activities shall be established:

A) Surveying and monitoring shall occur within the previously identified piping plover territorial, courtship, nesting, and brood rearing areas at a frequency of at least four days per week, during two alternating tidal cycles in those areas that may be potentially affected by construction activities during the plover season. If plovers are not detected in these areas, then surveying can be discontinued on July 1. When unfledged chicks are within 1,000 meters (3,280 feet) of moving equipment, monitoring shall occur daily in those areas;

B) Surveying within the remaining sections of the project area shall occur at a frequency of one day per week. If plovers are not detected in these areas, then surveying can be discontinued on July 1. If plovers are detected in these areas, then surveying shall increase to a frequency of at least four days per week, during two alternating tidal cycles, in those areas that may be potentially affected by construction activities during the plover season. Symbolic fencing shall also be erected in these areas. When unfledged chicks are within 1,000 meters (3,280 feet) of moving equipment, monitoring shall occur daily in those areas.

5) During both the <u>initial construction project and during subsequent renourishment activities</u>, the Corps will coordinate with the Service to ensure that the hydraulic pipeline will be placed offshore, to the maximum extent practicable, along identified piping plover territorial, courtship, nesting, and brood rearing areas to allow plover chicks unobstructed access to foraging habitat.

Doxsee Sea Clam Company, Inc.

Off Shore Seafood Company

Telephone: 516-432-0529
FAX: 516-432-3140

50 Bayside Drive
P.O. Box 120
Point Lookout, N.Y. 11569

February 2, 1995

Mr. Stuart Piken
Chief, Planning Division
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Piken,

I've reviewed Volume I of the Draft Feasibility Report, which includes the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, and I advocate that we need this project if shoaling in Point Lookout is to be alleviated.

I am a resident of the unincorporated community of Point Lookout, in the Town of Hempstead. I also own commercial property, situated on Reynolds Channel, in Point Lookout, in which my business, Doxsee Sea Clam Company, is located. We are diggers and processors of the Atlantic surf clam. Our processing plant is located at 50 Bayside Drive; also three clam boats of varying sizes which access the Atlantic Ocean through Jones Inlet, make Point Lookout, on Reynolds Channel, their homeport.

I support that the Army Corps of Engineers maintain dredging and navigation in proposed areas, and I recommend that where dredge material is appropriate, it should be placed on ocean front beaches.

Also, I'd like to suggest that the Army Corps of Engineers should confer with local users to pinpoint exactly where shoals in our area need attention.

Thank you for your attention.

Sincerely,

Bob Doxsee

Bob Doxsee
President

Your comments have been noted.

POINT LOOKOUT CIVIC ASSOCIATION, Inc.

Incorporated 1931

Post Office Box 391
Point Lookout, New York 11569

February 3, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corp of Engineers
CENAN - PL - EA
26 Federal Plaza
New York, New York 10278-0090

Re: Long Beach Island
Draft Feasibility Report

Dear Mr. Weppler:

We are writing on behalf of the Point Lookout Civic Association regarding the Draft Feasibility Report prepared by your office for Long Beach Island. Needless to say, the citizens of Point Lookout have been extremely concerned about the severe effects erosion has already had on the eastern portion of Long Beach Island. We also recognize the vulnerability of the entire island in the event of a major storm and, consequently, believe that there is an urgent need for the type of remedial measures your study proposes to address these dangers and prevent the potentially catastrophic loss of life and property.

In reviewing the draft feasibility report, it is apparent that your study was thorough and professional. While we are in agreement with the findings set forth in the study and fully support the recommended proposal, we wish to point out that there appear to be two aspects of the "selected plan" which we fear may undermine the stated goals of the project. Specifically, we believe the "selected plan" should include the rehabilitation, reconstruction and extension of the eastern terminal groin and the inclusion of several additional groins to eliminate the apparent "gap" created between the new groin field and the existing jetty, located to the west of Lido Beach.

Over the last 30 years, we have been close observers of the interaction between the ocean and the shore line along Long Beach Island. We agree the proposals contained in the "selected plan" would provide stability to the beach and much needed storm protection to the local communities. However, we believe the plan fails to provide a suitable barrier to the continual migration of sand from the beach front into the Jones Inlet. The easterly terminal groin and attached revetment have fallen into severe disrepair as a result of the inlet currents which have severely undermined them. In light of the fact that storm protection is a primary focus of the new plan, it seems obvious to us that the revetment along the Jones Inlet would have to be rebuilt in order to provide the necessary protection to our town. We would strongly recommend that the Army Corp of Engineers include the rehabilitation of the Jones Inlet revetment, as well as the rebuilding and extension of the easterly terminal groin. In the long run, we believe extending the groin 460 feet beyond its current terminus will provide much needed storm protection to the village of Point Lookout, assist in controlling the erosion effects of the Jones Inlet currents and, provide additional safety for the navigation way in the inlet. To leave the revetment and the eastern terminus jetty in its current condition, we submit, would simply create a project which would have to be addressed at a later date.

Our observations lead us to conclude that the eastern portion of the project would be undermined by the failure to provide an adequate "anchoring" mechanism. We note that the *1988 Reconnaissance Report* prepared by your office called for the reconstruction and extension of the eastern terminal groin. It was a sound idea at the time and it is still a sound idea today

We are also concerned about the placement of the proposed groin field along the Point Lookout and Lido section of the beach. While we are in full agreement with the need and purpose of these groins, we believe that by failing to extend the groin field to within a reasonable distance of the existing jetty, located at the west end of Lido Beach, a de-stabilizing effect will be created in this "gap." History has shown both here and in other areas of the country, notably Westhampton Beach, that the failure to properly place groins oftentimes can create problems more serious than those originally addressed. Here again, we believe that the proposals contained in the new plan are excellent, however they are not complete.

We are fully aware of the cost benefit ratio analysis employed in determining the feasibility of these projects. The analysis contained within the feasibility study is in line with our thinking and concerns. But for the failure to include the extension and rehabilitation of the eastern terminal groin and attached revetment and the expansion of the Lido Beach groin field, as we have outlined herein, we believe the proposed project will accomplish the stated goals.

An issue of concern in the study involves the environmental impact on the "borrow area." Two possible solutions, we submit for your consideration, include shifting the borrow area to the west of the proposed area, and/or using the sand which has accumulated over the years along the west side of the Jones Beach Inlet jetty and revetment area as a source of material for beach nourishment. By using the material which has accumulated along the westerly side of the Jones Beach jetty, we believe that several goals can be accomplished, not the least of which would be the taking of material from an area which would not have the same environmental sensitivity, vis a vis surf clams, and would at the same time provide additional access and safety to the navigable portions of the Jones inlet.

Please accept the compliments of our association for a most thorough and comprehensive study. We sincerely appreciate the efforts you and your agency have made and assure you that our organization will provide continued support to ensure the completion of a successful project.

Very truly yours,

Dennis J. Sweeny
John T. McCann
Beach Committee
Point Lookout Civic Association

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

February 21, 1995

REPLY TO
ATTENTION OF
Planning Division
Coastal Section

Mr. Dennis J. Sweeny
Beach Committee
Point Lookout Civic Association
P.O Box 391
Point Lookout, NY 11569

Dear Mr. Sweeny:

I appreciate your interest and support of the Corps proposed storm damage protection project for Long Beach Island, New York. I am writing to respond to concerns raised in your letter dated February 3, 1995. Let me first preface the responses by stating that the purpose of the proposed project for Long Beach Island is to provide protection to the island against ocean storm damage. Although incidental benefits, such as recreation and land loss, may be provided from the project, the project is designed primarily on the benefits derived from the reduction in storm damage.

In our draft feasibility study, we estimated that there would be an anticipated increase in the volume of material in East Rockaway Inlet due to the significant updrift beachfill provided to the project area. A potential increased cost in maintenance dredging is incorporated into the overall project cost for the benefit-cost evaluation. However, at the eastern end of the project, at Point Lookout, we did not determine that there would be any increase in material from the shore protection project that would move into Jones Inlet, therefore no added costs nor added measures, such as extension of the terminal groin to prevent additional material returning into the inlet, were considered necessary. The beachfill provided to the Point Lookout area is designed to taper into the existing groin, which will provide protection to the area without a need to extend the terminal groin. Having determined the Federal interest from the reconnaissance study, the intent of the feasibility phase is to determine the most cost effective solution. The tapering of the beachfill into the terminal groin is considered to be a more cost effective means to protect the Point Lookout area and to prevent an increase in the amount of material that would drift into Jones Inlet than the plan presented in the Reconnaissance Report.

The study confirmed that the Point Lookout area is very dynamic, resulting in frequent changes in beach height and width, shoaling and groin stability. As part of the feasibility investigation, we conducted a condition survey of the terminal groin and revetment. Although the rehabilitation of the terminal groin was included in the draft report based on observations earlier in the study, the condition of the revetment, which also provides storm damage protection, has since deteriorated. The final report will incorporate the rehabilitation of the revetment as part of the project. The final layout of the project will be based on the surveys which will be taken for the preparation of the plans and specifications. We intend to monitor the physical characteristics of the beach and the groins and consider implementation of any necessary changes in the nourishment program and project features to provide the most cost effective measures which ensure the integrity of the project design.

Regarding the "gap" in the groin field, based on our coastal response investigations, we believe that the proposed groin field covers the extent of the most erosive zone along the Long Beach barrier island. The proposed groin field was also compared to a similar plan which provided sand fill only to this area, and was determined to be more cost effective. It is important to realize that these new groins will be combined with beachfill and periodically nourished. The alignment of the new groins together with the curvature of the existing shoreline create a reasonable transition. As to your reference to Westhampton Beach, please note that it was not the improper placement of the groins, but that beach nourishment (which was recommended and approved by the Corps) was never incorporated. As stated in the previous discussion, we will monitor the beach conditions to ensure that the design is maintained and that any refinements in the project and nourishment program will be considered as appropriate.

We believe that the proposed dredging of the borrow area will not have significant adverse impacts on the shellfish. We are discussing various proposals, some of which would include harvesting of the borrow area just prior to the dredging. As far as dredging the shoals in Jones Inlet, this option would not be cost effective because the limited volume of material would still require a second offshore source, thus increasing mobilization/demobilization costs. Inlet dynamics could also change by dredging areas outside of the authorized project. Such changes would have to be studied as such modifications to the inlet could impact the navigation project as well as the shore protection project. We do not anticipate a significant long term cost savings. We do not plan to consider such alternatives at this time. We will consider the beneficial use of the material from the inlet and authorized deposition basin to decrease the volumetric requirements of the periodic nourishment as each maintenance dredging operation is planned.

If you have any further questions or comments, please contact me or Mr. Clifford Jones at 212-264-9079.

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

February 6, 1995

Mr. Peter M. Weppler, DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Weppler:

Enclosed are comments on the Draft Environmental Impact Statement for Atlantic Coast of Long Island Jones Inlet to East Rockaway Inlet Long Beach Island, New York. We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

Donna Wieting

Donna S. Wieting
Acting Director
Ecology and Conservation Office

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Silver Spring, Maryland 20910

JAN 17 1995

MEMORANDUM FOR: Donna Wieting
Ecology and Environmental Conservation Office
Office of the Chief Scientist

FROM: for Captain Lewis A. Lapine, NOAA
Chief, National Geodetic Survey

SUBJECT: DEIS-9501-01 -- Atlantic Coast of Long Island Jones Inlet to East Rockaway Inlet Long Beach Island, New York

The subject statement has been reviewed within the areas of the National Geodetic Survey's (NGS) responsibility and expertise and in terms of the impact of the proposed actions on NGS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in Nassau County is provided on the diskettes accompanying this memorandum. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation.

NGS recommends that funding for this project include the cost of any relocation(s) required. For further information about these monuments, please contact John Spencer, NOAA, NGS, N/CG17, 1315 East-West Highway, Silver Spring, Maryland 20910 telephone 301-713-3236, fax 301-713-4172.

Attachments

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

February 23, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. John Spencer
National Oceanic and
Atmospheric Administration
National Geodetic Survey - N/CG17
1315 East-West Highway
Silver Spring, Maryland 20910

Dear Mr. Spencer:

This is in reference to your January 17, 1995 memorandum (Enclosure 1) included in the Office of Chief Scientist's comments (Enclosure 2) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

After reviewing the information sent by your office, the New York District has concluded that the proposed project has the potential of disturbing **Monument Number-KU3186** (Enclosure 3). The location of **KU3186** will be noted in the FEIS and if relocation activities are needed, they will be incorporated into the proposed project's Plans and Specifications. Your office will be notified if the necessary relocation activities are undertaken.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

ENCLOSURE 1

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Silver Spring, Maryland 20910

JAN 17 1995

MEMORANDUM FOR: Donna Wieting
Ecology and Environmental Conservation Office
Office of the Chief Scientist

FROM: for Captain Lewis A. Lapine, NOAA
Chief, National Geodetic Survey

SUBJECT: DEIS-9501-01 -- Atlantic Coast of Long Island Jones Inlet to East Rockaway Inlet Long Beach Island, New York

The subject statement has been reviewed within the areas of the National Geodetic Survey's (NGS) responsibility and expertise and in terms of the impact of the proposed actions on NGS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in Nassau County is provided on the diskettes accompanying this memorandum. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation.

NGS recommends that funding for this project include the cost of any relocation(s) required. For further information about these monuments, please contact John Spencer, NOAA, NGS, N/CG17, 1315 East-West Highway, Silver Spring, Maryland 20910 telephone 301-713-3236, fax 301-713-4172.

Attachments

ENCLOSURE 2

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

February 6, 1995

Mr. Peter M. Weppler, DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Weppler:

Enclosed are comments on the Draft Environmental Impact Statement for Atlantic Coast of Long Island Jones Inlet to East Rockaway Inlet Long Beach Island, New York. We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

Donna Wieting

Donna S. Wieting
Acting Director
Ecology and Conservation Office

Enclosure

```
       National Geodetic Survey,   Retrieval Date = JANUARY  9, 1995
KU3186 ***********************************************************************
KU3186  DESIGNATION -  ALLEVARD
KU3186  PID         -  KU3186
KU3186  STATE/COUNTY-  NY/NASSAU
KU3186  USGS QUAD   -  LAWRENCE (1979)
KU3186
KU3186  HORZ DATUM  -  NAD 83
KU3186  VERT DATUM  -  NGVD 29
KU3186
KU3186  POSITION    -  40 35 09.49855(N)    073 37 40.87137(W)     ADJUSTED
KU3186  83 minus 27 -      +00.37692                -01.52678      ADJUSTED
KU3186
KU3186  HEIGHT      -           5.7    (meters)      19.     (feet)  VERT ANG
KU3186  88 minus 29 -          -0.3                                VERTCON
KU3186 ***********************************************************************
KU3186  LAPLACE CORR-           4.31                               DEFLEC93
KU3186  GEOID HEIGHT-          -32.15                              GEOID93
KU3186
KU3186  HORZ ORDER  -  FIRST
KU3186
KU3186 The horizontal position was established by classical geodetic methods
KU3186 and adjusted by the National Geodetic Survey in July 1986.
KU3186
KU3186 The orthometric height was determined by vertical angle observations.
KU3186
KU3186 The Laplace correction was computed from DEFLEC93 derived deflections.
KU3186
KU3186 The geoid height was determined by GEOID93.
KU3186
KU3186                    North         East       Scale          Converg.
KU3186 SPC NY L    -     46,628.742   331,491.717 1.00000547     +0 14 35.9  MT
KU3186 UTM  18     -  4,493,702.148   616,106.362 0.99976593     +0 53 33.7  MT
KU3186
KU3186                Primary Azimuth Mark                     Grid Az
KU3186 SPC NY L    -  ALLEVARD AZ MK                           302 29 50.6
KU3186 UTM  18     -  ALLEVARD AZ MK                           301 50 52.8
KU3186
KU3186 ----------------------------------------------------------------------
KU3186  Pid     Reference Object                    Distance      Geod. AZ
KU3186                                                            dddmmss.s
KU3186          ALLEVARD RM 1                       27.319 METERS 03707
KU3186          ALLEVARD AZ MK                                    3024426.5
KU3186          ALLEVARD RM 2                       21.592 METERS 33237
KU3186  KU3222 ISLAND PK LONG IS LIGHT CO STK      APPROX. 3.7 KM 3335436.5
KU3186 ----------------------------------------------------------------------
KU3186
KU3186  HISTORY     - Year Condition               Recov. By
KU3186  HISTORY     - 1962 STATION MONUMENTED      COAST AND GEODETIC SURVEY
KU3186  HISTORY     - 1965 GOOD                    COAST AND GEODETIC SURVEY
KU3186
KU3186                          STATION DESCRIPTION
KU3186
KU3186 DESCRIBED BY COAST AND GEODETIC SURVEY 1962 (ELH)
KU3186 THE STATION IS LOCATED AT LIDO BEACH IN THE COMMUNITY
KU3186 OF ALLEVARD, 1 BLOCK SOUTH OF LIDO BOULEVARD ON A SAND DUNE
KU3186 AT THE SOUTH END OF ALLEVARD STREET.
KU3186
KU3186 TO REACH THE STATION FROM THE POST OFFICE IN LONG BEACH AT
KU3186 THE INTERSECTION OF EAST PARK 100 AND RIVERSIDE BOULEVARD,
```

KU3186 GO EAST ON EAST PARK FOR 1.2 MILE TO THE CITY LIMITS, AT
KU3186 WHICH POINT THE STREET NARROWS AND ITS NAME CHANGES TO
KU3186 LIDO BOULEVARD, CONTINUE EAST ON LIDO BOULEVARD FOR
KU3186 0.6 MILE TO THE INTERSECTION WITH ALLEVARD STREET, TURN
KU3186 RIGHT ON ALLEVARD STREET AND GO SOUTH 1 BLOCK TO THE STREET
KU3186 ENDING AND THE STATION AS DESCRIBED.
KU3186
KU3186 THE STATION MARK IS 72.5 FEET SOUTHWEST OF A STREET LIGHT
KU3186 POLE AT THE SOUTH END OF ALLEVARD STREET AND 64.1 FEET
KU3186 SOUTHEAST OF THE CENTER OF A METAL GATE LEADING TO A PARKING
KU3186 LOT. IT IS A STANDARD DISK SET IN THE TOP OF A SOIL PIPE
KU3186 WHICH PROJECTS 10 INCHES AND IS ABOUT 10 FEET ABOVE STREET
KU3186 LEVEL. THE MARK IS STAMPED ALLEVARD 1962.
KU3186
KU3186 REFERENCE MARK NO. 1 IS SET IN THE SIDEWALK 3.5 FEET EAST
KU3186 OF THE CURB AND 1.0 FEET SOUTH OF THE LIGHT POLE AT THE SOUTH
KU3186 END OF ALLEVARD STREET. IT IS A STANDARD DISK STAMPED
KU3186 ALLEVARD NO 1 1962.
KU3186
KU3186 REFERENCE MARK NO. 2 IS SET IN THE SIDEWALK 17.5 FEET
KU3186 NORTHEAST OF THE NORTH GATE POST OF THE GATE LEADING TO A
KU3186 PARKING LOT, 8.5 FEET EAST FROM THE WEST END OF THE SIDEWALK
KU3186 AND 2.4 FEET SOUTH OF A BOARD FENCE. IT IS A STANDARD DISK
KU3186 STAMPED ALLEVARD NO 2 1962.
KU3186
KU3186 THE DISTANCE BETWEEN THE REFERENCE MARKS IS 87.2 FEET.
KU3186
KU3186
KU3186 STATION RECOVERY (1965)
KU3186
KU3186 RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1965 (JLC)
KU3186 THE STATION MARK, REFERENCE MARKS NO. 1 AND 2 WERE RECOVERED
KU3186 IN GOOD CONDITION. THIS PARTY ESTABLISHED AN AZIMUTH
KU3186 MARK. THE 1962 DESCRIPTION IS ADEQUATE WITH THE FOLLOWING
KU3186 DATUM.
KU3186
KU3186 THE STATION MARK IS 91.3 FEET SOUTHWEST OF A STREET LIGHT
KU3186 POLE AT THE SOUTH END OF ALLEVARD STREET AND PROJECTS 18
KU3186 INCHES ABOVE THE SAND.
KU3186
KU3186 THE AZIMUTH MARK IS A STANDARD DISK STAMPED ALLEVARD 1965,
KU3186 SET IN THE TOP OF A 12-INCH CYLINDRICAL CONCRETE MONUMENT
KU3186 FLUSH WITH THE GROUND SURFACE. IT IS 51.5 FEET NORTHWEST
KU3186 OF A FIRE HYDRANT, 44 FEET SOUTHWEST OF THE CENTER OF LIDO
KU3186 BOULEVARD, 3.7 FEET NORTHWEST OF POWER LINE POLE NO. 22,
KU3186 AND 1.7 FEET SOUTHWEST OF THE CURB.
KU3186
KU3186 TO REACH THE AZIMUTH MARK FROM THE STATION, GO NORTH ON
KU3186 ALLEVARD STREET FOR 0.1 MILE TO LIDO BOULEVARD. TURN LEFT AND
KU3186 GO WEST ON LIDO BOULEVARD FOR 0.2 MILE TO THE AZIMUTH MARK ON
KU3186 THE LEFT, SOUTH, SIDE OF THE ROAD.
KU3186
KU3186 HEIGHT OF LIGHT ABOVE STATION MARK 45.9 FEET.
KU3186
KU3186 AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN
KU3186 IN LONG BEACH.
KU3186

KU3178 ***
KU3178 DESIGNATION - GRIMES

Lido Homes Civic Association

175 School Lane
Lido Beach, NY 11561

February 10, 1995

Mr. Peter M. Weppler
DEIS Coordination
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

We are writing to inform you of our concern about the Beach Erosion Plan, particularly for Lido Beach West. After carefully reading Volumes 1 and 2 of the Feasibility Plan, there is no question regarding the urgency of implementation. We are concerned that waiting until 1998 for the plan to go into action maybe too late.

We would like to know exactly why Morris Kramer, environmentalist from Atlantic Beach, feels that your plan is insufficient to stem the coastal erosion at our portion of the beach. There are many homeowners in this community who are at risk. In discussions with Henry Bokuniewicz, a marine biologist at Stony Brook, he confirmed that a possibility for a West Hampton's type breach exists. We would like you to address these concerns in a more specific manner.

There are many issues such as coastal "tidal gates", modified flood drains, man-made ocean reefs which are not explored and which seem to be viable alternatives or additional protective measures.

We invite you to address our concerns at a meeting of the Lido Beach Civic Association in the coming weeks. Please give us a date in April 1995.

We look forward to working with you.

Sincerely,

Felicia Solomon — Robert H. Solomon

Felicia Solomon, Co-President
Robert H. Solomon, Co-President

cc:
Clifford Jones, Project Manager
Planning Division
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278-0090

Lido Homes Civic Association

Senator Alfonse M. D'Amato
370 Seventh Avenue
7 Penn Plaza
Suite 600
New York, NY 10001

Assemblyman Harvey Weisenberg
20 West Park Avenue
Long Beach, NY 11561

Supervisor Bruce Nyman
City of Long Beach
One City Hall
Long Beach, NY 11561

Mr. Morris Kramer, Environmentalist
P.O. Box 444
Atlantic Beach, NY 11509

175 School Lane
Lido Beach, NY 11561

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090
February 28, 1995

REPLY TO
ATTENTION OF

Planning Division
Coastal Section

Lido Homes Civic Association
175 School Lane
Lido Beach, NY 11561

Dear Mr. & Mrs. Solomon:

I appreciate your interest and support of the Corps proposed storm damage protection project for Long Beach Island, New York. I am writing to respond to concerns raised in your letter dated February 3, 1995.

The purpose of the proposed project for Long Beach Island is to provide protection to the Long Beach barrier island against ocean storm damage. Plans that would protect against inlet and bayside flooding, that might require "tidal gates", were discussed with local officials during the early development of the 1989 reconnaissance report. Such plans to close off the East Rockaway Inlet and Jones Inlet during storms were ruled out as being prohibitively costly and likely to have significant environmental impacts and little chance of ever being implemented. Plans to seal off the bay side of Long Beach, which would include "modified flood drains" to protect against high tides in the bay areas, were also ruled out in consultation with State and local officials because of high costs and the difficulty in constructing an effective closure for the entire barrier island. Limited plans to protect specific problem areas from bay flooding to supplement the protection from direct ocean attack could still be implemented, if needed, by the County or the Town of Hempstead.

In the absence of the currently-proposed shoreline protection project, severe storms can be expected to cause overwashes of the barrier island in the low-lying areas. We do not estimate that a "breach" of the island resulting in continuing tidal exchange after a storm passes would be likely to occur. Existing ground elevations and the considerable width of the island generally minimize any such possibility. The proposed dune and beach berm plan would significantly reduce the chance of damages from ocean surges and wave attack, making even an overwash very unlikely.

Regarding the concern's expressed by Mr. Morris Kramer about the proposed low profile groins in the Point Lookout and Lido Beach areas, we have determined that the groins will reduce the current high rate of erosion and, in turn, will reduce the quantity of periodic beach fill nourishment needed to maintain the design dune and beach berm configuration. Additional groins are considered to be unnecessary. Because of the overall beach alignment, the proposed groin field beach section effectively tapers into the downdrift shoreline in Lido Beach and will not increase the downdrift erosion rate. This area, as well as the entire project area, would be monitored to review performance and, if necessary, modifications to the project would be considered. A monitoring program has been developed and is being coordinated with the State and local governments.

I will arrange for a member of my staff to be available to meet with the Lido Beach Civil Association. Please call Mr. Clifford Jones at 212-264-9079 to coordinate a date, place and time. Since the project is being sponsored by the New York State Department of Environmental Conservation together with Nassau County, the Town of Hempstead and the City of Long Beach, you may also wish to invite representatives from those agencies.

Stuart Piken, P.E.
Chief, Planning Division

Lido Homes Civic Association

175 School Lane
Lido Beach, NY 11561

February 10, 1995

Mr. Peter M. Weppler
DEIS Coordination
U.S. Army Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

We are writing to inform you of our concern about the Beach Erosion Plan, particularly for Lido Beach West. After carefully reading Volumes 1 and 2 of the Feasibility Plan, there is no question regarding the urgency of implementation. We are concerned that waiting until 1998 for the plan to go into action maybe too late.

We would like to know exactly why Morris Kramer, environmentalist from Atlantic Beach, feels that your plan is insufficient to stem the coastal erosion at our portion of the beach. There are many homeowners in this community who are at risk. In discussions with Henry Bokuniewicz, a marine biologist at Stony Brook, he confirmed that a possibility for a West Hampton's type breach exists. We would like you to address these concerns in a more specific manner.

There are many issues such as coastal "tidal gates", modified flood drains, man-made ocean reefs which are not explored and which seem to be viable alternatives or additional protective measures.

We invite you to address our concerns at a meeting of the Lido Beach Civic Association in the coming weeks. Please give us a date in April 1995.

We look forward to working with you.

Sincerely,

Felicia Solomon

Felicia Solomon
Co-President

Robert H. Solomon
Co-President

cc:
Clifford Jones, Project Manager
Planning Division
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278-0090

COUNCIL MEMBERS
PATRICK A. ZAGARINO
JOSEPH J. KEARNEY
CURTIS E. FISHER
ANTHONY J. SANTINO
BRUCE A. BLAKEMAN
JOSEPH J. RA
EL M. FISHER, JR.
TOWN CLERK
ANGIE M. CULLIN
RECEIVER OF TAXES
ARNOLD D. PALLESCHI
COMMISSIONER

TOWN OF HEMPSTEAD
DEPARTMENT
OF
CONSERVATION & WATERWAYS
LIDO BOULEVARD
P.O. BOX 180
POINT LOOKOUT, N.Y. 11569-0180
(516) 431-9200

TOWN OF HEMPSTEAD, N.Y. FOUNDED 1644

GREGORY P. PETERSON
PRESIDING SUPERVISOR
RICHARD V. GUARDINO, JR.
SUPERVISOR

February 14, 1995

Mr. Peter Weppler
DEIS Coordinator
Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

RE: COMMENTS ON THE DRAFT FEASIBILITY REPORT SEPTEMBER 1994, ON THE LONG BEACH BARRIER ISLAND STORM DAMAGE REDUCTION PROJECT

Dear Mr. Weppler:

The Town of Hempstead Department of Conservation and Waterways has reviewed the Draft Feasibility Report and would like to offer the following comments:

1) Regarding our concern for the possible erosion of that portion of Lido Beach West and downdrift of groin-f.

It is the Department's opinion that the project should include three additional groins, in order to complete the system in Lido, and to connect with the existing groin field which begins at the western end of Lido Beach and continues through Long Beach to Atlantic Beach. If left as proposed, this section of beach would be the only portion of the barrier beach without groins. Over the years, Lido Beach has remained resilient as a result of the enhancement of its natural protective features and continuous stream of nourishment from the erosion at Point Lookout. Due to the overall size of the proposed groin structure, the improved -0- line will reside several hundred feet from the tip of each groin, leaving a large area within each cell to fill before sand can bypass around each groin. This may impede the flow of sand to the portion of Lido Beach downdrift of the field. Although the project calls for the nourishment of the project design every five years, accelerated erosion would require a shortening of the nourishment cycles.

It is our understanding from the discussions on February 1, 1995 that the Corps is willing to provide a rapid resolution to any situation which negatively impacts on the project design. We further understand that the Corps intends to integrate a specific monitoring program at this location to aid in its response to the possible downdrift erosion through accelerated renourishment activities.

Repetitive renourishment, driven by the need to protect the project design, may at first seem like the most reasonable response to solving the downdrift erosion problem if it were not for the fact that each renourishment project requires matching local funding. The process of accelerated renourishment, over the life of the project, would place an undue economic hardship on local government far in excess of the required five-year maintenance cycles over the 50-year project life. Therefore, it may be necessary to compare the cost benefit associated with completing the groin field against the repetitive placement of fill.

2) Regarding our concern for the elimination of the lengthening of the terminal groin at Point Lookout.

The department disagrees with the assumption by the ACOE that the terminal groin does not need to be lengthened because the design of the project's fill line will not cause any additional material to enter the interior portion of the inlet and eventually into Reynolds Channel, over and above that which would normally move there. Aerial photographs and on-site observations indicate that a portion of each nourishment project enlarges the shoal area to the east of Point Lookout, as well as the federal channel, and Reynolds Channel, which impedes navigation of the area.

Presently, the terminal groin at Point Lookout is the shortest of all existing and planned groins, and as such, it cannot and does not provide the functions of a terminal groin. The overall structural condition has deteriorated from major storm events since the last conditions survey was performed. If possible, during the preparation of the project plans and specifications, would you please consider another structural evaluation and perform the necessary modification to this important structure, to allow it to capture sand and provide a larger base width to the existing beach, and additional storm protection to the community at Point Lookout.

Any such modifications to the jetty that would aid in holding sand from entering the interior of the inlet navigation channels, would lessen the economic impact to marine commercial businesses already affected by inlet shoaling entering Reynolds Channel.

The Department requests the Corps to re-evaluate the modifications to the terminal groin at Point Lookout, incorporating the additional funds within the overall cost of the revetment rehabilitation.

3) <u>Revetment Rehabilitation at Point Lookout</u>.

We have been informed that our concerns for the deteriorated revetment along the southeast corner of Point Lookout has been included into the overall project, and will be rehabilitated to provide much needed storm protection for that section. The Department wishes to thank the project leadership for their cooperation in this matter.

We appreciate the opportunity to provide the Corps with our comments, and we look forward to working closely with you in this most important project.

Very truly yours,

Arnold D. Palleschi
Commissioner

AP:go

Your comments have been noted.

To: PETE WEPPLER
from: Daisy Mather EPA
Comment letter –
Fax # 5472

UNITED STATES ENVIRONMENTAL PROTE

REGION II

JACOB K. JAVITS FEDERAL BUILDING

NEW YORK, NEW YORK 10278-0012

FEB 13 1995

Class: EC-2

Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
New York District
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

The Environmental Protection Agency (EPA) has reviewed the draft environmental impact statement (EIS) for the proposed Storm Damage Protection Project, Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7609, PL 91-604 12(a), 84 Stat. 1709), and the National Environmental Policy Act.

The proposed project is intended to restore the Atlantic Ocean side of Long Beach Island, from Point Lookout to the eastern end of Atlantic Beach, and to protect it from erosion and storm damage. The draft EIS evaluates several alternatives, including use of the existing berm and no dune, construction of a 17 foot dune and a 160 foot berm, and no action. The preferred alternative involves the following: construction of six new groins at the eastern end of the Island; rehabilitation of 16 of the more than 40 existing groins; construction of a 15 foot dune; and beach nourishment with clean sand dredged from an offshore borrow area every five years for 50 years. Based on our review, we offer the following comments.

We understand that this is one of several proposed and on-going Army Corps of Engineers (ACE) erosion and storm damage protection projects on the Atlantic coast of Long Island barrier beaches, all of which involve beach nourishment with sand dredged from offshore borrow areas. EPA is concerned that the implementation of these projects could result in adverse cumulative impacts. Unfortunately, a comprehensive evaluation of the cumulative impacts of all of these projects has yet to be performed. Accordingly, EPA recommends that the ACE consider preparing a comprehensive cumulative impacts analysis (possibly through a programmatic EIS) for all of these projects prior to initiation of construction. At a minimum, the evaluation should address impacts to water quality, terrestrial and aquatic ecosystems, including benthic and back bay habitats, and endangered species.

The preferred alternative for the proposed project calls for systematic beach nourishment every five years for 50 years, involving the placement of a total of approximately 30 million cubic yards of sand dredged from an offshore borrow area. The draft EIS, however, does not sufficiently document the need to nourish the beach on a fixed routine basis, nor does it provide a plan to be followed in the event that nourishment is not required. EPA is concerned that the placement of fill as described in the draft EIS may exceed the nourishment needs within the project area, potentially causing unnecessary adverse impacts to both the offshore and onshore environments. With this in mind, we suggest that the final EIS provide beach nourishment plans that are tied to an appropriate maintenance schedule, rather than a pre-established five year schedule.

It appears that the evaluation of alternatives in the draft EIS focuses on designs that provide the same level of storm damage protection across the entire length of the project area. However, the areas to the west of Lido Beach are not as severely affected by storms as the eastern end of the project area. Rather, these areas are more susceptible to long-term erosion. With this in mind, we suggest that the final EIS evaluate combinations of the various alternatives tailored to the specific needs of the respective areas of the Island. In addition to potentially minimizing project-related environmental impacts, a combination of alternatives may be more cost-effective.

In a related matter, the September 1994 New York State Governor's Coastal Erosion Task Force Report contains several recommendations concerning the Long Beach Island area, including the initiation of sand bypassing around the Jones Inlet jetty. The final EIS should discuss the relationship between this project and the Task Force recommendations.

With regard to dredging at borrow areas, in our comments on the draft environmental assessment for the 1994 Westhampton Interim Plan for Storm Damage Protection Project, we expressed concern about the creation of deep, steep-sided borrow pits, and its potential adverse effects on water quality, including reduced dissolved oxygen and increased turbidity. The ACE indicated in its response to those comments that it will employ standard dredging practices to minimize impacts to water quality in the borrow area. This approach is acceptable to us; however, the draft EIS does not describe the practices to be employed regarding dredging at the borrow pit. Accordingly, the final EIS for this project should make the same commitment to the use of standard practices to avoid adverse impacts to water quality in the borrow area.

In conclusion, based on our review and in accordance with EPA policy, we have rated this draft EIS as EC-2, indicating that we have environmental concerns (EC) about the potential cumulative impacts associated with this and other erosion/storm damage protection projects on Long Island. Additionally, we suggest that variations of the preferred alternative be further evaluated. Accordingly, additional information (2), as outlined in this letter, should be presented in the final EIS to address this issue.

Should you have any questions concerning this letter, please contact Daisy Mather of my staff at (212) 264-6720.

Sincerely yours,

Robert W. Hargrove

Robert W. Hargrove, Chief
Environmental Impacts Branch

cc: D. Stilwell, U.S. Fish and Wildlife Service
R. Murray, U.S. Fish and Wildlife Service

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

March 1, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Robert W. Hargrove
Chief, Environmental Impacts Branch
United States Environmental
Protection Agency, Region II
Jacob K. Javits Federal Building
New York, New York 10278-0012

Attention: Ms. Daisy Mather

Dear Mr. Hargrove:

This is in reference to your February 13, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Please find our responses to your comments attached (Enclosure 2).

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

To: PETE WEPPLER
from: Daisy Mather EPA
Comment letter –
Fax #5472

UNITED STATES ENVIRONMENTAL PROTE
REGION II
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, NEW YORK 10278-0012

FEB 13 1995

Class: EC-2

Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
New York District
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

The Environmental Protection Agency (EPA) has reviewed the draft environmental impact statement (EIS) for the proposed Storm Damage Protection Project, Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. This review was conducted in accordance with Section 309 of the Clean Air Act, as amended (42 U.S.C. 7609, PL 91-604 12(a), 84 Stat. 1709), and the National Environmental Policy Act.

The proposed project is intended to restore the Atlantic Ocean side of Long Beach Island, from Point Lookout to the eastern end of Atlantic Beach, and to protect it from erosion and storm damage. The draft EIS evaluates several alternatives, including use of the existing berm and no dune, construction of a 17 foot dune and a 160 foot berm, and no action. The preferred alternative involves the following: construction of six new groins at the eastern end of the Island; rehabilitation of 16 of the more than 40 existing groins; construction of a 15 foot dune; and beach nourishment with clean sand dredged from an offshore borrow area every five years for 50 years. Based on our review, we offer the following comments.

We understand that this is one of several proposed and on-going Army Corps of Engineers (ACE) erosion and storm damage protection projects on the Atlantic coast of Long Island barrier beaches, all of which involve beach nourishment with sand dredged from offshore borrow areas. EPA is concerned that the implementation of these projects could result in adverse cumulative impacts. Unfortunately, a comprehensive evaluation of the cumulative impacts of all of these projects has yet to be performed. Accordingly, EPA recommends that the ACE consider preparing a comprehensive cumulative impacts analysis (possibly through a programmatic EIS) for all of these projects prior to initiation of construction. At a minimum, the evaluation should address impacts to water quality, terrestrial and aquatic ecosystems, including benthic and back bay habitats, and endangered species.

The preferred alternative for the proposed project calls for systematic beach nourishment every five years for 50 years, involving the placement of a total of approximately 30 million cubic yards of sand dredged from an offshore borrow area. The draft EIS, however, does not sufficiently document the need to nourish the beach on a fixed routine basis, nor does it provide a plan to be followed in the event that nourishment is not required. EPA is concerned that the placement of fill as described in the draft EIS may exceed the nourishment needs within the project area, potentially causing unnecessary adverse impacts to both the offshore and onshore environments. With this in mind, we suggest that the final EIS provide beach nourishment plans that are tied to an appropriate maintenance schedule, rather than a pre-established five year schedule.

It appears that the evaluation of alternatives in the draft EIS focuses on designs that provide the same level of storm damage protection across the entire length of the project area. However, the areas to the west of Lido Beach are not as severely affected by storms as the eastern end of the project area. Rather, these areas are more susceptible to long-term erosion. With this in mind, we suggest that the final EIS evaluate combinations of the various alternatives tailored to the specific needs of the respective areas of the Island. In addition to potentially minimizing project-related environmental impacts, a combination of alternatives may be more cost-effective.

In a related matter, the September 1994 New York State Governor's Coastal Erosion Task Force Report contains several recommendations concerning the Long Beach Island area, including the initiation of sand bypassing around the Jones Inlet jetty. The final EIS should discuss the relationship between this project and the Task Force recommendations.

With regard to dredging at borrow areas, in our comments on the draft environmental assessment for the 1994 Westhampton Interim Plan for Storm Damage Protection Project, we expressed concern about the creation of deep, steep-sided borrow pits, and its potential adverse effects on water quality, including reduced dissolved oxygen and increased turbidity. The ACE indicated in its response to those comments that it will employ standard dredging practices to minimize impacts to water quality in the borrow area. This approach is acceptable to us; however, the draft EIS does not describe the practices to be employed regarding dredging at the borrow pit. Accordingly, the final EIS for this project should make the same commitment to the use of standard practices to avoid adverse impacts to water quality in the borrow area.

In conclusion, based on our review and in accordance with EPA policy, we have rated this draft EIS as EC-2, indicating that we have environmental concerns (EC) about the potential cumulative impacts associated with this and other erosion/storm damage protection projects on Long Island. Additionally, we suggest that variations of the preferred alternative be further evaluated. Accordingly, additional information (2), as outlined in this letter, should be presented in the final EIS to address this issue.

Should you have any questions concerning this letter, please contact Daisy Mather of my staff at (212) 264-6720.

Sincerely yours,

Robert W. Hargrove, Chief
Environmental Impacts Branch

cc: D. Stilwell, U.S. Fish and Wildlife Service
R. Murray, U.S. Fish and Wildlife Service

ENCLOSURE 2

Response to EPA Comments on the DEIS and Draft Feasibility Report for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project

Paragraph 3: In regards to your comment about cumulative impacts of storm damage protection projects on the Atlantic Coast of Long Island, District staff determined the approximate amount of borrow area acreage to be impacted by the proposed south shore of Long Island beach nourishment projects in comparison to the overall available acreage between the -18 foot and -60 foot contour lines from Breezy Point to Montauk Point. Please refer to the table below for the corresponding acreages.

PROJECT	BORROW AREA(acres) set aside for the entire life of the project
Coney Island	528.0
East Rockaway	
Area 1A	73.5
Area 1B	82.6
Area 2	365.0
Long Beach	1193.8
Westhampton	308.5
Fire Island - Montauk Point anticipated to be used	4,754.1
BORROW AREA TOTAL	7,000.9 acres
SOUTH SHORE OFFSHORE TOTAL	183,655.0 acres

If all the borrow area acreage between -18 foot MLW and -60 foot MLW contours from Breezy Point to Montauk Point is utilized, only 4% of the south shore of Long Island will be impacted. This is the worst case projection for 50 years.

Actual use per year would be significantly less. Renourishment cycles occur approximately every 3-6 years. Over the life of the proposed project, Long Beach's borrow area will use less than 1% of the total habitat available.

Therefore, the District does not agree that a cumulative impact programmatic EIS needs to prepared prior to construction of any of the proposed south shore of Long Island storm damage protection projects. The District is in the process of assessing the performance of other storm damage protection projects in the New York Bight Region with the following coastal monitoring programs.

To ensure the quality of the material placed, comparisons of various available sand sources were conducted. To assess the implementation of the proposed project, the District will conduct a coastal processes monitoring program consisting of a survey of beach profile lines, sediment sampling of the beach and borrow areas, and aerial photography of the project area. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment (See Volume II, Appendix H). The coastal monitoring program has been coordinated with the New York Department of Environmental Conservation, New York Department of State, and the Town of Hempstead.

The District is also conducting a comprehensive borrow area monitoring program along the Atlantic Coast of New Jersey as well as a separate program at the Coney Island Storm Damage Protection Project Borrow Area in New York. These monitoring programs (which are scheduled to continue four years after project completion) includes the assessment of the impacts of dredging on: benthic resources and fish habitat utilization (via BRAT analysis), and water quality.

The District does not agree that a nearshore monitoring program is necessary for the proposed, or any similar south shore of Long Island project. This subject was discussed with the USFWS-LIFO, and was included in the comments to Draft Fish and Wildlife Coordination Report (FWCAR) and concurred in the Final FWCAR.

Results from studies (Courtenay, et al. 1972 and 1980, Parr, Diener and Lacy, 1978, Reilly and Bellis, 1978, Holland, Chambers and Blackman, 1980, Naqvi and Pullen, 1982) elsewhere around the country can be applied to this region as basic oceanic processes and ecological principles are involved (See DEIS-Sections 4.21-4.24). These studies indicate that during nourishment activities the habitat in the littoral zone is not lost, but displaced a short distance seaward of its former location. The basic habitat characteristics such as; currents, substrate, depth and other physical/chemical factors remain the same, so the availability of a suitable habitat remains unchanged. The beach nourishment construction process itself is gradual, building up over months. Ample time exists for motile or even planktonic forms to be displaced outside the zone of direct impact (burial). Sessile organisms would be buried but should rapidly recolonize the extended zone as long as a suitable seed source is available from the adjacent areas. Added turbidity itself is of little effect in this already turbulent zone. Since the biota have already adapted to harsh conditions associated with the Atlantic Coast, recovery should be relatively quick. The nearshore region is a highly dynamic area which is accustomed to the amount of change experienced in nourishment operations.

The District agrees with your opinion that specific information on the use of the nearshore zone in the New York Bight Region (including the New Jersey and Long Island Atlantic Coasts) is not readily available. The District is undertaking a coordinated major nearshore monitoring effort for the Atlantic Coast of New Jersey. The goal is to better understand the degree to which each habitat is utilized and how best one can enhance or possibly even direct the recovery of the resource for future projects. The results of this program will be very pertinent to Long Island projects, and will be utilized to the extent practical. However, all evidence and reasonable interpretations lead us to believe that impacts to the beach site will be short-term and minimal, while returning the area to previous conditions.

Based on studies conducted to date (LaSalle, et al. 1991) all life stages of estuarine-dependent and anadromous fish species appear to be fairly tolerant of the impacts associated with dredging (i.e. suspended sediment concentrations). In all probability, species that use naturally turbid habitats as spawning and nursery grounds are adapted to and highly tolerant of elevated suspended sediment concentrations. Most estuarine and marine benthic communities are highly variable in nature, therefore disturbances by dredging usually represent minor and short-lived impacts, similar to those induced by storm events.

Paragraph 4: In respect to renourishment schedule, periodic nourishment is designed to protect the integrity of the project. The proposed nourishment requirements are based on anticipated erosion rates and other expected losses. The Corps' modeling programs have determined that the appropriate maintenance cycle which would optimize the fill requirements is every 5 years. While it is true that the actual volumetric requirements may be less than or greater than the expected nourishment volumes, the modeling techniques used for developing the anticipated volumes are the best tools available at this time. We do not expect to exceed the total volume available in the borrow area. Based on the monitoring of the beach and borrow area, we will determine if other borrow sources are required, and conduct the appropriate studies of other areas (ie, coring, sediment sampling).

Paragraph 5: In reference to the alternatives evaluation, the preliminary screening of alternatives considered designs which provide the same level of storm damage protection. However, in optimizing the design to develop the most environmentally sound and cost effective design, various levels of protection were considered. All of the alternatives considered recognized the severity of erosion in the eastern end of the project, which is most susceptible to the effects of long term erosion. This long term erosion diminishes the storm damage protection capability of fill only alternatives incorporating berm and dune features. In this area it was determined that the beach fill combined with a groin field, which addresses the specific needs of this area, is a more effective solution than the alternative of increased beachfill alone.

Paragraph 6: It is important to realize that this is a storm damage protection project, and that any relationships to Jones Inlet would have to be addressed under separate authority. The feasibility report states that it has been determined to be prudent that material dredged from Jones Inlet is placed onto the downdrift shores, and that such placement results in a decrease in the volumetric requirements for periodic nourishment. Sand-bypassing is generally economically unfeasible for inlets wider than approximately 500 feet in width. Past experience has shown that the maintenance necessary for mechanically sand-bypassing systems associated with wider inlets is costly with breakdowns being common. Neither the volumes of material from Jones Inlet nor the sand bypassing around the jetty at Jones Inlet, would be sufficient for the volumetric requirements of this proposed project. An offshore borrow source, as identified, is less costly.

Paragraph 7: Dredging for this type of beach nourishment project can be accomplished by either a hopper dredge or a hydraulic (cutterhead) dredge. The costs for this project are based on the use of both of these dredges. The use of both dredges is anticipated to maximize dredging production efficiency. Although the District cannot predict the types of dredge(s) that will be bid for the specific project or awarded a contract, history has shown that these dredges are readily available with sufficient capability to perform the proposed project work. Hopper dredges normally perform at maximum production when the dredging - placement distances exceed three miles. Hydraulic dredges are usually used within the three mile distance. Even though the borrow site is approximately one-half mile offshore, the distance of the placement area is approximately seven miles. Therefore, the most cost-effective solution is to use both types of dredges.

The following discussion of dredging techniques will be included in the FEIS under **Section 4.00 Environmental Effects:**

> A hopper dredge behaves as an underwater "vacuum cleaner", in that it moves along the ocean floor and inhales sediment through a pipeline which deposits the material into the vessel's hopper. The sediment, in each pass, is taken up in less than two foot increments until the hopper is full or the maximum dredging depth is met. The hopper dredge will normally transverse a large area, to minimize turns, and will incrementally dredge the entire area before the second pass is executed.
>
> Conversely, the hydraulic dredge will dredge from a stationary position and continue until the limited depth is reached. The dredge will then position itself to another site to continue the process.
>
> Although the techniques may differ, the outcome is the same: a specified area will be

dredged to a depth (not to exceed twenty foot below existing ocean bottom) which will provide sufficient material to meet the necessary volumetric beachfill requirements.

It is further noted that there are other types of dredging vessels that may become available for use on the proposed project. The Federal objective (construction of the proposed project) will be the same, and whichever type of dredge can perform the required work at least cost (low-bid), will fulfill the objective. If the State (project co-sponsor) has dredging restrictions that result in an increased cost to the Federally proposed dredging, the increased costs shall be the responsibility of the State.

Standard dredging practices aim to avoid dredging or disturbing sediment types that are of high benthic quality and that are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized. Also, as standard practice, the District tries to dredge borrow areas to the minimum depth required with gently sloping sides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

The FEIS will be revised to state the Corps' commitment to the use of standard dredging practices to minimize impacts to water quality in the borrow area.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat and Protected
Resources Division
James J. Howard Marine
Sciences Laboratory
Highlands, New Jersey 07732

February 14, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

We have reviewed the revised Draft Environmental Impact Statement and Draft Feasibility Report (DEIS/DFR) for storm damage reduction along the Atlantic Coast of Long Island. The document assesses the potential impact of groin rehabilitation and construction, beach fill, and hydraulic dredging along a seven mile stretch of shoreline from Jones Inlet to East Rockaway Inlet at Long Beach, New York. A 550 acre offshore borrow area located 1.5 miles south of Long Beach Island is proposed for use as the source of nourishment material. We offer the following comments for your consideration.

General Comments:

The proposed project includes an initial beach nourishment of 8.6 million cubic yards of sand, the placement of 198,000 tons of stone, and the creation of an upland dune system to a height of 15 feet. Dredging from the offshore borrow area will remove benthic sediments to 20 feet below the existing bottom profile of 30 to 60 feet below mean low water. In addition, 19.6 million cubic yards of sand will be hydraulically removed from the borrow area for periodic renourishment over the 50-year life of the project.

The document does not contain sufficient information to make an adequate evaluation of the potential project impacts on aquatic resources under the purview of the National Marine Fisheries Service (NMFS). Specifically, we are concerned that the proposed dredging of the offshore borrow area will unnecessarily degrade the benthic environment and adversely affect shellfish resources such as American lobster (*Homarus americanus*), and surf clam (*Spisula solidissima*).

The DEIS describes the borrow site as a productive benthic environment comprised of a diverse community of aquatic organisms. Preliminary investigations indicate that this dynamic offshore shoal is dominated by bivalves, crustaceans, polychaetes, and amphipods. Because these organisms are predominantly sessile, many will be eliminated or displaced by the dredging. Opportunistic benthic and epibenthic species will rapidly repopulate the disturbed area, leaving the community profile in the vicinity of the borrow area severely altered.

Some species, such as the surf clam and American lobster, will require a longer period of time for recovery, perhaps years, and even then, abundance levels may never reach pre-dredging levels. Because the DEIS/DFR does not provide a recent assessment of stock abundance and distribution within the borrow area, we are unable to determine whether the Long Island surf clam and lobster population or the New York State inshore commercial fishery will be adversely impacted by the project.

Stock assessments completed by the New York State Department of Environmental Conservation (NYSDEC) in 1992 indicate that at least 10 million bushels of adult surf clams are present between Rockaway Inlet and Montauk Point. Approximately 6 million bushels could be of commercially harvestable size. In addition, our agency estimates total landings for New York State in 1993 to be in the range of 14.6 million pounds with a market value of 5.5 million dollars. The beach nourishment could affect this resource and the industry dependent on it.

Because dredging can affect resident shellfish, a more detailed benthic assessment of the habitat in and immediately adjacent to the borrow area should be undertaken. The assessment should identify areas of shellfish concentration within the borrow area and estimate the resource's potential importance to the commercial fishery. This survey should be developed in consultation with the NYSDEC, U.S. Fish and Wildlife Service, and the NMFS. A similar analysis should be performed for lobsters.

Endangered Species:

In a letter to Mr. Bruce Bergmann dated June 1, 1993, we indicated that federally listed endangered or threatened sea turtles may be present in the vicinity of the borrow area. Because a biological opinion evaluating the potential impacts of hopper dredge use in the New York/New Jersey area has not been completed, our original recommendations regarding seasonal use of this type of dredge must be sustained. If a hopper dredge will be employed from mid-June through mid-November, NMFS-approved observers must be on board the vessel to monitor the operation for evidence of sea turtle entrainment and mortality. If evidence of sea turtle entrainment is observed, further consultation with NMFS pursuant to Section 7 of the Endangered Species Act (ESA) may be necessary.

If further clarification is needed regarding our comments, please contact Ms. Cori Collins at the Milford Laboratory, in Milford, Connecticut. Her number is (203) 783-4228.

Sincerely,

Stanley W. Gorski
Assistant Coordinator
Habitat Program

cc: NYSDEC, Long Island (D. Fox)
NMFS,PSP (L. Silva)
NMFS, (D. Rusanowsky)
NMFS, (C. Collins)
NOAA,ECO, Washington (D. Wieting)
NOAA,ECO, (N. Gallman) at fax # (202) 501-3024

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

February 27, 1995

Environmental Analysis Branch
Environmental Assessment Section

Mr. Stanley W. Gorski
Assistant Coorinator
Habitat Program
National Marine Fisheries Service
James J. Howard Laboratory
Highlands, New Jersey 07732

Dear. Mr. Gorski:

This is in reference to your February 14, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Please find our responses to your comments attached (Enclosure 2).

Any questions concerning this matter should be addressed to Mr. Howard Ruben or Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

cc: Rusanowsky, NMFS-Milford

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat and Protected
Resources Division
James J. Howard Marine
Sciences Laboratory
Highlands, New Jersey 07732

February 14, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

We have reviewed the revised Draft Environmental Impact Statement and Draft Feasibility Report (DEIS/DFR) for storm damage reduction along the Atlantic Coast of Long Island. The document assesses the potential impact of groin rehabilitation and construction, beach fill, and hydraulic dredging along a seven mile stretch of shoreline from Jones Inlet to East Rockaway Inlet at Long Beach, New York. A 550 acre offshore borrow area located 1.5 miles south of Long Beach Island is proposed for use as the source of nourishment material. We offer the following comments for your consideration.

General Comments:

The proposed project includes an initial beach nourishment of 8.6 million cubic yards of sand, the placement of 198,000 tons of stone, and the creation of an upland dune system to a height of 15 feet. Dredging from the offshore borrow area will remove benthic sediments to 20 feet below the existing bottom profile of 30 to 60 feet below mean low water. In addition, 19.6 million cubic yards of sand will be hydraulically removed from the borrow area for periodic renourishment over the 50-year life of the project.

The document does not contain sufficient information to make an adequate evaluation of the potential project impacts on aquatic resources under the purview of the National Marine Fisheries Service (NMFS). Specifically, we are concerned that the proposed dredging of the offshore borrow area will unnecessarily degrade the benthic environment and adversely affect shellfish resources such as American lobster (*Homarus americanus*), and surf clam (*Spisula solidissima*).

The DEIS describes the borrow site as a productive benthic environment comprised of a diverse community of aquatic organisms. Preliminary investigations indicate that this dynamic offshore shoal is dominated by bivalves, crustaceans, polychaetes, and amphipods. Because these organisms are predominantly sessile, many will be eliminated or displaced by the dredging. Opportunistic benthic and epibenthic species will rapidly repopulate the disturbed area, leaving the community profile in the vicinity of the borrow area severely altered.

Some species, such as the surf clam and American lobster, will require a longer period of time for recovery, perhaps years, and even then, abundance levels may never reach pre-dredging levels. Because the DEIS/DFR does not provide a recent assessment of stock abundance and distribution within the borrow area, we are unable to determine whether the Long Island surf clam and lobster population or the New York State inshore commercial fishery will be adversely impacted by the project.

Stock assessments completed by the New York State Department of Environmental Conservation (NYSDEC) in 1992 indicate that at least 10 million bushels of adult surf clams are present between Rockaway Inlet and Montauk Point. Approximately 6 million bushels could be of commercially harvestable size. In addition, our agency estimates total landings for New York State in 1993 to be in the range of 14.6 million pounds with a market value of 5.5 million dollars. The beach nourishment could affect this resource and the industry dependent on it.

Because dredging can affect resident shellfish, a more detailed benthic assessment of the habitat in and immediately adjacent to the borrow area should be undertaken. The assessment should identify areas of shellfish concentration within the borrow area and estimate the resource's potential importance to the commercial fishery. This survey should be developed in consultation with the NYSDEC, U.S. Fish and Wildlife Service, and the NMFS. A similar analysis should be performed for lobsters.

Endangered Species:

In a letter to Mr. Bruce Bergmann dated June 1, 1993, we indicated that federally listed endangered or threatened sea turtles may be present in the vicinity of the borrow area. Because a biological opinion evaluating the potential impacts of hopper dredge use in the New York/New Jersey area has not been completed, our original recommendations regarding seasonal use of this type of dredge must be sustained. If a hopper dredge will be employed from mid-June through mid-November, NMFS-approved observers must be on board the vessel to monitor the operation for evidence of sea turtle entrainment and mortality. If evidence of sea turtle entrainment is observed, further consultation with NMFS pursuant to Section 7 of the Endangered Species Act (ESA) may be necessary.

If further clarification is needed regarding our comments, please contact Ms. Cori Collins at the Milford Laboratory, in Milford, Connecticut. Her number is (203) 783-4228.

Sincerely,

Stanley W. Gorski
Assistant Coordinator
Habitat Program

cc: NYSDEC, Long Island (D. Fox)
NMFS,PSP (L. Silva)
NMFS, (D. Rusanowsky)
NMFS, (C. Collins)
NOAA,ECO, Washington (D. Wieting)
NOAA,ECO, (N. Gallman) at fax # (202) 501-3024

Response to NMFS Comments
on the DEIS and Draft Feasibility Report for the proposed
Atlantic Coast of Long Island,
Jones Inlet to East Rockaway Inlet,
Long Beach Island, New York
Storm Damage Reduction Project

GENERAL COMMENTS

Single project or cumulative impacts to surf clams will be dependent on the productivity of each individual borrow area at the time of dredging. Accurate assessments can only be determined by a survey conducted within a relatively brief period before the proposed dredging activities. As stated in the DEIS, the District will conduct a pre-dredge surf clam population assessment of the borrow area to obtain the latest available information. If it is found that clam populations do not exist in economically feasible numbers, then utilization of the borrow sites would not impact that resource. If areas are found to be of high surf clam use, the District will coordinate with NMFS-Milford and NYSDEC-Region I staff in developing potential mitigation alternatives. Possible alternatives include:

a. depending on the magnitude and distribution of the resource, dredge in areas of lower surf clam use when such action can be accomplished without creating isolated holes
b. harvesting the resources before dredging initiates
c. develop a monitoring program to determine actual impacts and the possibility of modifying future nourishments for them.

The borrow area delineated for the proposed project consists of primarily unconsolidated sands and is relatively free of sunken hard structures or obstacles. This type of environment is not suitable habitat for the American lobster. The American lobster spends most of its time occupying its den, which usually consists of rocks or other structures on the ocean floor. Under normal dredging procedures, if large areas containing structures or obstacles are known to be potentially present (i.e. shipwrecks or artificial reefs), a buffer zone is placed around the structure, protecting the structure itself as well as any associated species or related habitats.

Dens or burrows can also be excavated by the lobster in sediments such as clay or mud. These physical characteristics are not significantly present in the proposed borrow area and therefore, not significantly impacting American lobster habitat.

ENDANGERED SPECIES

The District concurs. **Section 4.29 Endangered Fish and Wildlife Resources** of the DEIS states "...if hopper dredges are utilized between mid-June and mid-November, NMFS-approved turtle observers must be on board to monitor dredging activity."

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

February 16, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Re: F-94-696
COE/NY - Atlantic Coast of Long Island - Jones Inlet to East Rockaway Inlet, Long Beach Island Storm Damage Reduction Project

Draft Environmental Impact Statement

Dear Mr. Weppler:

The New York State Department of State's Division of Coastal Resources and Waterfront Revitalization has reviewed the Draft Environmental Impact Statement (DEIS) and Draft Feasibility Report for the proposed storm damage reduction project on Long Beach Island, as released by your agency in September 1994. The Division's comments relate to the coastal policies of New York State's Coastal Management Program (CMP) and the proposed project's potential to affect coastal resources. The comments are intended to assure adequate recognition of and response to coastal resource related issues, while providing guidance toward completion of a Final Environmental Impact Statement.

The Division's review of the DEIS raised concern over two principal issues, as was indicated at the meeting held at your agency's office on February 1, 1995. The first issue pertains to the proposed six new groins that would be constructed immediately west of Jones Inlet, and potential adverse effects to the downdrift, westward, beach area and to Jones Inlet. The second issue involves the potential adverse effects on fisheries resources at the proposed borrow site.

According to the DEIS, your agency has prepared a program for post-construction monitoring of potential effects caused by the beach stabilization work (including the six new

groins), to begin at the initiation of pre-construction efforts and continue for five years. Based on the February 1 meeting, this monitoring program is designed to assess project performance and the potential need for further remedial action. This Department, after coordination with other interested agencies, has prepared a modified version of the proposed monitoring program. Please refer to the enclosed monitoring diagram, as modified from the original diagram within the technical appendices of the Draft Feasibility Report and DEIS. As agreed at the February 1 meeting, the monitoring design for the eastern end of Long Beach Island must detect significant shoreline changes resulting from the placement of the beach fill and the addition of six groins. It must also document any increase in shoaling at the east end of Long Beach Island. Detection of unanticipated changes will signal the need for further Corps of Engineers (COE), State, and local action to address problems before they become a major threat to existing shoreline development or navigation. It is assumed that the remainder of Long Beach Island, and those elements not discussed below, will be monitored as proposed by the COE in the Long Beach Feasibility Study.

To detect adverse changes in the filled areas that are caused by the new groins, modification of the proposed COE Feasibility Study monitoring plan is recommended. Along the Atlantic shorefront, proposed transect lines should be revised to: relocate any lines that would be adjacent to existing or proposed groins (research has documented that survey lines within 100 ft of a groin can give spurious results); add additional transect lines so that there is at least one survey line at the approximate mid-line of each groin compartment (to document excessive compartment accretion or scouring); and add lines to provide sufficient coverage downdrift of the western most groin (to document potential accelerated erosion caused by the new groins). This Department recommends that the final plan contain at least 15 profile survey lines as indicated on the enclosed map.

Surveys along each of the 15 profile lines should be performed immediately prior to project construction (to serve as baseline information), and quarterly after project completion for two full years. Evidence of rapid shoreline erosion rates in this area suggests the need for frequent surveys. This will ensure that shoreline erosion is identified soon enough to facilitate action prior to upland damage. After the second year, if unanticipated erosion has not been detected by the quarterly surveys, the temporal interval for surveys may be relaxed to match the proposed COE monitoring plan.

Comparative profile plots for each of the 15 lines should be provided to the New York State Department of Environmental Conservation (DEC), this Department and the Town of Hempstead, for review within 30 days of survey. It is assumed that post-storm monitoring activities will proceed as proposed in the COE Feasibility Study plan, and will incorporate these additional surveyed areas. Post-storm profile surveys and aerial photography would then be provided to DEC, this Department and the Town, within 30 days of collection. All

monitoring information should ultimately be incorporated into the Atlantic Coast of New York Monitoring Program.

To document increased shoaling in Jones Inlet, in the vicinity of Point Lookout, the monitoring program requires annual bathymetric surveys. Where possible, these surveys can be coordinated with inlet channel surveys for navigation purposes. The proposed area of survey (approx. 150 acres) is shaded on the enclosed map. A pre-project survey should be conducted to document existing conditions. Upon project completion, a survey should be performed and repeated annually at approximately the same time of year for the first 5 years. Subsequent monitoring intervals for inlet shoaling should be jointly determined based on the experience of this initial period. The bathymetric data should be overlaid and difference maps developed to detect any significant shoaling. Bathymetric survey maps and difference plots should then be provided to DEC, this Department and the Town of Hempstead, within 30 days of the survey. Finally, the bathymetric data should be incorporated into the Atlantic Coast of New York Monitoring Program.

If results of the modified monitoring program indicate a problem with project design, the addition of 3 groins (to close the gap between the new groins and the existing groins to the west) should be examined as an option for correcting the problem. Additional groins may result in a more permanent and economical solution, as opposed to the increase in frequency of sand placement along the beach.

In regard to the potential adverse effects at the proposed borrow site, this Department has been advised by DEC, by copy of a letter to your agency dated January 10, 1995, of its concern about potential shellfishery impacts. DEC indicates that the proposed borrow area has an "extensive" population of surf clams (Spisula solidissima), and that the proposed dredging will cause extensive damage to the commercial fishery and, thereby, the associated economy. This Department shares DEC's concern.

Department staff contacted your agency on February 7, 1995 to request a meeting to discuss and assist in resolving the potential impact on the surf clam resource at the proposed borrow area. Staff was advised that a meeting is pending coordination between your agency and DEC, and that staff of this Department would be invited when a date was set. Please inform us when this meeting will be held.

The above comments are provided to assure adequate recognition and response to coastal resource related issues, although they do not constitute a formal federal consistency review by the Department of State. Pursuant to 15 CFR 930.41, the Department of State will commence its formal consistency review of this project upon receipt of the Final Environmental Impact Statement and your agency's final consistency determination with respect to the New York State Coastal Management Program.

If you have any questions pertaining to the above comments, please contact Mr. Kevin Vienneau or Mr. Fred Anders at (518) 474-6000.

Sincerely,

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

Enclosure
WFB/KV/FA/jtb
cc: Arnold Palleschi, Town of Hempstead
Jay Tanski, NYS Sea Grant
Bill Daley, NYS DEC

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

February 24, 1995

Environmental Assessment Section
Environmental Analysis Branch

Mr. William F. Barton
Chief, Consistency Review and Analysis Bureau
Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Re: **F-94-696**
Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Attention: Mr. Kevin Vienneau

Dear Mr. Barton:

This is in reference to your February 16, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) and the Consistency Determination for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

As discussed in the February 1, 1995 meeting held at the District, your staff's concerns regarding coastal processes west of Jones Inlet will be addressed in the modified monitoring program that was coordinated with the District, New York Department of Environmental Conservation (NYSDEC), the Town of Hempstead, and New York State Sea Grant. The modified monitoring program will be developed prior to the finalizing of Plans and Specifications for the proposed project and can be further modified as appropriate during the life of the project.

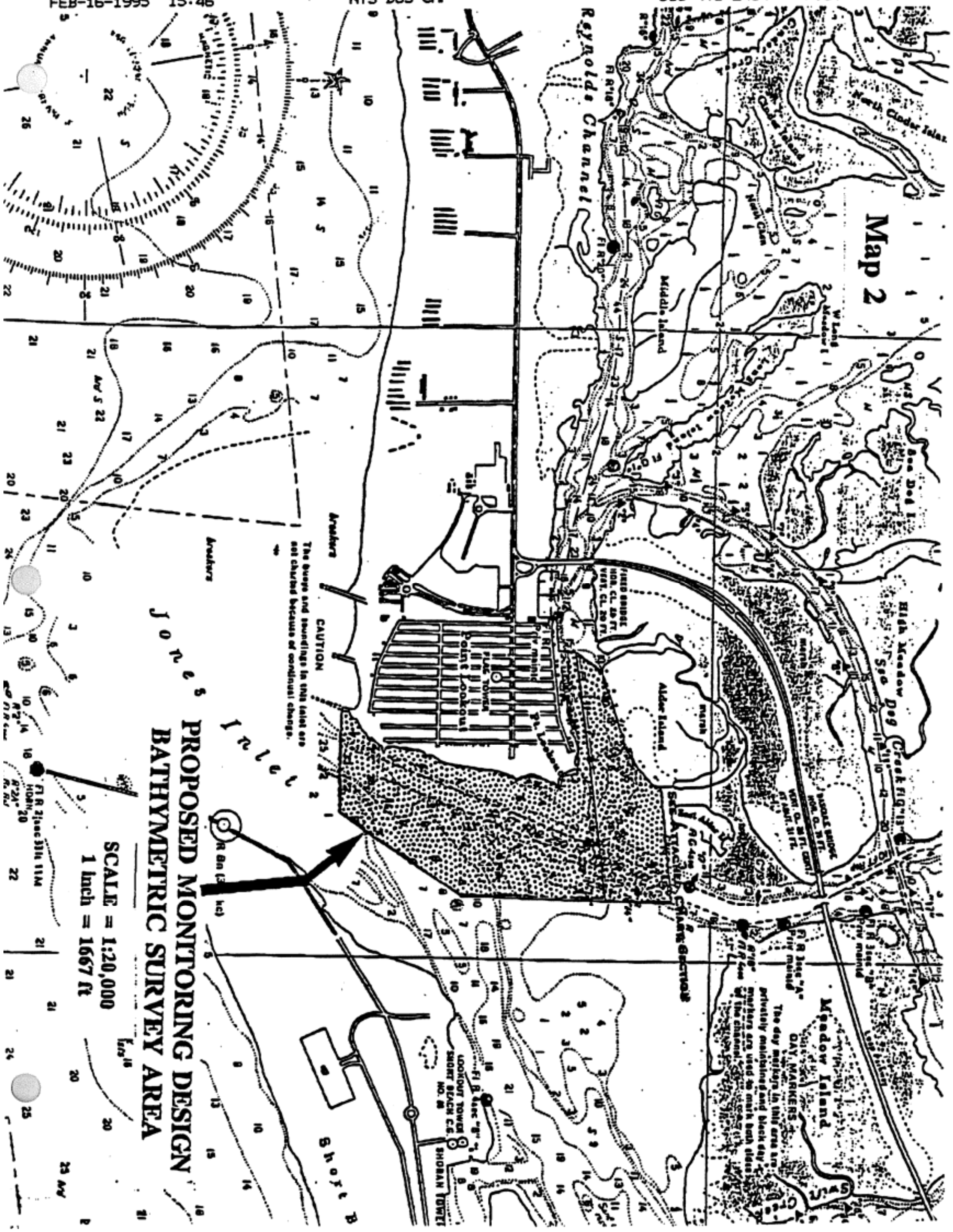
In regards to the potential adverse impacts of the proposed project on the surf clam population, District staff has been coordinating with NYSDEC Region I to resolve the issue. The NYSDEC is in the process of evaluating if a significant surf clam resource does exist within the proposed borrow area, and if so, the District and the NYSDEC will develop potential mitigation alternatives. As discussed with Mr. Kevin Vienneau of your staff, the District will update the Department of State with regard to the status of coordination.

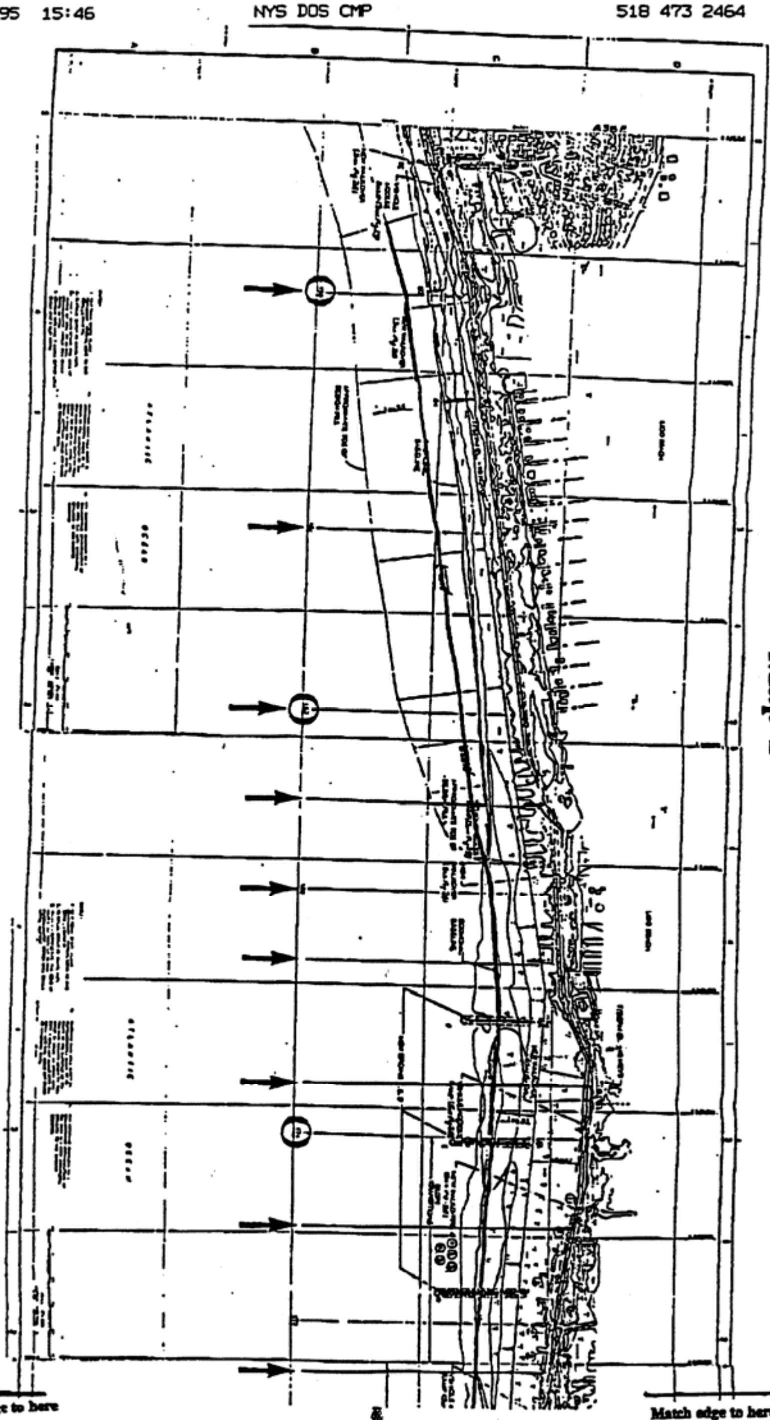
Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure


Map 2
PROPOSED MONITORING DESIGN
BATHYMETRIC SURVEY AREA
SCALE = 1:20,000
1 inch = 1667 ft
Jones Inlet
Reynolds Channel
Middle Island
Alder Island
High Meadow
Meadow Island
North Cinder Island
CAUTION
The buoys and soundings in this inlet are not charted because of continual change.
breakers
DAY MARKERS
LOOKOUT TOWER SHORT BEACH C.G.



Map 1

Match edge to here

Match edge to here

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

February 16, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Re: F-94-696
COE/NY - Atlantic Coast of Long Island - Jones Inlet to East Rockaway Inlet, Long Beach Island Storm Damage Reduction Project

Draft Environmental Impact Statement

Dear Mr. Weppler:

The New York State Department of State's Division of Coastal Resources and Waterfront Revitalization has reviewed the Draft Environmental Impact Statement (DEIS) and Draft Feasibility Report for the proposed storm damage reduction project on Long Beach Island, as released by your agency in September 1994. The Division's comments relate to the coastal policies of New York State's Coastal Management Program (CMP) and the proposed project's potential to affect coastal resources. The comments are intended to assure adequate recognition of and response to coastal resource related issues, while providing guidance toward completion of a Final Environmental Impact Statement.

The Division's review of the DEIS raised concern over two principal issues, as was indicated at the meeting held at your agency's office on February 1, 1995. The first issue pertains to the proposed six new groins that would be constructed immediately west of Jones Inlet, and potential adverse effects to the downdrift, westward, beach area and to Jones Inlet. The second issue involves the potential adverse effects on fisheries resources at the proposed borrow site.

According to the DEIS, your agency has prepared a program for post-construction monitoring of potential effects caused by the beach stabilization work (including the six new

groins), to begin at the initiation of pre-construction efforts and continue for five years. Based on the February 1 meeting, this monitoring program is designed to assess project performance and the potential need for further remedial action. This Department, after coordination with other interested agencies, has prepared a modified version of the proposed monitoring program. Please refer to the enclosed monitoring diagram, as modified from the original diagram within the technical appendices of the Draft Feasibility Report and DEIS. As agreed at the February 1 meeting, the monitoring design for the eastern end of Long Beach Island must detect significant shoreline changes resulting from the placement of the beach fill and the addition of six groins. It must also document any increase in shoaling at the east end of Long Beach Island. Detection of unanticipated changes will signal the need for further Corps of Engineers (COE), State, and local action to address problems before they become a major threat to existing shoreline development or navigation. It is assumed that the remainder of Long Beach Island, and those elements not discussed below, will be monitored as proposed by the COE in the Long Beach Feasibility Study.

To detect adverse changes in the filled areas that are caused by the new groins, modification of the proposed COE Feasibility Study monitoring plan is recommended. Along the Atlantic shorefront, proposed transect lines should be revised to: relocate any lines that would be adjacent to existing or proposed groins (research has documented that survey lines within 100 ft of a groin can give spurious results); add additional transect lines so that there is at least one survey line at the approximate mid-line of each groin compartment (to document excessive compartment accretion or scouring); and add lines to provide sufficient coverage downdrift of the western most groin (to document potential accelerated erosion caused by the new groins). This Department recommends that the final plan contain at least 15 profile survey lines as indicated on the enclosed map.

Surveys along each of the 15 profile lines should be performed immediately prior to project construction (to serve as baseline information), and quarterly after project completion for two full years. Evidence of rapid shoreline erosion rates in this area suggests the need for frequent surveys. This will ensure that shoreline erosion is identified soon enough to facilitate action prior to upland damage. After the second year, if unanticipated erosion has not been detected by the quarterly surveys, the temporal interval for surveys may be relaxed to match the proposed COE monitoring plan.

Comparative profile plots for each of the 15 lines should be provided to the New York State Department of Environmental Conservation (DEC), this Department and the Town of Hempstead, for review within 30 days of survey. It is assumed that post-storm monitoring activities will proceed as proposed in the COE Feasibility Study plan, and will incorporate these additional surveyed areas. Post-storm profile surveys and aerial photography would then be provided to DEC, this Department and the Town, within 30 days of collection. All

monitoring information should ultimately be incorporated into the Atlantic Coast of New York Monitoring Program.

To document increased shoaling in Jones Inlet, in the vicinity of Point Lookout, the monitoring program requires annual bathymetric surveys. Where possible, these surveys can be coordinated with inlet channel surveys for navigation purposes. The proposed area of survey (approx. 150 acres) is shaded on the enclosed map. A pre-project survey should be conducted to document existing conditions. Upon project completion, a survey should be performed and repeated annually at approximately the same time of year for the first 5 years. Subsequent monitoring intervals for inlet shoaling should be jointly determined based on the experience of this initial period. The bathymetric data should be overlaid and difference maps developed to detect any significant shoaling. Bathymetric survey maps and difference plots should then be provided to DEC, this Department and the Town of Hempstead, within 30 days of the survey. Finally, the bathymetric data should be incorporated into the Atlantic Coast of New York Monitoring Program.

If results of the modified monitoring program indicate a problem with project design, the addition of 3 groins (to close the gap between the new groins and the existing groins to the west) should be examined as an option for correcting the problem. Additional groins may result in a more permanent and economical solution, as opposed to the increase in frequency of sand placement along the beach.

In regard to the potential adverse effects at the proposed borrow site, this Department has been advised by DEC, by copy of a letter to your agency dated January 10, 1995, of its concern about potential shellfishery ~~impacts. DEC indicates that~~ the proposed borrow area has an "extensive" population of surf clams (Spisula solidissima), and that the proposed dredging will cause extensive damage to the commercial fishery and, thereby, the associated economy. This Department shares DEC's concern.

Department staff contacted your agency on February 7, 1995 to request a meeting to discuss and assist in resolving the potential impact on the surf clam resource at the proposed borrow area. Staff was advised that a meeting is pending coordination between your agency and DEC, and that staff of this Department would be invited when a date was set. Please inform us when this meeting will be held.

The above comments are provided to assure adequate recognition and response to coastal resource related issues, although they do not constitute a formal federal consistency review by the Department of State. Pursuant to 15 CFR 930.41, the Department of State will commence its formal consistency review of this project upon receipt of the Final Environmental Impact Statement and your agency's final consistency determination with respect to the New York State Coastal Management Program.

If you have any questions pertaining to the above comments, please contact Mr. Kevin Vienneau or Mr. Fred Anders at (518) 474-6000.

Sincerely,

William F. Barton

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

Enclosure
WFB/KV/FA/jtb
cc: Arnold Palleschi, Town of Hempstead
Jay Tanski, NYS Sea Grant
Bill Daley, NYS DEC

FINAL FISH AND WILDLIFE COORDINATION ACT REPORT

NEW YORK DISTRICT COMMENTS TO THE FINAL FISH AND WILDLIFE COORDINATION ACT REPORT FOR THE ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY INLET, LONG BEACH ISLAND, NEW YORK STORM DAMAGE PROTECTION PROJECT

A. MITIGATION RECOMMENDATIONS

1. Beach Nourishment Area

1-7. As coordinated with your Long Island Field Office staff by way of their February 9, 1995 letter, if construction activities are accomplished within the piping plover nesting season (APRIL 1 TO SEPTEMBER 1), the New York District will institute a monitoring program designed to assure the protection of the piping plovers and least terns. The program shall consist of:

1. Pre-Construction Survey Phase - Prior to initial construction and future renourishment efforts, the Corps of Engineers in consultation with the USFWS will identify, delineate and symbolically fence previously utilized piping plover territorial, courtship, nesting, and brood rearing areas. Construction activities shall not occur within 300 feet of the posted areas. If no plovers/least terns are present within the posted by July 1, the Corps after consultation with the USFWS, may initiate construction activities within these areas.

2. Concurrent-Construction Survey/Monitor Phase - Beginning on April 1 or two weeks prior to any construction activity, and continuing September 1, or the date of last fledging (marking the conclusion of the piping plover season), The following survey/monitor activities shall be established:

   a. A Corps of Engineers biologist, or designated representative (monitor) will survey (identify and delineate bird use areas) for four days each week, not to exceed 2 consecutive days at any time, all action areas (landing, staging, beach placement, etc.) for the occurrence of territorial, courting or nesting piping plovers/least terns. If plovers/least terns are not detected in these areas, then surveying can be discontinued on July 1. When unfledged chicks are within 3,280 feet (1000 meters) of moving equipment, monitoring shall occur daily in those areas.

b. Surveying within the remaining sections of the project area shall occur at a frequency of one day per week. If plovers/least terns are not detected in these areas, then surveying can be discontinued on July 1. If plovers/least terns are detected in these areas, then the protocol described in **a.** above will be implemented. Symbolic fencing shall also be erected in these areas. When unfledged chicks are within 3,280 feet (1000 meters) of moving equipment, monitoring shall occur daily in those areas.

4. Post-Construction Surveys - For three seasons after initial project completion (until first nourishment cycle), New York District will survey shorebird use in the project area for the occurrence of territorial, courting or nesting piping plovers/least terns, on a biweekly basis for two consecutive days each time until nests are discovered. If nests are detected monitoring will become weekly and continue until all plover/tern chicks are fledged or lost. If no nests are established, by July 15, monitoring will be concluded.

5. System of Notification - The District shall notify the USFWS-Long Island Field Office within 25 hours, if plovers/terns are observed during any of the surveys. Maps shall be prepared to record all observations. The maps will be provided to the USFWS on a weekly basis. Information from this survey could be the grounds for recommendations on future maintenance work, as well as other similar dredging/beach nourishment projects that may occur along the south shore.

In the event that it appears that disturbance to the piping plovers/least terns cannot be avoided, the New York District will notify the USFWS, and the NYSDEC, by close of business that day. The on-site contractors shall be directed by the District to adjust or halt construction activities to avoid the disturbance to the extent practicable. Further consultation under the Endangered Species Act will be initiated.

The rehabilitation of the groins could also impact the plovers/least terns by disturbing possible nesting activities. To minimize the duration of these impacts, work is being scheduled as a single continuous action, to avoid a second season of impacts. Work is scheduled to begin in Fiscal Year 1998, and to be completed before the spring 1999 nesting season. In the event that work on the groins is extended into the breeding season, nesting sites would be identified and measures taken to isolate them from the contractor's work. The section of groins requiring repair is now underwater, therefore repair work on it would have minimum impact on plovers/least terns. However, the construction of the six (6) new groins near Point Lookout will occur on land. All previously discussed protective measures for beach placement activities will be instituted to minimize/avoid impacts.

Piping plovers/least terns that currently utilize the project area may experience possible **indirect** impacts as the result of increased human recreational activity. To reduce this impact, the New York District will approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of briefing them regarding the USFWS Protection Agreement and protective measures that could be employed to minimize future problems.

8. The New York District will notify the USFWS-LIFO if any of the above protection measures are implemented during the piping plover breeding season.

9. Standard dredging practices aim to avoid exposing and dredging sediment types that are of low benthic quality and are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized.

10. Dune construction includes approximately 29 acres of planting of American beach grass (Ammophila breviligulata) and 50,000 linear feet of sand fence for dune sand entrapment, as well as ramps and walkovers for access. The District's Planning Division, in consultation with the USFWS-Long Island Field Office, will oversee the placement of the beach grass plantings to avoid any potential impacts in piping plover and least tern nesting areas. The spacing of the plantings will be incorporated into the Plans and Specifications for the project.

11. Public access on the dunes will be restricted to only walkovers and handicapped entrances spaced approximately every one-half mile or less. Placement of public access routes will avoid known piping plover nesting areas.

2. Offshore Borrow Areas

1-3. The District is proposing to conduct a pre-dredge spring surf clam stock assessment similar to the protocol employed in the NYSDEC Bureau of Shellfisheries' Surf Clam Assessments (NYSDEC, 1992). The pre-dredge stock assessment will be used to identify areas of lower shellfish use within the borrow area and to develop a dredging plan that minimizes impacts to the shellfish resources. If areas of high shellfish use are identified, sufficient time will be available for the resource to be harvested before dredging begins. Discussion of other alternatives are currently being discussed with the NYSDEC. The District will also perform a post-dredge surf clam population survey.

Standard dredging practices aim to avoid disturbing and dredging sediment types that are of high benthic quality and that are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized. Also, as standard practice, the District tries to dredge borrow areas to the minimum depth required with gently sloping slides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

3. New Groin Construction

1. In addition to evaluating groin construction at the eastern end, the District examined sand only alternatives. The groin field is anticipated to reduce nourishment costs (See Feasibility Report Volume I, pages 29-32 & Volume II, Appendix A).

2. The six new groins at Lido Beach are designed with a low top elevation to encourage, not impede, sand transport to the down drift beaches (See Feasibility Report Volume I, pages 29-32 & Volume II, Appendix A).

B. MONITORING RECOMMENDATIONS

1. Beach Nourishment Area

1. The project calls for the placement of sand for 41,000 feet along Long Beach Island (from Point Lookout to East Atlantic Beach). The proposed borrow area contains sand that is similar to the native beach material. The borrow material will not contain silt and organic matter that is associated

with hypoxic or anoxic conditions. Pre-construction monitoring consists of a survey of beach profile lines, sediment sampling of the beach and borrow areas, aerial photography of the project area and biological samples collected along the beach and borrow area. To ensure the quality of the material placed, comparisons of various available sand sources were conducted. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment (See Volume II, Appendix H). The District will forward the results of the surveys to the USFWS-LIFO when they become available.

2. Offshore Borrow Area

1/2. See A-2, 1-3.

3. New Groin Construction

1/2. See A-3, 1-3.

C. ENDANGERED AND THREATENED SPECIES RECOMMENDATIONS

1. See A-1, 1-8.

References:

New York Department of Environmental Conservation. 1992 Atlantic Ocean Surf Clam Population Assessment. Report prepared by Bureau of Shellfisheries. July.

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

February 15, 1995

Colonel Thomas A. York
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Attention: Mr. Peter Weppler

Dear Colonel York:

This constitutes the U.S. Fish and Wildlife Service's (Service) final Fish and Wildlife Coordination Act Report entitled "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project." This report is prepared pursuant to Section 2(b) of the Fish and Wildlife Coordination Act (P.L. 85-624, 1958), and is a revised edition of the Draft Fish and Wildlife Coordination Act Report that was prepared by the Service in April 1994.

This final report incorporates the review comments of the New York State Department of Environmental Conservation (NYSDEC), and the U.S. Army Corps of Engineers (Corps). The NYSDEC has reviewed the draft document; however, the NYSDEC has not, at this point in time, given their final written concurrence with the Service's assessment of the Corps' selected plan and the Service's mitigation recommendations. Such concurrence is expected from the NYSDEC upon 45 days after their receipt of this final report.

Specific comments made by the Corps on the draft document are enclosed in Appendix A. The Service concurs with the Corps' review comments; however, as discussed below, issues under the authority of the Endangered Species Act of 1973 (87 Stat, 401., as amended; 16 U.S.C. 1531 et seq.) have not been fully resolved regarding the Federally listed (threatened) piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*). Consequently, the Service is unable to conclude, at this point in time, that the proposed project is not likely to adversely affect piping plovers or seabeach amaranth. Appendix B contains the Service's most recent letter to the Corps recommending specific measures that need to be incorporated into the project plans to ensure that the proposed project would not be likely to adversely affect the piping plover or seabeach amaranth.

The Service is appreciative of the comments provided by your agency during the review of the draft report. Should you have any questions, have your staff contact Robert Murray of my Long Island Field Office staff at (516) 581-2941.

Sincerely,

Sherry W. Morgan

Sherry W. Morgan
Field Supervisor

cc:

NYSDEC, Albany, NY
NYSDEC, Stony Brook, NY
USEPA, New York, NY
NMFS, Gloucester, MA
NMFS, Milford, CT

FISH AND WILDLIFE SERVICE COORDINATION ACT REPORT

SECTION 2(b)

ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
Long Island Field Office
Islip, New York

February 1995

FISH AND WILDLIFE COORDINATION ACT REPORT

SECTION 2(B)

ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE REDUCTION PROJECT

Prepared for:

U.S. Army Corps of Engineers
New York District
New York, New York

Prepared by:

U.S. Fish and Wildlife Service
Ecological Services, Region 5
Long Island Field Office
Islip, New York

Preparer: Robert G. Murray
Long Island Field Office Supervisor: Nancy J. Schlotter
New York Field Office Supervisor: Sherry W. Morgan

February 1995

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

This is the Fish and Wildlife Service's (Service) final Fish and Wildlife Coordination Act Report describing the potential environmental impacts on fish and wildlife resources that may result from implementation of the selected storm damage protection plan within the proposed U.S. Army Corps of Engineers (Corps) "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project." This report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The purpose of the Corps' Long Beach Island storm damage protection study is to identify and evaluate a possible solution to beach erosion and storm damage problems experienced on Long Beach Island. The Service previously submitted a Planning Aid Report for this study in January 1989 (USFWS 1989), which identified the fish and wildlife resources and potential project impacts related to general beach nourishment storm protection plans along Long Beach Island. The draft Fish and Wildlife Coordination Act Report for this project was submitted to the Corps in April of 1994. The purpose of this Fish and Wildlife Coordination Act report is to document the chosen storm damage reduction project's potential impacts upon fish and wildlife resources and to recommend measures that should be taken to conserve and protect fish and wildlife resources in light of those impacts.

The Service has incorporated the review comments of the Corps and the New York State Department of Environmental Conservation (NYSDEC) that were provided during their review of the Service's draft Fish and Wildlife Coordination Act Report in April of 1994. However, the NYSDEC has not, at this time, given their final written concurrence with the Service's assessment of the Corps' selected plan and the Service's mitigation recommendations. Such concurrence is expected from the NYSDEC upon 45 days after their receipt of this final report.

Specifically, this final report describes the fish and wildlife resources within the placement area and borrow area and discusses the potential environmental impacts upon these resources both with and without implementation of the recommended plan. The report recommends mitigation measures to avoid, minimize and compensate for project-related impacts.

The Service and the Corps are currently engaged in informal consultation under the Endangered Species Act of 1973 (87 Stat. 884, as amended ; 16 U.S. C. 1531 et seq.), in an attempt to ensure that the proposed project would not be likely to adversely affect the Federally listed (threatened) piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*). Appendix B of this report contains a February 9, 1995, letter from the Service to the Corps recommending specific measures that need to be incorporated into the project plans to ensure that the proposed project would not be likely to adversely affect the piping plover or seabeach amaranth. As of the date of this report, these issues have not been fully resolved and the Service and the Corps are continuing the informal consultation process.

II. DESCRIPTION OF STUDY AREA

A. General Information

As shown in Figure 1, the on-shore study area consists of Long Beach Island, on the Atlantic Coast of Long Island between Jones Inlet and East Rockaway Inlet, Nassau County, New York. The off-shore portion of the proposal includes the borrow areas as indicated in Figure 2. The borrow area covers approximately 223 hectares (550 acres). Long Beach Island is approximately 14.5 kilometers (9 miles) long varying in width from 457 meters to 1220 meters (1,500 to 4,000 feet). From east to west, Long Beach Island consists of the communities of Point Lookout, Lido Beach, City of Long Beach, and Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead.

Tides on the south shore of Long Island are semi-diurnal. The mean tide level for Long Beach Island is 0.61 meters (2.0 feet) above mean low water. The mean tidal range is approximately 1 meter (3.6 feet) and the spring tidal range reaches 1.3 meters (4.3 feet) above mean low water (USACE 1989).

The island is primarily residential with extensive recreational facilities. Apartment houses, condominium complexes, beach clubs, and hotels predominate along the ocean shore. The north shore is predominately occupied by private homes and publicly owned facilities (USACE 1989).

Long Beach Island is a barrier island with elevations generally less than 3 meters (approximately 10 feet) above National Geodetic Vertical Datum (NGVD) (USACE 1989). The island provides some measure of protection against wave attack to the Long Island mainland shore (USACE 1989). The ocean shoreline consists of a continuous strip of low-lying beach with a series of approximately 60 stone and timber groins which extend offshore into the ocean from 60 to 183 meters (200 to 600 feet) (USFWS 1989). Long Beach Island separates the Atlantic Ocean from Hempstead Bay and Middle Bay. Hempstead Bay is one of the largest undeveloped coastal wetland ecosystems in New York State (USFWS 1991). Both of these bays support regionally-significant wintering waterfowl concentrations, sport fisheries, and clams.

The only undeveloped areas remaining on Long Beach Island, besides the beach itself, are small dune areas located at Silver Point on the western end of the island and Lido Beach/Point Lookout on the eastern end. All of these areas are associated with bathing beaches. One area of saltmarsh remains on the north shore of the island in the Lido Beach area (USFWS 1989).

The beach serves year-round residents as well as the great influx of summer visitors and vacationers. The area beaches are easily accessible by people from New York City and the remainder of Nassau County. The importance of this resource is demonstrated by an annual beach attendance of approximately 1.5 million visitors (USACE 1989).

FIGURE 1: Map of project area
(Source: New York State Department of Transportation, 1983)

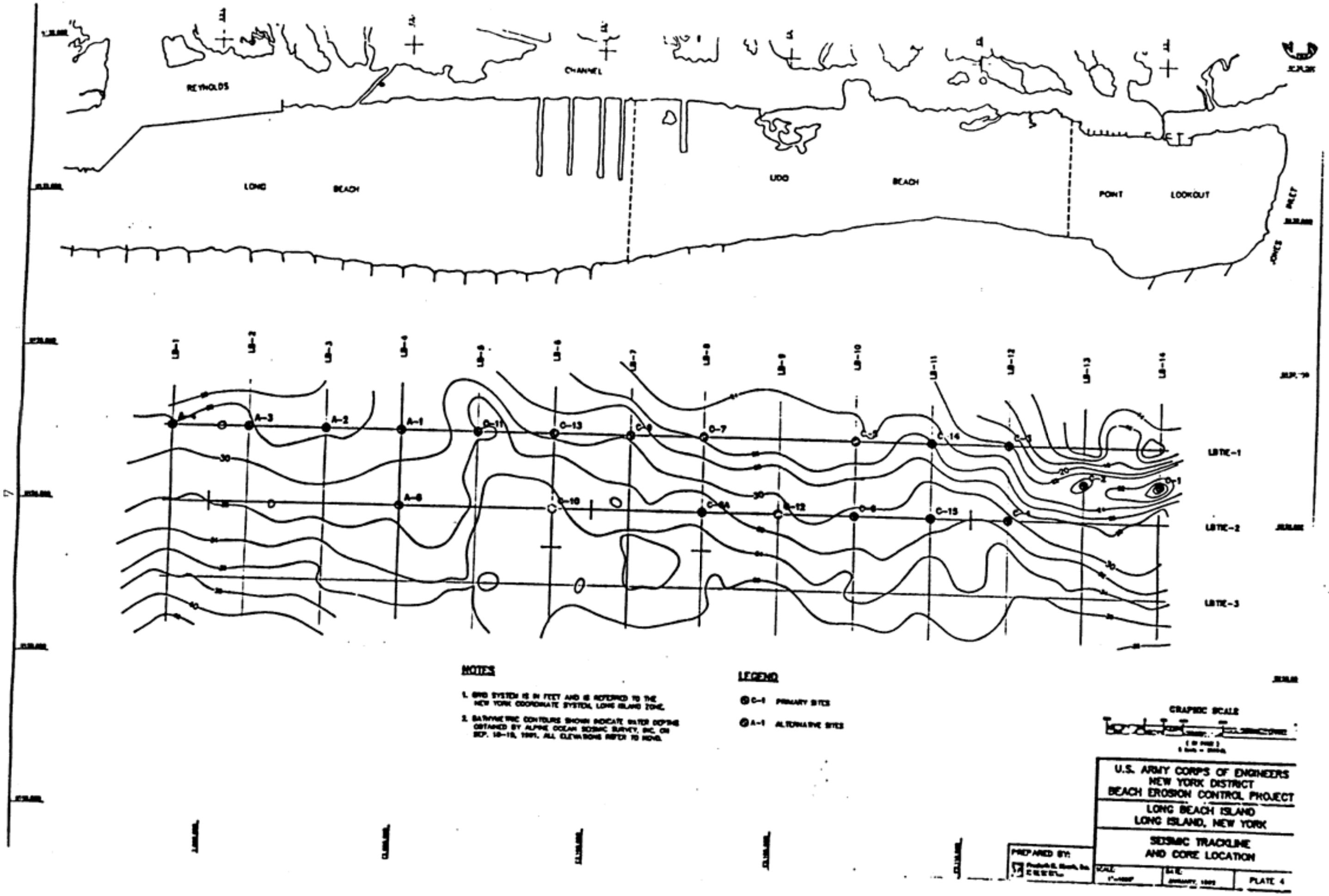


FIGURE 2: Map of borrow area
(Harris, 1992)

B. Problem Identification and Need Assessment

The problem being addressed is beach erosion fronting the densely populated areas due to storm induced erosion and the deterioration of the protective coastal structures. Erosion, which has reduced the width of most beach front areas in the study area, exposes Long Beach Island properties to a high risk of damage from ocean flooding and wave attack.

Sand erosion calculations indicate that the entire study area has experienced a net loss of sand, except Atlantic Beach which continually accretes sand. The groins and jetties within the study area have deteriorated since their construction and are becoming less effective and increasingly susceptible to storm damage. Continuation of this historic trend will increase the potential for economic losses and the threat to human life and safety (USACE 1989).

An effective erosion and storm damage control program is needed that eliminates long term erosion and provides acceptable levels of protection from the impacts of inundation and wave attack. In recognition that the regional economy relies heavily on recreational beach usage, a need exists for protecting and enhancing the Long Beach Island shorefront. Due to the low elevations of the entire barrier island, an effective barrier to high ocean surges is a necessary component of any plan of protection (USACE 1989).

C. Endangered and Threatened Species/Section 7 Comments

The piping plover is a Federally listed threatened species along the Atlantic coast which nests on Long Island beaches. Information obtained from the New York State Department of Environmental Conservation and The Nature Conservancy indicate that piping plovers utilize several areas of Long Beach Island. Refer to Table 1 below for piping plover use information. This table corresponds to Figure 3 which identifies each of the piping plover nesting areas that are presented in Table 1.

Table 1: Piping plover nesting sites along Long Beach Island (Information compiled from TNC 1987, NYSDEC 1993, 1994)

PIPING PLOVER NEST SITES	HISTORY OF USE	PROPERTY OWNER
Silver Point Jetty	1983-1993,94	Nassau County
Ocean Beach Club	1988,89,92,94	Private
Lido Beach Town Park	1985-89,92,93,94	Town of Hempstead
Lido Beach Townhouse	1988,1993	Not Known
Nassau Beach	1986-93	Nassau County
Point Lookout	1988,89,91	Town of Hempstead

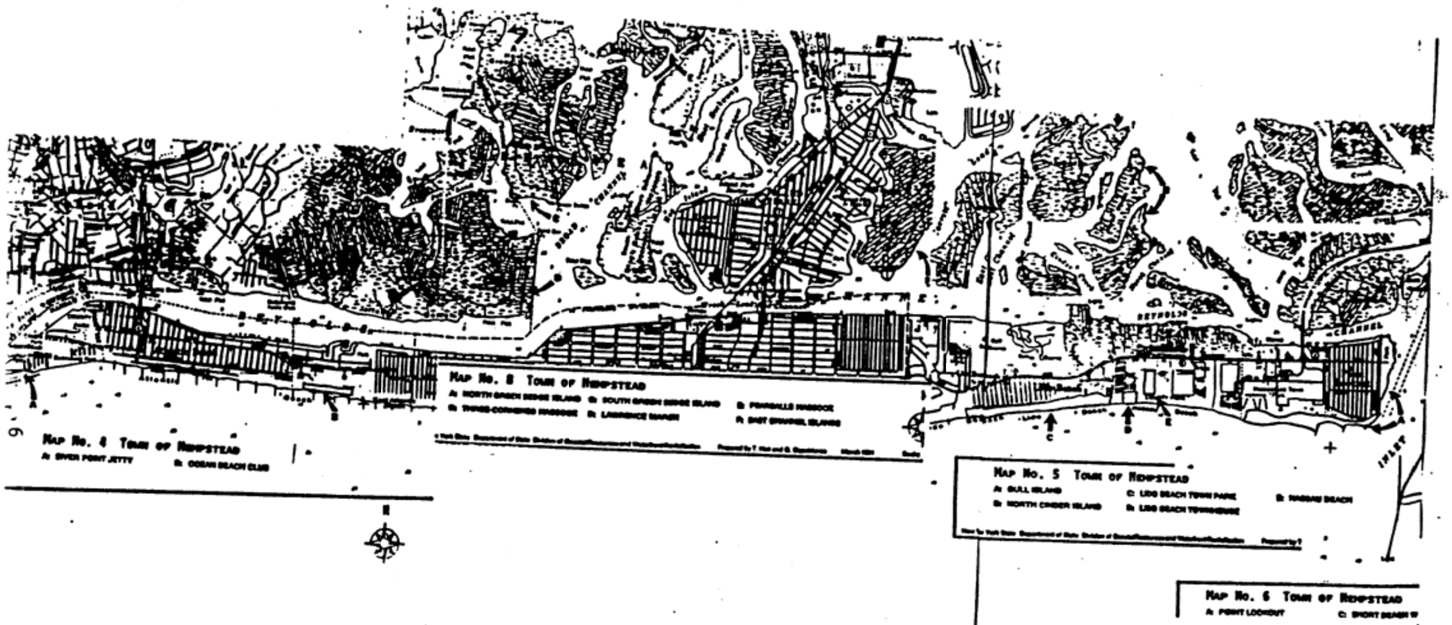


FIGURE 3: Long Beach Island Piping Plover Nesting Areas(Six site total)
(Source: The Nature Conservancy, 1991)

Seabeach amaranth, a Federally listed threatened annual herb, is characteristically found on Long Island barrier beach islands that experience high wave energy, low tidal energy, frequent overwash, and frequent breaching. In the five years between 1990 and 1994, seabeach amaranth surveys on Long Beach Island were only conducted during the 1991 and 1993 growing season. While seabeach amaranth was not detected on Long Beach Island during these two surveys, seabeach amaranth is present on adjacent Jones Beach Island and Rockaway Beach Peninsula.

The nearshore waters of Long Island, including the proposed project area, may contain both Federally listed endangered and threatened species of sea turtles during summer and early fall months. Endangered species of sea turtles which may be present in the area of the proposed operations include Kemp's Ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*), and green (*Chelonia mydas*). A threatened species known to occur in the vicinity is the loggerhead sea turtle (*Caretta caretta*). Principal responsibility for these species is vested with the National Marine Fisheries Service (NMFS), who must be notified about the proposed project under the Section 7 consultation requirement of the Endangered Species Act.

III. DESCRIPTION OF THE SELECTED PLAN

The Corps has evaluated nine beach fill alternatives, and has designated the alternative described as "existing groin rehabilitation/covering" as the recommended project. The basic design profile consists of a +15 foot National Geodetic Vertical Datum (NGVD) dune 7.6 meters (25 feet) wide with side slopes of 1V:5H, and a +10 foot NGVD berm 33.5 meters (110 feet) wide with a seaward slope varying from 1V:35H to 1V:25H, as depicted in Figure 4. In order to help ensure design survivability between the 6 year nourishment cycles, an additional 12.2 meters (40 feet) of berm width has been added as advanced maintenance fill (USACE 1989). Advanced fill and maintenance fill will be provided for the entire study shoreline for a 50 year maintenance period. The shore protection project includes the construction of six new groins, as depicted in Figure 5. The proposed locations of these groins are in the severely eroded areas at Point Lookout and the Town of Hempstead beaches.

The design beach fill will be placed on top of the existing beach. Existing groins may be partially or completely covered. The extent of groin covering does not include the effect of periodic nourishment. For the remaining groins which remain exposed, those that are in fair to poor condition will be rehabilitated only within their exposed portions. This includes approximately 15 existing groins which will be extended approximately 10 meters (30 feet). The remaining groins will remain the same length or shortened.

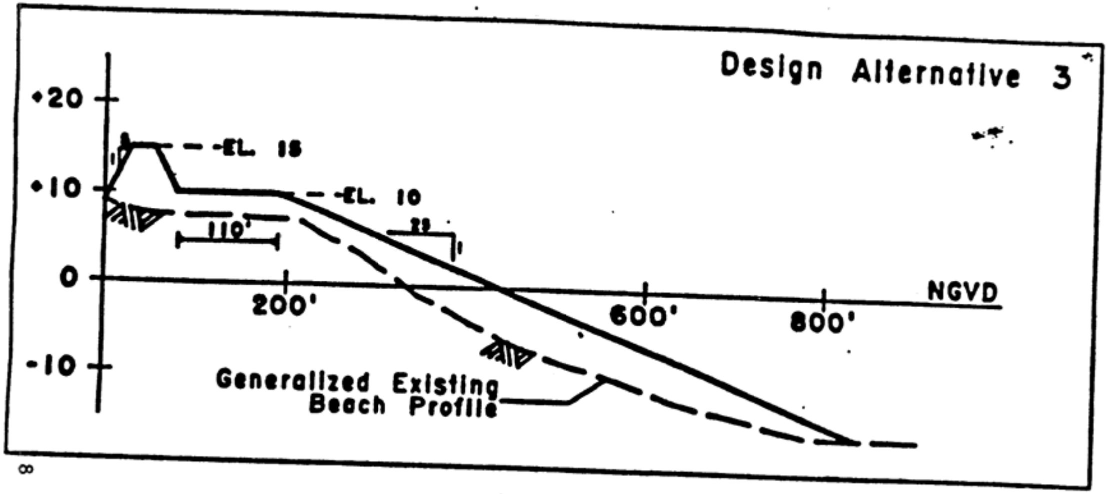


FIGURE 4: Proposed Beach fill profile (USACE, 1989)

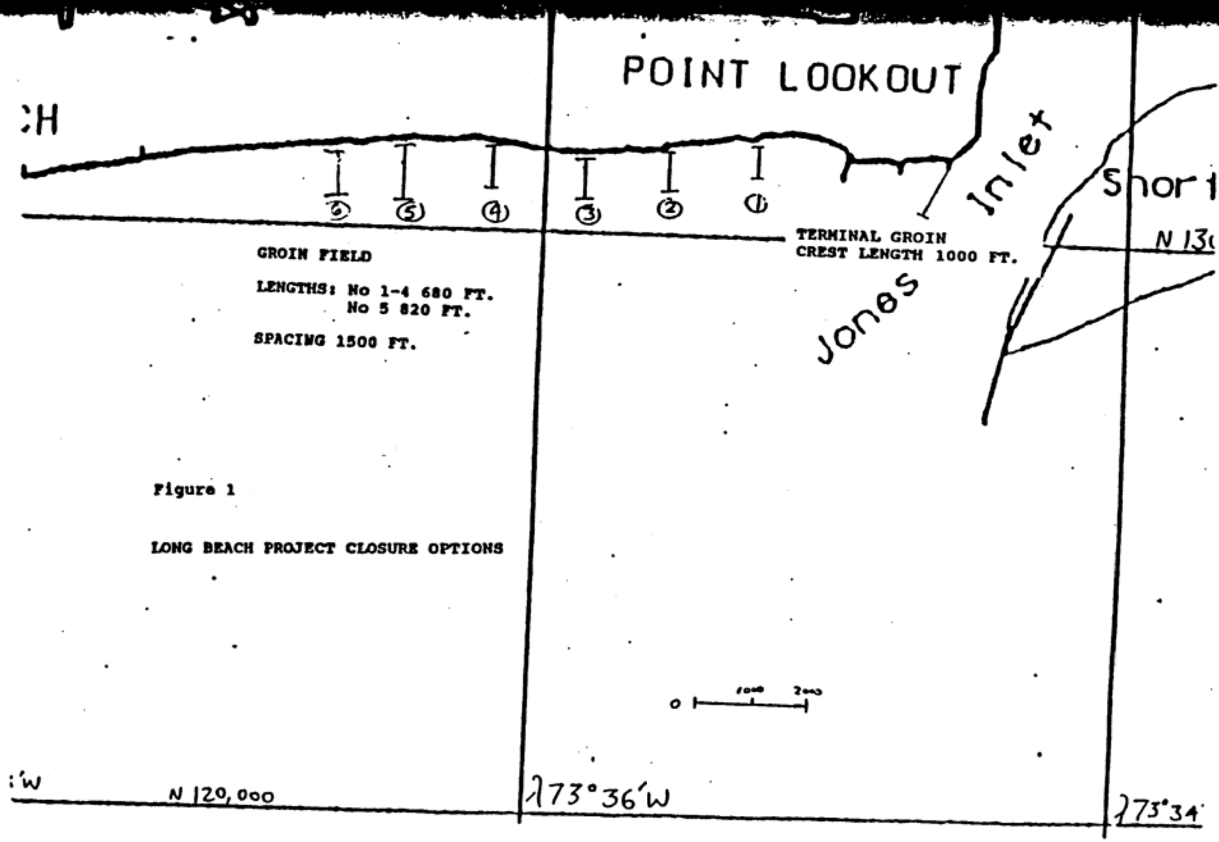


FIGURE 5: Proposed location of new groins
(USACE, 1993)

IV. FUTURE WITHOUT THE PROJECT

A. Non-Ecological Impacts

The without project condition is identified as a continuation of long term erosion as local interests do not have the financial capability to maintain the beach against erosion. Likely effects of such continued erosion include a reduction in beach and dune area up to the seaward face of any bulkheads, building, or transportation routes. Thus it is anticipated that without shoreline protection improvements, existing protective mechanisms would deteriorate thereby exposing the coastal communities to extensive property damage and loss.

B. Ecological Impacts

1. Beach Nourishment Area

The oceanic processes on Long Beach Island greatly influence the components of the biological community. Wind, waves, currents, tides, and storm events are the driving forces behind barrier beach ecosystem maintenance and change. Currents and high energy storm waves associated with winter weather tend to erode beaches pushing sand off-shore, while sand generally accumulates on-shore during calmer summer weather.

Coastal beaches can generically be divided into an upper zone, intertidal zone, and a nearshore subtidal zone. The upper beach zone extends from dune areas seaward to just above the mean high water line, and this area is rarely inundated except during storms and spring high tide events. Species diversity and abundance in the upper beach zone is limited and distribution is patchy (Naqvi and Pullen 1982). The food pyramid of this community rests primarily upon beach wrack, despite the occurrence of several species of vascular plants which can occur in this area (Perry 1985). Dominant animals of the typical upper beach zone include burrowing invertebrates such as ghost crabs (*Ocypode* spp.) and sand fleas (*Talorhestia* spp.). Nesting shorebirds, including least terns and piping plovers, are found in this area on Long Beach Island especially where human access is restricted. For a listing of birds associated with this zone as well as the other two zones to be discussed below, refer to Table 2.

The intertidal zone is alternately exposed and submerged throughout tidal fluctuations, and is subject to the turbulence of waves, currents, and the shifting nature of the substrate. Although few species can withstand the stresses caused by being alternatingly exposed and submerged, those species that do tolerate such conditions are often abundant (Naqvi and Pullen 1982). Generally, the dominant form of animal life in this intertidal zone is the mole-crab (*Emerita talpoida*). Migrating and resident shorebirds feed upon the fauna of the intertidal zone which may include the mole-crab, the mollusk coquina (*Donax variabilis*), amphipods (*Acathohaustorius* spp.), and polychaetes (*Scolelpis squamata*) (USFWS, June 1993). The nearshore subtidal zone extends from the low tide mark to the lower limit of wave action (Perry 1985). This area is continuously flooded and is more physically and environmentally stable than the intertidal zone. Shellfish and crustaceans that may inhabit this general area include the duck clam (*Mulinia lateralis*), razor clam (*Ensis directus*), surf clam (*Spisula solidissima*), blue mussel (*Mytilus edulis*), soft shell clam (*Mya arenaria*), blue crab (*Callinectes sapidus*), and American lobster (*Homarus americanus*) (USFWS July, 1993).

TABLE 2: Birds associated with beach environments in the south shore of Long Island, New York.[1]

Common Name	Scientific Name
American Kestrel	Falco sparverius
American Oystercatcher	Haematopus palliatus
Bald Eagle	Heliaeetus leucocephalus
Black-bellied Plover	Pluvialis squatarola
Black Scoter	Melanitta nigra
Black Skimmer	Rynchops niger
Bonaparte's Gull	Larus philadelphia
Common Eider	Somateria mollissima
Common Loon	Gavia immer
Common Tern	Sterna hirundo
Dunlin	Colidris alpina
Forster's Tern	Sterna forsteri
Glaucous Gull	Larus hyperboreus
Great Black-backed Gull	Larus marinus
Great Cormorant	Phalacrocorax carbo
Gull-billed Tern	Gelochelidon nilotica
Herring Gull	Larus argentatus
Horned Grebe	Podiceps auritus
Horned Lark	Eremophila alpestris
Iceland Gull	Larus glaucoides
Least Tern	Sterna albifrons
Merlin	Falco columbarius
Oldsquaw	Clangula hyemalis
Osprey	Pandion haliaetus
Peregrine Falcon	Falco peregrinus
Piping Plover	Charadrius melodus
Purple Sandpiper	Colidris maritima
Red-breasted Merganser	Mergus serrator
Red Knot	Calidris canutus
Red-throated Loon	Gavia stellata
Ring-billed Gull	Larus delawarensis
Roseate Tern	Sterna dougallii
Ruddy Turnstone	Arenaria interpres
Sanderling	Calidris alba
Savannah Sparrow	Passerculus sandwichensis
Semipalmated Plover	Charadrius semipalmatus
Snow Bunting	Plectrophenax nivalis
Snowy Owl	Nyctea scandiaca
Spotted Sandpiper	Actitis macularia
Surf Scoter	Melanitta perspicillata
White-rumped Sandpiper	Calidris fuscicollis
White-winged Scoter	Melanitta deglandi
Willet	Catoptrophorus semipalmatus

1 from Howe, M. A., R. B. Clapp, and J. S. Weske. 1978. Marine and Coastal Birds. In MESA New York Bight Atlas, Monograph 31. New York Sea Grant Institute, Albany. 87 pp.

Other nearshore subtidal benthic macrofauna in southwest Long Island (a larger area than the scope of this particular project) include another smaller clam *Tellina agilis*, the sand dollar (*Echinarachnius parma*), amphipods (*Protohaustarius deichmaae, Unicola irrorata*), and polychaetes (*Sthenelais limicola, Lumbrineris fragilis, Spiophanes bombyx*), all of which are found in habitats described as a medium, coarse-grain sand community (Steimle and Stone 1973). The surf clam is the primary commercial shellfish in the nearshore zone off Long Beach Island and there are currently four commercial clamming operations utilizing these clams in the Long Beach area (USACE 1993).

A variety of fish species with both recreational and commercial importance can be found in the vicinity of Long Beach Island beaches. The nearshore subtidal zones are used by many species for feeding including tautog (*Tautoga onitis*), northern puffer (*Sphoeroides maculatus*), black sea bass (*Centropristis striata*), striped bass (*Morone saxatilis*), bluefish (*Pomatomus saltatrix*), and weakfish (*Cynoscion regalis*) (USACE 1993).

The immediate off shore area supports seasonally abundant populations of many commercially and recreationally important fish (USFWS January, 1989). Primary species include striped bass, weakfish, bluefish, fluke (*Paralichthys dentatus*), winter flounder (*Pleuronectes americanus*), scup (*Stenotomus chrysops*), black sea bass, and Atlantic mackerel (*Scomber scombrus*) (USFWS January, 1989). Refer to Table 3 which lists finfish species reported from the Lower Bay complex of the New York Harbor in 1985-1986 and also refer to Figure 6, which indicates the location of the sample plots used to obtain this finfish data. This listing includes species which may also be found in the nearshore waters of the south shore of Long Island (NYSOGS 1992).

Man-made structures such as seawalls, jetties, groins, and bulkheads provide rocky intertidal habitat for both aquatic and avian species. Barnacles, crustaceans, polychaetes, mollusks and a variety of shorebirds reside on, above, and around these structures. The blue mussel is the dominant species of this community on Long Beach Island (USACE 1993).

The future of these areas, without the project, would be varied. The upper zone would continue to erode in some areas, perhaps eventually being eliminated entirely in certain areas. This is undesirable especially for shorebirds which rely on the upper zone for nesting habitat. In other areas, the upper zone would continue to accrete sand, thereby increasing in size. In this instance, accretion of sand improves nesting habitat for shorebirds. The intertidal zone will remain stable, only shifting off-shore or on-shore depending on erosion and accretion rates of the various areas on Long Beach Island. The nearshore subtidal zone would also remain relatively stable, moving only in relation to the changes experienced by the location of the intertidal zone.

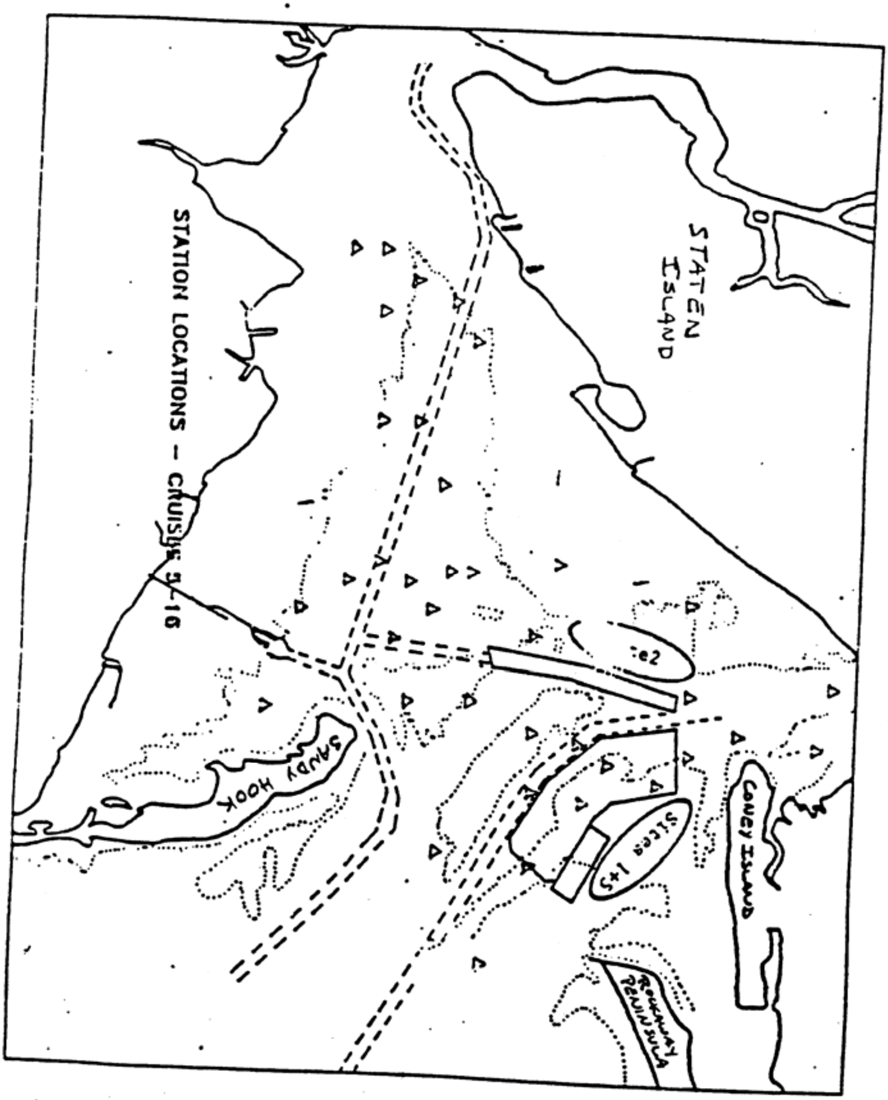
2. Offshore Borrow Area

The offshore borrow area is off of Long Beach Island on the eastern portion of its south shore as indicated in Figure 2. The borrow area lies approximately 2.4 kilometers (1.5 miles) south of Long Beach Island between 7.6 meters (25 feet) mean low water to about 18.3 meters (60 feet) mean low water. Moving from east to west, patches of clean and silty sand alternate (WCH Industries 1994).

TABLE 3: Finfish community caught over the year 1985-86 in the Lower Bay of New York Harbor Complex (NYSOGS, 1992)

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
LAMPREY	lamprey	Petromyzon marinus
SM DOGF	smooth dogfish	Mustelus canis
SP DOGF	spiny dogfish	Squalus acanthias
LI SKATE	little skate	Raja erinacea
RS SKATE	rosette skate	Raja garmani
W SKATE	winter skate	Raja ocellata
TH SKATE	thorny skate	Raja radiata
AT STURG	Atlantic sturgeon	Acipenser oxyrhinchus
AMER EEL	American eel	Anguilla rostrata
CON EEL	conger eel	Conger oceanicus
BB HERRG	blueback herring	Alosa aestivalis
ALEWIFE	alewife	Alosa pseudoharengus
AM SHAD	American shad	Alosa sapidissima
AT MENHD	Atlantic menhadden	Brevoortia tyrannus
AT HERRG	Atlantic herring	Clupea harengus
RND HERR	round herring	Etrumeus teres
BAY ANCH	bay anchovy	Anchoa mitchilli
STR ANCH	striped anchovy	Anchoa hepsetus
TOADFISH	oyster toadfish	Opsanus tau
GOOSEF	goosefish	Lophius americanus
4 ROCKLG	fourbeard rockling	Enchelyopus cimbrius
SL HAKE	silver hake	Merluccius bilinearis
TOMCOD	tomcod	Microgadus tomcod
POLLOCK	pollock	Pollachius virens
SPT HAKE	spotted hake	Urophycis regius
W/R HAKE	white/red hake mixed	Urophycis tenuis/chuss
CUSKEEL	cuskeel	Lepophidium cervinum
CORNETF	cornetfish	Fistularia tabacaria
A SILVER	Atlantic silverside	Menidia menidia
3 STICKL	3 spine stickleback	Gasterosteus aculeatus
SEAHORSE	lined seahorse	Hippocampus erectus
PIPEFISH	northern pipefish	Syngnathus fuscus
SEA RAVN	sea raven	Hemitripterus americanus
GRUBBY	grubby	Myoxocephalus aenus
LN SCULP	longhorn sculpin	M. octodecemspinosus
SH SCULP	shorthorn sculpin	Myoxocephalus scorpios
BL SEABS	black seabass	Centropristis striata
GRY SNAP	grey snapper	Lutianus griseus
STR BASS	striped bass	Morone saxatilis
LEPOMIS	sunfish	Lepomis sp.
BLUEFISH	bluefish	Pomatomus saltatrix
CREV JCK	crevelle jack	Caranx hippos
LOOKDOWN	lookdown	Selene vomer
RH SCAD	rough scad	Trachurus trachurus
SLPERCH	silverperch	Bairdiella chrysura
WEAKFISH	weakfish	Cynoscion regalis
SPOT	spot	Leiostomus xanthurus

FIGURE 6: **Sampling Areas for Finfish Species Reported in the Lower Bay Complex of the New York Harbor (NYSOGS 1992)**



The borrow area is within the migratory path of numerous fish species and provides spawning, feeding, and nursery habitat for many other species (USACE 1993). For a discussion on fishery resources in the borrow area, refer to the previous beach nourishment area section above.

In June of 1993, benthic invertebrate sampling was conducted in this proposed borrow area. See Figure 7 which identifies the proposed sand borrow sites in relation to benthic sampling areas. Seventy-five taxa (species in most cases) were found in the survey which indicated a clear positive correlation between number of taxa and the percent silt/clay of sediments (WCH Industries 1994). Table 4 lists the dominant species that were collected in this survey. The presence of high proportions of juveniles and of species with short life cycles suggest that populations undergo large seasonal variations in this habitat (WCH Industries 1994).

Those areas within the borrow area with a higher proportion of silt/clay show high total densities of individuals. Dominants include the polychaete *Asabellides oculata*, the amphipod *Gammarus lawrencianus*, the bivalves *M. edulis, E. directus, T. agilis*, and three other polychaetes. The most numerous species in the survey was the tube-dwelling polychaete *A. oculata* and because this species is known to rapidly recolonize areas defaunated by anoxia off the New Jersey coast, this species has some characteristics of an opportunistic species (WCH Industries 1994).

A medium sand assemblage dominated by the bivalve *T. agilis*, the amphipod *Protohaustarius deichmannae*, the sand dollar (*Echinarachius parma*), the amphipod *Unciola irrorata*, and the surf clam (*S. solidissima*) was identified in the vicinity of the borrow area (Steimle and Stone 1973). This assemblage was also acknowledged by the most recent surveys conducted in 1993 (WCH Industries 1994). A sand fauna community is also identified within the borrow area, dominated by polychaete worms and blue mussels (USACE 1994).

The borrow area is within one of the most productive surf clam areas on the east coast. This area is responsible for the majority of New York's surf clam harvesting. Surf clam surveys conducted immediately west of this location along the Rockaway Beach Peninsula have been shown to produce a harvest valued at approximately $100,000 per 100 acres or more (NYSDEC 1994).

Clearly, the future of the proposed borrow area without project implementation would be the continued existence of this community in its present undisturbed condition.

V. FUTURE WITH THE PROJECT

A. Non-Ecological Impacts

Implementation of the proposed plan will provide storm damage reduction benefits. Recreational benefits will be realized and they can be defined as enhanced recreation potential provided by increased beach area (USACE 1989).

The proposed beach fill project will involve the construction of a design beach profile. Without advanced beach fill (initial overfill) and periodic nourishment, long-shore and cross-shore coastal processes would erode the design beach profile, reducing the storm

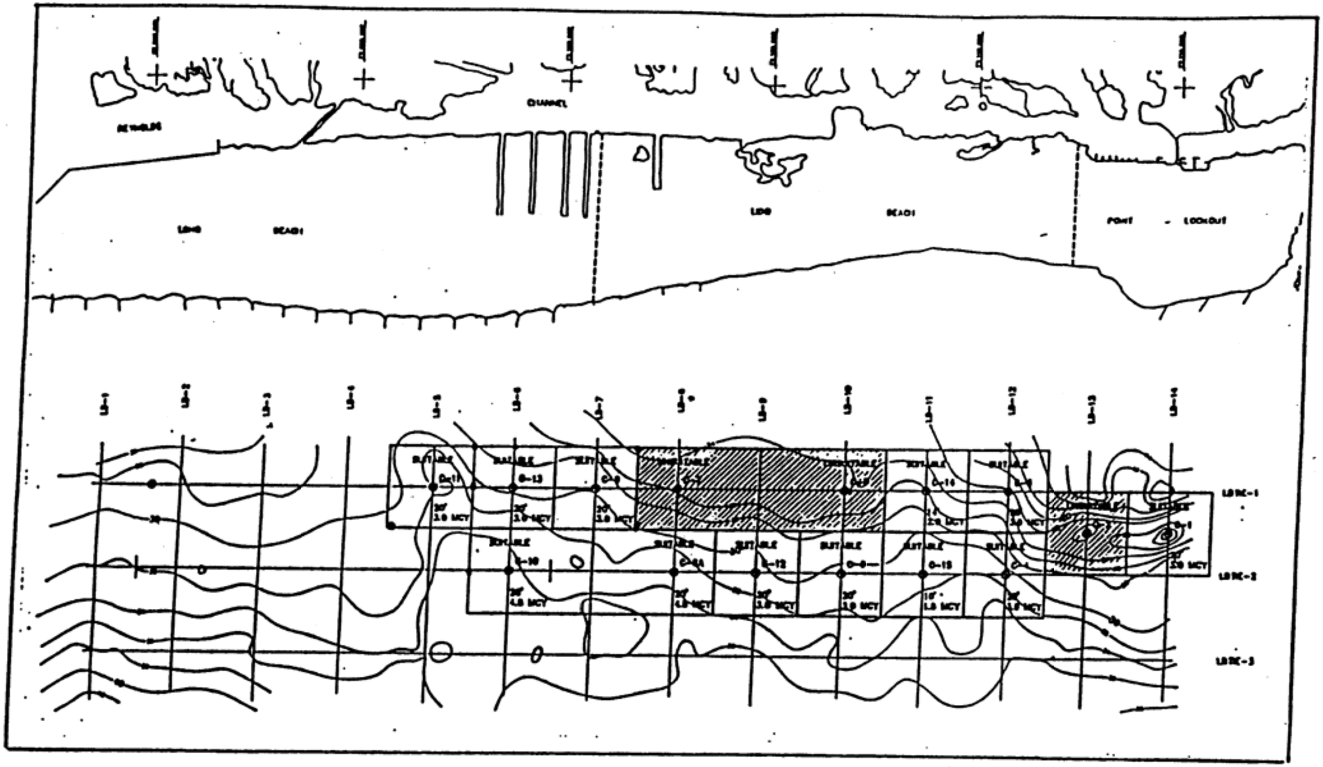


FIGURE 7: Benthic survey area from which 32 samples were taken from stations located randomly on the grid shown, excluding the shaded areas (WCH Industries, 1994)

TABLE 4: List and Description of the dominant benthic species in the 32 project samples within the borrow area. (WCH Industries, 1994)

Species	Mean density/m^2	Identification	Life form	Feeding type
Asabellides oculata	1192	polychaete	tube dwelling	selective deposit
Gammarus lawrencius	1023	amphipod crustacean	motile epifauna	omnivore
Mytilus edulis spat	258	bivalve	sessel epifauna	suspension
Protohaustorius deichmannae	177	amphipod crustacean	free burrowing	suspension within sand
Tellina agilis	160	bivalve	burrowing	suspension/ surface deposit
Tharyx acutus	112	polychaete	free burrowing	selective deposit
Ensis directus	104	bivalve	burrow	suspension
Magelona rosea	65	polychaete	tube dwelling	selective deposit
Spiophanes bombyx	65	polychaete	tube dwelling	selective deposit
Spisula solidissima	51	bivalve	burrow	suspension
Amatigos caperatus	43	polychaete	burrowing	non-selective deposit
Acanthohaustorius millsi	41	amphipod crustacean	free burrowing	suspension within sand
Pseudunciola obliquua	35	amphipod crustacean	burrow	suspension/ scavenger
Nephtys picta	27	polychaete	free burrowing	predator
Oligochaete sp.	23	oligochaete	burrow	selective deposit
Cancer megalopa	18	decapod crustacean	motile epifauna	matures to predator
Siliqua costata	18	bivalve	burrow	suspension

damage protection ability of the project design (USACE 1993). The proposed project would place approximately 4.8 million cubic meters (6.4 million cubic yards) of sand along the 14.5 kilometers (9 miles) of Long Beach Island Atlantic Coast (USACE 1993). The proposed beach nourishment involves construction of a berm 33.5 meters (110 feet) wide which would effectively widen the beach by 31 to 122 meters (100 to 400 feet) seaward from the existing 0' NGVD datum. Wider beaches would provide greater protection from damaging storms and provide a larger area for recreational use.

The proposed project would also completely or partially bury 27 groins and one jetty, and partially bury and rehabilitate 17 existing groins. Six new groins are proposed for construction at the eastern end of Long Beach Island (USACE 1994).

B. Ecological Impacts

1. Potential Beach Nourishment Area Impacts

There are three major ways that beach nourishment physically impacts the three zones of the coastal beach environment. The first is that the deposited material covers the existing beach sediments, the second is that the deposited material modifies the beach (sand-water) interface, and the third is that the deposited material frequently increases the turbidity of the nearshore area (Naqvi and Pullen 1982).

The primary adverse impact on the three zones due to the placement of sand material onto the beach nourishment area is the disturbance and destruction of benthic resources due to the covering of existing beach material. Placement of sand on the three zones will result in the temporary degradation of the existing beach habitat during the initial and the periodic nourishment activities. Existing benthic organisms would be buried, and the use of the entire area by fish and avian species for feeding could be temporarily disrupted. In addition, decreased water quality and increased turbidity in the nearshore subtidal zone could result from the actual beach nourishment activity. Such degradation would be transient in nature.

The Corps' Draft Environmental Impact Statement (USACE 1993) indicates that the biological community of the beach nourishment area will not be significantly affected over the long-term. Motile organisms, such as fish, appear to be the least affected by beach nourishment activities as they are able to move to avoid disturbances (Hurme and Pullen 1988). Such motile species are able to return to the area when conditions are suitable again.

The Corps' report also states that those organisms unable to leave would be subject to increased turbidity; however, such organisms are generally adapted to a highly turbid nearshore environment (USACE 1993). Fish tolerance to suspended solids varies from species to species and by age. Beach nourishment can also affect fish populations by delaying hatching time of fish eggs, killing the fish by coating their gills, and by reducing dissolved oxygen concentrations to stressful levels (Naqvi and Pullen 1982).

The recovery of benthic macrofauna (those animals 0.5 millimeters or larger in size) after beach nourishment varies from one site to another. Studies completed in the 1970's indicate that when nourishment ceases, the recovery of benthic macrofauna is rapid and complete recovery might occur within one or two seasons (Reilly and Bellis 1978; Parr et al., 1978). The ability of macrofauna to recover is due to: (a) their short life cycles, (b) their fast reproductive potential, and (c) the recruitment of plankton larvae and motile macrofauna from nearby unaffected areas (Naqvi and Pullen 1982).

Meiofauna (animals smaller than 0.5 millimeter and equal to or larger than 0.062 millimeter) tend to recover very slowly from a major disturbance, perhaps due to their slow reproduction, limited ability to migrate, and their highly specialized adaptations to a restricted environment (Naqvi and Pullen 1982). However, meiofaunal recovery can be rapid following minor disturbances (Naqvi and Pullen 1982).

Review of the available literature on impact assessment of beach nourishment areas presents contradictory evidence as to both short term and long term impacts. The environmental impacts of beach nourishment projects have been studied in detail by various researchers throughout the United States. However, studies on the impacts of fill deposition on northeastern beaches reveals proportionately less documentation. The majority of the published literature on beach nourishment impacts comes from beaches located primarily in the southern states, including studies of beaches in North Carolina, Texas, and Florida. See Rutkosky, 1988, for a well documented literature review.

Presently, the proposed project area provides high quality nesting habitat for least terns (*Sterna albifrons*). The future of this area with project implementation will entail beach fill as well as berm and dune construction. There are both immediate, direct effects of such construction activity and also long term, indirect effects.

The immediate, direct effects include the following scenario. If project construction activities are conducted during the least tern nesting season (April 15 - September 1), their courtship, nesting, and brood rearing activities may be directly and adversely affected. The operation of dredging equipment immediately adjacent to a shoreline that is used by terns as a courtship, nesting, and brood rearing area has the potential to disturb terns to the point where they may not successfully nest and fledge young. Dredging equipment that is operated immediately adjacent to tern habitat may preclude terns from using the habitat entirely, forcing them to seek appropriate habitat elsewhere. Operation of machinery used to move dredge pipeline and to grade the nourished beach can greatly disturb terns, their nests, and can endanger the lives of chicks. Additionally, the actual placement of sand within a known nesting area can adversely affect the quality of the currently existing least tern nesting substrate.

There are also potential long term, indirect effects of the construction activity. If vegetation succession and increased human disturbance is encouraged, least terns will most likely be discouraged from occupying existing colonies.

2) Potential Offshore Borrow Area Impacts

Approximately 223 hectares (550 acres) will be impacted during the actual dredging of the borrow area for this particular project (Harris 1992). Dredging involves the direct removal of habitat and organisms from a borrow area. Direct effects of dredging are from the sand removal and from the resuspension of fine and medium sediments. In a study done by Woodward-Clyde Consultants (1975), it was determined that dredging may lower the productivity of a borrow area, and thus the usefulness of the site for the production of fish and shellfish may decrease until a typical community is re-established in the borrow area.

The primary adverse impact on the environment due to dredging operations at a borrow area involves the disturbance and destruction of benthic resources and their habitats, which would result in a loss of benthic organisms from the immediate area of the removal activity. However, Woodward-Clyde Consultants (1975) report rapid repopulation of the Rockaway Beach borrow area occurring particularly by transient colonizing species.

Dredging also directly effects fish by displacing fish populations from the dredging operation site (Woodhead 1992). Fish utilizing borrow pits may potentially be exposed to elevated contaminant levels due to the siltation of contaminated fine material into the borrow pit. Small deep pits are the poorest habitat due to reduced water circulation and high sedimentation rates which could lead to anoxic conditions lethal to species using the pits. However, as indicated in studies by Woodhead and McCafferty (1986), borrow areas and channels often contain higher levels of fish than adjacent shoals, indicating that borrow areas do not demonstrate adverse impacts to resources once the immediate construction period is over.

Indirect effects of dredging include increased turbidity in the water column (Woodhead 1992). Sand particles suspended by dredging are dense and fall quickly back to the bottom while the fine sediments stay in suspension longer than sand, only sinking slowly (Woodhead 1992). Dredging will cause a short-term reduction in water clarity down-current from the dredging activity.

Localized turbidity plumes can have lethal and sublethal effects on benthos and fish including hematological compensation for reduced gas exchange across gill surfaces, abrasion of epithelial tissue, packing of the gut with large quantities of ingested solids which may have little nutritive value, disruption of gill tissues (abrasion, clogging, increased activity of mucosa), and increased activity with a reduction of stored metabolic reserves (Profiles Research and Consulting Groups, Inc., 1980). Other effects of increases in turbidity include a decrease in light penetration, mechanical abrasion of the filter feeding and respiratory structures of animals, possible resuspension of contaminants and nutrients, burial of non-motile eggs, larvae, and adults, and adsorption of essential nutrients from the water column (Stern and Stickle 1978).

The potential for oxygen deprivation problems in borrow areas is a very real concern. Reduced water circulation and high siltation/sedimentation of fine material can lead to anoxic conditions lethal to organisms which may be utilizing a borrow pit. These adverse impacts have been found to be minimal in areas with strong currents where oxygen can be quickly replenished (Tuberville and Marsh 1982). Elimination of small deep pit designs can alleviate potential oxygen deprivation problems, but would affect a larger surface area.

In general, species which are found on well sorted, clean, rippled sand are adapted for a dynamic environment, but one which remains stable over long time periods. These species may be more sensitive to silt deposited from dredging and slower to recolonize than less specialized and more opportunistic species found on high silt/clay sediment (WCH Industries 1994).

The silty patches in the proposed borrow area have high standing crops of benthic species with the amphipods and juvenile rock crabs having high value to fluke, winter flounder, black sea bass, and striped bass. Scup and winter flounder consume a great variety of benthos including polychaetes. The sub-areas within the borrow area which have higher levels of silt are populated by opportunistic and rapid growing species and could recover rapidly from dredging. In contrast, the organisms in sandy patches provide less food for fish, and may be slower to recover (WCH Industries 1994).

The surf clam is of special interest because it is harvested commercially in the proposed borrow area which is within one of the most productive surf clam areas on the east coast. Again, this area is responsible for the majority of New York's surf clam harvesting, where surf clam surveys conducted immediately west of the borrow area location along the Rockaway Beach Peninsula have been shown to produce a harvest valued at approximately \$100,000 per 100 acres or more (NYSDEC 1994). To fully assess the effects of sand removal on the commercial surf clam fishery, it would be necessary to map stock in and around the borrow area, and to describe the patterns of use of the area as determined by regulations, parameters such as depth, topography, sediment type, and the relative value of stock of different sizes and density (WCH Industries 1994).

3) Groin Burial, Rehabilitation, Construction Impacts

The effects of sand burial of groins would result in a loss of rocky intertidal habitat. However, in effect, sand placement over groins will re-establish or restore sandy bottomed intertidal habitat. Impacts associated with the placement of rock substrate into the intertidal zone to rehabilitate existing groins could include the mortality of clams, mussels and other invertebrates that would be eliminated during groin construction, as well as short-term effects of increased turbidity in the immediate area. However, the groins will be colonized by species associated with a rocky substrate which will provide a food source for fishes and invertebrates. More importantly, the rehabilitated groins would affect circulation patterns of nearshore currents (USACE 1994).

The effects of new groin construction at the eastern end of the project area include those noted above. In addition, these new groins should stabilize the nourished beach, providing additional habitat for piping plovers and terns which have traditionally used this area. This area is presently severely eroded and completely washed out, undermining some of the structures adjacent to the beach. The effect of new groins on down drift beaches to the west and nearshore currents needs to be assessed in order to avoid the transference of beach erosion westward.

C) Effects on Federally Listed Endangered/Threatened Species

The U.S. Army Corps of Engineers (Corps) must consult with the Service under Section 7 of the Endangered Species Act regarding any action that it authorizes, funds or carries out that may affect a listed species. In consultation with the Service, the Corps shall utilize its authority to further the purposes of the Endangered Species Act in the conservation and recovery of listed species and the ecosystems on which they depend. Further, 50 CFR 402.02 states that the "effects of an action" to be considered during consultation include "direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action...." This report is a follow up to our June 29, 1993, correspondence to the Corps.

The piping plover is a Federally listed threatened species along the Atlantic coast which nests on Long Island beaches. Dredging and beach disposal activities have potential to exert direct adverse effects on the piping plover as a result of disruption of courtship, nesting and feeding activities during the breeding season, and alteration of their habitat. The operation of dredging equipment immediately adjacent to a shoreline that is used by piping plovers as a courtship, nesting and feeding area has the potential to disturb plovers to the point where they do not successfully nest and fledge young. In addition, dredging equipment that is operated immediately adjacent to piping plover habitat may preclude plovers from using the habitat entirely, forcing them to seek appropriate habitat elsewhere.

Operation of machinery used to move dredge pipeline and to grade the nourished beach can greatly disturb plovers, their nests, and can endanger the lives of chicks. The placement of dredge pipeline can form a barrier prohibiting plover chicks from reaching foraging habitats including beach wrack and American beach grass (*Ammophila breviligulata*) areas. Beach slope is also a critical factor for habitat selection. In order to maintain piping plover habitat during a beach nourishment project, the material to be deposited on the beach must be consistent with the existing substrate already on the beach, or consist of material that is suitable for maintenance of piping plover habitat.

The proposed beach nourishment may also maintain or enhance habitat for plovers. If the project beaches are occupied by plovers, these birds may suffer indirect effects from human activity as a result of the increased attractiveness of these areas for human recreation. One of the project purposes of beach nourishment is to maintain and enhance recreational opportunities on Long Beach Island. Human activities that may potentially adversely affect plovers include off-road vehicle use, unleashing of pets, fireworks, kite flying, and removal of wrack near plover nesting and feeding areas.

Seabeach amaranth may also be adversely affected by the proposed project. Proposed activities which may affect seabeach amaranth include beach nourishment. Direct effects within the project may include burial of adult plants and seeds, disruption of seed production and dispersal, and degradation of habitat by promoting vegetative stabilization, perennial succession and competition. Indirect effects may include trampling of plants and seeds by recreational activities.

Included in Appendix B of this report is consultation submitted pursuant to, and in accordance with, the provisions of Section 7(a) of the Endangered Species Act. This consultation includes recommendations that must be included in the project proposal in order to ensure that the project is not likely to adversely effect the piping plover or seabeach amaranth.

VI. MITIGATION AND MONITORING RECOMMENDATIONS

A. Mitigation Recommendations

The views and recommendations of the Service on this project are guided by its Mitigation Policy (Federal Register, 1981). This policy seeks to mitigate losses of fish, wildlife, and their habitats, and uses thereof, from land and water developments. The Service's mitigation policy does not apply to the Endangered Species Act. The term "mitigation" is defined as: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating impacts over time; and, (e) compensating for impacts by replacing or providing substitute resources or habitats. The Service has developed mitigation measures for the beach nourishment area, the borrow area, and the new groin construction area which are discussed below.

1. Beach Nourishment Area

Based on our review of the proposed project, beach nourishment activities and berm and dune construction within this area will have direct adverse effects on least terns. The following protection strategies have been developed to avoid and minimize potential impacts to least terns during project construction. The Service and the NYSDEC originally developed these measures, however, the Service has also incorporated the system of notification as developed by the USACE into the following monitoring plan.

1. Activities associated with beach nourishment, berm and dune construction, and groin rehabilitation should be accomplished outside the least tern nesting season (April 15 to September 1 of any given year).

2. Under circumstances where this is unavoidable and activities are scheduled during any time in the nesting season, an appropriate survey and monitoring plan, approved by the Service and the NYSDEC, shall be conducted to document the presence or absence of nesting terns in the work areas at the time of construction, to identify and delineate tern nesting areas and nest locations, and to determine if buffer zones can be established to avoid disturbance of tern nesting areas. Buffer zone distances shall be approved by the Service. If disturbance of nesting birds cannot be avoided with the use of buffer zones, project activities should not be conducted during the nesting season. The survey and monitoring plan should consist of the following.

    A) A qualified bird monitor(s), <u>pre-approved</u> by the Service and the NYSDEC, shall be retained prior to commencement of the proposed activity and through project completion but not beyond the date of last fledging, which may occur up to September 1.

    B) <u>Pre-Construction Survey:</u> Beginning on April 15, or at least two weeks prior to commencement of the proposed activity at any time after April 15, the monitor shall conduct a total of three surveys per week of the project area (staging, operation, and beach nourishment area), on alternate tidal cycles and not on consecutive days, for the occurrence of least terns. The frequency and duration of monitoring shall be adequate to clearly determine the mobility of the individual broods and accurately define, and post and fence brood rearing areas.

    C) <u>Construction Survey:</u> After the preliminary two week survey, survey and monitoring efforts can be limited to only those areas within the project area where construction activity will take place during the least tern nesting season (April 15 to September 1). A single survey shall be conducted every day on alternate tidal cycles. Surveying and monitoring shall continue through project completion but not beyond the date of last fledging, which may occur by September 1. The frequency and duration of monitoring of broods shall be adequate to clearly determine the mobility of the individual broods and accurately define, and post and fence brood rearing areas.

3. During construction surveying and monitoring, nest and brood rearing areas shall be posted and fenced immediately (supervised by the monitor) and no disturbance shall be permitted within 100 meters of the designated area. The boundaries of the protected areas shall be adjusted should terns move outside the originally posted area. Adjustment of brood rearing areas based on close monitoring of the brood's mobility is critical. Machinery operation or dredge pipe installation or removal shall not occur within 100 meters of the nest or brood rearing area.

4. Flexibility in project timing shall be provided to allow for adjustments in scheduling to avoid active least tern areas during critical breeding stages.

5. The dredge disposal pipe shall be placed offshore in those areas where surveying has identified least tern nesting areas.

6. The Service and the NYSDEC shall be notified at least one week prior to the initiation of the pre-construction survey. Pre-construction survey reports and field notes shall be sent to the Service and the NYSDEC on a weekly basis. Concurrent construction surveys and field reports shall also be sent to the Service and the NYSDEC on a weekly basis. The monitor(s), in consultation with the Service and the NYSDEC, shall make adjustments to the minimum survey/monitoring components requirements if necessary. In the event that disturbance to least terns can not be avoided, the USACE shall notify the Service and the NYSDEC by the close of business that day. The on-site contractors shall be directed by the USACE to adjust or halt construction activities in order to avoid disturbances.

7. A stated secondary benefit of the proposed project will be the significant improvement of opportunities for recreational beach use. Increases in recreational use of beaches can also result in increased adverse impacts to least terns that utilize these beaches. To avoid such impacts, the protection of least terns should be assured prior to project implementation. This should occur by educating residents, landowners or beach managers of the management requirements discussed below, and, prior to project commencement, by seeking a written agreement from residents, landowners or beach managers for full cooperation with the Corps and the Service, or mutually agreed upon designated representatives (the New York State Department of Environmental Conservation, The Nature Conservancy, etc.).

   A) Provide access to the project beaches to the Service, the Corps, or their mutually agreed upon designated representatives, to survey, monitor, post, and/or symbolically fence least tern courtship, nesting, and brood rearing areas during the least tern breeding season (April 15 to September 1). Access should be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purposes stated above.

   The symbolic fencing may be placed in a 50 meter radius (approximately 163 feet) around tern nesting sites where pedestrians, joggers, picnickers, fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating terns and their eggs.

B) Prohibit fireworks on beaches where least terns nest from April 15 to September 1, or the date of last fledging.

C) Leash pets at all times from April 1 to September 1 on beaches in the action area where least terns are present because dogs and cats are common predators of least tern eggs and chicks.

D) Prohibit feeding of raccoons, gulls, or other wildlife to minimize predation on plovers.

8. In order for the Service to be kept informed of actions taken in regard to items discussed in section 7 above, the Service is requesting to be notified of the implementation of any of these measures.

9. The Corps should ensure that the mined beach nourishment sand is compatible with the sand that is now on the beach with respect to grain size, clay content, and organic matter.

10. If the dunes are to be planted with vegetation, American beach grass should be planted 18" on center from the southern toe of the dune to the dune crest to the northern toe of the dune.

11. Public access on dunes should be limited to wooden walkways over the dune in order to maintain beach grass beneath the walkway, and on the dunes.

2. Offshore Borrow Area

1. Avoid mining sand from areas within the larger borrow area which contain commercially important surf clam beds.

2. Avoid exposing and impacting various sediment types during dredging. Maintaining the same sediment type at the borrow area will increase the probability that the same pre-work benthic assemblage will re-establish after dredging.

3. Avoid producing deep, steep-sided dredging pits with little to no water circulation that may lead to silt and organic matter accumulation and hypoxic or anoxic conditions. Broad shallow pits with gently sloping sides are less likely to exhibit these effects.

3. New Groin Construction

1. Justify the need for new groin construction by examining potential alternatives. While the Service recognizes that there is a severe erosion problem at the eastern end of Long Beach Island, the Service believes that non-structural alternatives should be addressed as well as structural alternatives that would facilitate beach stabilization.

2. The construction of new groins at the eastern end of the project area should avoid adversely affecting sand accretion on down drift beaches west of the new groin field.

B. Monitoring Recommendations

1. Beach Nourishment Area

This particular project is only one of many dredging and beach nourishment projects undertaken by the Corps (and others) along the south shore of Long Island. Consequently, an assessment of long term cumulative impacts of beach nourishment on local resources should be initiated. For this particular project, the Service recommends the following.

1. Monitor sand grain size distribution at the beach nourishment site before the project and immediately after project completion. Results of the such monitoring should be coordinated with the Service.

2. Offshore Borrow Area

1. Quantitative baseline date on the density and age distribution of surf clams should be collected to determine the surf clam resources within the borrow area. This information can be used to determine areas, within the entire borrow area, that should be excluded from dredging operations, and will also enable the Corps to better determine the value of surf clam resources that may be impacted by dredging.

2. Long term surveying should be conducted to determine the recolonization of the borrow area by surf clams and to ensure that the area is not becoming anoxic. This surveying should be conducted at least until the beginning of the first renourishment cycle.

3. New Groin Construction Area

1. If the Corps determines that new groin construction is the best alternative for alleviating sand erosion at the eastern portion of Long Beach Island, the area should be monitored in order to determine the effects of these structures on the beaches west of the new groin field, especially at Lido Beach and Long Beach.

2. The Corps should develop remedial action plans should the new groins be proven to negatively impact the beaches west of the new groin field.

VII. ENDANGERED AND THREATENED SPECIES RECOMMENDATIONS

As stated previously, Section 7(a)(2) of the Endangered Species Act of 1972 (Act), as amended, requires all Federal Agencies, in consultation with the Secretary of the Interior, to insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species. In consultation with the Service, the Corps shall utilize its authority to further the purposes of the Act in the conservation and recovery of listed species and the ecosystems on which they depend. Further, 50 CFR 402.02 states that the "effects of an action" to be considered during consultation include "direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action...."

Based on our review of the proposed project, beach nourishment activities along the shoreline of Long Beach Island have the potential for direct and indirect adverse effects on piping plovers and seabeach amaranth. Consequently, further Section 7 consultation will be required unless the recommendations in our February 9, 1995, letter to the Corps, as contained within Appendix B of this report, are incorporated into the project plans.

VIII. SUMMARY OF FINDINGS

A. Potential Impacts on Beach Nourishment Area

The Service finds that implementation of the proposed beach nourishment aspect of this project will cause adverse impacts to the ecological communities of the beach nourishment area. Beach nourishment will eliminate nearshore-intertidal and subtidal areas as they currently exist and will move these two zones further off shore. Short term impacts will result in the elimination of invertebrate and vertebrate inhabitants from the beach nourishment area, perhaps making these areas less able to support the feeding requirements of migrating shorebirds. In addition, least terns will be adversely affected by the proposed project if beach nourishment is undertaken in those areas commonly used by least terns during the least tern nesting season.

B. Potential Impacts in Borrow Area

Dredging sand from the borrow area will result in the elimination of benthic invertebrate species and habitats and commercial clam beds and will generate turbidity and cause sedimentation both in and around the dredged area. A decrease in dissolved oxygen may result from the resuspension of organically enriched sediments, as well as with the changes in the currents and water circulation within the borrow area itself. Recovery time periods for the dredged area are unknown. If creation of steep sided deep pits is avoided, recovery could be hastened. The major concern is the impact dredging may have on the surf clam. A serious effort should be undertaken to determine the potential impacts that this project may have on the commercial surf clam fishery.

C. Potential Impacts of New Groin Construction

The purpose of new groin construction is to stabilize the beach at the eastern end of Long Beach Island. This area is severely eroded and is in need of restoration and stabilization. Beach restoration and stabilization in this area will potentially enhance shorebird nesting habitat. However, new groin construction can also transfer beach erosion problems to the west of the proposed new groin field. The Corps needs to assure that this will not happen.

D. Potential Impacts to Endangered and Threatened Species

The proposed project has the potential to exert both direct and indirect adverse effects on the piping plover and seabeach amaranth. Dredging and beach disposal activities during the plover breeding season have the potential to exert <u>direct</u> adverse effects on the piping plover as a result of disruption of courtship, nesting and feeding activities, and alteration of their habitat. Seabeach amaranth may also be adversely affected by the proposed project which may result in the burial of adult plants and seeds, disruption of seed production and dispersal, and degradation of habitat by promoting vegetative stabilization, perennial succession and competition.

The proposed beach nourishment may also maintain or enhance habitat for plovers. If the project beaches are occupied by plovers, these birds may suffer indirect effects from human activity as a result of the increased attractiveness of these areas for human recreation. Indirect effects of the project upon seabeach amaranth may include trampling of plants and seeds by recreational activities.

IX. SERVICE POSITION AND CONCLUSIONS

The Service finds that implementation of the proposed project has the potential to adversely affect fish and wildlife resources, including the piping plover and seabeach amaranth (which are Federally listed as threatened species) and their supporting ecosystems. In addition, the Service recognizes the need for the project and acknowledges that beach nourishment can potentially maintain and enhance habitat for nesting shorebirds.

The Service has recommended mitigation which will avoid and minimize adverse environmental impacts of the proposal. The Service has also recommended sand grain size monitoring of the beach nourishment and new groin construction areas in order to assess the impacts of beach nourishment on fish and wildlife habitat substrate. This monitoring plan will also enable the Service and the Corps to effectively evaluate potential impacts for similar projects which may be proposed in the same or similar areas in the future and to assist in assessing long term cumulative impacts of beach nourishment and dredging on local resources.

The Service, as stated in our February 9, 1995, letter contained within Appendix B of this report, has presented several recommendations that must be incorporated into the proposal in order to ensure that the project would not be likely to adversely affect the piping plover and seabeach amaranth. Should these measures not be implemented throughout the life of the project, a biological assessment or further consultation pursuant to Section 7(a)(2) of the Endangered Species Act will be required to evaluate potential adverse effects of project implementation on the piping plover and seabeach amaranth and to determine if formal consultation is necessary.

LIST OF REFERENCES

Cerrato, R.M. and F.T. Scheier. 1983. Effect of Borrow Pits on the Distribution and Abundance of Benthic Fauna in the lower Bay of New York Harbor. Draft Report to the N.Y. District, U.S. Army Corps of Engineers. 255 pp.

Fay, C., R. Neves, and G. Pardue. 1982. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Mid-Atlantic)-Surf Clam. Fish and Wildlife Service Report FWS/OBS-82/11.13.

Federal Register. 1981. U.S. Fish and Wildlife Service Mitigation Policy. Washington, D.C.: U.S. Department of the Interior.

Franz, D.R., 1976. Distribution and abundance of inshore populations of the surf clam *Spisula solidissima*. Am. Soc. Limnol. Oceanogr. Spec. Symp. 2:404-413.

Harris, Frederic, R. Inc.. 1992. Detailed Investigation of Borrow Areas (Long Beach Island Feasibility Design). New York: report prepared for the New York District Corps of Engineers.

Howe, M.A., R.B. Clapp, and J.S. Weske. 1978. Marine and Coastal Birds. MESA New York Bight Atlas, Monograph 31. New York Sea Grant Institute, Albany. 87 pp.

Hurme, A.K. and E.J. Pullen. 1988. Biological Effects of Marine Sand Mining and Fill Placement for Beach Replenishment. Marine Mining, 7:123-136.

Naqvi, S.M., and E.J. Pullen. 1982. Effects of Beach Nourishment and Borrowing on Marine Organisms. Fort Belvoir: U.S. Army Corps of Engineers, Coastal Engineering Research Center. MR 82-14.

New York State Department of Environmental Conservation (NYSDEC). 1993. 1990-1991 Long Island Colonial Waterbird and Piping Plover Survey. Stony Brook: NYSDEC.

NYSDEC. 1994. Concerns regarding Long Beach Storm Damage Project, Stony Brook: New York State Department of Environmental Conservation.

New York State Office of General Services (NYSOGS). 1992. Subaqueous Sand Mining. Albany: Draft Environmental Impact Statement.

McDermott, J.J. 1983. Food web in surf zone of an exposed sandy beach along the mid-Atlantic coast of the United States. *IN*: McLachman, A. and Erasmus, T. (eds.), Sandy Beaches as Ecosystems. Dr. W. Junk Publishers, Boston, Massachusetts, pp. 529-538.

Parr, T., Diener, E., and S. Lacy. 1978. Effects of Beach Replenishment on Nearshore Sand Fauna at Imperial Beach, California. Fort Belvoir: U.S. Army Corps of Engineers, Coastal Engineering Research Center. MR 78-4.

Perry, Bill. 1985. A Sierra Club Naturalist's Guide to the Middle Atlantic Coast, Cape Hatteras to Cape Cod. San Francisco: Sierra Club Books.

Profiles Research and Consulting Groups, Inc., 1980. Seasonal Restrictions on Dredging Project by NMFS in the Northeast. Volume 1. Prepared for the National Marine Fisheries Service under Contract SB 1408(a)-79-C-169.

Reilly, F., and V.J. Bellis. 1978. A study of the ecological impact of beach nourishment with dredged materials on the intertidal zone. Inst. For Coastal and Marine Resources, East Carolina Univ. Tech. Rpt. No. 4. East Carolina University, Greenville, North Carolina.

Ropes, J. 1980. Biological and Fisheries Data on the Atlantic Surf Clam, *Spisula solidissima*. U.S. Dept. of Comm. NOAA, NMFS, Northeast Fisheries Center Tech. Ser. Rep. No. 124.

Rutkosky, F.W. 1988. Atlantic Coast of New Jersey - Sea Bright to Ocean Township Beach Erosion Control Study: Analysis of the Corps of Engineers Selected Plan. USDOI, Fish and Wildlife Service Fish and Wildlife Coordination Act Report, Section 2(B) U.S. Fish and Wildlife Service, Absecon, New Jersey. 52pp.

Stanley, J.G., and J. Parsons. 1985. Species Profiles: Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates (Mid-Atlantic) - Hard Clam. U.S. Fish and Wildlife Service Biological Report 82 (11.41).

Stern, E.M. and W.B. Stickle. 1978. Effects of Turbidity and Suspended Material in Aquatic Environments. Vicksburg: U.S. Army Corps of Engineers, Waterways Experiment Station. Technical Report D-78-21.

Steimle, F. and R. Stone. 1973. Abundance and Distribution of Inshore Benthic Fauna of Southwestern Long Island. NOAA Tech. Rep. NMFS SSRF-673.

The Nature Conservancy. 1991. Long Island's Beach-Nesting Shorebird Habitat: Protection and management of a vulnerable resource. (Draft). Albany: New York State Department of State.

Tuberville, D.B. and G.A.. Marsh. 1982. Benthic Fauna of an Offshore Borrow Area in Broward County, Florida. MR 82-1, U.S. Army Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, Virginia. 26 pp.

U.S. Army Corps of Engineers (USACE). 1993. Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York.. New York: New York District. P-4A Technical Review Submission.

USACE. 1989. Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. New York: New York District. Reconnaissance Report.

USACE. 1994. Beach Erosion Control Project, Jones Inlet to East Rockaway Inlet (Long Beach Island Area). New York: New York District. Project Blue Prints.

U.S. Fish and Wildlife Service (USFWS). June, 1993. Atlantic Coast of New Jersey - Sea Bright to Ocean Township Beach Erosion Control Study. Pleasantville: U.S. Fish and Wildlife Service, New Jersey Field Office.

USFWS. July 1993. Atlantic Coast of New York City East Rockaway Inlet to Rockaway Inlet. Islip: U.S. Fish and Wildlife Service, Long Island Field Office.

USFWS. 1991. Northeast Coastal Areas Study: Significant Coastal Habitats of Southern New England and Portions of Long Island, New York. Charlestown: U.S. Fish and Wildlife Service, Southern New England - Long Island Sound Coastal and Estuary Office.

USFWS. January, 1989. Planning Aid Report for the Atlantic Coast of Long Island, East Rockaway Inlet to Jones Inlet (Long Beach Island) Study. Cortland: U.S. Fish and Wildlife Service, New York Field Office.

WCH Industries, Inc. (WCH Industries). 1994. Benthic Community Profile, Beach Restoration Project, Jones Beach Inlet to Long Beach Island, Long Beach New York. Waltham: WCH Industries, Inc.

Woodhead, P.M.J. and S.S. McCafferty. 1986. Report on the fish community of lower New York Harbor in relation to borrow pit sites. In Draft Supplemental Environmental Impact Statement: Use of Subaqeous Borrow Pits in the Disposal of Dredged Material from the Port of New York - New Jersey, 1988, by U.S. Army Corps of Engineers, New York District. New York: 1988.

Woodhead, P.M.J. 1992. Assessments of the Fish Community and Fishery Resources of the Lower New York Bay Area in Relation to a Program of Sand mining Proposed by New York State. Stony Brook: Marine Sciences Research, SUNY at Stony Brook.

Woodward-Clyde Consultants. 1977. Rockaway Beach Erosion Control Project Dredge Material Research Program Offshore Borrow Area. San Francisco: Woodward-Clyde Consulting Engineers, Geologists, and Environmental Scientists.

Woodward-Clyde Consultants. 1975. Results of Phase I Pre-Dredging Study. Rockaway Beach Erosion Control Project Dredge Material Resource Program-Offshore Borrow Area. Report prepared for the New York District.

APPENDIX A

U.S. Army Corps of Engineers Comments to the Service's April 1994, Draft Fish and Wildlife Coordination Act Report

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

December 8, 1994

Environmental Assessment Section
Environmental Analysis Branch

Mr. David A Stilwell
Acting Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Mr. Stilwell:

The U.S. Army Corps of Engineers, New York District, has reviewed the draft Fish and Wildlife Coordination Act Report (FWCAR) which your office prepared for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project dated April, 1994. We wish to take this opportunity to comment on the FWCAR.

Please refer to Enclosure 1 for our comments on the FWCAR and its Recommendations which are enclosed as Enclosure 2.

As coordinated with Mr. Robert Murray of your Long Island Field Office (LIFO), the District now expects to receive the Final FWCAR, originally scheduled for October 1, 1994, by January 20, 1995.

Should you have any question or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Attch.
cc: Murray-LIFO

ENCLOSURE 1

NEW YORK DISTRICT COMMENTS TO THE DRAFT FISH AND WILDLIFE COORDINATION ACT REPORT FOR THE ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY INLET, LONG BEACH ISLAND, NEW YORK STORM DAMAGE PROTECTION PROJECT

GENERAL COMMENT

On page 7, Section III, paragraph 3, the last sentence should be changed to "This includes 15 existing groins, three (3) which will be extended ≤ 30 feet. The remainder will be the same length or shorter.

A. MITIGATION RECOMMENDATIONS

1. Beach Nourishment Area

1. The project calls for the placement of sand 41,000 feet along Long Beach Island (from Point Lookout to East Atlantic Beach) that is consistent with the native beach material. The borrow material will not contain silt and organic matter that is associated with hypoxic or anoxic conditions. Pre-construction monitoring consists of a survey of beach profile lines, sediment sampling of the beach and borrow areas, aerial photography of the project area and biological samples collected along the beach and borrow area. To ensure the quality of the material placed, comparisons of various available sand sources were conducted. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment.

2. Dune construction includes approximately 29 acres of planting of American beach grass *(Ammophila breviligulata)* and 50,000 linear feet of sand fence for dune sand entrapment, as well as ramps and walkovers for access. The District's Planning Division, in consultation with the USFWS-Long Island Field Office, will oversee the placement of the beach grass plantings to avoid any potential impacts in piping plover and least tern nesting areas.

3. Public access on the dunes will be restricted to only walkovers and handicapped entrances spaced approximately every one-half mile or less. Placement of public access routes will avoid known piping plover nesting areas.

2. Borrow Areas

1. The District will conduct a pre-dredge spring surf clam stock assessment similar to the protocol employed in the NYSDEC Bureau of Shellfisheries' Surf Clam Assessments. The pre-dredge stock assessment will be used to identify areas of lower shellfish use within the borrow area and to develop a dredging plan that minimizes impacts to the shellfish resources. If areas of high shellfish use are identified, sufficient time will be available for the resource to be harvested before dredging begins. The District will also perform a post-dredge population survey.

2. Standard dredging practices aim to avoid exposing and dredging sediment types that are of low benthic quality and are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized.

3. The District, as is standard practice, tries to dredge borrow areas with to the minimum depth required and gently sloping slides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

3. New Groin Construction

1. In addition to evaluating groin construction at the eastern end, the District examined sand only alternatives. The groin field is anticipated to reduce nourishment costs.

2. The addition of six new groins at Lido Beach are designed with a low top elevation to encourage, not impede, sand transport to the down drift beaches.

B. MONITORING RECOMMENDATIONS

1. Beach Nourishment Area

1/2/3. The Corps does not agree that a nearshore monitoring program is necessary for the proposed, or any similar south shore of Long Island project. Further discussions between the District and the USFWS-LIFO after the Draft FWCAR was written resolved the disagreement regarding the monitoring at the placement site.

Results from studies (Courtenay, et al. 1972 and 1980, Parr, Diener and Lacy, 1978, Reilly and Bellis, 1978, Holland, Chambers and Blackman, 1980, Naqvi and Pullen, 1982) elsewhere around the country can be applied to this region as basic oceanic processes and ecological principles are involved. These studies indicate that during nourishment activities the habitat in the littoral zone is not lost, but displaced a short distance seaward of its former location.

The basic habitat characteristics such as; currents, substrate, depth and other physical/chemical factors remain the same, so the availability of a suitable habitat remains unchanged. The beach nourishment construction process itself is gradual, building up over months. Ample time exists for motile or even planktonic forms to be displaced outside the zone of direct impact (burial). Sessile organisms would be buried but should rapidly recolonize the extended zone as long as a suitable seed source is available from the adjacent areas. Added turbidity itself is of little effect in this already turbulent zone. Since the biota have already adapted to harsh conditions associated with the Atlantic Coast, recovery should be relatively quick. The nearshore region is a highly dynamic area which is accustomed to the amount of change experienced in nourishment operations.

We agree with your determination that specific information on the use of the nearshore zone in the New York Bight Region (including the New Jersey and Long Island Atlantic Coasts) is not readily available. The Corps is undertaking with your agencies cooperation, a major nearshore monitoring effort, in conjunction with the study of borrow areas, along the Atlantic Coast of New Jersey. The goal is to better understand the degree to which each habitat is utilized and how best one can enhance or possibly even direct the recovery of the resource for future projects. The results of this program will be very pertinent to Long Island projects, and will be utilized to the extent practical. However, all evidence and reasonable interpretations lead us to believe that impacts to the beach site will be short-term and minimal, while returning the area to previous conditions. In the light of the absence of evidence to the contrary and with concurrence from NMFS and USFWS-LIFO, monitoring of the beach placement site will not be included in the project.

2. Offshore Borrow Area

1/2. See A-2-1.

3. New Groin Construction

1/2. See A-1-1.

C. ENDANGERED AND THREATENED SPECIES RECOMMENDATIONS

1/2. If construction activities are accomplished within the piping plover nesting season (APRIL 1 TO SEPTEMBER 1), the District will institute a monitoring program designed to assure the protection of the piping plovers and least terns. The program shall consist of:

1. <u>Pre-Construction</u> <u>Survey</u> <u>Phase</u> - Two weeks prior to

any construction activity, a Corps biologist, or designated representative (monitor) will survey (identify and delineate) bird use areas for two days each week, all action areas (landing, staging, beach placement, etc.) for the occurrence of territorial, courting or nesting piping plovers/other shorebirds (terns, oystercatchers, etc.) though not the primary target will be noted as well.

2. Concurrent-Construction Survey/Monitor Phase - This phase shall continue the Pre-Activity Phase survey work through July 1 at a frequency of two days per week, 9 hours each day (2 days/week/9 hours/day). The 9 hour a day component will insure that the monitors will make observations during the complete tidal cycle. If any piping plovers are detected at any time during the survey, a monitoring component, consisting of observing and providing protection to the plovers from any of project activities, will be implemented. Fencing and/or exclosures will be utilized when appropriate to protect the nests until hatching. When the chicks begin to feed, the monitor will direct the contractor away from the chicks and, if necessary, temporarily stop construction in the feeding area. Also, if disturbance is deemed a potential threat, the frequency of the survey/monitoring activities will be increased to effectively monitor the plover chicks for the duration of such construction activities. Monitoring shall continue until completion of the initial project construction but not beyond September 1 or the date of the last fledged chick, which ever occurs first.

3. Posting and Buffer Zone Establishment - Courtship areas, nests, and brooding areas, shall be posted immediately (under the monitor's supervision) and no disturbance shall be permitted within 300 feet of the posted area if there is sufficient work space available. If there is not sufficient space available for the buffer zone, the District in consultation with the USFWS will establish a buffer zone appropriately scaled to the available space. Posting of courtship areas shall not be required beyond July 1. The posted areas shall be updated during the survey, if necessary. Monitors shall document any plover movement into the construction activity area to determine the effectiveness of the buffer.

4. Post-Construction Surveys - The District will, for three seasons after initial project completion (until first nourishment cycle), survey shorebird use in the project area for the occurrence of territorial, courting or nesting piping plovers, on a biweekly basis for two consecutive days each time until nests are discovered. If nests are detected monitoring will become weekly and continue until all plover chicks are fledged or lost. If no nests are established, by July 15, monitoring will be concluded.

5. System of Notification - The District shall notify

in 24 hours, the USFWS-Long Island Field Office, if plovers are observed during any of the surveys. After consultation between the USFWS and the District, the monitor shall make any revisions necessary to better protect the plover population that is present (such as alerting and instructing the Contractor on a course of preventive action). The monitor shall make necessary adjustments to the minimum survey/monitoring component during the brood rearing stage to ensure that the weekly and daily observation frequency adequately documents the mobility of the individual broods and to adjust the posted brood rearing areas. A field note book shall be used to record all observations. It will be provided to the USFWS at pre-agreed time intervals. USFWS, in cooperation with the District and state/local experts, may modify the survey based on site specific conditions to avoid any adverse affects and to adjust it (including relaxation of the restriction) to the bird's needs as they develop. This information could be the grounds for recommendations on future maintenance work, as well as other similar dredging/beach nourishment projects that may occur along the south shore.

- In the event that it appears that disturbance to the piping plovers/least terns cannot be avoided, the District will notify the USFWS, and the NYSDEC, by close of business that day. The on-site contractors shall be directed by the District to adjust or halt construction activities to avoid the disturbance to the extent practicable. Further consultation under the Endangered Species Act will be initiated.

The rehabilitation of the groins could also impact the plovers by disturbing possible nesting activities. To minimize the duration of these impacts, work is being scheduled as a single continuous action, to avoid a second season of impacts. Work is scheduled to begin in Fiscal Year 1998, and thus be completed before the spring 1999 nesting season. In the event that work on the groins is extended into the breeding season, nesting sites would be identified and measures taken to isolate them from the contractor's work. The section of groins requiring repair is now underwater, therefore, repair work on it would have minimum impact on plovers. However, the construction of the six (6) new groins near Point Lookout will occur on land. All previously discussed protective measures for beach placement activities will be instituted to minimize/avoid impacts.

g. Piping plovers that currently utilize the project area may experience possible indirect impacts as the result of increased human recreational activity. To reduce the impact of this action, the District will seek to approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of obtaining concurrence of the State and local municipalities on the USFWS Protection Agreement and protective measures that could be employed to minimize future problems.

ENCLOSURE 1

3. The District concurs. Slopes were developed consistent with the natural contour.

4. See A-2-2.

5. To reduce the possible indirect impact of this action, the District will seek to approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of briefing them on the USFWS Protection Agreement.

6. The contractor will be briefed on the Endangered Species Act of 1973, as amended.

7. The USFWS-LIFO will be given proper notification regarding initiation and completion of each placement cycle.

8. The area will be surveyed or the data collected from local agencies regarding the presence or absence of piping plover.

REFERENCES CITED

Courtenay, W.R., Jr., et al. 1972. Ecological Monitoring of Two Beach Nourishment Projects in Broward County, Florida. Journal of Shore and Beach, Vol. 40, No. 2, 8-13 pp.

Courtenay, W.R., Jr., Hartig, B.C. and Loisel, G.R. 1980. Evaluation of Fish Populations Adjacent to Borrow Areas of Beach Nourishment Projects at Hallandale (Broward County), Florida, Vol. 1. Prepared for: USACOE, CERC. 23 pp.

Holland, T.H., Chambers, J.R. and Blackman, R.R. 1980. Effects of Dredging and Filling for Reach Erosion Control on Fishers in the Vicinity of Lido Key, Florida. Prepared for: USACOE, Jacksonville District.

Naqvi, S.M. and E.J. Pullen. 1982. Effects of beach nourishment and borrowing on marine organisms. MR No. 82-14. Prepared for: USACOE, CERC. 43 pp.

Parr, T., Diener, E. and Lacy, S. 1978. Effects of Beach Replenishment on the Nearshore Sand Fauna at Imperial Beach, California. MR 78-4. Prepared for: USACOE, CERC.

Reilly, F.J., Jr. and V.J. Bellis. 1978. A Study of the Ecological Impact of Beach Nourishment with Dredged Materials on the Intertidal Zone. Institute for Coastal and Marine Resources Technical Report No. 4. East Carolina University, Greenville, NC. 107 pp.

APPENDIX B

U.S. Fish and Wildlife Service February 1995, Section 7 Consultation Letter to the Corps

Faxed 2/9/95 mlp

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

February 9, 1995

Colonel Thomas A. York
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Attention: Mr. Peter Weppler

Dear Colonel York:

This letter is in reference to the proposed "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Protection Project". These comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 401., as amended; 16 U.S.C. 1531 et seq.).

The U.S. Fish and Wildlife Service (Service) originally addressed potential project-related impacts upon the Federally listed (threatened) piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) within our April 29, 1994, draft 2(b) Fish and Wildlife Coordination Act Report. The U.S. Army Corps of Engineers (Corps) responded to the Service's recommendations to minimize and avoid impacts to plovers as discussed in their mitigation and monitoring plan that was provided in their September 1994 draft feasibility report for the Long Beach Island project. Upon further consideration of our original recommendations and the Corps' proposed mitigation and monitoring plan, the Service is unable to conclude, at this point in time, that the proposed project is not likely to adversely affect piping plovers or seabeach amaranth.

Consequently, in order to ensure that the proposed project is not likely to adversely affect piping plovers and seabeach amaranth, the following recommendations must be incorporated into the project plans.

1) Prior to the <u>initial construction project and future re-nourishment efforts</u>, the Corps shall consult with the Service in order to identify, delineate, and symbolically fence previously utilized piping plover territorial, courtship, nesting, and brood rearing areas. Beach nourishment activities and groin construction and/or rehabilitation activities shall not occur during the piping plover nesting season (April 1 to September 1) within a symbolically fenced 91.4 meter (300 feet) buffer distance from these identified areas, except as follows. By July 1, if plovers have not utilized any previously designated piping plover territorial, courtship, nesting, or brood rearing area, the Corps, after consultation with the Service, may be authorized to initiate construction activities within these areas. Any on-going construction work within the plover territorial, courtship,

nesting, and brood rearing areas and designated buffer areas shall cease by April 1 of any given year.

2) To establish the symbolically fenced buffer areas, determine the area within 91.4 meters (300 feet) of either side of the territory, courtship, nesting, and brood rearing areas from a line drawn perpendicular to the long axis of the beach. The resulting area should extend from the ocean side low water line to the bayside low water line, or to the furthest extent of a natural or man-made feature which would prohibit piping plover chicks from traversing the area (e.g. scarp, dune, road, house).

3) Qualified endangered species bird monitor(s), from a list preapproved by the Service, shall be retained for a period prior to commencement of the initial construction project and subsequent renourishment activities through project completion but not beyond September 1, or the date of last fledging.

4) Beginning on April 1, and prior to commencement of both the initial construction project and subsequent renourishment activities, and continuing through September 1, or the date of last fledging (marking the conclusion of the piping plover breeding season), the following survey/monitor activities shall be established:

A) Surveying and monitoring shall occur within the previously identified piping plover territorial, courtship, nesting, and brood rearing areas at a frequency of at least four days per week, during two alternating tidal cycles in those areas that may be potentially affected by construction activities during the plover season. If plovers are not detected in these areas, then surveying can be discontinued on July 1. When unfledged chicks are within 1,000 meters (3,280 feet) of moving equipment, monitoring shall occur daily in those areas;

B) Surveying within the remaining sections of the project area shall occur at a frequency of one day per week. If plovers are not detected in these areas, then surveying can be discontinued on July 1. If plovers are detected in these areas, then surveying shall increase to a frequency of at least four days per week, during two alternating tidal cycles, in those areas that may be potentially affected by construction activities during the plover season. Symbolic fencing shall also be erected in these areas. When unfledged chicks are within 1,000 meters (3,280 feet) of moving equipment, monitoring shall occur daily in those areas.

5) During both the initial construction project and during subsequent renourishment activities, the Corps will coordinate with the Service to ensure that the hydraulic pipeline will be placed offshore, to the maximum extent practicable, along identified piping plover territorial, courtship, nesting, and brood rearing areas to allow plover chicks unobstructed access to foraging habitat.

6) The Corps shall survey the project area[1], during both the initial construction project and subsequent renourishment activities, during the seabeach amaranth growing season (May 1 to November 1).[2]

7) Qualified endangered species plant monitor(s), from a list preapproved by the Service, shall be retained prior to commencement of the initial construction project and subsequent renourishment activities through project completion but not beyond November 1 (see footnote 2 below). Seabeach amaranth surveying activities within the project area shall be conducted both mid-season (June/July) and late season (September/October). Upon the identification of any seabeach amaranth within the project area, the Corps shall reinitiate Section 7 consultation with the Service and shall protect seabeach amaranth habitat with symbolic fencing.[3] Symbolic fencing shall be erected in a 3 meter (approximately 10 feet) radius around individual plants, or erected in a 3 meter zone in any direction around groups of plants. No fill shall be placed on seabeach amaranth between May 1 and November 1 in any given year. Consultation with the Service will be necessary to determine if this time of year work restriction is appropriate.

8) System of Notification: The Service (Long Island Field Office- phone: (516) 581-2941, fax: (516) 581-2972) shall be notified of piping plovers or seabeach amaranth that are detected during their appropriate surveys. At the initiation of the initial construction project and subsequent renourishment activities, maps indicating the location of plover courtship, nesting, and brood rearing areas, and seabeach amaranth, as well as locations of construction activities, shall be generated by the Corps. The maps will be revised on a weekly basis during the construction season and delivered to the Service after each revision.

9) In the event that disturbance to piping plovers or seabeach amaranth occurs despite implementation of conditions discussed above, the on-site contractor shall be

---

[1] In the five years between 1990 and 1994, seabeach amaranth surveys on Long Beach Island were only conducted during the 1991 and 1993 growing season. While seabeach amaranth was not detected on Long Beach Island during these two surveys, seabeach amaranth is present on adjacent Jones Beach Island and Rockaway Beach Peninsula.

[2] Seabeach amaranth may persist after November 1 depending upon temperatures and frost events.

[3] If seabeach amaranth is identified within the project area, the Corps will need to consult with the Service to ensure that the project will not be likely to adversely affect seabeach amaranth. Beach nourishment can adversely affect seabeach amaranth through direct placement of sand onto the plant species and construction machinery can crush plants and seeds. The effects of such impacts can result in mortality of individual plants and reduced or zero seed production.

directed by the Corps to immediately adjust or halt construction activities to eliminate the disturbance. The Corps shall, by close of business that day, contact the Service in regard to any such incidents.

10) The beach disposal area(s) in front of the dunes shall be finished to a natural grade and contour to maintain suitable nesting habitat for piping plovers.

11) The dredged material to be disposed of in the beach nourishment area shall conform with the already existing substrate on the beach or consist of material that is capable of maintaining suitable piping plover habitat.

12) The contractor and employees shall be adequately informed of Endangered Species Act concerns.

13) In order to assess the need for additional protective measures for piping plover and seabeach amaranth, the Corps shall ensure that the project area is surveyed for three seasons following initial project completion. The objectives of these surveys shall be to estimate the number of breeding pairs of plovers, to estimate overall productivity, and to estimate the number of seabeach amaranth plants. Yearly survey reports shall be sent to the Service by October 1 during each of the three years following initial project completion.

14) A stated secondary benefit of the proposed project will be the significant improvement of opportunities for recreational beach use. Increases in recreational use of beaches can also result in increased adverse impacts to piping plovers and seabeach amaranth that occur on these beaches. To avoid such impacts, the protection of piping plover and seabeach amaranth habitats shall be assured prior to project implementation. This shall occur by educating residents, landowners or beach managers of the management requirements discussed below, and, prior to project commencement, by seeking a written agreement from residents, landowners or beach managers for full cooperation with the Corps and the Service, or mutually agreed upon designated representatives (the New York State Department of Environmental Conservation, The Nature Conservancy, etc.).

A) Provide access to the project beaches to the Service, the Corps, or their mutually agreed upon designated representatives, to survey, monitor, post, and/or symbolically fence seabeach amaranth habitat and piping plover courtship, nesting, and brood rearing areas, and erect predator exclosures (as needed) for nests during the plover breeding season (April 1 to September 1). Access should be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purposes stated above.

The symbolic fencing may be placed in a 50 meter radius (approximately 163 feet) around plover nest sites, and in a 3 meter radius or zone around seabeach amaranth plant(s) where pedestrians, joggers, picnickers, fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers and their eggs and seabeach amaranth.

B) Prohibit off-road vehicular traffic, including all terrain vehicles, on the beach in accordance with the Service's April 15, 1994 Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act (see enclosure 1). Prohibit off-road vehicles from entering symbolically fenced seabeach amaranth areas during the growing season between May 1 and November 1.

C) Prohibit the removal of natural organic material deposited on the beach by the tides (wrack) during brood rearing in the areas used by plovers in order to preserve plover feeding habitat. Prohibit mechanical beach cleaning of any kind; however, trash and litter may be manually removed from the wrackline.

D) Prohibit fireworks on beaches where piping plovers nest from April 1 to September 1, or the date of last fledging.

E) Prohibit kite flying within 200 meters (approximately 656 feet) of territorial or nesting adults or unfledged juvenile piping plovers from April 1 to September 1.

F) Leash pets at all times from April 1 to September 1 on beaches in the action area where piping plovers are present because dogs and cats are common predators of piping plover eggs and chicks

G) Prohibit feeding of raccoons, gulls, or other wildlife to minimize predation on plovers.

15) In order for the Service to be kept informed of actions taken in regard to items discussed in section 14 above, the Service is requesting to be notified of the implementation of any of these measures.

With incorporation of these measures into the project plans, the proposed project would not be likely to adversely affect the piping plover or seabeach amaranth. Should these measures not be implemented throughout the life of the project, a biological assessment or further consultation pursuant to Section 7(a)(2) of the Endangered Species Act will be required to evaluate potential adverse effects of project implementation on the piping plover, seabeach amaranth, and their habitats, and to determine if formal consultation is necessary. Should project plans change or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

Please have your staff contact Mr. Robert Murray, at my Long Island Field Office, at (516) 581-2941 should you have any questions or comments.

Sincerely,

for John T. Hickey

Sherry W. Morgan
Field Supervisor

PERTINENT CORRESPONDENCE

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

February 24, 1995

Environmental Assessment Section
Environmental Analysis Branch

Mr. William F. Barton
Chief, Consistency Review and Analysis Bureau
Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Re: **F-94-696**
Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Attention: Mr. Kevin Vienneau

Dear Mr. Barton:

This is in reference to your February 16, 1995 comments (Enclosure 1) on the Draft Environmental Impact Statement (DEIS) and the Consistency Determination for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

As discussed in the February 1, 1995 meeting held at the District, your staff's concerns regarding coastal processes west of Jones Inlet will be addressed in the modified monitoring program that was coordinated with the District, New York Department of Environmental Conservation (NYSDEC), the Town of Hempstead, and New York State Sea Grant. The modified monitoring program will be developed prior to the finalizing of Plans and Specifications for the proposed project and can be further modified as appropriate during the life of the project.

In regards to the potential adverse impacts of the proposed project on the surf clam population, District staff has been coordinating with NYSDEC Region I to resolve the issue. The NYSDEC is in the process of evaluating if a significant surf clam resource does exist within the proposed borrow area, and if so, the District and the NYSDEC will develop potential mitigation alternatives. As discussed with Mr. Kevin Vienneau of your staff, the District will update the Department of State with regard to the status of coordination.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

ALEXANDER F. TREADWELL
SECRETARY OF STATE

February 16, 1995

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

Re: F-94-696
COE/NY - Atlantic Coast of Long Island - Jones Inlet to East Rockaway Inlet, Long Beach Island Storm Damage Reduction Project

<u>Draft Environmental Impact Statement</u>

Dear Mr. Weppler:

The New York State Department of State's Division of Coastal Resources and Waterfront Revitalization has reviewed the Draft Environmental Impact Statement (DEIS) and Draft Feasibility Report for the proposed storm damage reduction project on Long Beach Island, as released by your agency in September 1994. The Division's comments relate to the coastal policies of New York State's Coastal Management Program (CMP) and the proposed project's potential to affect coastal resources. The comments are intended to assure adequate recognition of and response to coastal resource related issues, while providing guidance toward completion of a Final Environmental Impact Statement.

The Division's review of the DEIS raised concern over two principal issues, as was indicated at the meeting held at your agency's office on February 1, 1995. The first issue pertains to the proposed six new groins that would be constructed immediately west of Jones Inlet, and potential adverse effects to the downdrift, westward, beach area and to Jones Inlet. The second issue involves the potential adverse effects on fisheries resources at the proposed borrow site.

According to the DEIS, your agency has prepared a program for post-construction monitoring of potential effects caused by the beach stabilization work (including the six new

groins), to begin at the initiation of pre-construction efforts and continue for five years. Based on the February 1 meeting, this monitoring program is designed to assess project performance and the potential need for further remedial action. This Department, after coordination with other interested agencies, has prepared a modified version of the proposed monitoring program. Please refer to the enclosed monitoring diagram, as modified from the original diagram within the technical appendices of the Draft Feasibility Report and DEIS. As agreed at the February 1 meeting, the monitoring design for the eastern end of Long Beach Island must detect significant shoreline changes resulting from the placement of the beach fill and the addition of six groins. It must also document any increase in shoaling at the east end of Long Beach Island. Detection of unanticipated changes will signal the need for further Corps of Engineers (COE), State, and local action to address problems before they become a major threat to existing shoreline development or navigation. It is assumed that the remainder of Long Beach Island, and those elements not discussed below, will be monitored as proposed by the COE in the Long Beach Feasibility Study.

To detect adverse changes in the filled areas that are caused by the new groins, modification of the proposed COE Feasibility Study monitoring plan is recommended. Along the Atlantic shorefront, proposed transect lines should be revised to: relocate any lines that would be adjacent to existing or proposed groins (research has documented that survey lines within 100 ft of a groin can give spurious results); add additional transect lines so that there is at least one survey line at the approximate mid-line of each groin compartment (to document excessive compartment accretion or scouring); and add lines to provide sufficient coverage downdrift of the western most groin (to document potential accelerated erosion caused by the new groins). This Department recommends that the final plan contain at least 15 profile survey lines as indicated on the enclosed map.

Surveys along each of the 15 profile lines should be performed immediately prior to project construction (to serve as baseline information), and quarterly after project completion for two full years. Evidence of rapid shoreline erosion rates in this area suggests the need for frequent surveys. This will ensure that shoreline erosion is identified soon enough to facilitate action prior to upland damage. After the second year, if unanticipated erosion has not been detected by the quarterly surveys, the temporal interval for surveys may be relaxed to match the proposed COE monitoring plan.

Comparative profile plots for each of the 15 lines should be provided to the New York State Department of Environmental Conservation (DEC), this Department and the Town of Hempstead, for review within 30 days of survey. It is assumed that post-storm monitoring activities will proceed as proposed in the COE Feasibility Study plan, and will incorporate these additional surveyed areas. Post-storm profile surveys and aerial photography would then be provided to DEC, this Department and the Town, within 30 days of collection. All

monitoring information should ultimately be incorporated into the Atlantic Coast of New York Monitoring Program.

To document increased shoaling in Jones Inlet, in the vicinity of Point Lookout, the monitoring program requires annual bathymetric surveys. Where possible, these surveys can be coordinated with inlet channel surveys for navigation purposes. The proposed area of survey (approx. 150 acres) is shaded on the enclosed map. A pre-project survey should be conducted to document existing conditions. Upon project completion, a survey should be performed and repeated annually at approximately the same time of year for the first 5 years. Subsequent monitoring intervals for inlet shoaling should be jointly determined based on the experience of this initial period. The bathymetric data should be overlaid and difference maps developed to detect any significant shoaling. Bathymetric survey maps and difference plots should then be provided to DEC, this Department and the Town of Hempstead, within 30 days of the survey. Finally, the bathymetric data should be incorporated into the Atlantic Coast of New York Monitoring Program.

If results of the modified monitoring program indicate a problem with project design, the addition of 3 groins (to close the gap between the new groins and the existing groins to the west) should be examined as an option for correcting the problem. Additional groins may result in a more permanent and economical solution, as opposed to the increase in frequency of sand placement along the beach.

In regard to the potential adverse effects at the proposed borrow site, this Department has been advised by DEC, by copy of a letter to your agency dated January 10, 1995, of its concern about potential shellfishery impacts. DEC indicates that the proposed borrow area has an "extensive" population of surf clams (Spisula solidissima), and that the proposed dredging will cause extensive damage to the commercial fishery and, thereby, the associated economy. This Department shares DEC's concern.

Department staff contacted your agency on February 7, 1995 to request a meeting to discuss and assist in resolving the potential impact on the surf clam resource at the proposed borrow area. Staff was advised that a meeting is pending coordination between your agency and DEC, and that staff of this Department would be invited when a date was set. Please inform us when this meeting will be held.

The above comments are provided to assure adequate recognition and response to coastal resource related issues, although they do not constitute a formal federal consistency review by the Department of State. Pursuant to 15 CFR 930.41, the Department of State will commence its formal consistency review of this project upon receipt of the Final Environmental Impact Statement and your agency's final consistency determination with respect to the New York State Coastal Management Program.

If you have any questions pertaining to the above comments, please contact Mr. Kevin Vienneau or Mr. Fred Anders at (518) 474-6000.

Sincerely,

William F. Barton

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

Enclosure
WFB/KV/FA/jtb
cc: Arnold Palleschi, Town of Hempstead
Jay Tanski, NYS Sea Grant
Bill Daley, NYS DEC

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT. CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

February 24, 1995

Environmental Assessment Section
Environmental Analysis Branch

Ms. Sherry Morgan
Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Mr. Stilwell:

The U.S. Army Corps of Engineers, New York District, has reviewed your February 9, 1995 Section 7 comment letter for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project. Please find our responses attached (Enclosure 1). The comments will be incorporated into the proposed project's Final Environmental Impact Statement to ensure that the proposed project would not be likely to adversely affect the piping plover and seabeach amaranth.

Should you have any question or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Attch.
cc: Murray-LIFO

ENCLOSURE 1

REVISED ENDANGERED AND THREATENED SPECIES RESPONSE TO COMMENTS

1-9. The New York District will institute recommendations 1-9 (revised monitoring program) if construction activities are accomplished within the piping plover nesting season (APRIL 1 TO SEPTEMBER 1) and seabeach amaranth growing season (MAY 1 TO NOVEMBER 1) to assure the protection of the species. The revised monitoring program can be found in **Section 4.00 ENVIRONMENTAL IMPACTS** of the FEIS.

10. The District concurs. Slopes will be developed consistent with the natural contour.

11. It is U.S. Army Corps of Engineers' standard practice to deposit suitable and consistent material at the beach placement area.

12. The contractor and employees will be briefed on the Endangered Species Act of 1973, as amended.

13. The New York District will survey the project site for piping plovers and seabeach amaranth for three seasons. This could include, but not be limited to surveys or data collected from local agencies regarding the presence or absence of piping plover. A yearly survey report will be sent to the Long Island Field Office when completed.

14. The protection of piping plovers and seabeach amaranth will be the responsibility of New York State or the local representatives following the completion of construction activities. To reduce the possibility of **indirect** impact from this action, the District will inform the City of Long Beach, Town of Hempstead, and New York State on the USFWS Protection Agreement.

15. The USFWS-LIFO will be given proper notification regarding initiation and completion of each placement cycle.

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

February 9, 1995

Colonel Thomas A. York
District Engineer, New York District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Attention: Mr. Peter Weppler

Dear Colonel York:

This letter is in reference to the proposed "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Protection Project". These comments are provided pursuant to the Endangered Species Act of 1973 (87 Stat. 401., as amended; 16 U.S.C. 1531 et seq.).

The U.S. Fish and Wildlife Service (Service) originally addressed potential project-related impacts upon the Federally listed (threatened) piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*) within our April 29, 1994, draft 2(b) Fish and Wildlife Coordination Act Report. The U.S. Army Corps of Engineers (Corps) responded to the Service's recommendations to minimize and avoid impacts to plovers as discussed in their mitigation and monitoring plan that was provided in their September 1994 draft feasibility report for the Long Beach Island project. Upon further consideration of our original recommendations and the Corps' proposed mitigation and monitoring plan, the Service is unable to conclude, at this point in time, that the proposed project is not likely to adversely affect piping plovers or seabeach amaranth.

Consequently, in order to ensure that the proposed project is not likely to adversely affect piping plovers and seabeach amaranth, the following recommendations must be incorporated into the project plans.

1) Prior to the initial construction project and future re-nourishment efforts, the Corps shall consult with the Service in order to identify, delineate, and symbolically fence previously utilized piping plover territorial, courtship, nesting, and brood rearing areas. Beach nourishment activities and groin construction and/or rehabilitation activities shall not occur during the piping plover nesting season (April 1 to September 1) within a symbolically fenced 91.4 meter (300 feet) buffer distance from these identified areas, except as follows. By July 1, if plovers have not utilized any previously designated piping plover territorial, courtship, nesting, or brood rearing area, the Corps, after consultation with the Service, may be authorized to initiate construction activities within these areas. Any on-going construction work within the plover territorial, courtship,

nesting, and brood rearing areas and designated buffer areas shall cease by April 1 of any given year.

2) To establish the symbolically fenced buffer areas, determine the area within 91.4 meters (300 feet) of either side of the territory, courtship, nesting, and brood rearing areas from a line drawn perpendicular to the long axis of the beach. The resulting area should extend from the ocean side low water line to the bayside low water line, or to the furthest extent of a natural or man-made feature which would prohibit piping plover chicks from traversing the area (e.g. scarp, dune, road, house).

3) Qualified endangered species bird monitor(s), from a list preapproved by the Service, shall be retained for a period prior to commencement of the initial construction project and subsequent renourishment activities through project completion but not beyond September 1, or the date of last fledging.

4) Beginning on April 1, and prior to commencement of both the initial construction project and subsequent renourishment activities, and continuing through September 1, or the date of last fledging (marking the conclusion of the piping plover breeding season), the following survey/monitor activities shall be established:

A) Surveying and monitoring shall occur within the previously identified piping plover territorial, courtship, nesting, and brood rearing areas at a frequency of at least four days per week, during two alternating tidal cycles in those areas that may be potentially affected by construction activities during the plover season. If plovers are not detected in these areas, then surveying can be discontinued on July 1. When unfledged chicks are within 1,000 meters (3,280 feet) of moving equipment, monitoring shall occur daily in those areas;

B) Surveying within the remaining sections of the project area shall occur at a frequency of one day per week. If plovers are not detected in these areas, then surveying can be discontinued on July 1. If plovers are detected in these areas, then surveying shall increase to a frequency of at least four days per week, during two alternating tidal cycles, in those areas that may be potentially affected by construction activities during the plover season. Symbolic fencing shall also be erected in these areas. When unfledged chicks are within 1,000 meters (3,280 feet) of moving equipment, monitoring shall occur daily in those areas.

5) During both the initial construction project and during subsequent renourishment activities, the Corps will coordinate with the Service to ensure that the hydraulic pipeline will be placed offshore, to the maximum extent practicable, along identified piping plover territorial, courtship, nesting, and brood rearing areas to allow plover chicks unobstructed access to foraging habitat.

6) The Corps shall survey the project area[1], during both the initial construction project and subsequent renourishment activities, during the seabeach amaranth growing season (May 1 to November 1).[2]

7) Qualified endangered species plant monitor(s), from a list preapproved by the Service, shall be retained prior to commencement of the initial construction project and subsequent renourishment activities through project completion but not beyond November 1 (see footnote 2 below). Seabeach amaranth surveying activities within the project area shall be conducted both mid-season (June/July) and late season (September/October). Upon the identification of any seabeach amaranth within the project area, the Corps shall reinitiate Section 7 consultation with the Service and shall protect seabeach amaranth habitat with symbolic fencing.[3] Symbolic fencing shall be erected in a 3 meter (approximately 10 feet) radius around individual plants, or erected in a 3 meter zone in any direction around groups of plants. No fill shall be placed on seabeach amaranth between May 1 and November 1 in any given year. Consultation with the Service will be necessary to determine if this time of year work restriction is appropriate.

8) System of Notification: The Service (Long Island Field Office- phone: (516) 581-2941, fax: (516) 581-2972) shall be notified of piping plovers or seabeach amaranth that are detected during their appropriate surveys. At the initiation of the initial construction project and subsequent renourishment activities, maps indicating the location of plover courtship, nesting, and brood rearing areas, and seabeach amaranth, as well as locations of construction activities, shall be generated by the Corps. The maps will be revised on a weekly basis during the construction season and delivered to the Service after each revision.

9) In the event that disturbance to piping plovers or seabeach amaranth occurs despite implementation of conditions discussed above, the on-site contractor shall be

---

[1] In the five years between 1990 and 1994, seabeach amaranth surveys on Long Beach Island were only conducted during the 1991 and 1993 growing season. While seabeach amaranth was not detected on Long Beach Island during these two surveys, seabeach amaranth is present on adjacent Jones Beach Island and Rockaway Beach Peninsula.

[2]Seabeach amaranth may persist after November 1 depending upon temperatures and frost events.

[3] If seabeach amaranth is identified within the project area, the Corps will need to consult with the Service to ensure that the project will not be likely to adversely affect seabeach amaranth. Beach nourishment can adversely affect seabeach amaranth through direct placement of sand onto the plant species and construction machinery can crush plants and seeds. The effects of such impacts can result in mortality of individual plants and reduced or zero seed production.

directed by the Corps to immediately adjust or halt construction activities to eliminate the disturbance. The Corps shall, by close of business that day, contact the Service in regard to any such incidents.

10) The beach disposal area(s) in front of the dunes shall be finished to a natural grade and contour to maintain suitable nesting habitat for piping plovers.

11) The dredged material to be disposed of in the beach nourishment area shall conform with the already existing substrate on the beach or consist of material that is capable of maintaining suitable piping plover habitat.

12) The contractor and employees shall be adequately informed of Endangered Species Act concerns.

13) In order to assess the need for additional protective measures for piping plover and seabeach amaranth, the Corps shall ensure that the project area is surveyed for three seasons following initial project completion. The objectives of these surveys shall be to estimate the number of breeding pairs of plovers, to estimate overall productivity, and to estimate the number of seabeach amaranth plants. Yearly survey reports shall be sent to the Service by October 1 during each of the three years following initial project completion.

14) A stated secondary benefit of the proposed project will be the significant improvement of opportunities for recreational beach use. Increases in recreational use of beaches can also result in increased adverse impacts to piping plovers and seabeach amaranth that occur on these beaches. To avoid such impacts, the protection of piping plover and seabeach amaranth habitats shall be assured prior to project implementation. This shall occur by educating residents, landowners or beach managers of the management requirements discussed below, and, prior to project commencement, by seeking a written agreement from residents, landowners or beach managers for full cooperation with the Corps and the Service, or mutually agreed upon designated representatives (the New York State Department of Environmental Conservation, The Nature Conservancy, etc.).

A) Provide access to the project beaches to the Service, the Corps, or their mutually agreed upon designated representatives, to survey, monitor, post, and/or symbolically fence seabeach amaranth habitat and piping plover courtship, nesting, and brood rearing areas, and erect predator exclosures (as needed) for nests during the plover breeding season (April 1 to September 1). Access should be given during daylight hours on any day(s) of any given year at the required frequency to accomplish the purposes stated above.

The symbolic fencing may be placed in a 50 meter radius (approximately 163 feet) around plover nest sites, and in a 3 meter radius or zone around seabeach amaranth plant(s) where pedestrians, joggers, picnickers, fisherman, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers and their eggs and seabeach amaranth.

B) Prohibit off-road vehicular traffic, including all terrain vehicles, on the beach in accordance with the Service's April 15, 1994 Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act (see enclosure 1). Prohibit off-road vehicles from entering symbolically fenced seabeach amaranth areas during the growing season between May 1 and November 1.

C) Prohibit the removal of natural organic material deposited on the beach by the tides (wrack) during brood rearing in the areas used by plovers in order to preserve plover feeding habitat. Prohibit mechanical beach cleaning of any kind; however, trash and litter may be manually removed from the wrackline.

D) Prohibit fireworks on beaches where piping plovers nest from April 1 to September 1, or the date of last fledging.

E) Prohibit kite flying within 200 meters (approximately 656 feet) of territorial or nesting adults or unfledged juvenile piping plovers from April 1 to September 1.

F) Leash pets at all times from April 1 to September 1 on beaches in the action area where piping plovers are present because dogs and cats are common predators of piping plover eggs and chicks

G) Prohibit feeding of raccoons, gulls, or other wildlife to minimize predation on plovers.

15) In order for the Service to be kept informed of actions taken in regard to items discussed in section 14 above, the Service is requesting to be notified of the implementation of any of these measures.

With incorporation of these measures into the project plans, the proposed project would not be likely to adversely affect the piping plover or seabeach amaranth. Should these measures not be implemented throughout the life of the project, a biological assessment or further consultation pursuant to Section 7(a)(2) of the Endangered Species Act will be required to evaluate potential adverse effects of project implementation on the piping plover, seabeach amaranth, and their habitats, and to determine if formal consultation is necessary. Should project plans change or if additional information on listed or proposed species becomes available, this determination may be reconsidered.

Please have your staff contact Mr. Robert Murray, at my Long Island Field Office, at (516) 581-2941 should you have any questions or comments.

Sincerely,

for John T. Hickey

Sherry W. Morgan
Field Supervisor

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

February 23, 1995

Environmental Assessment Section
Environmental Analysis Branch

Ms. Sherry Jones
Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Ms. Jones:

The U.S. Army Corps of Engineers, New York District, has reviewed the final Fish and Wildlife Coordination Act Report (FWCAR) which your office prepared for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project dated February, 1995. We wish to take this opportunity to comment on the FWCAR.

Please refer to Enclosure 1 for our comments on the FWCAR and its Recommendations.

Should you have any question or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Attch.
cc: Murray-LIFO

NEW YORK DISTRICT COMMENTS TO THE FINAL FISH AND WILDLIFE COORDINATION ACT REPORT FOR THE ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY INLET, LONG BEACH ISLAND, NEW YORK STORM DAMAGE PROTECTION PROJECT

A. MITIGATION RECOMMENDATIONS

1. Beach Nourishment Area

1-7. As coordinated with your Long Island Field Office staff by way of their February 9, 1995 letter, if construction activities are accomplished within the piping plover nesting season (APRIL 1 TO SEPTEMBER 1), the New York District will institute a monitoring program designed to assure the protection of the piping plovers and least terns. The program shall consist of:

1. Pre-Construction Survey Phase - Prior to initial construction and future renourishment efforts, the Corps of Engineers in consultation with the USFWS will identify, delineate and symbolically fence previously utilized piping plover territorial, courtship, nesting, and brood rearing areas. Construction activities shall not occur within 300 feet of the posted areas. If no plovers/least terns are present within the posted by July 1, the Corps after consultation with the USFWS, may initiate construction activities within these areas.

2. Concurrent-Construction Survey/Monitor Phase - Beginning on April 1 or two weeks prior to any construction activity, and continuing September 1, or the date of last fledging (marking the conclusion of the piping plover season), The following survey/monitor activities shall be established:

   a. A Corps of Engineers biologist, or designated representative (monitor) will survey (identify and delineate bird use areas) for four days each week, not to exceed 2 consecutive days at any time, all action areas (landing, staging, beach placement, etc.) for the occurrence of territorial, courting or nesting piping plovers/least terns. If plovers/least terns are not detected in these areas, then surveying can be discontinued on July 1. When unfledged chicks are within 3,280 feet (1000 meters) of moving equipment, monitoring shall occur daily in those areas.

b. Surveying within the remaining sections of the project area shall occur at a frequency of one day per week. If plovers/least terns are not detected in these areas, then surveying can be discontinued on July 1. If plovers/least terns are detected in these areas, then the protocol described in **a.** above will be implemented. Symbolic fencing shall also be erected in these areas. When unfledged chicks are within 3,280 feet (1000 meters) of moving equipment, monitoring shall occur daily in those areas.

4. <u>Post-Construction Surveys</u> - For three seasons after initial project completion (until first nourishment cycle), New York District will survey shorebird use in the project area for the occurrence of territorial, courting or nesting piping plovers/least terns, on a biweekly basis for two consecutive days each time until nests are discovered. If nests are detected monitoring will become weekly and continue until all plover/tern chicks are fledged or lost. If no nests are established, by July 15, monitoring will be concluded.

5. <u>System of Notification</u> - The District shall notify the USFWS-Long Island Field Office within 25 hours, if plovers/terns are observed during any of the surveys. Maps shall be prepared to record all observations. The maps will be provided to the USFWS on a weekly basis. Information from this survey could be the grounds for recommendations on future maintenance work, as well as other similar dredging/beach nourishment projects that may occur along the south shore.

In the event that it appears that disturbance to the piping plovers/least terns cannot be avoided, the New York District will notify the USFWS, and the NYSDEC, by close of business that day. The on-site contractors shall be directed by the District to adjust or halt construction activities to avoid the disturbance to the extent practicable. Further consultation under the Endangered Species Act will be initiated.

The rehabilitation of the groins could also impact the plovers/least terns by disturbing possible nesting activities. To minimize the duration of these impacts, work is being scheduled as a single continuous action, to avoid a second season of impacts. Work is scheduled to begin in Fiscal Year 1998, and to be completed before the spring 1999 nesting season. In the event that work on the groins is extended into the breeding season, nesting sites would be identified and measures taken to isolate them from the contractor's work. The section of groins requiring repair is now underwater, therefore repair work on it would have minimum impact on plovers/least terns. However, the construction of the six (6) new groins near Point Lookout will occur on land. All previously discussed protective measures for beach placement activities will be instituted to minimize/avoid impacts.

Piping plovers/least terns that currently utilize the project area may experience possible **indirect** impacts as the result of increased human recreational activity. To reduce this impact, the New York District will approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of briefing them regarding the USFWS Protection Agreement and protective measures that could be employed to minimize future problems.

8. The New York District will notify the USFWS-LIFO if any of the above protection measures are implemented during the piping plover breeding season.

9. Standard dredging practices aim to avoid exposing and dredging sediment types that are of low benthic quality and are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized.

10. Dune construction includes approximately 29 acres of planting of American beach grass (_Ammophila breviligulata_) and 50,000 linear feet of sand fence for dune sand entrapment, as well as ramps and walkovers for access. The District's Planning Division, in consultation with the USFWS-Long Island Field Office, will oversee the placement of the beach grass plantings to avoid any potential impacts in piping plover and least tern nesting areas. The spacing of the plantings will be incorporated into the Plans and Specifications for the project.

11. Public access on the dunes will be restricted to only walkovers and handicapped entrances spaced approximately every one-half mile or less. Placement of public access routes will avoid known piping plover nesting areas.

2. Offshore Borrow Areas

1-3. The District is proposing to conduct a pre-dredge spring surf clam stock assessment similar to the protocol employed in the NYSDEC Bureau of Shellfisheries' Surf Clam Assessments (NYSDEC, 1992). The pre-dredge stock assessment will be used to identify areas of lower shellfish use within the borrow area and to develop a dredging plan that minimizes impacts to the shellfish resources. If areas of high shellfish use are identified, sufficient time will be available for the resource to be harvested before dredging begins. Discussion of other alternatives are currently being discussed with the NYSDEC. The District will also perform a post-dredge surf clam population survey.

Standard dredging practices aim to avoid disturbing and dredging sediment types that are of high benthic quality and that are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized. Also, as standard practice, the District tries to dredge borrow areas to the minimum depth required with gently sloping slides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

3. New Groin Construction

1. In addition to evaluating groin construction at the eastern end, the District examined sand only alternatives. The groin field is anticipated to reduce nourishment costs (See Feasibility Report Volume I, pages 29-32 & Volume II, Appendix A).

2. The six new groins at Lido Beach are designed with a low top elevation to encourage, not impede, sand transport to the down drift beaches (See Feasibility Report Volume I, pages 29-32 & Volume II, Appendix A).

B. MONITORING RECOMMENDATIONS

1. Beach Nourishment Area

1. The project calls for the placement of sand for 41,000 feet along Long Beach Island (from Point Lookout to East Atlantic Beach). The proposed borrow area contains sand that is similar to the native beach material. The borrow material will not contain silt and organic matter that is

associated with hypoxic or anoxic conditions. Pre-construction monitoring consists of a survey of beach profile lines, sediment sampling of the beach and borrow areas, aerial photography of the project area and biological samples collected along the beach and borrow area. To ensure the quality of the material placed, comparisons of various available sand sources were conducted. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment (See Volume II, Appendix H). The District will forward the results of the surveys to the USFWS-LIFO when they become available.

2. Offshore Borrow Area

1/2. See A-2, 1-3.

3. New Groin Construction

1/2. See A-3, 1-3.

C. ENDANGERED AND THREATENED SPECIES RECOMMENDATIONS

1. See A-1, 1-8.

References:

New York Department of Environmental Conservation. 1992 Atlantic Ocean Surf Clam Population Assessment. Report prepared by Bureau of Shellfisheries. July.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

February 15, 1995

REPLY TO
ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Ms. Marilyn E. Peterson
Regulatory Affairs
New York State Department of
Environmental Conservation
SUNY Campus, Building 40
Loop Road
Stony Brook, New York 11790

RE: 1-2899-00008/00001-0
Long Beach Island

Dear Ms. Peterson:

This is in reference to your January 18, 1995 letter (Enclosure 1) on the above referenced Water Quality Certificate Application. As requested please find the enclosed a set of plans for the proposed project. For any technical project particulars, please refer to Volumes I and II of the Draft Feasibility Report previously transmitted on December 28, 1994.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken P.E.
Chief, Planning Division

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

January 30, 1995

Environmental Assessment Section
Environmental Analysis Branch

Ms. Sherry Morgan
Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Ms. Morgan:

As requested by your letter dated January 25, 1995 and as pre-coordinated with Mr. Robert Murray of your Long Island Field Office (LIFO), the District will receive the Final Fish and Wildlife Coordination Act Report for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project by February 16, 1995. The change was requested due to the abundance of associated work with other Federal-related projects.

Should you have any question or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

cc: Murray-LIFO

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

January 25, 1995

Mr. Stuart Piken, P.E.
Chief, Planning Division
New York District, U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Attention: Peter Weppler

Dear Mr. Piken:

The U.S. Fish and Wildlife Service's (Service) Long Island Field Office is requesting a one month extension for submittance of the Service's Final Fish and Wildlife Coordination Act Report for the U.S. Army Corps of Engineers' Long Beach Island Storm Damage Reduction Project. A new due date of February 16, 1995, was informally agreed upon in a telephone conversation between Peter Weppler of your staff and Bob Murray of the Long Island Field Office. Please provide written confirmation of your decision to grant this extension.

If you have any questions or require further assistance please feel free to contact Nancy Schlotter or Bob Murray of my Long Island Field Office at (516) 581-2941.

Sincerely,

ACTING FOR Nancy J. Schlotter

Sherry Morgan
Field Supervisor

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

January 20, 1995

Environmental Assessment Section
Environmental Analysis Branch

Mr. William F. Barton
Chief, Consistency Review and Analysis Bureau
Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Re: **F-94-696**
Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Attention: Mr. Kevin Vienneau

Dear Mr. Barton:

This correspondence is to confirm the extension request of February 16, 1995 made by Mr. Kevin Vienneau of your staff for the DEIS comment period regarding the above-referenced project. The extension was required for Mr. Vienneu to fully coordinate your agency's comments.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11790-2356

Telephone (516) 444-0365
Facsimile (516) 444-0373

Langdon Marsh
Commissioner

January 18, 1995

Mr. Peter Weppler
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, NY 10278-0090

RE: 1-2899-00008/00001-0
Long Beach Island

Dear Mr. Weppler:

As per your request of December 28, 1994, the Department has assigned the above application number for the proposed storm damage reduction project for the Atlantic Coast of Long Island - Long Beach Island.

In order to initiate review, it is requested that you forward a set of plans to this office outlining the proposed project.

If you have any questions or require additional information, please contact me at (516) 444-0366.

Very truly yours,

Marilyn E. Peterson
Environmental Analyst I

MEP:jr
File

17 January 1995

Mr. Peter M. Weppler
U.S. Army Corps of Engineers
New York District
Jacob Javits Federal Building
New York, New York 10278-0090

Dear Mr. Weppler:

I am writing to request a copy of the **Draft Environmental Impact Statement - Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, NY Storm Damage Reduction Project** for review. This letter is in response to a notice in the Federal Register (Vol. 59, No. 244, Wednesday, December 21, 1994 p. 65764) that announced the availability of the above mentioned document for public review.

Please forward to the following address:

> **Andrew Haines**
> **ROY F. WESTON, Inc.**
> **Life Systems Department**
> **Building 5-1**
> **One Weston Way**
> **West Chester, PA 19380-1499**

I look forward to recieving this draft document for review. Thank you for your time concerning this request.

Sincerely,

Andrew Haines

Andrew Haines
Senior Project Scientist

corres21.95

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

December 28, 1994

Environmental Analysis Branch
Environmental Assessment Section

Mr. Robert Greene
Regulatory Affairs
New York State Department of
Environmental Conservation
SUNY Campus, Building 40
Loop Road
Stony Brook, New York 11790

Dear Mr. Greene:

The U.S. Army Corps of Engineers, New York District (District) wishes to initiate the application process for Section 401 Water Quality Certification concerning the proposed storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. A District letter dated May 13, 1994 (Enclosure 1), also requesting initiation of the application did not receive a response.

The New York District requests that your office review the enclosed copies of Volume I and II of the Draft Feasibility Report, which contains the Draft Environmental Impact Statement for the proposed project for the purpose of obtaining a Section 401 Water Quality Certificate. Please assign a file number and a permit coordinator to the subject project. We ask that the NYSDEC point of contact (POC) notify the District POC, Mr. Peter Weppler at 212-264-4663 once a file number is assigned.

If there are any questions concerning this matter, please contact Mr. Weppler of my office at the above telephone number.

Sincerely,

Stuart Piken P.E.
Chief, Planning Division

Enclosures

CC: Daley

Enclosure 1

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

May 13, 1994

Environmental Analysis Branch
Environmental Assessment Section

Mr. Robert Greene
Regulatory Affairs
New York State Department of
Environmental Conservation
SUNY Campus, Building 40
Loop Road
Stony Brook, New York 11790

Dear Mr. Greene:

The U.S. Army Corps of Engineers, New York District wishes to initiate the application process for Section 401 Water Quality Certification concerning the proposed storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. This project is necessary due to the continual erosion that is decreasing the width of beach and the loss of beach material during severe storms.

Long Beach Island, New York, a barrier island, is located on the Atlantic Coast of Long Island, between Jones Inlet and East Rockaway Inlet. The project study area lies within Nassau County, New York and is encompassed by the communities of Point Lookout, Lido Beach, the City of Long Beach and the Village of Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The study area is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel (Enclosure 1). A feasibility study is currently underway, which will result in an optimum plan to reduce storm damages in this area. It is likely that this plan will be a beachfill plan that would be periodically nourished. The beachfill plan would include a dune system at +15 feet NGVD. The purpose of the beachfill and nourishment would be to insure the integrity of the dune. Proposed sand sources would be from offshore borrow areas (Enclosure 2). In addition to beach fill, the plan includes rehabilitating some of the thirty (30) groins/jetties, and one of two closure alternatives near the Point Lookout end of the project, which we are currently evaluating: 1) sand fill taper and, 2) constructing six new groins. The plan also includes rehabilitating terminal groin at Point Lookout (Enclosure 3). The closure alternatives would be designed to

Enclosure 1

ameliorate the erosive condition at the Point Lookout/Lido Beach areas.

Upon receipt of this request, please assign a file number and a permit coordinator to the subject project. We ask that the NYSDEC point of contact (POC) notify the District POC, Mr. Peter Weppler at 212-264-4663 once a file number is assigned.

If there are any questions concerning this matter, please contact Mr. Weppler of my office at the above telephone number.

Sincerely,

Thomas [signature]

for Stuart Piken P.E.
Chief, Planning Division

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

December 28, 1994

Environmental Assessment Section
Environmental Analysis Branch

Mr. George R. Stafford
Director, Division of Coastal Resources
State of New York
Department of State
162 Washington Avenue
Albany, New York 12231-0001

Dear Mr. Stafford:

Pursuant to Section 307(c) of the Coastal Zone Management Act of 1972 as amended (16 U.S.C. 1456 [c]), the U.S. Army Corps of Engineers, New York District requests Consistency Determinations for the 19 State policies (Enclosure 1) applicable to the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project (Enclosure 2).

The New York District requests that your office review these findings and formally transmit your Consistency Determination to the District.

If there are any questions concerning this matter, please contact Mr. Peter Weppler of my office at (212) 264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enc.

NEW YORK STATE COASTAL MANAGEMENT PROGRAM
CONSISTENCY DETERMINATION

Project: Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project.

Applicant: U.S. Army Corps of Engineers, New York District.

Applicable Policies: Based on a review of the Coastal Management Program policies for New York, 18 were found to be potentially applicable to the proposed project. These policies are listed below.

Consistency Determination: Each of the 18 applicable policies were evaluated with respect to the project's consistency with their stated goals. The project has been found to be consistent with each policy.

POLICY 1 Restore, revitalize and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational and other compatible uses.

Determination: By restoring the project shoreline, the project would allow for the revitalization of the area's recreational beaches and waterfront areas (see DEIS Section 1.0) and protect the existing public infrastructure.

POLICY 2 Facilitate the siting of water dependent uses and facilities on or adjacent to coastal waters.

Determination: The existing recreational beach area is heavily utilized by the public as a water-dependent recreational facility and will be increased and greatly enhanced aesthetically by the proposed project.

POLICY 5 Encourage the location of development in areas where public services and facilities essential to such development are adequate.

Determination: The restoration of the project's shoreline is necessary and ideal for the location's already existing recreation and public services.

POLICY 7 Significant coastal fish and wildlife habitats will be protected, preserved and where practical, restored so as to maintain their viability as habitats.

Determination: There is one significant coastal fish and wildlife habitat listed in the New York State Department of State Public Notice within the project area, Nassau Beach. Nassau Beach is located approximately one mile west of Point Lookout. The beach is located within Nassau Beach County

Park, in the Town of Hempstead, Nassau County. The significant habitat consists of approximately 15 acres of sparsely vegetated dunes and the adjacent shell and pebble area inland and north of the dunes. Although the beach receives heavy recreational use during the summer months, the habitat area is generally located behind the open beach, and receives little disturbance. The Town of Hempstead actively posts and protects the area (NYSDOS, 1991).

The habitat area represents an undeveloped barrier beach ecosystem, a rare occurrence in Nassau County. However, development and use of the recreation areas has resulted in little degradation to the habitat.

This area serves an important nesting area for the State-listed endangered least tern (Sterna albifrons) and Federal-listed threatened piping plover (Charadrius melodus). In 1993, there were 6 piping plovers and 0 least terns down from 8 piping plovers and 148 least terns in 1992 (NYSDEC, 1994). The primary cause of the decrease in the number of nests is the severe erosion taking place at the project area.

Unregulated placement of dredged material would be detrimental to the habitat. However, for this project, a coordinated (with the USFWS, NYSDEC, and Town of Hempstead) survey/monitoring program will be instituted to insure the protection of the shorebirds. A secondary benefit of the proposed project would be the creation of more and enhanced shorebird habitat. Therefore, no significant negative impacts are anticipated to the shorebirds or their habitat.

POLICY 12 Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.

Determination: The project's major goals are storm dame reduction through the creation of a continuous dune system and widening of the existing. Borrow site selection incorporated data to identify areas of low benthic use in order to minimize offshore impacts to natural resources.

POLICY 13 The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.

Determination: The construction and maintenance of the erosion protection structures, (six new groins at Lido Beach, plus beachfill, with periodic renourishment and the rehabilitation of existing groins) for the selected NED plan will provide erosion control for the 50 year project life.

POLICY 14 Activities and development including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.

Determination: The construction and maintenance of the six new groins at Lido beach and the rehabilitation of the existing groins are expected to reduce erosion and will not cause any measurable increases in flooding while restoring the historical littoral drift.

POLICY 15 Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.

Determination: The potential for increased shoreline erosion on Long Beach Island due to dredging in the project borrow area (located approximately 1.5 miles offshore) was modelled by the Corps. Simulated modifications to the borrow area bathymetry were made to reflect post dredging conditions. The resulting calculated wave conditions were compared to pre-dredging conditions. No negative impacts were found (Harris, 1992)

POLICY 16 Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.

Determination: The public benefits outweigh the long term costs in that there will be a significant reduction in damages to the public beach, shorefront structures, buildings and wildlife habitat in the project area due to natural forces. The project is designed to provide storm damage protection in the shoreline areas located between Jones Inlet to the east and Yates Avenue to the west. A small degree of protection incidental to the design protection, would be provided west of Yates Avenue at the Village of Atlantic Beach.

POLICY 18 To safeguard the vital economic, social and environmental interests of the State and of its citizens, proposed major action in the coastal area must give full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas.

Determination: The proposed action would provide a means of protecting an important public recreational area and adjacent commercial and residential properties with minimal short-term impacts to natural resources.

POLICY 19 Protect, maintain, and increase the level and types of access to public water-related recreation resources and facilities.

Determination: The benefits of the proposed project include the protection, maintenance, and enlargement of the recreational beach area which will enhance the aesthetics of fully public accessible Long Beach Island.

POLICY 20 Access to publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.

Determination: Access to the publicly-owned lands already exists within the project area. The proposed project will continue to provide public access.

POLICY 21 Water dependent and water enhanced recreation will be encouraged and facilitated, and will be given priority over non-water related uses along the coast.

Determination: The construction of the six new groins at Lido Beach, the extension of the terminal groin at Point Lookout, and the beach nourishment plan will not only provide storm damage protection, but will greatly enhance water dependent recreation. Impacts associated with the placement of beach fill during the recreation period will not be significant as the work will be accomplished in sections to minimize the area of active disturbance.

POLICY 22 Development when located adjacent to the shore will provide for water-related recreation whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.

Determination: One of the secondary benefits of the proposed storm protection project is enhancing the Long Beach Island beachfront area. The proposed project does not include additional development of the upland area.

POLICY 24 Prevent impairment of scenic resources of statewide significance.

Determination: The proposed project will protect and enhance the Long Beach Island beachfront area, without adversely affecting the scenic resources (boardwalk) for which it is well known.

POLICY 25 Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance, but which contribute to the overall scenic quality of the coastal area.

Determination: The proposed action will protect the Long Beach Island beachfront from any further damage while restoring the existing beach to appropriate widths.

POLICY 35 Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing State dredging permit requirements and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands and wetlands.

Determination: The dredging will be undertaken in a manner consistent with the allowable practices. No significant fish and wildlife habitats will be impacted and the proposed sites will be chosen to minimize impacts. When the beach is nourished, wetlands (intertidal and littoral zones) will be minimally impacted. Wetland areas will recover shortly after the project completion.

POLICY 44 Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

Determination: After the initial beach nourishment disturbance (and the following renourishments), the intertidal areas and littoral zones will return to "before project" status.

References:

Harris, Frederick, R. Inc. 1992. Total Feasibility, Engineering, and Design - Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York - Detailed Investigation of Borrow Areas; prepared for the New York District.

New York State. Department of Environmental Conservation. 1994. <u>1992-93 Long Island Colonial Waterbird and Piping Plover Survey.</u> Unpublished. Preliminary Tables. May.

New York State. Department of State. 1987. <u>Public Notice: Significant Coastal Fish and Wildlife Habitats in Nassau and Suffolk Counties.</u> February.

New York State. Department of State. 1991. Division of Coastal Resources and Waterfront Revitalization and The Nature Conservancy. <u>(Draft) Long Island's Beach-Nesting Shorebird Habitat: Protection and Management of a Vulnerable Resource.</u>

STATE OF NEW YORK
DEPARTMENT OF STATE
ALBANY, NY 12231-0001

GAIL S. SHAFFER
SECRETARY OF STATE

December 28, 1994

Mr. Stuart Piken, P.E.
Chief, Planning Division
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278-0090

Re: F-94-696
COE/NY - Atlantic Coast of Long Island - Jones Inlet to East Rockaway Inlet, Long Beach Island Storm Damage Reduction Project

Dear Mr. Piken:

The Department of State acknowledges receipt on December 27, 1994 of the U.S. Army Corps of Engineers/New York District draft consistency determination, Draft Feasibility Report and Draft Environmental Impact Statement for the above-referenced project. As requested, the Department will provide its comments on these draft documents to you on or before February 13, 1995.

Pursuant to 15 CFR 930.41, the Department of State will commence its formal consistency review of this project upon receipt of the Final Environmental Impact Statement and your agency's final consistency determination with respect to the New York State Coastal Management Program. The Department's agreement or disagreement with your agency's consistency determination will be provided within 45 days of receipt of that documentation.

Please call Kevin Vienneau at (518) 474-6000 if you have any questions.

Sincerely,

William F. Barton

William F. Barton
Chief, Consistency Review
and Analysis Bureau
Division of Coastal Resources
and Waterfront Revitalization

WFB\dlb

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

December 27, 1994

Environmental Analysis Branch
Environmental Assessment Section

Dear Reviewer:

Enclosed is/are copy(ies) of Volume I of the Draft Feasibility Report, which includes the Draft Environmental Impact Statement (DEIS) for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York - Storm Damage Reduction Project. The DEIS will be filed with the U.S. Environmental Protection Agency, pursuant to National Environmental Protection Act (NEPA) of 1969 and the President's Council on Environmental Quality (40 CFR Parts 1500 - 1508). Your written comments to the DEIS are due forty-five (45) days from the date the Notice of Availability appears in the Federal Register, which is anticipated to be 21 December 1994 Your written comments can be directed to:

Mr. Peter M. Weppler
DEIS Coordinator
U.S. Army Corps of Engineers
CENAN-PL-EA
26 Federal Plaza
New York, New York 10278-0090

Volumes II of the Draft Feasibilty Report, in its entirety, is available upon request. All questions can be addressed to Mr. Weppler at 212-264-4663.

Sincerely,

Stuart Piken, P.E.
Chief, Planning Division

Enclosure

material that is important to two countries for construction, maintenance and rehabilitation of public and private facilities. The proposed action is intended to help satisfy the long-term demand for commercially-usable aggregate material in the region.

Because the action will require a permit under Section 404 of the Clean Water Act (as amended) and adverse individual culminative impacts to the aquatic ecosystem may result, the Corps has determined that the proposed action warrants an Environmental Impact Statement (EIS) pursuant to the National Environmental Policy Act.

A Joint Review Panel (JRP) consisting of the primary permitting agencies for the project has been formed to coordinate multi-agency review. The JRP includes representatives of the U.S. Army Corps of Engineers, California Division of Mines and Geology, and Country of Santa Barbara. The County of Santa Barbara will serve as the lead agency under the California Environmental Quality Act (CEQA). The environmental document will therefore be circulated as a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR).

ADDRESSES: U.S. Army Corps of Engineers, Regulatory Branch, 2151 Alessandro Drive, Suite 255, Ventura, California 93001.

FOR FURTHER INFORMATION CONTACT: Mr. Michael Jewell, (805) 641–0301.

DATE: Scoping comment period will expire January 20, 1995.

SUPPLEMENTARY INFORMATION:

1. Proposed Action

Southern Pacific Milling Company (SPMilling), has applied to the Corps of Engineers for a Section 404 individual permit to remove sand and gravel material from a 1.5-mile stretch of the Sisquoc River over the course of the next 20 years. The proposed mining plan has been designed to interface with the proposed Coast Rock Products Mining and Reclamation Plan on the Sisquoc and Santa Maria Rivers (see Federal Register 59 FR 2361).

In 1989, the California Division of Mines and Geology found that the largest concentration of construction-grade material in Santa Barbara and San Louis Obispo Counties (the service area) extends along the Sisquoc/Santa Maria river system from a narrow canyon in the Sisquoc Ranch to the ancient flood plain underlying the City of Santa Maria. Because much of this material is no longer accessible due to surface improvements or established land use, the most viable long-term sources have been identified to occur within and adjacent the Sisquoc and Santa Maria Rivers. The overall purpose of the proposed action is to mine high-quality, construction-grade aggregate (MRZ–2 classified) deposits within the service area for utilization of the resource for approximately 20 years and reclaim mined lands in accordance with the requirements of the California State Surface Mining and Reclamation Act (SMART).

The EIS/EIR for this proposal will be combined with the Coast Rock Products IS/EIR (currently in development) in one document. Since the SPMilling project site is situated between the upstream and downstream Coast Rock Products sites, it was determined that a combined document for both proposals would be appropriate and valuable in evaluating individual and cumulative impacts of these major operations on the river system.

2. Alternatives

At least the following alternatives will be considered: (1) No action; (2) applicant's preferred project; (3) off-site (outside the 100-year floodplain) mining; (4) mining in the river (within the 100-year floodplain) but not within Section 404 jurisdiction; (5) a reduced-scale project; and (6) alternative landuse/reclamation scenarios.

3. Scoping Process

a. Federal, state and local agencies and other interested private citizens and organizations are encouraged to send their written comments to Mr. Michael Jewell at the address provided in this notice. This scoping comment period will expire 30 days from the date of this notice.

b. Significant issues to be analyzed in depth in the Draft Environmental Impact Statement (DEIS) include hydrology/hydraulics, biological resources, water quality, cultural resources, air quality, transportation, groundwater recharge, noise, aesthetics, and socioeconomics.

c. Coordination will be undertaken with the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, California Department of Fish and Game, State Historic Preservation Office, and California Regional Water Quality Control Board.

d. The project will also be reviewed under the California Environmental Quality Act. A draft EIS/EIR will be published which will discuss both NEPA and CEQA issues.

4. Scoping Meeting

A scoping meeting has not been scheduled for the SPMilling proposal. A scoping meeting was held in January 1994 to identify potential issues relative to the Coast Rock Mining and Reclamation Plan. The same or similar issues will be germane to the proposal discussed herein.

5. DEIS Schedule

The current schedule estimates that the combined DEIS will be available for public review and comment in February 1995.

Kenneth L. Denton,

Army Federal Register Liaison Officer.

[FR Doc. 94–31330 Filed 12–20–94; 8:45 am]

BILLING CODE 3710–KF–M

Draft Environmental Impact Statement—Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, NY, Storm Damage Reduction Project

AGENCY: U.S. Army Corps of Engineers, New York District, DOD.

ACTION: Notice.

SUMMARY: The responsible lead agency is the U.S. Army Engineer District, New York. The entire project shoreline is approximately seven (7) miles long and includes the communities of Point Lookout, Nassau Beach, Lido Beach, and the City of Long Beach, within the Town of Hempstead, in Nassau County. The Department of the Army plan addresses issues of storm induced erosion and inundation by widening the existing beach with the placement of hydraulic fill, the rehabilitation of sixteen (16) of the existing groins at Long Beach, and the construction of six (6) new groins west of Point Lookout at Lido Beach. The plan is designed to maintain a 110-foot berm width along the shoreline between west of Point Lookout to approximately Yates Avenue where it would taper into the eastern portion of the Village of Atlantic Beach.

ADDRESSES: U.S. Army Corps of Engineers, New York District, Jacob K. Javits Federal Building, New York, New York 10278–0090.

FOR FURTHER INFORMATION CONTACT: Mr. Peter M. Weppler, DEIS Coordinator, (212) 264–4663.

SUPPLEMENTARY INFORMATION: The Department of the Army has recommended a plan for implementation, called the selected NED plan. This plan includes groin rehabilitation and new construction, beach fill with a proposed berm height of +10-feet NGVD, and a dune system with a height of +15-feet NGVD. The selected plan has an average berm width of 110-feet throughout the placement area and will not extend the beach west of Yates Avenue.

An offshore borrow area located approximately 1.5 miles south of the project area will be utilized as a sand source. In order to provide for initial construction and four subsequent renourishments over 50 years the selected NED plan would require 28.24 million cubic yards.

For the selected NED, the construction of the six new groins at Lido Beach will need approximately 100,000 tons of armor stone (6 to 9 ton range) and 30,000 tones of bedding stone. The stone volume required to rehabilitate the 16 groins at Long Beach is approximately 68,000, some of it reused from the existing groins.

Environmental impacts will occur at the placement site and the borrow area. The fill site will see short-term loss of limited benthic habitat, already severely stressed and disturbed, and minor short-term water quality effects. The borrow area will suffer short-term benthic losses that will be replaced by rapid recolonization, and minimal water quality impacts that will be limited to the immediate vicinity and time of evaluation. Due to the New York State Department of Environmental Conservation's Bureau of Shellfisheries concern regarding impacts to the surf clam (Spisula solidissma). The District is proposing to perform a pre-dredge surf clam survey to confirm the presence of commercially-viable surf clam beds within the project area at time of construction (1998) and develop, in conjunction with the Bureau of Shellfisheries, a contingency plan to harvest all areas before construction activity is initiated. Impacts to potential shipwreck sites in the borrow area will be avoided through the designation of buffer zones. The project will be constructed in sections which will minimize interference with the recreational use of the project area.

Kenneth L. Denton,

Army Federal Register Liaison Officer.

[FR Doc. 94-31437 Filed 12-20-94; 8:45 am]

BILLING CODE 3710-08-M

Army Science Board; Open Meeting

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), announcement is made of the following Committee Meeting:

Name of Committee: Army Science Board (ASB).

Date of Meeting: January 5, 1995.

Time of Meeting: 1400-1500.

Place: Pentagon, Washington, DC.

Agenda: The Army Science Board (ASB) C4I Issue Group will meet with the Sponsor (Acting Director of Information Systems for Command, Control, Communications and Computers) to discuss two pending Issue Group Studies (Information Warfare and Future Data Radio) and meet the chairperson for the studies. This meeting will be open to the public. Any interested person may attend, appear before, or file statements with the committee at the time and in the manner permitted by the committee. The ASB Administrative Officer, Sally Warner, may be contacted for further information at (703) 695-0781.

Sally A. Warner,

Administrative Officer, Army Science Board.

[FR Doc. 94-31261 Filed 12-20-94; 8:45 am]

BILLING CODE 3710-08-M

Army Science Board; Closed Meeting

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), announcement is made of the following Committee Meeting:

Name of Committee: Army Science Board (ASB).

Date of Meeting: January 12, 1995.

Time of Meeting: 0800-1700.

Place: Fort Sill, Oklahoma.

Agenda: The Army Science Board's Ad Hoc Study on Innovations in Artillery Force Structure will hold a meeting of the panel members. This meeting will be hosted by the Commanding General and Director of Combat Developments, U.S. Army Field Artillery Center, Fort Sill, Oklahoma. The primary purpose of the meeting is to present and discuss the final results from analysis conducted for this study by the TRADOC Analysis Center (TRAC) and research findings by individual members of the panel. The members will also finalize a report outline and timeline. It will consist of primarily classified briefings dealing with force structure initiatives, war plans, artillery related studies and analysis, and field artillery weapon systems. This meeting will be closed to the public in accordance with Section 552b(c) of title 5, U.S.C., specifically subparagraphs (1) and (4) thereof, and Title 5, U.S.C., Appendix 2, subsection 10(d). The classified, unclassified and proprietary information to be discussed will be so inextricably intertwined so as to preclude opening all portions of the meeting. The ASB Administrative Officer, Sally Warner, may be contacted for further information at (703) 695-0781.

Sally A. Warner,

Administrative Officer, Army Science Board.

[FR Doc. 94-31262 Filed 12-20-94; 8:45 am]

BILLING CODE 3710-08-M

Army Science Board; Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), announcement is made of the following Committee Meeting:

Name of Committee: Army Science Board (ASB).

Date of Meeting: January 19 and 20, 1995

Time of Meeting: 0900-1700, January 19 1995; 0900-1400, January 20, 1995.

Place: Pentagon, Washington, DC.

Agenda: The Army Science Board (ASB) Panel on "An Initial Review of the Army Office Development System—Present and Future" will review the panel's work to date, discuss the data on officers, and discuss future work. This meeting will be open to the public. Any interested person may attend, appear before, or file statements with the committee at the time and in the manner permitted by the committee. The ASB Administrative Officer, Sally Warner, may be contacted for further information at (703) 695-0781.

Sally A. Warner,

Administrative Officer, Army Science Board

[FR Doc. 94-31263 Filed 12-20-94; 8:45 am]

BILLING CODE 3710-08-M

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

Docket No. GT95-7-000]

Columbia Gulf Transmission Company; Proposed Changes in FERC Gas Tariff

December 15, 1994.

Take notice that on December 7, 1994 Columbia Gulf Transmission Company (Columbia Gulf), filed tariff sheets to its FERC Gas Tariff, Second Revised Volume No. 1 and Original Volume No 2, to become effective January 7, 1995, as shown on Appendix A to the filing.

Columbia Gulf states that it is filing to update the Table of Contents for both Second Revised Volume No. 1 and Original Volume No. 2 of its FERC Gas Tariff to reflect an accurate record of active and canceled X-Rate Schedules previously filed with the Commission.

Any person desiring to be heard or to protest said filing should file a motion to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street, NE., Washington, DC 20426, in accordance with rules 211 and 214 of the Commission's Rules of Practice and Procedure. All such motions or protests should be filed on or before December 22, 1994. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceedings. Any person wishing to become a party must file a motion to intervene. Copies of Columbia Gulf's filings are on file

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

December 14, 1994

Environmental Analysis Branch
Environmental Assessment Section

U.S. Environmental Protection Agency
ATTN: Office of Federal Activities
EIS Filing Section [Mail Code A-104]
Room 2119, Waterside Mall
401 M Street, S.W.
Washington, D.C. 20460

Dear Sir or Madam:

Enclosed are five (5) copies of the Draft Environmental Impact Statement (DEIS) that are contained in the Draft Feasibility Report, Volumes I and II for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York - Storm Damage Reduction Project. Pursuant to National Environmental Protection Act (NEPA) of 1969 and the President's Council on Environmental Quality (40 CFR Parts 1500 - 1508), the subject DEIS is being filed with your office for the purpose of issuing a Notice of Availability in the Federal Register.

The transmittal of Volumes I and II to commenting agencies has been completed and a Notice of the DEIS's Availability has been distributed.

Please contact Mr. Peter M. Weppler, DEIS Coordinator at 212-264-4663 if you require additional information.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

December 8, 1994

Environmental Assessment Section
Environmental Analysis Branch

Mr. David A Stilwell
Acting Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Mr. Stilwell:

The U.S. Army Corps of Engineers, New York District, has reviewed the draft Fish and Wildlife Coordination Act Report (FWCAR) which your office prepared for the proposed Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project dated April, 1994. We wish to take this opportunity to comment on the FWCAR.

Please refer to Enclosure 1 for our comments on the FWCAR and its Recommendations which are enclosed as Enclosure 2.

As coordinated with Mr. Robert Murray of your Long Island Field Office (LIFO), the District now expects to receive the Final FWCAR, originally scheduled for October 1, 1994, by January 20, 1995.

Should you have any question or comments, please contact Mr. Peter Weppler of my staff at (212) 264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Attch.
cc: Murray-LIFO

ENCLOSURE 1

NEW YORK DISTRICT COMMENTS TO THE DRAFT FISH AND WILDLIFE COORDINATION ACT REPORT FOR THE ATLANTIC COAST OF LONG ISLAND, JONES INLET TO EAST ROCKAWAY INLET, LONG BEACH ISLAND, NEW YORK STORM DAMAGE PROTECTION PROJECT

GENERAL COMMENT

On page 7, Section III, paragraph 3, the last sentence should be changed to "This includes 15 existing groins, three (3) which will be extended ≤ 30 feet. The remainder will be the same length or shorter.

A. MITIGATION RECOMMENDATIONS

1. Beach Nourishment Area

1. The project calls for the placement of sand 41,000 feet along Long Beach Island (from Point Lookout to East Atlantic Beach) that is consistent with the native beach material. The borrow material will not contain silt and organic matter that is associated with hypoxic or anoxic conditions. Pre-construction monitoring consists of a survey of beach profile lines, sediment sampling of the beach and borrow areas, aerial photography of the project area and biological samples collected along the beach and borrow area. To ensure the quality of the material placed, comparisons of various available sand sources were conducted. Post-construction monitoring will duplicate the preconstruction coastal monitoring efforts, plus add the deployment of a directional wave gauge with subsequent littoral climate measurement. Post-construction field work will be followed by lab and data analysis and summarized in reports. The proposed monitoring program will begin at the initiation of pre-construction efforts and continue for five years. Monitoring after the first nourishment will be reduced to annual aerial photographs and borrow area hydrograph surveys after each nourishment.

2. Dune construction includes approximately 29 acres of planting of American beach grass (*Ammophila breviligulata*) and 50,000 linear feet of sand fence for dune sand entrapment, as well as ramps and walkovers for access. The District's Planning Division, in consultation with the USFWS-Long Island Field Office, will oversee the placement of the beach grass plantings to avoid any potential impacts in piping plover and least tern nesting areas.

3. Public access on the dunes will be restricted to only walkovers and handicapped entrances spaced approximately every one-half mile or less. Placement of public access routes will avoid known piping plover nesting areas.

2. Borrow Areas

1. The District will conduct a pre-dredge spring surf clam stock assessment similar to the protocol employed in the NYSDEC Bureau of Shellfisheries' Surf Clam Assessments. The pre-dredge stock assessment will be used to identify areas of lower shellfish use within the borrow area and to develop a dredging plan that minimizes impacts to the shellfish resources. If areas of high shellfish use are identified, sufficient time will be available for the resource to be harvested before dredging begins. The District will also perform a post-dredge population survey.

2. Standard dredging practices aim to avoid exposing and dredging sediment types that are of low benthic quality and are not compatible with the sand at the placement area. Areas that contain material that is not consistent with the placement area, are not utilized.

3. The District, as is standard practice, tries to dredge borrow areas with to the minimum depth required and gently sloping slides to avoid a reduction or loss of circulation that may reduce dissolved oxygen (DO) levels.

3. New Groin Construction

1. In addition to evaluating groin construction at the eastern end, the District examined sand only alternatives. The groin field is anticipated to reduce nourishment costs.

2. The addition of six new groins at Lido Beach are designed with a low top elevation to encourage, not impede, sand transport to the down drift beaches.

B. MONITORING RECOMMENDATIONS

1. Beach Nourishment Area

1/2/3. The Corps does not agree that a nearshore monitoring program is necessary for the proposed, or any similar south shore of Long Island project. Further discussions between the District and the USFWS-LIFO after the Draft FWCAR was written resolved the disagreement regarding the monitoring at the placement site.

Results from studies (Courtenay, et al. 1972 and 1980, Parr, Diener and Lacy, 1978, Reilly and Bellis, 1978, Holland, Chambers and Blackman, 1980, Naqvi and Pullen, 1982) elsewhere around the country can be applied to this region as basic oceanic processes and ecological principles are involved. These studies indicate that during nourishment activities the habitat in the littoral zone is not lost, but displaced a short distance seaward of its former location.

The basic habitat characteristics such as; currents, substrate, depth and other physical/chemical factors remain the same, so the availability of a suitable habitat remains unchanged. The beach nourishment construction process itself is gradual, building up over months. Ample time exists for motile or even planktonic forms to be displaced outside the zone of direct impact (burial). Sessile organisms would be buried but should rapidly recolonize the extended zone as long as a suitable seed source is available from the adjacent areas. Added turbidity itself is of little effect in this already turbulent zone. Since the biota have already adapted to harsh conditions associated with the Atlantic Coast, recovery should be relatively quick. The nearshore region is a highly dynamic area which is accustomed to the amount of change experienced in nourishment operations.

We agree with your determination that specific information on the use of the nearshore zone in the New York Bight Region (including the New Jersey and Long Island Atlantic Coasts) is not readily available. The Corps is undertaking with your agencies cooperation, a major nearshore monitoring effort, in conjunction with the study of borrow areas, along the Atlantic Coast of New Jersey. The goal is to better understand the degree to which each habitat is utilized and how best one can enhance or possibly even direct the recovery of the resource for future projects. The results of this program will be very pertinent to Long Island projects, and will be utilized to the extent practical. However, all evidence and reasonable interpretations lead us to believe that impacts to the beach site will be short-term and minimal, while returning the area to previous conditions. In the light of the absence of evidence to the contrary and with concurrence from NMFS and USFWS-LIFO, monitoring of the beach placement site will not be included in the project.

2. Offshore Borrow Area

1/2. See A-2-1.

3. New Groin Construction

1/2. See A-1-1.

C. ENDANGERED AND THREATENED SPECIES RECOMMENDATIONS

1/2. If construction activities are accomplished within the piping plover nesting season (APRIL 1 TO SEPTEMBER 1), the District will institute a monitoring program designed to assure the protection of the piping plovers and least terns. The program shall consist of:

1. <u>Pre-Construction</u> <u>Survey</u> <u>Phase</u> - Two weeks prior to

any construction activity, a Corps biologist, or designated representative (monitor) will survey (identify and delineate) bird use areas for two days each week, all action areas (landing, staging, beach placement, etc.) for the occurrence of territorial, courting or nesting piping plovers/other shorebirds (terns, oystercatchers, etc.) though not the primary target will be noted as well.

2. Concurrent-Construction Survey/Monitor Phase - This phase shall continue the Pre-Activity Phase survey work through July 1 at a frequency of two days per week, 9 hours each day (2 days/week/9 hours/day). The 9 hour a day component will insure that the monitors will make observations during the complete tidal cycle. If any piping plovers are detected at any time during the survey, a monitoring component, consisting of observing and providing protection to the plovers from any of project activities, will be implemented. Fencing and/or exclosures will be utilized when appropriate to protect the nests until hatching. When the chicks begin to feed, the monitor will direct the contractor away from the chicks and, if necessary, temporarily stop construction in the feeding area. Also, if disturbance is deemed a potential threat, the frequency of the survey/monitoring activities will be increased to effectively monitor the plover chicks for the duration of such construction activities. Monitoring shall continue until completion of the initial project construction but not beyond September 1 or the date of the last fledged chick, which ever occurs first.

3. Posting and Buffer Zone Establishment - Courtship areas, nests, and brooding areas, shall be posted immediately (under the monitor's supervision) and no disturbance shall be permitted within 300 feet of the posted area if there is sufficient work space available. If there is not sufficient space available for the buffer zone, the District in consultation with the USFWS will establish a buffer zone appropriately scaled to the available space. Posting of courtship areas shall not be required beyond July 1. The posted areas shall be updated during the survey, if necessary. Monitors shall document any plover movement into the construction activity area to determine the effectiveness of the buffer.

4. Post-Construction Surveys - The District will, for three seasons after initial project completion (until first nourishment cycle), survey shorebird use in the project area for the occurrence of territorial, courting or nesting piping plovers, on a biweekly basis for two consecutive days each time until nests are discovered. If nests are detected monitoring will become weekly and continue until all plover chicks are fledged or lost. If no nests are established, by July 15, monitoring will be concluded.

5. System of Notification - The District shall notify

in 24 hours, the USFWS-Long Island Field Office, if plovers are observed during any of the surveys. After consultation between the USFWS and the District, the monitor shall make any revisions necessary to better protect the plover population that is present (such as alerting and instructing the Contractor on a course of preventive action). The monitor shall make necessary adjustments to the minimum survey/monitoring component during the brood rearing stage to ensure that the weekly and daily observation frequency adequately documents the mobility of the individual broods and to adjust the posted brood rearing areas. A field note book shall be used to record all observations. It will be provided to the USFWS at pre-agreed time intervals. USFWS, in cooperation with the District and state/local experts, may modify the survey based on site specific conditions to avoid any adverse affects and to adjust it (including relaxation of the restriction) to the bird's needs as they develop. This information could be the grounds for recommendations on future maintenance work, as well as other similar dredging/beach nourishment projects that may occur along the south shore.

In the event that it appears that disturbance to the piping plovers/least terns cannot be avoided, the District will notify the USFWS, and the NYSDEC, by close of business that day. The on-site contractors shall be directed by the District to adjust or halt construction activities to avoid the disturbance to the extent practicable. Further consultation under the Endangered Species Act will be initiated.

The rehabilitation of the groins could also impact the plovers by disturbing possible nesting activities. To minimize the duration of these impacts, work is being scheduled as a single continuous action, to avoid a second season of impacts. Work is scheduled to begin in Fiscal Year 1998, and thus be completed before the spring 1999 nesting season. In the event that work on the groins is extended into the breeding season, nesting sites would be identified and measures taken to isolate them from the contractor's work. The section of groins requiring repair is now underwater, therefore, repair work on it would have minimum impact on plovers. However, the construction of the six (6) new groins near Point Lookout will occur on land. All previously discussed protective measures for beach placement activities will be instituted to minimize/avoid impacts.

g. Piping plovers that currently utilize the project area may experience possible **indirect** impacts as the result of increased human recreational activity. To reduce the impact of this action, the District will seek to approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of obtaining concurrence of the State and local municipalities on the USFWS Protection Agreement and protective measures that could be employed to minimize future problems.

3. The District concurs. Slopes were developed consistent with the natural contour.

4. See A-2-2.

5. To reduce the possible **indirect** impact of this action, the District will seek to approach the City of Long Beach, Town of Hempstead, and New York State, with the intention of briefing them on the USFWS Protection Agreement.

6. The contractor will be briefed on the Endangered Species Act of 1973, as amended.

7. The USFWS-LIFO will be given proper notification regarding initiation and completion of each placement cycle.

8. The area will be surveyed or the data collected from local agencies regarding the presence or absence of piping plover.

REFERENCES CITED

Courtenay, W.R., Jr., et al. 1972. Ecological Monitoring of Two Beach Nourishment Projects in Broward County, Florida. Journal of Shore and Beach, Vol. 40, No. 2, 8-13 pp.

Courtenay, W.R., Jr., Hartig, B.C. and Loisel, G.R. 1980. Evaluation of Fish Populations Adjacent to Borrow Areas of Beach Nourishment Projects at Hallandale (Broward County), Florida, Vol. 1. Prepared for: USACOE, CERC. 23 pp.

Holland, T.H., Chambers, J.R. and Blackman, R.R. 1980. Effects of Dredging and Filling for Reach Erosion Control on Fishers in the Vicinity of Lido Key, Florida. Prepared for: USACOE, Jacksonville District.

Naqvi, S.M. and E.J. Pullen. 1982. Effects of beach nourishment and borrowing on marine organisms. MR No. 82-14. Prepared for: USACOE, CERC. 43 pp.

Parr, T., Diener, E. and Lacy, S. 1978. Effects of Beach Replenishment on the Nearshore Sand Fauna at Imperial Beach, California. MR 78-4. Prepared for: USACOE, CERC.

Reilly, F.J., Jr. and V.J. Bellis. 1978. A Study of the Ecological Impact of Beach Nourishment with Dredged Materials on the Intertidal Zone. Institute for Coastal and Marine Resources Technical Report No. 4. East Carolina University, Greenville, NC. 107 pp.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

August 8, 1994

Environmental Analysis Branch
Environmental Assessment Section

Mr. J. Winthrop Aldrich
Deputy Commissioner for Historic Preservation
New York State Office of Parks, Recreation,
and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island
P.O. Box 189
Waterford, New York 12188-0189

Dear Mr. Aldrich,

This letter is in reference to a letter dated June 14, 1993 regarding the Long Beach Erosion Control Project, Long Beach Island, Nassau County, New York, 92PR2416 (Enclosure 1). Since that time, additional information on the project and concerning cultural resources in the project area has been gathered.

As described in the original letter, the proposed erosion control project consists of the placement of sand dredged from an offshore borrow area onto Long Beach Island. The dune and berm fill will be placed along approximately 41,000 feet beach from Point Lookout to East Atlantic Village, but not including the Village of Atlantic Beach. In addition to beach fill, the construction of six new groins, with an average footprint of approximately 60 feet, is proposed for Lido Beach. The groins will be placed across 6000 feet of beach and spaced approximately 1200 feet apart. The new groins will be approximately 700 feet long. Fifteen existing groins at Long Beach will be rehabilitated as part of the project. The outer end of the terminal groin at Point Lookout will also be repaired.

The cultural resources study prepared as part of this project determined that no properties on the National Register of Historic Places (NRHP) and no NRHP sites were located on the onshore portion of the project area (Enclosure 2). The U.S. Army Corps of Engineers, New York District (Corps) concluded that this project would have no effect on historic properties located onshore (Enclosure 1). Your office concurred with this decision (Enclosure 3).

The cultural resources study also examined the area for shipwrecks and other sites to be located within the near shore placement area and the offshore borrow area. The study identified a number of ships listed as wrecked in the Long Beach Island area. In addition, marine charts of the project area showed two wrecks within the near shore sand placement zone in the Lido Beach and Point Lookout areas. Subsequent coordination with a local diver has identified one of these wrecks as the *Mexico*, which, according to the cultural resources study, was carrying a cargo of bar iron, coal, and 111 passengers when she was wrecked in 1837. The western wreck is unknown and thought to be buried. Two other wrecks were also identified by local divers: a small tug boat to the east of the *Mexico* and a barge at the extreme west point of Atlantic Beach. Additional cultural resources work will include an underwater inspection of all four wrecks to determine their eligibility for the NRHP. This work will be coordinated with your office.

The cultural resources study also identified the potential for the remains of the 1873 transatlantic cable to be located within the near shore portion of the project area between Edwards and Riverside Boulevards in Long Beach. Groin construction will take place in the area of Lido Beach to the east of Long Beach and will not disturb any remains of the cable. Similarly, the rehabilitation of existing groins at Long Beach or the placement of sand in this area will not disturb any remains of the cable. No additional work is planned for this site.

The remote sensing survey of the offshore borrow area will also be conducted as part of the next phase of the cultural resources activities. The Corps will coordinate the results of this work and the underwater inspections with your office when this work is underway.

If you have any questions, please contact Ms. Nancy Brighton, Project Archaeologist, (212)264-4663.

Sincerely,

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

Enclosures

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

Enclosure 1

REPLY TO
ATTENTION OF

14 June 1993

Environmental Analysis Branch
Environmental Assessment Section

Ms. Julia S. Stokes
Deputy Commissioner for Historic Preservation
New York State Office of Parks, Recreation, and
Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island
P.O. Box 189
Waterford, New York 12188-0189

Dear Ms. Stokes,

The New York District, Corps of Engineers (Corps), has been authorized to construct a beach nourishment project along the length of Long Beach Island, Nassau County, New York (Figure 1). This project is needed to replace portions of the beach that have undergone severe erosion and to protect existing development from further erosion. The current project area includes the shore and near-shore sand placement area as well as an offshore borrow area located approximately 2000 feet south of the eastern end of Long Beach Island (Figure 1 and 2). The proposed project will not impact the salt marshes situated on the northeast side of Long Beach Island.

Current project plans call for the placement of sand dredged from the offshore borrow site to be placed on Long Beach Island. This material will be placed above the mean high water mark to widen the beach berm to a width of 110 feet and to construct dunes in certain areas. Two portions of Long Beach Island, the westernmost portion of Atlantic Beach and a section of Lido Beach, are not being considered as part of the initial nourishment project, although they will be included as part of the subsequent maintenance cycle. As the project is currently scheduled, the beach maintenance program will last for 50 years, with beach nourishment occurring every five years.

Two structures, the Granada Towers and the U.S. Post Office, are listed on the National Register of Historic Places (NRHP). One private residence located on Washington Boulevard is listed on the historic structures inventory maintained by the New York State Office of Parks, Recreation, and Historic Preservation because it is considered to be one of the first private homes built in Long Beach. None of these structures will be affected by this project.

To determine if there were any other potentially NRHP eligible properties located within the project area, the Corps had a cultural resources study prepared as part of this project (Attachment 1). An extensive history and prehistory of the Long Beach Island area was compiled and a pedestrian survey was also conducted for this report. This study found that there were no prehistoric/contact period occupations or archaeological sites on Long Beach. In addition, the location of the 19th and early 20th century structures would be located north of the present beach zone and that no significant remains of the project area's history would be located at the site of the present beach. Since the proposed project involves the deposition of sand, no sites will be disturbed.

The cultural resources study also examined the potential for shipwrecks to be located in the near-shore placement area and the offshore borrow area. Marine charts of the project area show two wrecks within the near-shore sand placement zone in the Lido Beach/Point Lookout areas. These wrecks, however, are not listed on the National Oceanic and Atmospheric Administration's (NOAA) Automated Wreck and Obstruction Information System (AWOIS) listing for the project area. Mark J. Friese, Hydrographic Surveys Branch, NOAA, stated that the AWOIS is often not updated to include information from their charts. There is the potential, then, for the two wrecks to be located in the eastern section of the project area. An underwater investigation of the near-shore area in the vicinity of the two wrecks will be conducted during the next phase of the project.

A number of marine accidents or wrecks have occurred within and near the borrow site. In the next phase of this project, the Corps is planning to conduct a remote sensing survey of the proposed borrow area to determine if any wrecks are present.

On the basis of current project plans and pending review by your office, the Corps is of the opinion that the "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, Nassau County, New York Beach Nourishment Project" will have no effect on historic properties located onshore. Please provide us with Section 106 comments for the onshore portion of this project as pursuant to 36 CFR 800.5.

The remote sensing survey of the borrow site using a magnetometer and side scan sonar will be conducted as part of the next phase of the project. In addition, an underwater survey of the near-shore area in the location of the two wrecks will also be conducted. The results of these surveys will be coordinated with your office when this work is completed.

If your or your staff have any questions or require further information about this project, please contact Ms. Nancy J. Brighton, Project Archaeologist, (212)264-4663. Thank you for your assistance.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Attachments

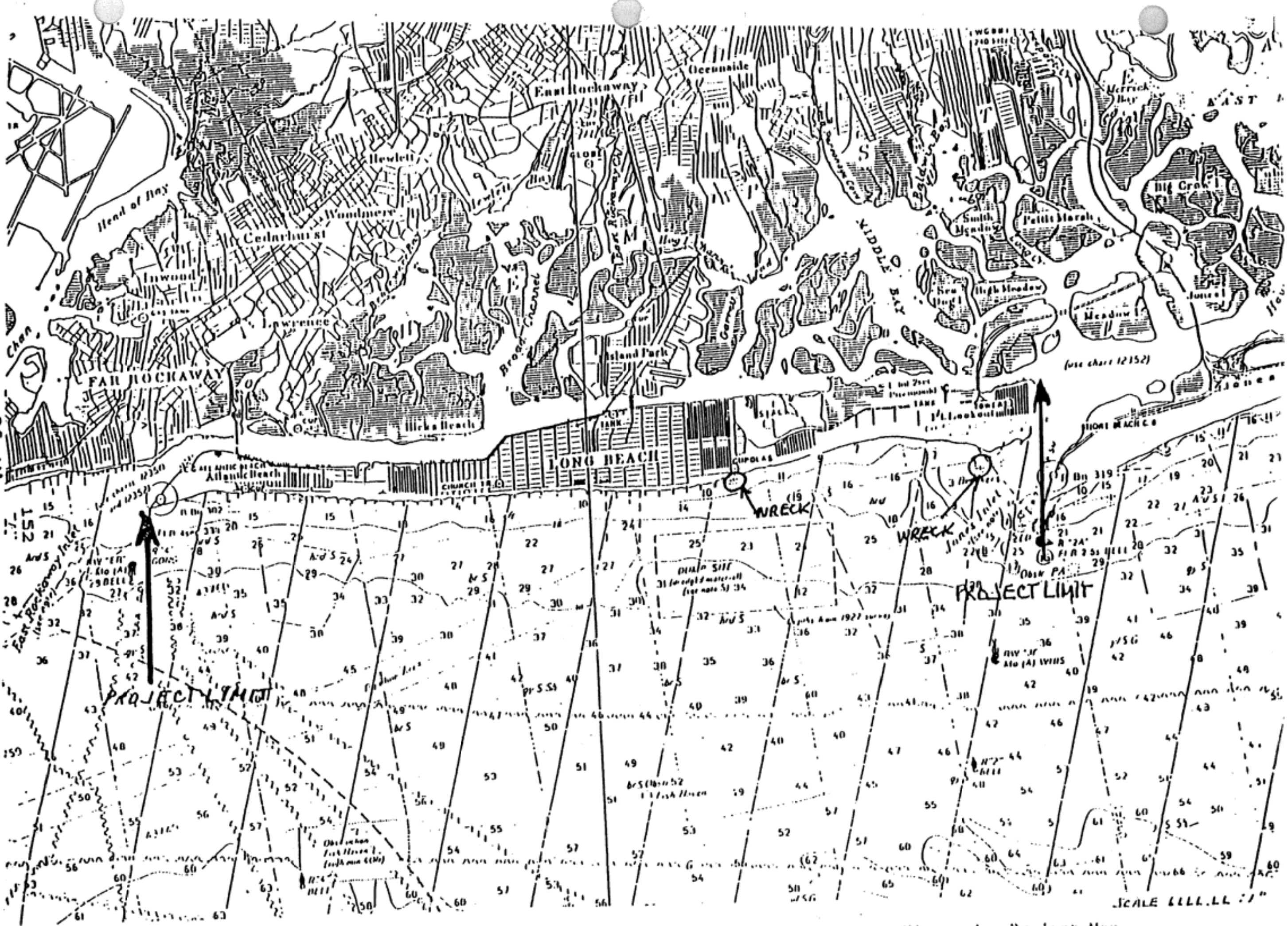


Figure 1: Project Map
Long Beach Island, Nassau County,
New York.

PC-14

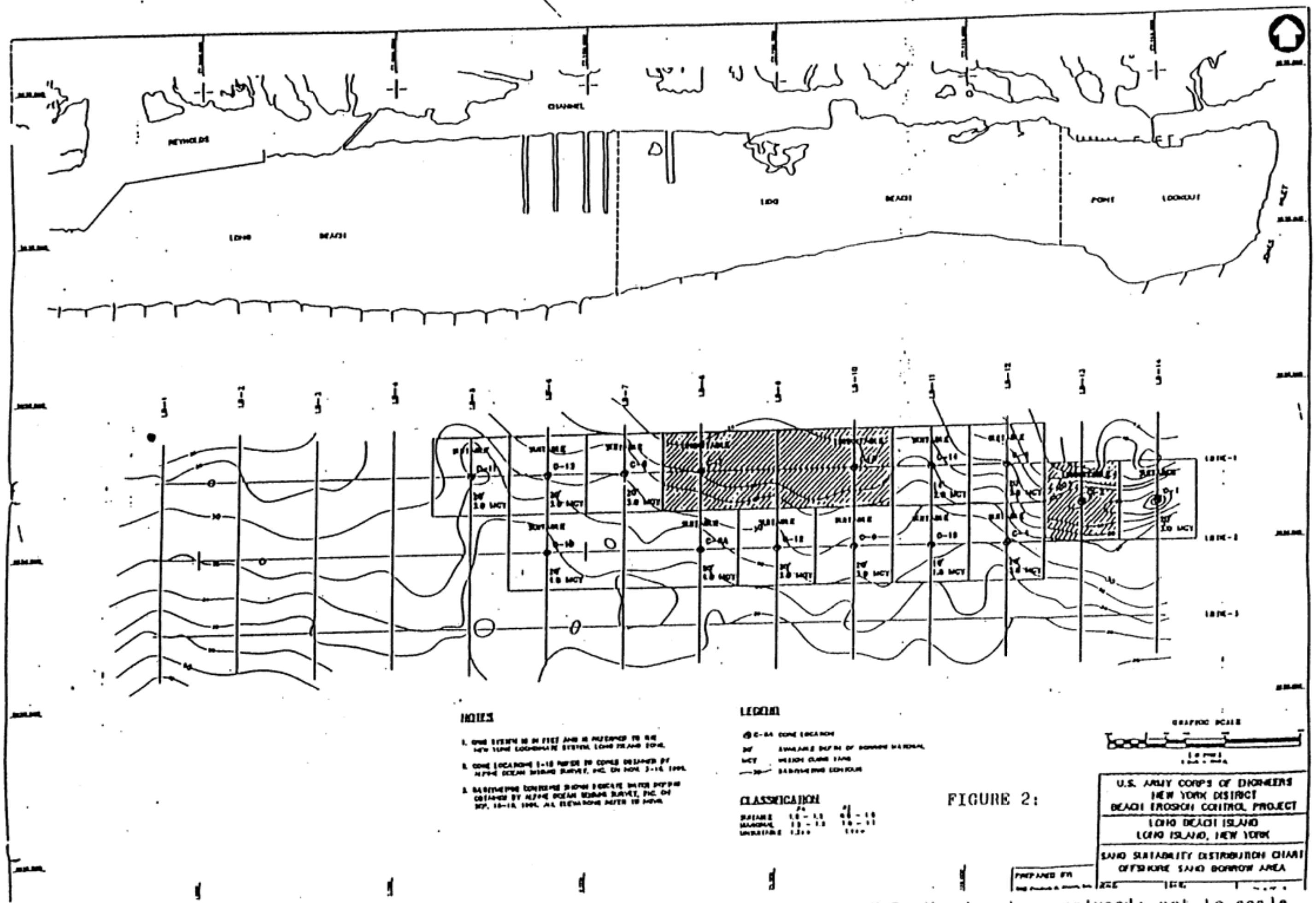


FIGURE 2:

N.B. Map has been reduced; not to scale.

Enclosure 2

CULTURAL RESOURCES RECONNAISSANCE
ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
CITY OF LONG BEACH, VILLAGE OF ATLANTIC BEACH,
LIDO BEACH AND POINT LOOKOUT AREAS, TOWN OF HEMPSTEAD
LONG BEACH ISLAND
NASSAU COUNTY, NEW YORK

by
Arnold Pickman

Submitted to:
U.S. Army Corps of Engineers
New York District

June 1993

Work Performed Under Contract No. DACW51-92-M-0636

Arnold Pickman

Arnold Pickman
Principal Investigator

PC-16

Enclosure 3

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189 518-237-8643

Orin Lehman
Commissioner

June 23, 1993

Mr. Bruce A. Bergmann
Chief, Planning Division
Department of the Army
Corps of Engineers
New York District Office
Jacob K. Javits Federal Building
New York, New York 10278-0090

Dear Mr. Bergmann:

Re: CORPS
Long Beach Erosion Control
Long Beach Island, Nassau County
92PR2416

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the Cultural Resources Reconnaissance Report in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO concurs with the recommendations of the the report. It is the opinion of the SHPO that no further investigations are warranted for the on-shore area of the project. We look forward to receiving the results of the surveys of the off-shore borrow areas when that work is completed.

If you have any questions, please call James Warren of our Project Review Unit at (518) 237-8643 ext. 280.

Sincerely,

Julia S. Stokes
Deputy Commissioner for
Historic Preservation

JSS/RDK:gc

PC-17

Wippler

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

August 5, 1994

Planning Division
Navigation & Coastal Section

The Honorable Earlene Shipper
Mayor Village of Atlantic Beach
65 The Plaza
Atlantic Beach, NY 11509

Dear Mayor Shipper:

Please reference a recent meeting regarding the feasibility study and potential storm damage reduction plans for the barrier island of Long Beach, NY. A copy of the record of the meeting is attached. Also, enclosed are drawings of the potential plans for the Village of Atlantic Beach.

The tentatively selected plan for the barrier island includes a dune at an elevation of +15 ft. NGVD and protective beach berm 110 ft wide with a gradual slope to match the existing bathymetry. The plan also includes rehabilitation of 15 of the existing groins and a new series of 6 groins in the vicinity of Lido Beach. Based upon previous coordination between Mr. Clifford Jones of my staff, and your office, the proposed project extends from Point Lookout westward to about Yates Avenue where it would taper into the eastern portion of the Village of Atlantic Beach. This will avoid conflicts of public accessibility and potential obstruction of view to the beach, which have been the voiced concerns from your constituent. However, please note that if the project is implemented, the Village will not be provided the same degree of protection as the remaining areas along the barrier island. I need to know if this is acceptable.

During the plan formulation for the project, an alternative plan was considered for storm damage protection for the Village. This considered plan for Atlantic Beach would consist of a dune at elevation +15 ft. NGVD (consistent with the other project areas) with periodic nourishment of the existing beach as necessary to ensure the integrity of the design. This plan was chosen since it is essential to provide a barrier at a high enough elevation that will reduce the storm surge run-up. Currently the shore front area in the Village exhibits wide beaches which have higher elevations than most of the remaining barrier island beaches so additional beach berm design is unnecessary.

Please review the enclosed plan sheets which show the general alignment of the considered dune for Atlantic Beach and provide comments, if any. It is important that we get a firm grasp of your intentions before we submit our recommendations for higher authority review. Therefore, it is requested that you provide, in writing to me and Mr. Roman Rakoczy of the NYSDEC, a definitive position of the desires of the Village of Atlantic Beach prior to submission of the draft report, which is scheduled for the end of September 1994. My staff will continue coordination with your office. Your cooperation in this matter is greatly appreciated.

Stuart Piken

Stuart Piken, P.E.
Chief, Planning Division

cc:
NYSDEC/Rackoczy
Town of Hempstead/Aiello
Nassau County/Cosgrove

CENAN-PL-FN 25 July 1994

MEMORANDUM FOR THE RECORD

SUBJECT: Long Beach Island, New York

1. A meeting was held on 15 July 1994 between representatives from the ACOE, NYSDEC, City of Long Beach, Town of Hempstead, Nassau County and the Village of Atlantic Beach. An attendance list is attached (see attachment 1).

2. The study schedule to construction of the project was discussed. It was noted that the preparation of the draft feasibility report was delayed, but is anticipated to be submitted to NAD in September 1994. The remaining schedule to complete the feasibility phase has been accelerated so that the remaining schedule is not altered (ie. the final report will still be submitted in Feb 95). Subsequent to the feasibility phase, a Design Memorandum (DM) is to be prepared which would solidify the recommendations of the feasibility study. The DM would include cultural investigations of the borrow area and other pertinent details of the project design and fill material. The DM will be followed by Plans and Specifications and then construction. A tentative schedule was presented as a hand-out (see attachment 2). The NYSDEC representative stated that the schedule anticipates an April 1998 construction start, and further noted that this start date is not likely since the State is budgeting for a 1998 start (the State Fiscal year begins in April). It was agreed that the schedule would be modified to show a July 1998 construction start to allow time for the availability of non-Fed funds; however, it was also noted that the schedule shown could be accelerated based on the actual time to complete and review the DM and P&S.

3. The formulation of the plan(s) was briefly discussed, and as had been discussed at previous meetings, the emphasis of the analyses centered around 9 beachfill alternatives. The discussion on alternatives had been presented in the P-4A Technical Review submission dated August 1993 which was previously distributed to the members of the study team.

4. Based on the economics of the 9 alternatives considered, the tentatively selected plan is similar to the plan recommended in the recon report. The characteristics of this plan are noted below:

- 110 ft. beach berm at elevation +10 ft. NGVD.
- dune at +15 ft. with a top width of 25 ft. landward and seaward slopes of 1H:5V;
- 15 to 25 ft buffer zone landward of the landward toe of the dune for vehicle access and maintenance;
- dune grass planting and fencing to ensure the integrity of the dune;
- dune walkovers and vehicle access ramps;

- 6 additional groins west of the 3 easternmost groinfield approximately 1200 ft apart;
- rehabilitation of 15 existing groins.
- advanced nourishment to ensure the design integrity; average width of 50 feet;
- periodic nourishment of 2,111,000 cy every 5 years.

5. Based on coordination with the State and local governments, the plan for Long Beach Island does not include improvements in the Village of Atlantic Beach. However, in order to visualize a potential plan for this area, one plan was selected. This plan includes a protective dune system with a top elevation at +15 ft NGVD fronting the beach in this area which would tie into the selected dune for the remaining areas along the barrier island. Should the Village of Atlantic Beach request (or be requested) to participate in the plan, a separate analysis must be done to ensure that the plan is optimized and/or cost differential would be developed if local interests desire a different plan. Village representatives acknowledge that these beaches are wider and higher than most other areas on the island and that these beaches are the recipients of much of the sand that is transported along the barrier shoreline. The Corps representatives explained that although wide beaches are not needed, additional height as can be provided by a dune would be needed to provide protection from storms with surges and wave runup that exceed existing beach elevations. Mayor Shipper requested that the Corps of Engineers send a letter to the Village spelling out their options and to provide specific information on any plan of protection considered.

6. A designated offshore borrow source has been proposed for use for beachfill. There are two remaining issues regarding the borrow area:

(1) Environmental - NYSDEC has indicated that there is a clam population that exists in the proposed borrow area, which would be impacted by dredging. Environmental Branch is coordinating with NYSDEC and will provide documentation of the coordination in the EIS.

(2) Cultural - A literature search was conducted of the impacts of the proposed project. The investigation did not note any wrecks in the borrow area; however, it was recommended that a remote sensing survey be conducted. The remote sensing is scheduled to be done in the Design Memo, and if anomalies are found, there is sufficient material available that they can be avoided. Of the 34,000,000 cy available, 8,642,000 is needed for initial construction.

CENAN-PL-FN
SUBJECT: Long Beach Island, New York

7. The duration of construction is estimated to be 2 years, at an estimated cost of $67 million. Environmental Branch will coordinate with Federal and State agencies to obtain concurrence for an uninterrupted construction schedule. As discussed, if this is not possible, the project cost will increase.

8. Lastly, the issue of public access was discussed. The State was asked to reply to our request to coordinate with the local governments and submit a plan which details the existing and future (with project) access to the beaches in the project area. The plan must include available transportation and parking as well as the fee structure(s) of the various beaches along the barrier island. It is preferable to use color coding to denote:

- -private areas (no access)
- -open to the public with differential fees (i.e. $4 for residents; $12 for non-residents);
- -open to all at the same rate.

9. The state and local interests were asked to review the project plans and to provide any comments as soon as possible. It is estimated that a preliminary draft of the feasibility report would be available around mid-August. We agreed to meet again in late August or early September to discuss the comments or any concerns raised, so that revisions could be incorporated in the draft feasibility report to be sent for review to Corps higher authority by 30 September 1994.

CLIFFORD S. JONES
Project Manager

2 Encls
1. Attendance List
2. Schedule

Concurred by:
Thomas Pfeifer
Chief, Navigation & Coastal Section

ATTENDANCE - Long Beach Mtg - July 15, 1994

Clifford Jones	Project Manager ACOE	212-264-9079
Tom Harnedy	Programs/Proj Mgmt. ACOE	(212)264-2461
Roman Rakoczy	Project Manager NYSDEC	518-457-3158
Nancy Antonius	N.C. Dept of Rec+Pks	516-572-0228
Nat Etrog	Trustee, Village of Atlantic Beach	(516) 371-4000
[illegible]	Mayor, " " " "	" " "
Joe Vietri	Asst. Chief Planning Div.	212-264-9219
Peter Weppler	Biologist - ACOE	212-264-4663
Diane Rahoy	hydraulic engineer - ACOE	212-264-9091
Thomas Pfeifer	Chief, Navigation & Coastal Section - ACOE	212-264-9077
Lynn M. Bocamazo	hydraulic engineer - ACOE	212 264-9083
Robert Ranti	City of Long Beach - Engineer	516 431-1000 x262
Tom Doherty	Town of Hempstead	516-897-4133
Edwin L Eaton	City of Long Beach	516-431-1000

Schedule

Assuming that Federal funds are appropriated so that the District can immediately proceed to the PED phase after the Public Notice is issued, the forecast milestones subsequent to the feasibility phase are as follows:

Complete Feasibility Phase	*Mar 1995*
Initiate preparation of Design Memo	*Apr 1995*
Submit Design Memo to NAD (DM forwarded to HQUSACE for concurrent review)	*Apr 1996*
Design Memo Approved by HQUSACE	*Jul 1996*
Plans & Specs Submitted to NAD	*Jul 1997*
Plans & Specs Approved	*Sep 1997*
PCA Submitted to NAD	*Nov 1997*
PCA Executed	*Feb 1998*
Advertisement	*Feb 1998*
Bid Opening	*Mar 1998*
Contract Award	*Apr 1998*
Initiate Construction	*Apr 1998* *

* Based on meeting with NYSDEC, construction will be scheduled for July 1998, although it is noted that this schedule has the potential to be accelerated.
CJones

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

June 10, 1994

Mr. Charles T. Hamilton
Supervisor of Natural Resources
New York State Department
of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Dear Mr. Hamilton:

On May 3, 1994, a copy of our draft Fish and Wildlife Coordination Act report entitled "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York, Storm Damage Reduction Project" as proposed by the New York District, U.S. Army Corps of Engineers (Corps) was forwarded to you for your agency's concurrence. In order to fulfill our obligation to the Corps, a response date of June 3, 1994, was requested. As of this date, a response has not been received.

The final report with your concurrence is necessary to move along with the proposed project. I would appreciate your assistance in providing us with a letter of concurrence.

Sincerely,

David A. Stilwell

David A. Stilwell
Acting Field Supervisor

cc: COE, New York, NY (Environmental Branch)

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

May 13, 1994

Environmental Analysis Branch
Environmental Assessment Section

Mr. Robert Greene
Regulatory Affairs
New York State Department of
Environmental Conservation
SUNY Campus, Building 40
Loop Road
Stony Brook, New York 11790

Dear Mr. Greene:

The U.S. Army Corps of Engineers, New York District wishes to initiate the application process for Section 401 Water Quality Certification concerning the proposed storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. This project is necessary due to the continual erosion that is decreasing the width of beach and the loss of beach material during severe storms.

Long Beach Island, New York, a barrier island, is located on the Atlantic Coast of Long Island, between Jones Inlet and East Rockaway Inlet. The project study area lies within Nassau County, New York and is encompassed by the communities of Point Lookout, Lido Beach, the City of Long Beach and the Village of Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The study area is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel (Enclosure 1). A feasibility study is currently underway, which will result in an optimum plan to reduce storm damages in this area. It is likely that this plan will be a beachfill plan that would be periodically nourished. The beachfill plan would include a dune system at +15 feet NGVD. The purpose of the beachfill and nourishment would be to insure the integrity of the dune. Proposed sand sources would be from offshore borrow areas (Enclosure 2). In addition to beach fill, the plan includes rehabilitating some of the thirty (30) groins/jetties, and one of two closure alternatives near the Point Lookout end of the project, which we are currently evaluating: 1) sand fill taper and, 2) constructing six new groins. The plan also includes rehabilitating terminal groin at Point Lookout (Enclosure 3). The closure alternatives would be designed to ameliorate the erosive condition at the Point Lookout/Lido Beach areas.

Upon receipt of this request, please assign a file number and a permit coordinator to the subject project. We ask that the NYSDEC point of contact (POC) notify the District POC, Mr. Peter Weppler at 212-264-4663 once a file number is assigned.

If there are any questions concerning this matter, please contact Mr. Weppler of my office at the above telephone number.

Sincerely,

Thomas E Hef for

~~Stuart Piken P.E.~~
for Chief, Planning Division

Enclosures

Long Beach
rec'd
3/14/94

Aqua Explorers, Inc
PO Box 116, East Rockaway, USA, NY 11518
2745 Cheshire Drive, Baldwin, USA, NY 11510
Phone/Fax (516) 868-2658

3-9-1994

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
Attn: Chief Bruce A. Bergmann
Jacob Javits Federal Building
New York, N.Y. 10278-0090

Dear Mr. Bergmann,

I am in receipt your recent letter concerning beach nourishment and its impact on local and historical shipwrecks. First let me say that I am glad the corp is concerned about these underwater time capsules. As you know shipwrecks are an invaluable tool for archoligest. Wrecks are also the key and main attraction to local fishing and sport scuba diving, not to mention the bread and butter for charter boats opperations.

Fortunately there are only a few wrecks within the areas you have marked, that will be effected. Although other sources may list additional shipwrecks the ones I will list are not buried and are all still visible above the sand. For the area marked in Long Beach you have two wrecks marked the eastern most site is of the vessel MEXICO and is an historical site. I do not have accurate Loran #s on the MEXICO but can obtain them if needed. A small tug boat sits in shallow water east of the MEXICO but this site has no significance and should not be a concern. The western wreck you have marked is an unknown site, I beleive she is now almost completely buried, so beach nourishment should not have a negative impact. Also of little concern is a barge located at the extreme west point of Atlantic Beach. You also make mention of an offshore borrow site. The deeper waters off Long Beach contain literally hundreds of shipwrecks so without knowing the exact borrow site I can not provide information as to any damage. I would recommend the books WRECK VALLEY Vol II which provides Loran #s for most area wrecks.

In regards to the Westhampton site I am not aware of any significant historical wrecks in this area.

As a side note I am aware that a similar project is planned for the New Jersey coast. Although I have not been contacted I would like to state that their are several wrecks within on 100 yards of the Jersey shore that should be considered prior to any beach nourishment project. I can provide the accurate location for each and every one of these wrecks. Please let me know if you have any input on the New Jersey project or if you would like to receive the location information.

Sincerely,

PC-28

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

February 23, 1994

Environmental Analysis Branch
Environmental Assessment Section

Mr. Daniel Berg
Aqua Explorers, Inc.
P.O. Box 116
East Rockaway, New York 11518

Dear Mr. Berg,

The New York District, U.S. Army Corps of Engineers (Corps) is currently developing beach nourishment projects along the length of Long Beach Island, Nassau County, and Westhampton Beach, Suffolk County, New York (Attachments 1 and 2). These projects are needed to replace portions of these beaches that have undergone severe erosion. The current project areas include the shore and near-shore sand placement areas as well as offshore borrow sites south of Long Beach Island and Westhampton Beach.

As an agency of the Federal government, the Corps is responsible for determining the impacts these projects will have on cultural resources, including shipwrecks. The Corps has conducted a remote sensing survey for the proposed Westhampton borrow site and a similar survey is planned for the Long Beach borrow site. Additional information is needed to determine if these projects, as described below, will have any effect on known wrecks in the near shore area.

The project plans for Long Beach Island, as currently developed, call for the placement of sand dredged from an offshore borrow site to be placed on Long Beach Island. This material will be used to create a dune 25 feet wide with a height of 15 feet National Geodetic Vertical Datum (NGVD). A beach berm measuring approximately 110 feet wide would be created in front of the dune. The toe of the beach berm will extend approximately 1200 feet into the water. Two portions of the Long Beach Island, the westernmost portion of Atlantic Beach and a section of Lido Beach, are not being considered as part of the initial nourishment project, although they will be included as part of the subsequent maintenance cycle.

The project plans for Westhampton Beach are still being designed, however, this project will also include placing sand dredged from an offshore source onto the beach. As currently proposed, a beach berm ranging from approximately 250 feet to 300 feet will be created. The toe of the berm will extend approximately 1000 feet into the water

Marine charts of the Long Beach project area show two wrecks lying in the near shore sand placement area near Lido Beach and Point Lookout. These wrecks are not listed on the National Oceanic and Atmospheric Adminstration's (NOAA) Automated Wreck and Obstruction Information System (AWOIS) listing for the project area, however, that does not preclude the possibility that these wrecks may exist. On Westhampton Beach, the remains of what local residents identified as a tug boat were uncovered by the December 1992 storm.

Because you are an experienced diver in New York and New Jersey, the Corps recognizes that you are very knowledgeable on the subject of New Jersey and Long Island shipwrecks. The Corps is requesting any information you may have concerning the existence and locations of shipwrecks or other submerged historic properties within the project areas. In addition, we would appreciate any other points of contact who may also provide information.

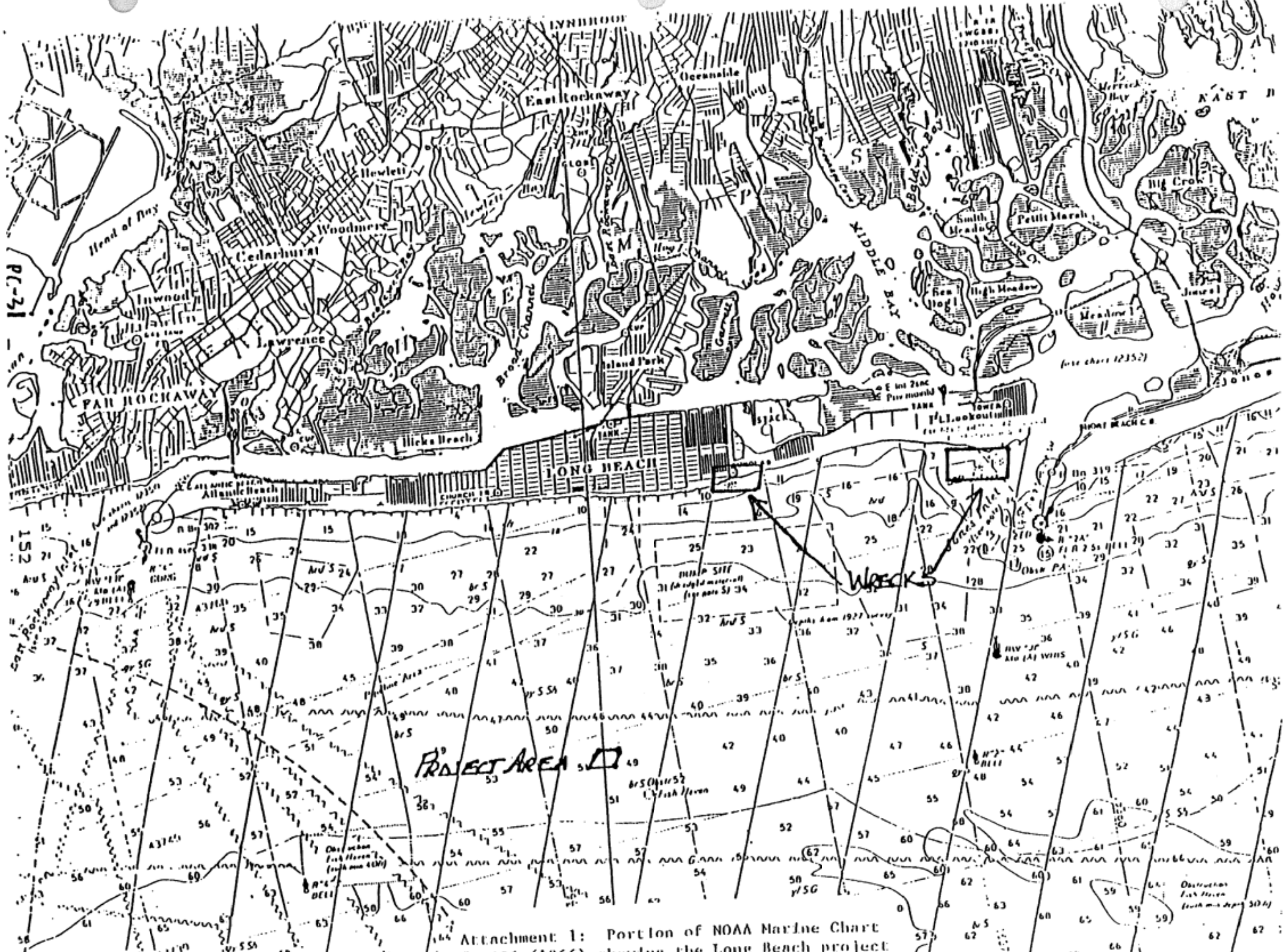
If you have any questions or require additional information please contact Ms. Nancy Brighton, Project Archaeologist, (212)264-4663. Thank you for your assistance.

Sincerely,

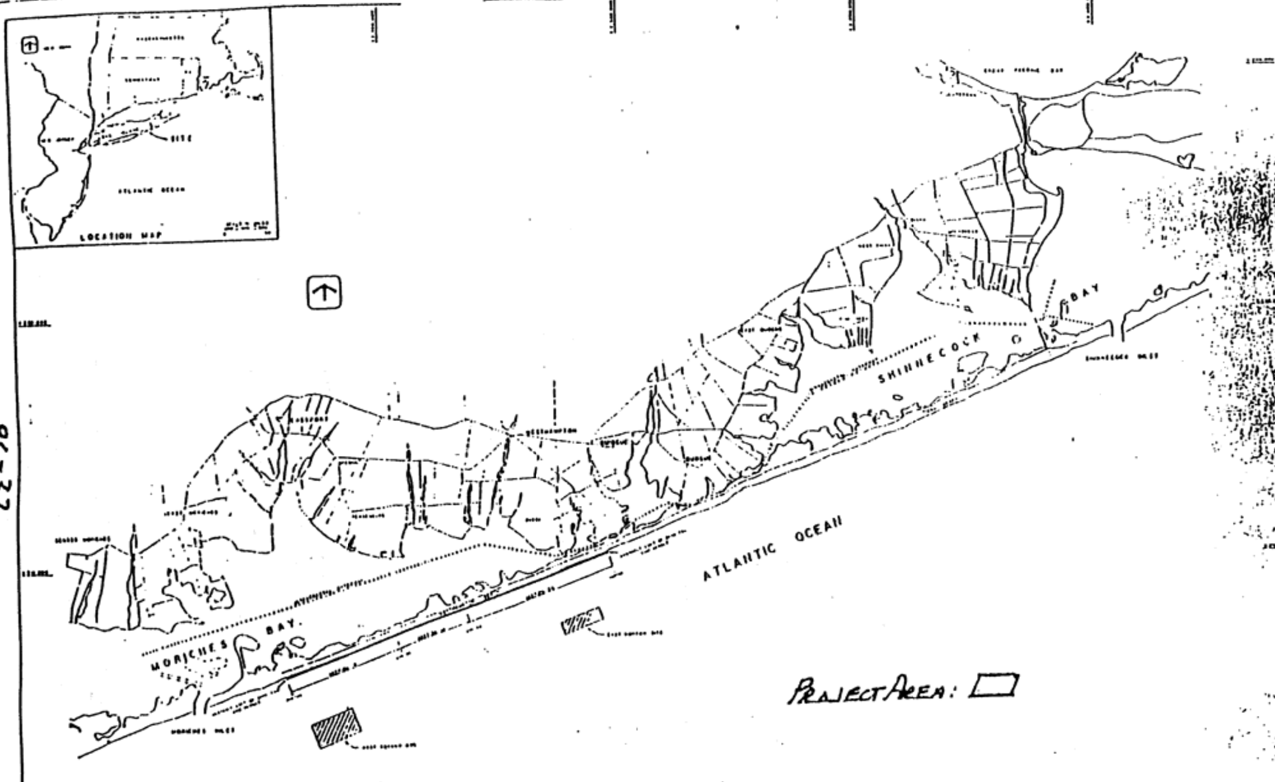
Bruce A. Bergmann,
Chief, Planning Division

Attachments

PC-30



Attachment 1: Portion of NOAA Marine Chart #12326 (1966) showing the Long Beach project



Attachment 2: Map showing the Westhampton Beach project area and borrow sites. Reduced, not to scale.

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO ATTENTION OF

February 23, 1994

Environmental Analysis Branch
Environmental Assessment Section

Mr. David A. Stilwell
Acting Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Mr. Stilwell:

The U.S. Army Corps, New York District, has been authorized by the Committee on Public Works and Transportation of the House of Representatives in October 1986 to participate in the storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. A Planning Aid Report was prepared for this project by your office in January 1989.

Pursuant to the Fish and Wildlife Coordination Act (48 Sta. 401, as amended; 16 U.S.C. 661 et seq.), the New York District requests a detailed report on the effects and/or environmental benefits of the proposed actions to be included in the Draft Environmental Impact Statement for the project as per the attached Scope of Work (SOW) [Enclosure 1] which was discussed with Mr. Robert Murray of your staff on February 1 and February 2, 1994.

Please find enclosed the SOW and a copy of the signed DA Form 2544 which was mailed to your Region 5 office in Massachusetts.

The New York District will continue coordination with your agency, to further assist in your preparation of the report.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Enclosures
cc: Nancy Schlotter, USFWS-LIFO

United States Department of the Interior

TAKE PRIDE IN AMERICA

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, New York 13045

June 29, 1993

Mr. Bruce A. Bergmann
Chief, Planning Division
Department of the Army
New York District Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Bergmann:

This responds to your May 3, 1993, correspondence regarding the storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to Rockaway Inlet, Long Beach Island, New York, and the Federally listed Piping Plover (*Charadrius melodus*).

During informal consultation with the U.S. Fish and Wildlife Service (Service), measures may be identified that, if implemented, would avoid the likelihood of adverse effects on listed species or critical habitat. However, at this stage in the Service's review of the project, it is premature to determine the impacts to endangered or threatened species. Based on the information provided, we believe that modification of the draft monitoring plan protocol and incorporation of additional measures would be necessary to assure the protection of the Piping Plover during the implementation of this project. Although there are no known current records of seabeach amaranth (*Amaranthus pumilis*) in the project area, additional surveys may be necessary to determine its presence or absence.

The Service will continue to work with the Corps during the development and review of specific project plans to determine needs for monitoring of endangered or threatened species and whether buffer zones and other measures can be implemented to avoid adverse impacts. Detailed comments will be provided during this process. We wish to advise you at this time, however, that implementation of such measures would require that project plans have the flexibility to accommodate timing and spatial restrictions necessary to avoid adverse impacts. The incorporation of such flexibility, particularly with larger projects, is a concern that would need to be adequately addressed.

We look forward to further coordination with you on this project. Should you have any questions regarding these comments, please contact Nancy Schlotter, Supervisor, of my Long Island Field Office at (516) 581-2941.

Sincerely,

David A. Stilwell

Acting For
Leonard P. Corin
Field Supervisor

PC-34

NEW YORK STATE
RECREATION · HISTORIC PRESERVATION · PARKS
Orin Lehman
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

June 23, 1993

Mr. Bruce A. Bergmann
Chief, Planning Division
Department of the Army
Corps of Engineers
New York District Office
Jacob K. Javits Federal Building
New York, New York 10278-0090

Dear Mr. Bergmann:

Re: CORPS
Long Beach Erosion Control
Long Beach Island, Nassau County
92PR2416

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the Cultural Resources Reconnaissance Report in accordance with Section 106 of the National Historic Preservation Act of 1966 and the relevant implementing regulations.

Based upon this review, the SHPO concurs with the recommendations of the the report. It is the opinion of the SHPO that no further investigations are warranted for the on-shore area of the project. We look forward to receiving the results of the surveys of the off-shore borrow areas when that work is completed.

If you have any questions, please call James Warren of our Project Review Unit at (518) 237-8643 ext. 280.

Sincerely,

Julia S. Stokes
Deputy Commissioner for
Historic Preservation

JSS/RDK:gc

PC-35

Heppler

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

REPLY TO
ATTENTION OF

14 June 1993

Environmental Analysis Branch
Environmental Assessment Section

Ms. Julia S. Stokes
Deputy Commissioner for Historic Preservation
New York State Office of Parks, Recreation, and
Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island
P.O. Box 189
Waterford, New York 12188-0189

Dear Ms. Stokes,

The New York District, Corps of Engineers (Corps), has been authorized to construct a beach nourishment project along the length of Long Beach Island, Nassau County, New York (Figure 1). This project is needed to replace portions of the beach that have undergone severe erosion and to protect existing development from further erosion. The current project area includes the shore and near-shore sand placement area as well as an offshore borrow area located approximately 2000 feet south of the eastern end of Long Beach Island (Figure 1 and 2). The proposed project will not impact the salt marshes situated on the northeast side of Long Beach Island.

Current project plans call for the placement of sand dredged from the offshore borrow site to be placed on Long Beach Island. This material will be placed above the mean high water mark to widen the beach berm to a width of 110 feet and to construct dunes in certain areas. Two portions of Long Beach Island, the westernmost portion of Atlantic Beach and a section of Lido Beach, are not being considered as part of the initial nourishment project, although they will be included as part of the subsequent maintenance cycle. As the project is currently scheduled, the beach maintenance program will last for 50 years, with beach nourishment occurring every five years.

Two structures, the Granada Towers and the U.S. Post Office, are listed on the National Register of Historic Places (NRHP). One private residence located on Washington Boulevard is listed on the historic structures inventory maintained by the New York State Office of Parks, Recreation, and Historic Preservation because it is considered to be one of the first private homes built in Long Beach. None of these structures will be affected by this project.

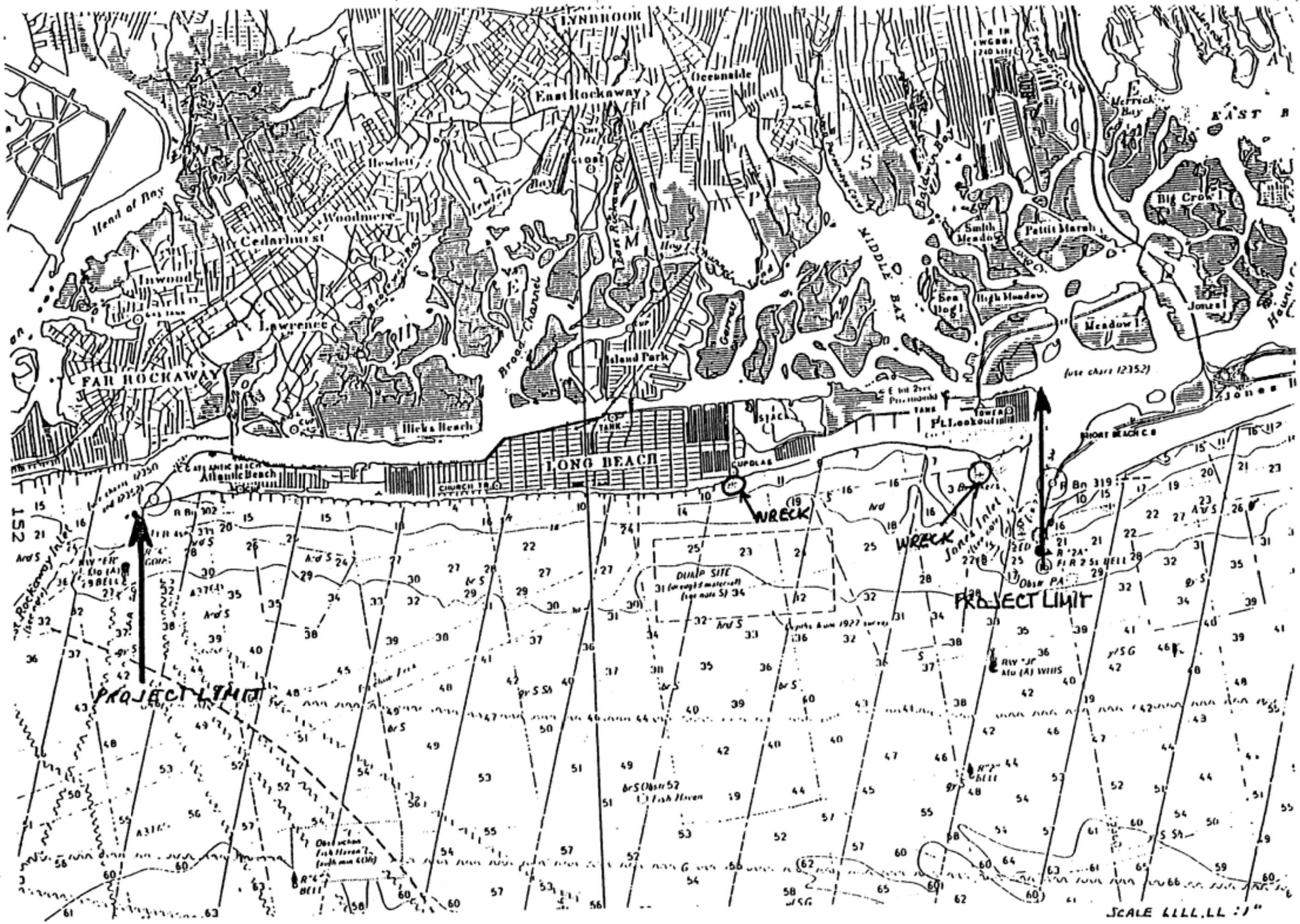


Figure 1: Project Map
Long Beach Island, Nassau County,
New York.

PC-37

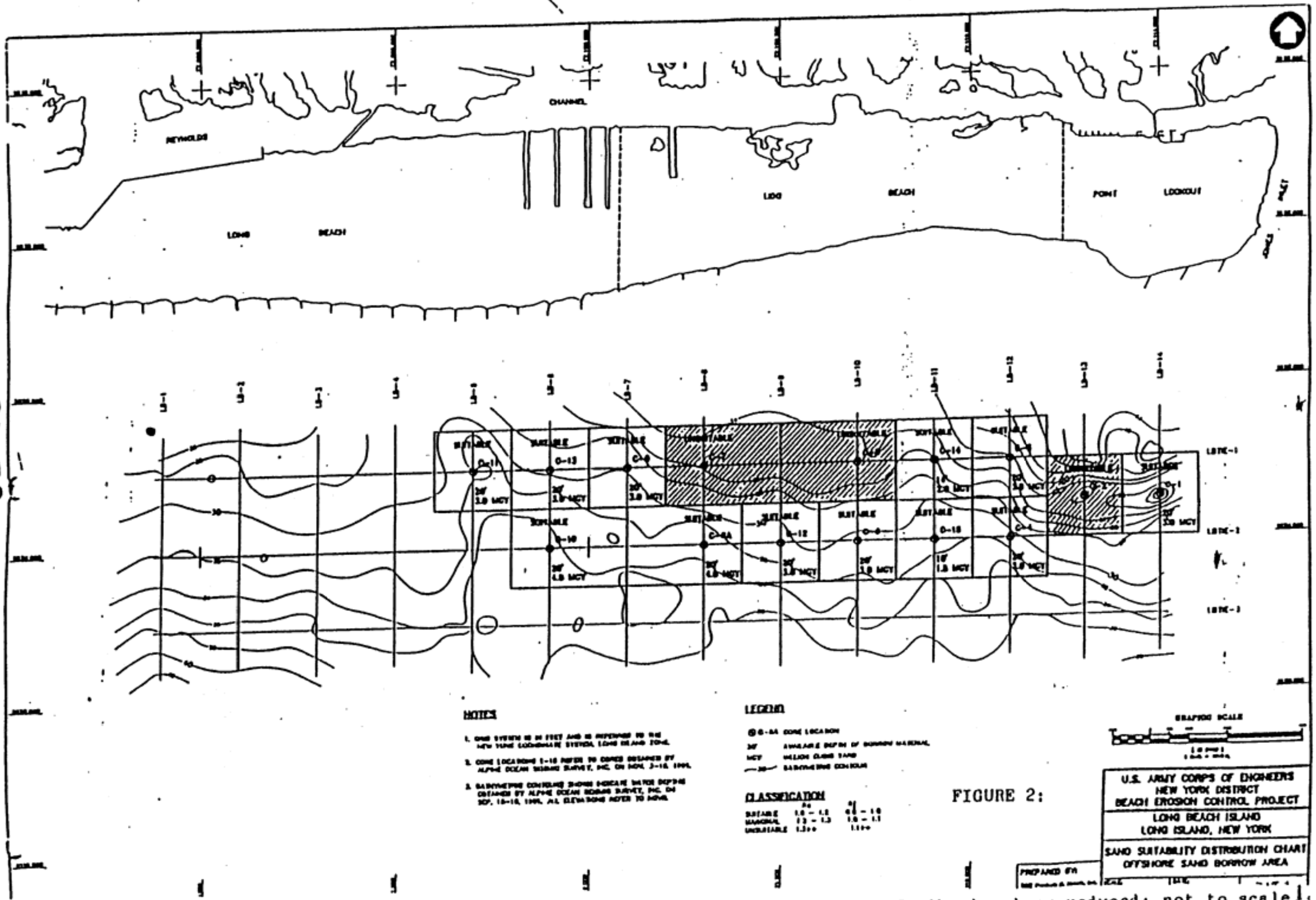


FIGURE 2:

N.B. Map has been reduced; not to scale.

To determine if there were any other potentially NRHP eligible properties located within the project area, the Corps had a cultural resources study prepared as part of this project (Attachment 1). An extensive history and prehistory of the Long Beach Island area was compiled and a pedestrian survey was also conducted for this report. This study found that there were no prehistoric/contact period occupations or archaeological sites on Long Beach. In addition, the location of the 19th and early 20th century structures would be located north of the present beach zone and that no significant remains of the project area's history would be located at the site of the present beach. Since the proposed project involves the deposition of sand, no sites will be disturbed.

The cultural resources study also examined the potential for shipwrecks to be located in the near-shore placement area and the offshore borrow area. Marine charts of the project area show two wrecks within the near-shore sand placement zone in the Lido Beach/Point Lookout areas. These wrecks, however, are not listed on the National Oceanic and Atmospheric Administration's (NOAA) Automated Wreck and Obstruction Information System (AWOIS) listing for the project area. Mark J. Friese, Hydrographic Surveys Branch, NOAA, stated that the AWOIS is often not updated to include information from their charts. There is the potential, then, for the two wrecks to be located in the eastern section of the project area. An underwater investigation of the near-shore area in the vicinity of the two wrecks will be conducted during the next phase of the project.

A number of marine accidents or wrecks have occurred within and near the borrow site. In the next phase of this project, the Corps is planning to conduct a remote sensing survey of the proposed borrow area to determine if any wrecks are present.

On the basis of current project plans and pending review by your office, the Corps is of the opinion that the "Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, Nassau County, New York Beach Nourishment Project" will have no effect on historic properties located onshore. Please provide us with Section 106 comments for the onshore portion of this project as pursuant to 36 CFR 800.5.

The remote sensing survey of the borrow site using a magnetometer and side scan sonar will be conducted as part of the next phase of the project. In addition, an underwater survey of the near-shore area in the location of the two wrecks will also be conducted. The results of these surveys will be coordinated with your office when this work is completed.

If your or your staff have any questions or require further information about this project, please contact Ms. Nancy J. Brighton, Project Archaeologist, (212)264-4663. Thank you for your assistance.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Attachments

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Region
One Blackburn Drive
Gloucester, MA 01930

JUN 1 1993

Bruce A. Bergmann
Chief, Planning Division
Environmental Assessment Section
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Bergmann:

This letter is in response to your letters to Thomas Bigford dated May 6, 1993 and May 11, 1993, requesting additional consultation on three beach nourishment projects along the southern shore of Long Island New York. The Section 933 Jones Inlet, the Section 934 East Rockaway Inlet to Rockaway Inlet, and the Jamaica Bay projects and the use of the Long Beach Island offshore borrow areas in Suffolk County, New York, constitute the combined project area. As stated in previous correspondence on these projects, listed species that may be present near the borrow areas include the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepidochelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles, as well as the endangered fin (Balaenoptera physalus), humpback (Megaptera novaeangliae), and right (Eubalaena glacialis) whales.

The whales mentioned above feed on pelagic prey (small schooling fish or copepods) and will not be affected by dredge activity either in the inlets or at the offshore borrow sites. The leatherback sea turtle also feeds on pelagic prey (jellyfish) that will not be affected by dredge activity in the inlets or at the offshore borrow sites.

The other sea turtle species occur in New York coastal waters during the summer and early fall months and are known to feed on benthic organisms such as crabs. This could place the turtles in the path of fast moving dredge systems such as hopper dredges. Hopper dredges are known to lethally take sea turtles. The information contained in your original project descriptions does not identify the dredge type to be used.

Therefore, as has been developed for other similar beach nourishment projects along the south shore of Long Island and the coast of New Jersey, we can concur that these projects proposed to be conducted along the Long Island coastline will be not likely to adversely affect endangered species provided the following conditions are met. If hopper dredges will be employed in the inlets or offshore borrow sites between mid-June and mid-November, NMFS-approved observers must be aboard the vessels to monitor the material coming aboard. If evidence of sea turtle entrainment in the dredge-head is observed, further consultation may be required.

Should a pre-dredge survey of the borrow site demonstrate that the sites are devoid of the types of benthic prey organisms known to be preferred by sea turtles, consultation should be reinitiated to readdress the need for the conditions mentioned above.

The specifications described in your letter dated May 11, 1993, that were inserted in the Emergency Closing of the Westhampton Breaches would be satisfactory for these projects. Although this determination does mean that there is no need for further consultation on these projects pursuant to Section 7 of the Endangered Act of 1973, as amended, should project plans change or new information become available, such as turtle parts being found in the hopper dredge, then consultation should be reinitiated. It should also be noted that, without a formal Biological Opinion in place for these or other similar beach nourishment projects, the Corps is not protected from the ESA Section 9 prohibitions on taking endangered species. It is recommended that the Corps continue the Biological Assessment work on the potential impacts of hopper dredge usage in these types of projects throughout the New York/New Jersey area to receive the full protection afforded by a formal consultation.

Please contact Margot Bohan of my staff, at (508) 281-9136, if you have any questions regarding this information.

Sincerely,

Richard B. Roe
Regional Director

DWBeach:(508)281-9254:5/27/93:dwb

cc: F/PR2 - Williams, Ziobro
F/NEO2 - Gorski, Ludwig
ACOE - NY - Mark Burlas
Peter Weppler
ACOE - Lenny Kotkewicz

FILE: 1514-05 COE 1993

PC-43

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

May 6, 1993

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Mr. Thomas E. Bigford
National Marine Fisheries Service
Division Chief
Habitat and Protected Resources Division
One Blackburn Drive
Gloucester, MA 01939-2298

Dear Mr. Bigford:

This letter is in response to your March 9, 1993 letter regarding the possible presence of the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepidochelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) turtles (Sea Turtles) in the Jones and East Rockaway Inlets and the offshore borrow areas of Long Beach Island, New York project area (Enclosure 1).

The U.S. Army Corps of Engineers, New York District (Corps), agreed to prepare a Biological Assessment on Sea Turtles for Section 934 East Rockaway Inlet to Rockaway Inlet and Jamaica Bay, New York project area in accordance to Section 7 of the Endangered Species Act (Enclosure 2), which is adjacent to the above referenced project.

The Corps proposes that due to the proximity of the Long Beach project area to the Section 934 project area, information gathered for the Section 934 Biological Assessment can be used to evaluate Section 7 requirements for the Long Beach Island project area. In addition, recent correspondence from your office concerning similar projects (April 12, 1993 re: Atlantic Coast of New Jersey from Sandy Hook to Barnegat Inlet, April 20, 1993 re: Emergency Closure of the Westhampton Breaches) states that one of the listed sea turtles (leatherback) will not be affected by dredging at the offshore borrow sites (Enclosure 3). Therefore, we also propose that a similar approach be used in our Section 7 consultation for the Long Beach Island project.

We request your office's response to these issues by May 28, 1993, so that the appropriate timetable can be scheduled.

Any questions concerning this subject should be addressed to Mr. Peter Weppler or Mr. Howard Ruben at (212) 264-4663.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Enclosure
cc: Beach, NMFS-NE Region
    Rusanowsky, NMFS-Milford

Wipples

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Northeast Region
Habitat and Protected
Resources Division
One Blackburn Drive
Gloucester, MA 01939-2298

March 9, 1993

Bruce A. Bergmann
Chief, Planning Division
Environmental Assessment Section
Department of the Army
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278-0090

Dear Mr. Bergmann:

This is in response to your letter to Colleen Coogan, dated December 17, 1992, requesting information on the presence of endangered or threatened species in the Jones and East Rockaway Inlets and the offshore borrow areas of Long Beach Island, New York. Listed species that may be present include the threatened loggerhead (Caretta caretta) and endangered Kemp's ridley (Lepidochelys kempi), leatherback (Dermochelys coriacea), and green (Chelonia mydas) sea turtles. These species occur in New York coastal waters during the summer and early fall months. Steve Morreale, of the Okeanos Foundation, has been conducting research on sea turtles in New York waters and may be able to provide more precise information regarding their presence in the project area. He can be reached at (516) 728-4523.

While it is not clear at this time what the Corps of Engineers' ultimate plan will be to reduce storm damage on the barrier island of Long Beach, I assume that the plan will include dredging and disposal on the beaches, by hopper, hydraulic or pipeline dredges. Because hopper dredges are known to kill sea turtles and shortnose sturgeon, NMFS is concerned about projects using hopper dredges, especially during the summer and fall months in the northeast. In fact, if hopper dredges are to be employed for this project from mid-June through mid-November, we would consider it a 'may affect' situation requiring a formal consultation pursuant to Section 7(a)(2) of the Endangered Species Act of 1973, as amended.

I have enclosed a copy of the ESA regulations which describes the consultation process and the information that should be included in a biological assessment (50 CFR Part 402.12(f)). Please

PC-46

submit to us a preliminary assessment of the potential impacts of the proposed storm damage reduction project upon the threatened and endangered species mentioned above. You may contact Margot Bohan of my staff, at (508) 281-9136, if you have any questions regarding this information.

Sincerely,

Thomas E Bigford

Thomas E. Bigford
Division Chief

Enclosure

cc: F/PR2 - Williams, Ziobro
F/NEO2 - Rusanowsky
ACOE - Weppler
Okeanos - Morreale

PC-48

F16

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

May 3, 1993

REPLY TO
ATTENTION OF

Environmental Analysis Branch
Environmental Assessment Section

Mr. Leonard P. Corin
Field Supervisor
U.S. Department of the Interior
Fish and Wildlife Service
3817 Luker Road
Cortland, New York 13045

Dear Mr. Corin:

This letter is in reference to the September 22, 1988 correspondence (Enclosure 1) regarding the presence of threatened or endangered species within the study area for the storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York.

The New York District feels that a biological assessment for the Federal-listed threatened piping plover is not necessary for the proposed project. The District will take the necessary protective measures to prevent impacts to both the piping plover and State-listed threatened least tern which will be subject to review with your Long Island Field Office. Please see Enclosure 2 for a draft of the monitoring protocol.

Please advise in writing, as to the feasibility of the proposed subject as soon as possible.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Enclosures
cc: Nancy Schlotter, USFWS-LIFO

PC-49

United States Department of the Interior

FISH AND WILDLIFE SERVICE

P.O. Box 534
705 White Horse Pike
Absecon, New Jersey 08201
(609-646-9310)

September 22, 1988

Mr. Richard J. Maraldo, P.E.
Acting Chief, Planning Division
New York District, Corps of Engineers
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Maraldo:

This is in response to your August 23, 1988 request to the Fish and Wildlife Service (Service) for information on the presence of endangered or threatened species within the study area of the Beach Erosion Control Project on Long Beach Island (East Rockaway Inlet to Jones Inlet), Nassau County, New York. The project will consist of the placement of sand along the length of the Island from a point above mean high water into the offshore waters. Dune construction may occur above the intertidal zone and existing groins may be rebuilt in an effort to protect the Island from storm damage and beach erosion.

The piping plover (Charadrius melodus), a federally listed threatened species on the Atlantic Coast, is known to breed at four sites on Long Beach Island: Lido Beach, Nassau Beach, Ocean Beach Club and Silver Point. In 1987, six nests were documented on Long Beach Island by researchers of the Long Island Colonial Waterbird and Piping Plover Survey. Project activities within the area of the plover breeding locations have the potential to adversely affect the species. A biological assessment or further consultation pursuant to the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531) is required to evaluate any potential adverse effects of project implementation to the plover or its habitat and to determine if formal consultation or a conference is necessary.

In the preparation of an assessment, the following information should be considered for inclusion:

1. the result of a survey of the Island to document most recent areas of plover use;

2. a discussion of any impacts to the plover or its habitat expected to result from project activities, including any changes in vegetation, slope or other habitat characteristics which may impair feeding or nesting activities;

3. an analysis of any cumulative effects expected to result to the plover or its habitat, including indirect effects such as any

PC-50

anticipated increase in use of the beaches which could result in disturbance to nesting plovers;

4. an analysis of measures available to minimize or avoid impacts to the plover and its habitat such as a time restriction on project activities and establishment of a buffer area around the nesting and feeding areas; and,

5. any other relevant information on the project which may affect the plover or its habitat.

In addition to the federally threatened piping plover, State listed endangered or threatened species may occur within the project location. To determine the presence of these species, the Service recommends that you contact the following offices:

Ms. Kathryn Schnieder
New York Natural Heritage Program
Wildlife Resource Center
Delmar, New York 12054
(518/439-7488)

Mr. Steve Sandford
New York Department of Environmental Conservation
S.U.N.Y. at Stony Brook
Building 40
Stony Brook, New York 11790
(516/751-7900)

If you have any questions, please contact Lynn Wilson of my staff.

Sincerely,

Clifford G. Day
Supervisor

PC-51

Enclosure 2

DRAFT MONITORING PLAN PROTOCOL

1. The monitoring plan is designed with three goals:

   a. Identify all critical areas existing before construction.
   b. Identify critical areas that develop during construction.
   c. Ensure that protective measures are avoiding impacts.

A. From April 1 to June 30 (based on two biologist team)

   1. Before construction: Weekly surveys beginning two weeks before any construction related activities (including surveys, site preparation, etc.) begins, to include dusk and dawn periods and, if possible, high and low tides (one overnight stay/week)

   2. During construction: Twice weekly surveys under the conditions described above, as well as one survey each day (pre-dusk/post dawn) during work hours (two overnight stays/week). In addition, daily checks by a Corps inspector of all critical areas identified by a Corps survey team before or during construction.

B. From July 1 to August 15

   1. Before construction: As in A(1) above, except that no further surveys are necessary if critical areas were already identified in late June.

   2. During construction: Weekly checks during work hours only by a single biologist, as well as daily checks of critical areas by the inspector.

2. Assuming critical areas were identified, the following protective measures would have to be undertaken by the contractor to avoid work impacts:

   a. Fence all nesting sites with a 100 foot diameter around each nest with post and string fencing. No activity of any sort will be permitted within the fenced area, and noise generating equipment should not be stored or operated adjacent to that perimeter.

b. No obstacles (equipment, roadways, deep tire ruts, pipes, etc.) shall be placed between the nest site and the shoreline, and traffic in that area (vehicular and foot) shall be reduced to the minimum essential for the accomplishment of a specific task.

FW

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

December 17, 1992

REPLY TO
Environmental Assessment Section
Environmental Analysis Branch

Mr. Steve Hendrickson
New York Department of
Environmental Conservation
SUNY Campus
Loop Road Building 40
Stony Brook, New York 11790-2356

Dear Mr. Hendrickson:

The U.S. Army Corps, New York District, has been authorized by the Committee on Public Works and Transportation of the House of Representatives in October 1986 to participate in the storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. This project is necessary due to continual erosion leading to a decrease in the width of beach and a loss of beach material during severe storms and hurricanes.

Long Beach Island, New York, a barrier island, is located on the Atlantic Coast of Long Island, between Jones Inlet and East Rockaway Inlet. The project study area lies within Nassau County, New York and is encompassed by the communities of Point Lookout, Lido Beach, the City of Long Beach and the Village of Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The study area is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel (Figure 1). A reconnaissance study was completed in 1989, which identified the Federal interest of storm damage reduction on the barrier island of Long Beach. A feasibility study is currently underway, which will result in an optimum plan to reduce storm damages in this area. It is likely that this plan will be a beachfill plan which would be periodically nourished. Proposed sand sources would be from offshore borrow areas (Figure 2). In addition to beach fill, the plan includes rehabilitation of thirty (30) groins/jetties and the reconstruction of the terminal groin at Point Lookout.

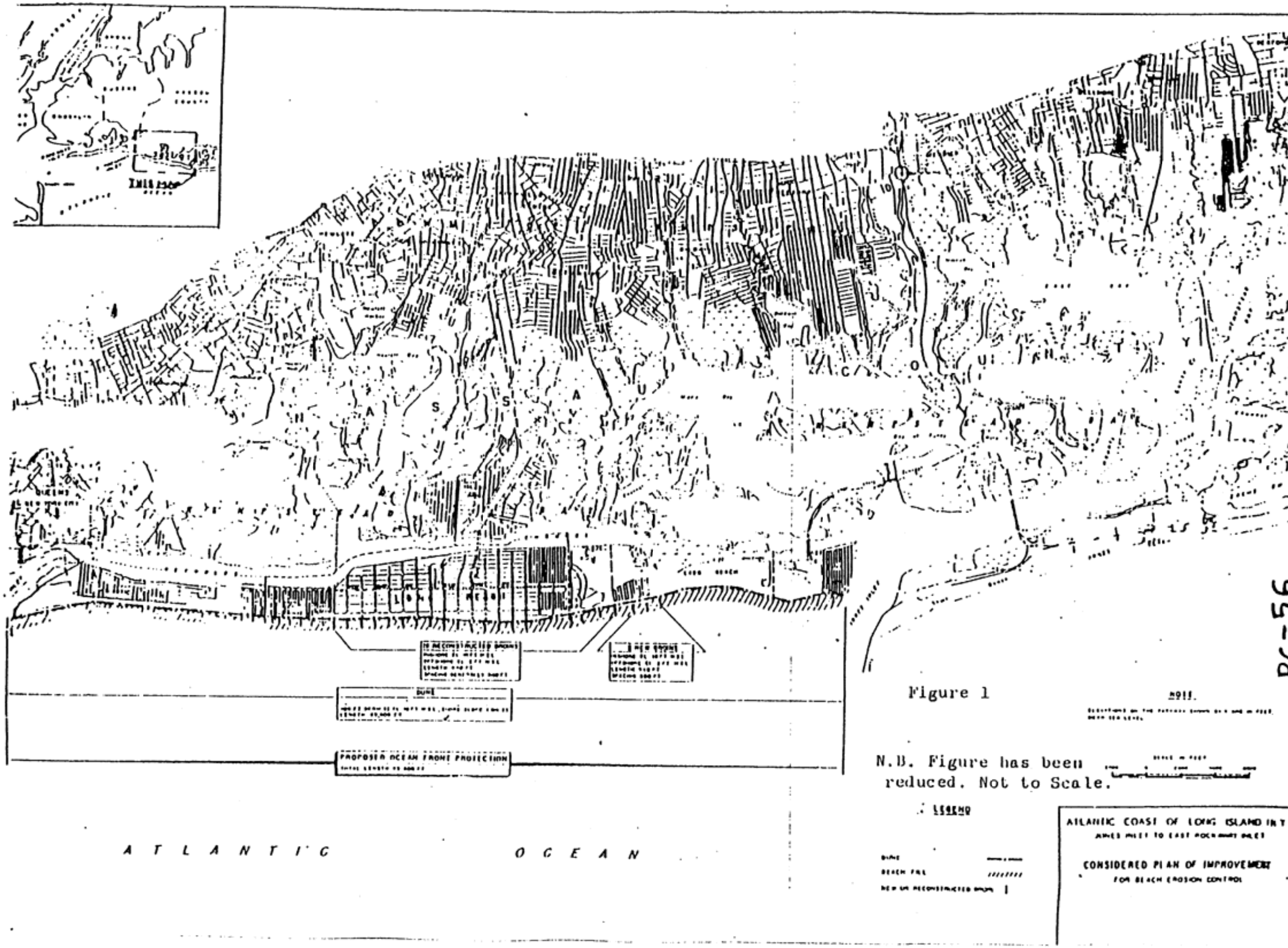
The New York District requests information on the presence of any known commercial and/or recreational presence of any known commercial and/or recreational shellfishing areas in the project area.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Enclosures



PC-56

Figure 1

N.B. Figure has been reduced. Not to Scale.

PC-57

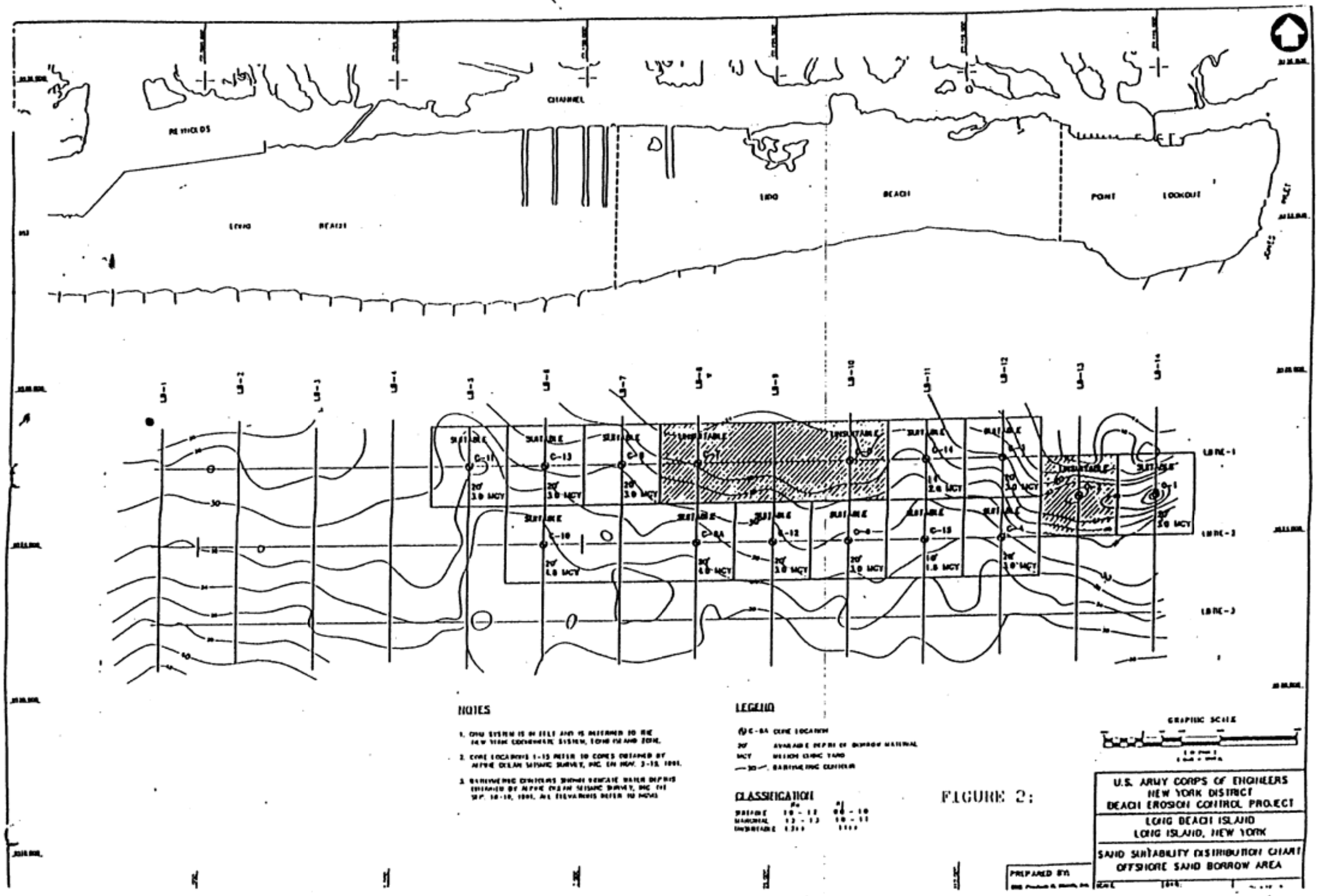


FIGURE 2:

... has been reduced; not to ...le.

New York State Department of Environmental Conservation
Building 40—SUNY, Stony Brook, New York 11790-2356

Thomas C. Jorling
Commissioner

December 29, 1992

Mr. Bruce A. Bergman
Chief, Planning Division
New York District Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Dear Mr. Bergman:

Stephen Hendrickson, Acting Chief of the Bureau of Shellfisheries, has asked that I respond to your inquiry about commercial and/or recreational shellfishing grounds in the near-shore Atlantic Ocean in the vicinity of Lido Beach. I understand that your interest is in connection with a feasibility study to develop an optimum plan to reduce storm damages to Long Beach Island. Your letter states that it is likely that the optimum plan will be a beachfill plan which would be periodically nourished. Figure 2, enclosed with your correspondence, presumably shows a "borrow area" which is under consideration as a source of beach nourishment material for this project.

The area indicated in Figure 2 has an extensive population of surf clams (Spisula solidissima), and lies within an area which is, and has historically been, heavily exploited by commercial harvesters. As the enclosed graph shows, New York's inshore landings have averaged over 144,000 bushels annually for the past twenty years, and have been significantly higher in recent years. Most of this production has been from New York's certified shellfishing waters located west of Jones Inlet within three miles of shore.

In addition, a surf clam population assessment conducted last July by this Department yielded populations as high as 42 adult surf clams per square meter of bottom within the area identified by Figure 2.

In light of the above, this Department believes that the borrowing of beach nourishment material from the identified area would cause extensive damage to a valuable commercial resource, and cause considerable disruption to a long-term and important commercial fishery centered in the vicinity.

Should you have questions or wish to discuss the matter further, please contact Mr. Hendrickson or me directly at (516) 751-6381.

Sincerely,

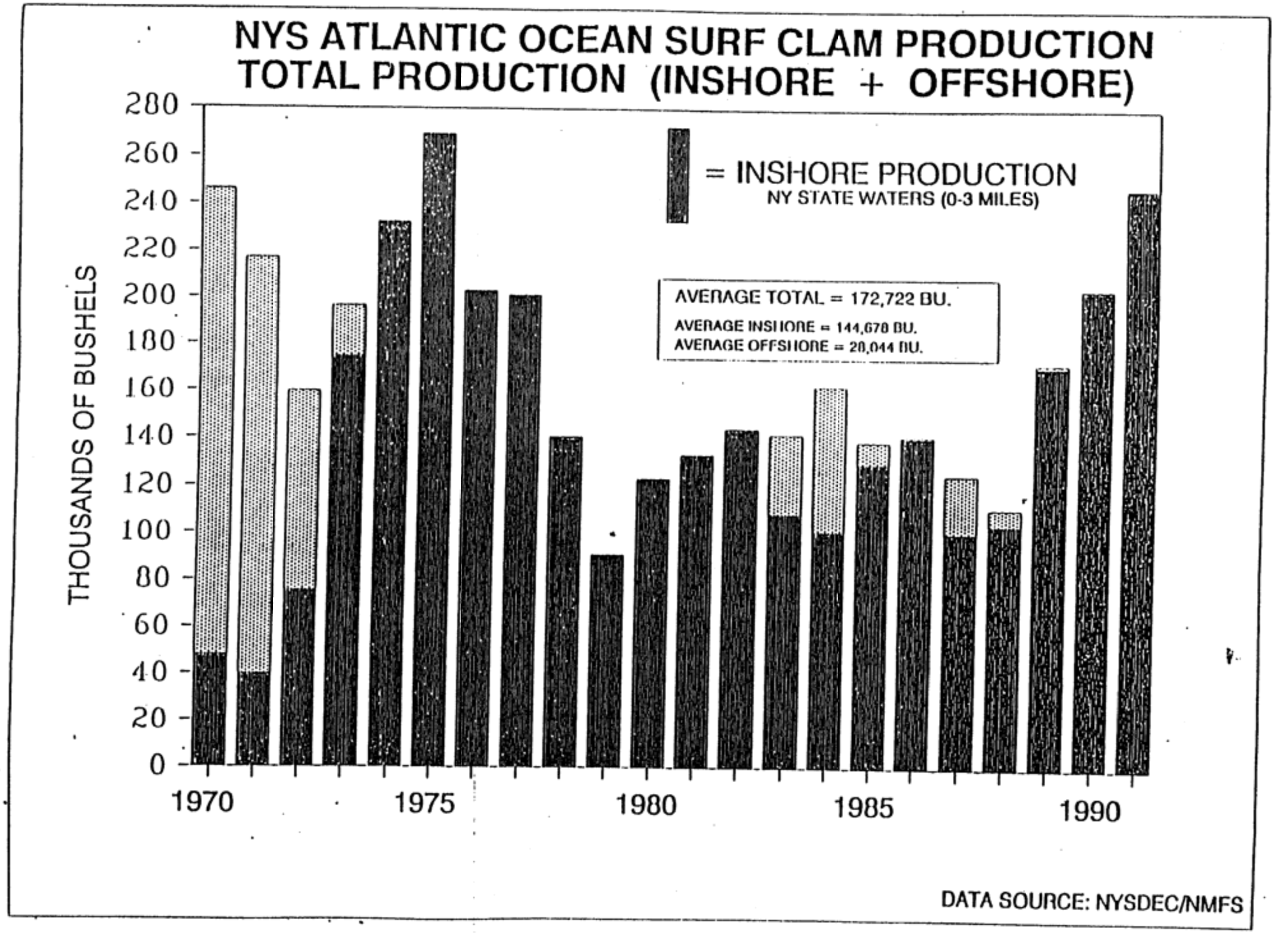
Richard E. Fox

Richard E. Fox
Marine Resources Specialist

Enc:

cc: Stephen A. Hendrickson, Acting Chief
Bureau of Shellfisheries

PC-58


NYS ATLANTIC OCEAN SURF CLAM PRODUCTION
TOTAL PRODUCTION (INSHORE + OFFSHORE)
= INSHORE PRODUCTION
NY STATE WATERS (0-3 MILES)
AVERAGE TOTAL = 172,722 BU.
AVERAGE INSHORE = 144,678 BU.
AVERAGE OFFSHORE = 28,044 BU.
THOUSANDS OF BUSHELS
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
1970
1975
1980
1985
1990
DATA SOURCE: NYSDEC/NMFS

IV-6

DEPARTMENT OF THE ARMY
NEW YORK DISTRICT CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
NEW YORK, N.Y. 10278-0090

December 17, 1992

REPLY TO
ATTENTION OF

Environmental Assessment Section
Environmental Analysis Branch

Ms. Colleen Coogan
National Marine Fisheries Service
Northeast Region
Habitat and Protected Resources Division
One Blackburn Drive
Gloucester, MA 01939-2298

Dear Ms. Coogan:

The U.S. Army Corps, New York District, has been authorized by the Committee on Public Works and Transportation of the House of Representatives in October 1986 to participate in the storm damage reduction project for the Atlantic Coast of Long Island, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York. This project is necessary due to continual erosion leading to a decrease in the width of beach and a loss of beach material during severe storms and hurricanes.

Long Beach Island, New York, a barrier island, is located on the Atlantic Coast of Long Island, between Jones Inlet and East Rockaway Inlet. The project study area lies within Nassau County, New York and is encompassed by the communities of Point Lookout, Lido Beach, the City of Long Beach and the Village of Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The study area is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel (Figure 1). A reconnaissance study was completed in 1989, which identified the Federal interest of storm damage reduction on the barrier island of Long Beach. A feasibility study is currently underway, which will result in an optimum plan to reduce storm damages in this area. It is likely that this plan will be a beachfill plan which would be periodically nourished. Proposed sand sources would be from offshore borrow areas (Figure 2). In addition to beach fill, the plan includes rehabilitation of thirty (30) groins/jetties and the reconstruction of the terminal groin at Point Lookout.

Pursuant to Section 7 of the Endangered Species Act of

PC-60

1973, as amended, the New York District requests information on the presence of endangered or threatened species in Jones and East Rockaway Inlets as well as the marked borrow areas.

Any questions concerning this matter should be addressed to Mr. Peter Weppler at (212) 264-4663.

Sincerely,

Bruce A. Bergmann
Chief, Planning Division

Enclosures
cc: Diane Rusanowsky, NMFS-Milford

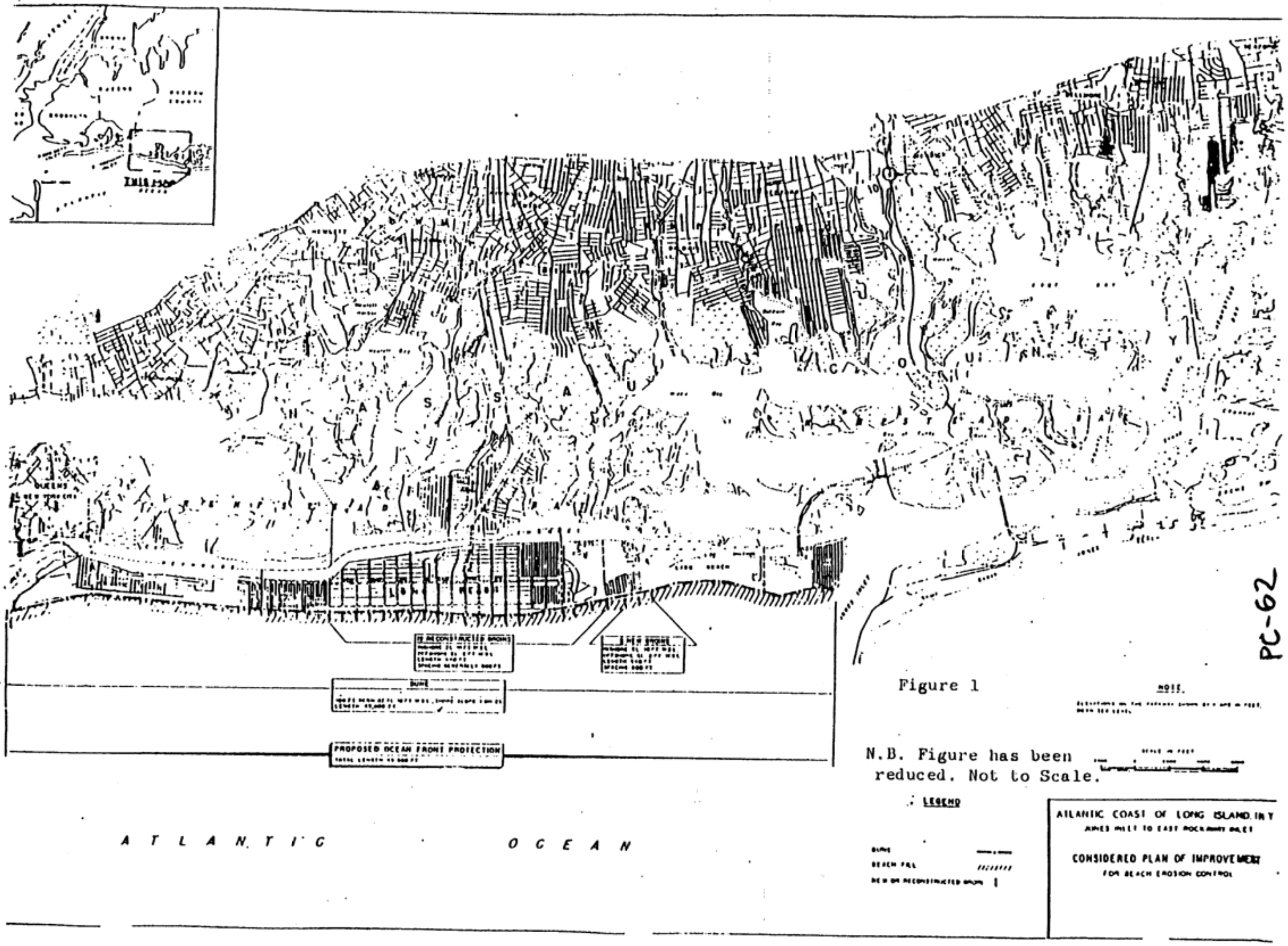


Figure 1

N.B. Figure has been reduced. Not to Scale.

PC-62

PC-63

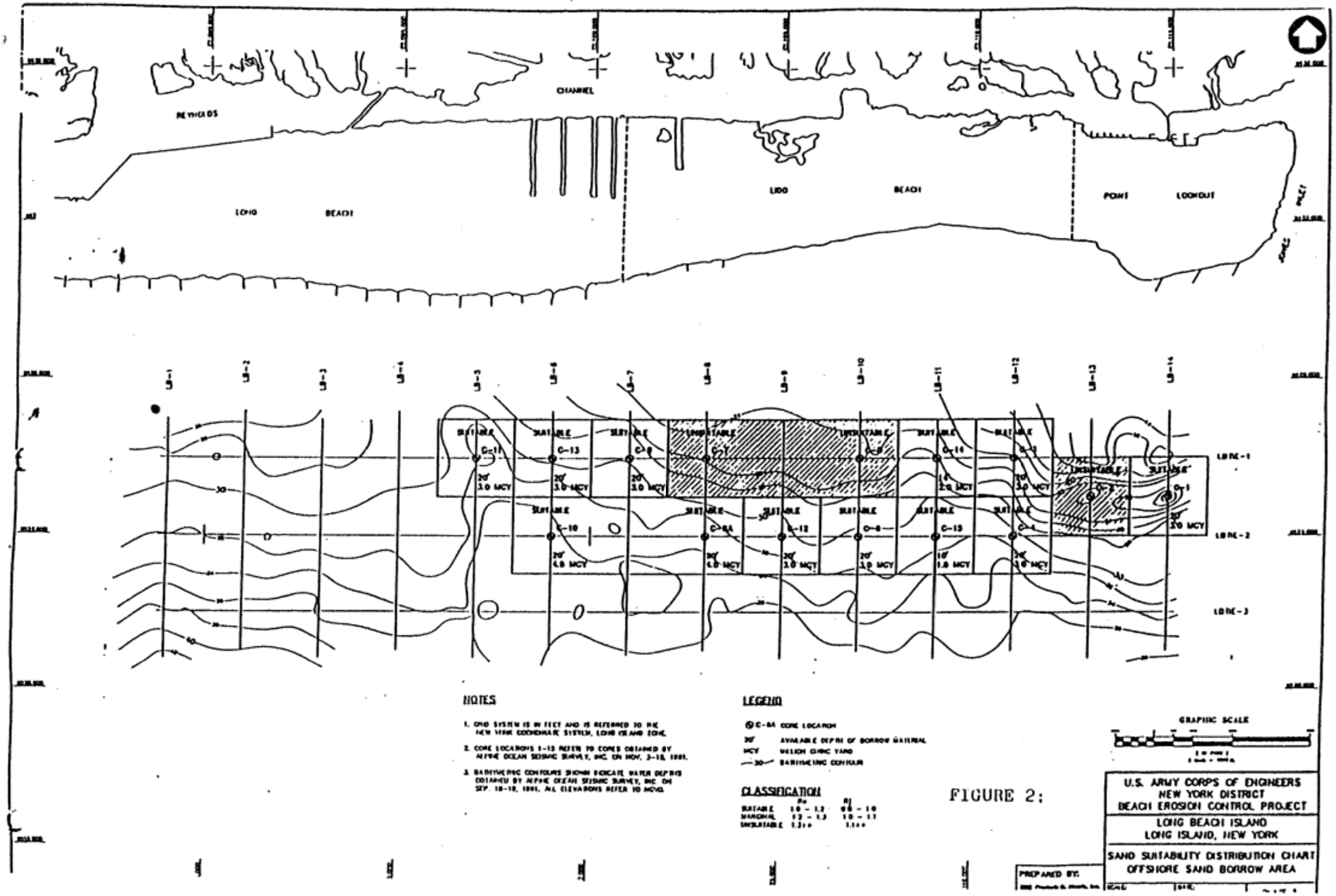


FIGURE 2:

N.B. Map has been reduced; not to scale.

Halsey Taylor
901 Navigation Blvd
Corpus Christi, TX

July 12, 1992

Mr. Peter M. Weppler
EIS Coordinator
Planning Division
Corps of Engineers, New York District
26 Federal Plaza
New York, New York 10278-0090

Dear Mr. Weppler:

I am responding to your June 29, 1992 Federal Register Notice of Intent to Prepare a Draft Environmental Impact Study for the Proposed Storm Damage Reduction Plan for Long Island.

I wish to be added to the mailing list for the EIS scoping process.

In addition to the issues identified in the notice, I suggest that the following issues be addressed in the EIS:

(1) *Air quality impacts. Compliance with air quality standards for the corresponding onshore areas, and impacts in those areas.*

(2) *Energy impacts. Short term and long term demands for use of energy from non-renewable resources for the project.*

(3) *Chronic water pollution. Short term and long term increased risk of an oil spill due to the project and the means available to combat a spill should one occur; including disposal of contaminated material.*

(4) *Long term access by the general public to beach areas restored/replenished by public funds.*

Thank you, I look forward to receiving the EIS materials in due course.

Sincerely,

Halsey Taylor
Halsey Taylor

PC-64

ENVIRONMENTAL BR.
BURLAS

8040 Bellamah Ct. N.E.
Albuquerque, NM 87110
July 14, 1992

Clifford S. Jones III, Project Manager
Planning Division
U.S. Army Corps of Engineers
New York District
26 Federal Plaza
New York, NY 10278-0090

Dear Mr. Jones:

Please place my name on your mailing list to receive the Environmental Impact Statement, when available, for Storm Damage Reduction Plan, Atlantic Coast of Long Island from Jones Inlet to East Rockaway Inlet, Long Beach Island, New York.

Thank you.

Sincerely,

John Geddie

John Geddie

PC-65

significant change in response activities or estimated costs, the Component should notify the State as soon as possible. I will be providing you additional guidance on this matter in the *next two weeks*.

Please provide a copy of the attached model DSMOA language to those who will be responsible for providing the necessary information to the States.

We will also provide more detailed information in the following documents as they are developed:

- DoD Policies and Procedures for the Cooperative Agreements Program under DSMOAs
- *Federal Register* notice announcing the program and the availability of funds.

Cooperation and communication are paramount to the success of this program. I encourage you and your installations to make every effort to continually build a good working relationship with your counterparts in the State agencies. I believe that a cooperative effort with the states, to include mutual consideration of each others comments and program objectives, is the key to cost-effective and timely execution of the Defense Environmental Restoration Program.

Thank you for your continuing efforts in making the program a success. If you have questions or comments, Sam Napolitano remains my point of contact for DSMOAs and Lt Col Ken Cornelius has the lead in carrying out the CA Program. You may reach either of them at (202) 325-2211 (Autovon: 221-2214) in our offices in Alexandria, Virginia.

William H. Parker, III, P.E.,

Deputy Assistant Secretary of Defense (Environment).

Attachment

The Office of the Assistant Secretary of Defense.

Washington, DC 22202-2864.

Dated: June 1, 1992.

L.M. Bynum,

Alternate OSD Federal Register Liaison Officer, Department of Defense

[FR Doc. 92-13199 Filed 6-26-92; 8:45 am]

BILLING CODE 3810-01-M

National Security Telecommunications Advisory Committee Meeting

AGENCY: National Communications System, DoD.

ACTION: Notice.

SUMMARY: A meeting of the National Security Telecommunications Advisory Committee will be held on Friday, July 17, 1992. The business session and the executive session of the meeting will be held at the Old Executive Office Building.

Business Session

Call to Order
Task Force Briefings (ECC, NS, Energy)
IES Report
Manager's Report

Executive Session

Call to Order
NSTAC 10 Year Anniversary
Past NSTAC Chairmen Honored
Adjournment

Due to the requirement to discuss classified information, in conjunction with the issues listed above, the meeting will be closed to the public in interest of National Defense. Any person desiring information about the meeting may telephone (703) 692-9274 or write the Manager, National Communications System, 701 S. Court House Road, Arlington, VA 22202-2199.

Dated: June 23, 1992.

L.M. Bynum,

Alternate OSD Federal Register Liaison Officer, Department of Defense.

[FR Doc. 92-15139 Filed 6-26-92; 8:45 am]

BILLING CODE 3810-01-M

Department of the Army; Corps of Engineers

Storm Damage Reduction Plan Atlantic Coast of Long Island, From Jones Inlet to East Rockaway Inlet, Long Beach Island, NY

June 18, 1992.

AGENCY: Corps of Engineers, Army, DOD.

ACTION: Notice of Intent to Prepare a Draft Environmental Impact Statement (DEIS).

SUMMARY: The New York District of the U.S. Army Corps of Engineers plans to begin preparation of a Draft Environmental Impact Statement (DEIS) for proposed measures for storm damage reduction for the Atlantic Coast of Long Island, from Jones Inlet to East Rockaway Inlet, Long Beach Island, New York (study area). This project is necessary due to continual erosion leading to a decrease in the width of beach and a loss of beach material during severe storms and hurricanes. Due to the erosion and the lack of sufficiently high beaches, berms or dune systems, residential and commercial developments have become increasingly susceptible to storm damage from flooding and wave attack.

FOR FURTHER INFORMATION CONTACT: Attn: Clifford S. Jones III, Project Manager, (212) 264-9077. Attn: Peter M. Weppler, EIS Coordinator, (212) 264-4663. Planning Division, Corps of Engineers, New York District, 26 Federal Plaza, New York, New York 10278-0090.

SUPPLEMENTARY INFORMATION: This action was authorized by a Resolution of the House Committee on Public Works and Transportation adopted October 1, 1986.

1. Location and Description of Proposed Action

Long Beach Island, New York, a barrier island, is located on the Atlantic Coast of Long Island, between Jones Inlet and East Rockaway Inlet. The project study area lies within Nassau County, New York and is encompassed by the communities of Point Lookout, Lido Beach, the City of Long Beach and the Village of Atlantic Beach. All unincorporated areas are under the jurisdiction of the Town of Hempstead. The study area is bounded on the east by Jones Inlet, on the south by the Atlantic Ocean, on the west by East Rockaway Inlet, and on the north by Reynolds Channel. The reconnaissance study dated March 1989 identified a potential solution for storm damage protection consisting of constructing a 110-foot wide berm at an elevation of +10 feet National Geodetic Vertical Datum (NGVD) backed by a dune system to an elevation of +15 NGVD. The project would be periodically nourished with beach fill. Proposed sand sources would be from offshore borrow areas, which are currently being investigated. In addition to beach fill, the plan includes rehabilitation of thirty (30) groins/jetties and the reconstruction of the terminal groin at Point Lookout.

2. Reasonable Alternative Actions

The reconnaissance study recommended plan has a design berm height of +10 feet NGVD, berm width of 110 feet and dune elevation of +15 feet NGVD. Berm elevations of 9 feet NGVD, berm widths of 100 and 140 feet, and 18-foot dune heights were evaluated. The "No Action" alternative failed to meet needs and objectives of the subject project. The "Buyout" plan was not economically justifiable. The ongoing feasibility study will further consider these beach fill alternatives, and others, including, but not limited to, "hard structures" such as groin fields, seawalls, revetments, and breakwaters to identify an economically optimal plan.

3. Scoping Process

A. Public Involvement

A separate scoping correspondence detailing the proposed plan will be distributed to all appropriate public and private agencies and organizations with the intent of receiving opinions all from interested parties. Additions to this mailing list can be made by notifying the project EIS coordinator.

PC-66

B: Significant Issues Requiring In-Depth Analysis

1. Water Quality Impacts.
2. Archaeological and Cultural Resources Impacts.
3. Aquatic and Terrestrial Resources Impacts.
4. Shorebird Populations.
5. Recreational Impacts.
6. Longshore Sand Transport.

C: Environmental Review and Consultation

Review will be conducted as outlined in the Council on Environmental Quality regulations dated November 29, 1983 (40 CFR parts 1500–1508) and U.S. Army Corps of Engineer regulation ER 200–2–2 dated March 4, 1988.

4. Scoping Meeting

A scoping meeting, if needed, will be scheduled at a later date.

5. Estimated Date of DEIS Availability

January 1994.

Bruce A. Bergmann,

Chief, Planning Division.

[FR Doc. 92–15121 Filed 6–26–92; 8:45 am]

BILLING CODE 3710–06–M

Department of the Army

U.S. Army Reserve Command Independent Commission; Open Meeting

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463), announcement is made of the following Committee meeting:

Name of Committee: U.S. Army Reserve Command Independent Commission.

Date of Meeting: July 20, 1992.

Place: 1225 Jefferson Davis Highway, suite 1410, Arlington, Virginia 22202.

Time: 9 a.m.–5 p.m.

Purpose: The Commission was established to assess the progress and effectiveness of the United States Army Reserve Command since its establishment.

Summary of Agenda: This is the fifth meeting of the Commission. The Commission will review the command and control of the other reserve components and receive briefings concerning the advantages and disadvantages of the USARC becoming a MACOM.

This meeting is open to the public. Any interested person may attend, appear before, or file statements with the committee at the time and in the matter permitted by the committee. Anyone desiring to appear before the committee should contact the staff for procedures.

Ellis L. Pennington,

LTC, FA, U.S. Army Reserve Command, Independent Commission.

[FR Doc. 92–15175 Filed 6–26–92; 8:45 am]

BILLING CODE 3710–01–M

Military Traffic Management Command, Directorate of Personal Property, CONUS Automated Rate System (CARTS): Proposed Changes

AGENCY: Military Traffic Management Command (MTMC), Department of the Army, DoD.

ACTION: Notice of proposed changes in procurement policy.

SUMMARY: The Military Traffic Management Command (MTMC) is proposing changes to the CONUS Automated Rate System (CARTS) program. This program is the method by which interstate household goods rates are procured for Department of Defense (DOD)-sponsored interstate household goods shipments. A test of the proposed changes will be conducted for 1 year at certain personal property shipping offices (PPSOs).

DATES: Comments must be received by August 28, 1992.

ADDRESSES: Comments may be mailed to Headquarters, Military Traffic Management Command, ATTN: MTPP–CD, room 408, 5611 Columbia Pike, Falls Church, VA 22041–5050.

FOR FURTHER INFORMATION CONTACT: Janet Nemier at (703) 756–1190.

SUPPLEMENTARY INFORMATION: On February 12, 1990, the General Accounting Office (GAO) issued a report (GAO/NSIAD–90–50) requesting that the DOD replace or modify the interstate household goods rate program. GAO's report concluded DOD's two-phase system for obtaining rates for moving household goods is not truly competitive in that it limits the incentive carriers have to initially offer low rates. They recommended that DOD introduce more competition into its procedures for obtaining rates from commercial household goods carriers. Although GAO did not make specific recommendations for replacement or modification of the current bidding system, they state, "a one-phase bidding system, whereby, all carriers have equal incentive to bid the lowest possible rates and those offering the lowest rates are rewarded with all the traffic they can handle on the routes for which they are low bidders, would probably provide the carriers the most incentive to offer their lowest rates initially." In addition, GAO suggested that, "if DOD determines that such a bidding system would not provide it the moving capability it needed, or would result in an unacceptable quality of service, it could modify the two-phase bidding system so that the carrier offering the lowest rate during the first phase is allocated a greater share of the traffic than any other carrier simply meeting the low rate."

On December 27, 1991, GAO issued a second report (GAO/NSIAD–92–61) requesting that the DOD accelerate implementation of GAO's previous recommendation to replace or modify the interstate household goods rate program.

HQMTMC reviewed these GAO reports, the process by which rates are presently solicited, and the impact of the proposed change on moving capability. Changes to the process for securing domestic household goods moving rates may increase competition among carriers and could result in savings to the DOD. Accordingly, MTMC intends to conduct a test program using a revised process for the submission of interstate moving rates by carriers and the subsequent offering and award of shipments by PPSOs to carriers at selected CONUS installations.

A summary of MTMC's proposed changes is as follows:

A 12-month filing cycle will replace the current 6-month cycle. The effective date is yet to be determined.

The process for the first or initial rate submission by carriers for the filing cycle will not be changed. This submission provides carriers maximum flexibility to establish the specific compensatory rates at which they desire to move household goods shipments from any origin PPSO to any destination state. Carriers will be allowed one opportunity to correct any rates rejected by HQMTMC in the initial submission. There are a number of reasons for rejection of rates. Some examples of rejections are: A missing data element, information in a blank that must be left blank, no interstate DOD approval, and no approval to or from Alaska for code of service indicated.

In the current system, carriers are allowed to meet any rate lower than theirs filed in the initial filing cycle. This process is accomplished in a second filing, commonly referred to as the "me-too" cycle. Under the test procedures, once the initial cycle is completed, carriers will be provided the low rate for each channel (i.e., origin PPSO to destination state). Carriers will be provided one opportunity to adjust their rate to meet the low rate filed for a given channel. There will be no correction submission. If a carriers' adjusted rate is rejected, the rate filed by the carrier in the initial submission will be carrier's effective rate. Carriers not desiring to adjust their initial filed rate, to meet the low rate filed on a channel, will have their initial rate as the HQMTMC accepted rate. A carrier's

PC-67

CLEAN AIR ACT
STATEMENT OF CONFORMITY

ATLANTIC COAST OF LONG ISLAND,
EAST ROCKAWAY INLET TO JONES INLET,
LONG BEACH ISLAND, NEW YORK
STORM DAMAGE PROTECTION PROJECT

Based on the conformity analysis in the subject report, I have determined that the proposed action conforms to the applicable State Implementation Plan (SIP). The Environmental Protection Agency had no adverse comments under their Clean Air Act authority. All air quality comments were fully addressed, and the project would not lead to adverse air emission as compared to the no-action alternative; and thus, would comply with Section 176 (c)(1) of the Clean Air Act Amendments of 1990.

14 December 1994
DATE

THOMAS A. YORK
Colonel, Corps of Engineers
District Engineer