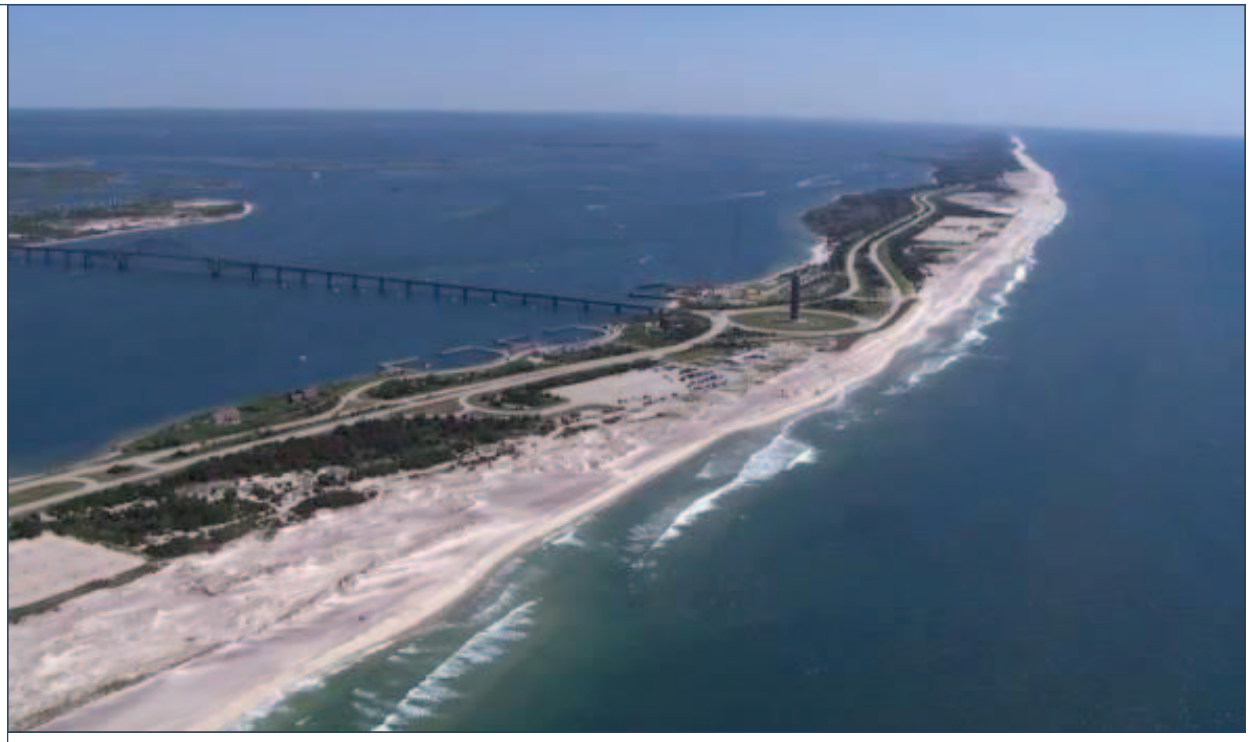
ROBERT MOSES STATE PARK

Captree State Boat Channel Dredging and Beach Stabilization Project



Tier 1 Environmental Assessment

New York State Homes and Community Renewal

January 29, 2014

Robert Moses State Park Captree State Boat Channel Dredging and Beach Stabilization Project

Tier 1 Environmental Assessment

January 29, 2014

Project Name:	Robert Moses State Park State Boat Channel Dredging and Beach Stabilization Project	
Project Location:	Robert Moses State Park, Towns of Babylon and Islip, Suffolk County, NY	
HTFC SHARS #:	N/A	
Federal Agency:	US Department of Housing and Urban Development (HUD)	
Responsible Entity:	New York State Homes and Community Renewal (HCR)	
Responsible Agency's Certifying Officer:	Heather Spitzberg, HCR Environmental Analysis Unit	
Project Sponsor:	New York State Office of Parks, Recreation, and Historic Preservation (OPRHP)	
Primary Contact:	Mr. Marc Talluto, Director of Operations	
	New York State Office of Parks, Recreation, and Historic Preservation 625 Broadway Albany, NY 12207	
	Marc.Talluto@parks.ny.gov	
	(518) 474-0440	
Project NEPA Classification:	24 CFR 58.36 (Environmental Assessment)	
Environmental Finding:	☒ Finding of No Significant Impact - The project will not result in a significant impact on the quality of the human environment.	
	☐ Finding of Significant Impact - The project may significantly affect the quality of the human environment.	
	The undersigned hereby certifies that HCR has conducted an environmental review of the project identified above and prepared the attached environmental review record in compliance with all applicable provisions of the National Environmental Policy Act of 1969, as amended (42 USC Sec. 4321 et seq.) and its implementing regulations at 24 CFR Part 58.	
	Heather Spitzberg	
Environmental Assessment Prepared By:	AKRF, Inc. 440 Park Avenue South, 7th Floor New York, NY 10016	Carter Ledyard & Milburn LLP Two Wall Street New York, NY 10005

TABLE OF CONTENTS

Project Description 1
Background 2
Purpose and Need for the Proposed Project 3
Existing conditions on the project site and potential impacts 3
Construction/implementation of the Proposed Project 7
Summary of Findings and Conclusions 9
Conditions for Permit Approval 10
List of Sources, Agencies, and Persons Consulted 13
Environmental Assessment Checklist 13
Compliance with Statutes and Regulations listed at 24 CFR 58.6 13
Compliance with Statutes and Regulations listed at 24 CFR 58.5 21
Determination 25

FIGURES

Figure 1: Beach Restoration Site Plan
Figure 2: Project Location
Figure 3: Dredging Area
Figure 4: Nearest Airports
Figure 5: National Wetlands Inventory
Figure 6: NYSDEC Regulated Wetlands

APPENDICES

Appendix A: NYSDEC Permits and Correspondence
Appendix B: USACE Permits and Correspondence
Appendix C: NMFS and USFWS Correspondence
Appendix D: SHPO Correspondence
Appendix E: NYSDOS Correspondence
Appendix F: FEMA FIRMs and Floodplain Management Documentation
Appendix G: Sole Source Aquifer Review Screening

PROJECT DESCRIPTION

The New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) is requesting Community Development Block Grant-Disaster Recovery (CDBG-DR) funding from New York State Homes and Community Renewal (HCR) for an urgent one-time dredging in Captree State Boat Channel and beach stabilization at Robert Moses State Park, both located in Suffolk County, New York.

The proposed project would involve the dredging of approximately 400,000 cubic yards of sand from the Captree State Boat Channel north of Robert Moses State Park (the Park). The proposed dredging area is shown in Figures 3a to 3d. Dredged sand would be placed along the oceanfront in the Park at specified locations adjacent to Parking Fields 3, 4, and 5. These locations stretch approximately 9,500 linear feet from an area west of Parking Field 3 to the western edge of Parking Field 5 (see Figures 1a and 1b). Excess sand from the Captree State Boat Channel would be stockpiled for future emergency use. Under the proposed action, OPRHP may use CDBG-DR funds to acquire additional stockpile sand (up to 200,000 cubic yards) should it become available from other sources, subject to future site specific (Tier 2) environmental review, as described below.

The proposed project is necessary to stabilize and restore the Park's beaches and protect infrastructure, to offset continued beach erosion that threatens wildlife habitat, and to restore the functionality of the beaches as coastal barriers for inland communities and public use. Dredging is proposed between February and July, 2014 so that the dredged sand can be deployed to address the immediate need to stabilize the Park's traffic circle, which is currently at risk of collapse into the Atlantic Ocean. The traffic circle is an integral component of the parkway system needed to provide vehicular access from the Robert Moses Causeway for the Park's 3.5 million annual visitors and residents of Fire Island. Stabilization of the beach area adjoining the traffic circle needs to be completed before the spring of 2014 to ensure protection from winter and spring storms, and to ensure public access to the Park during the summer of 2014 and beyond.

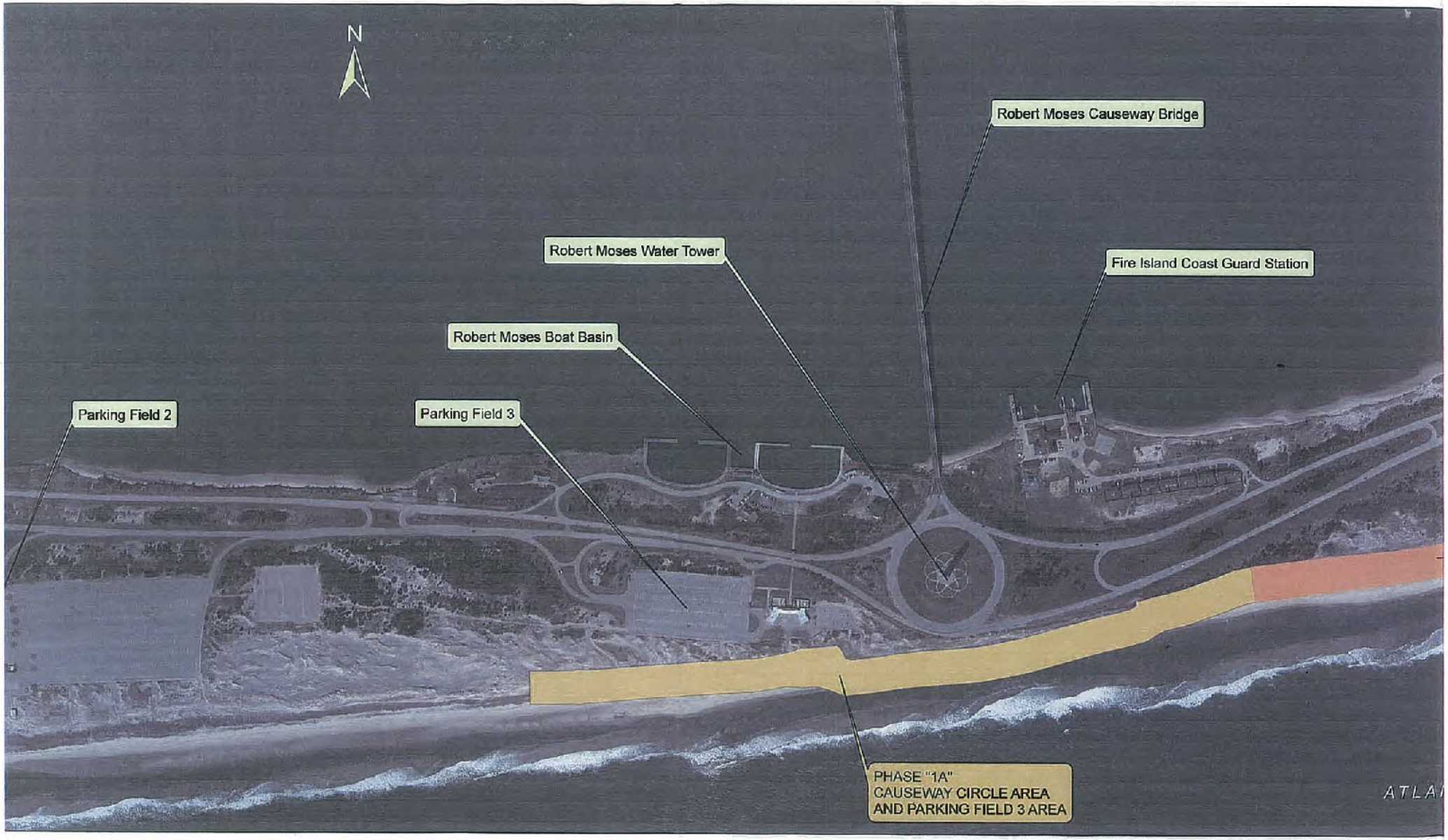
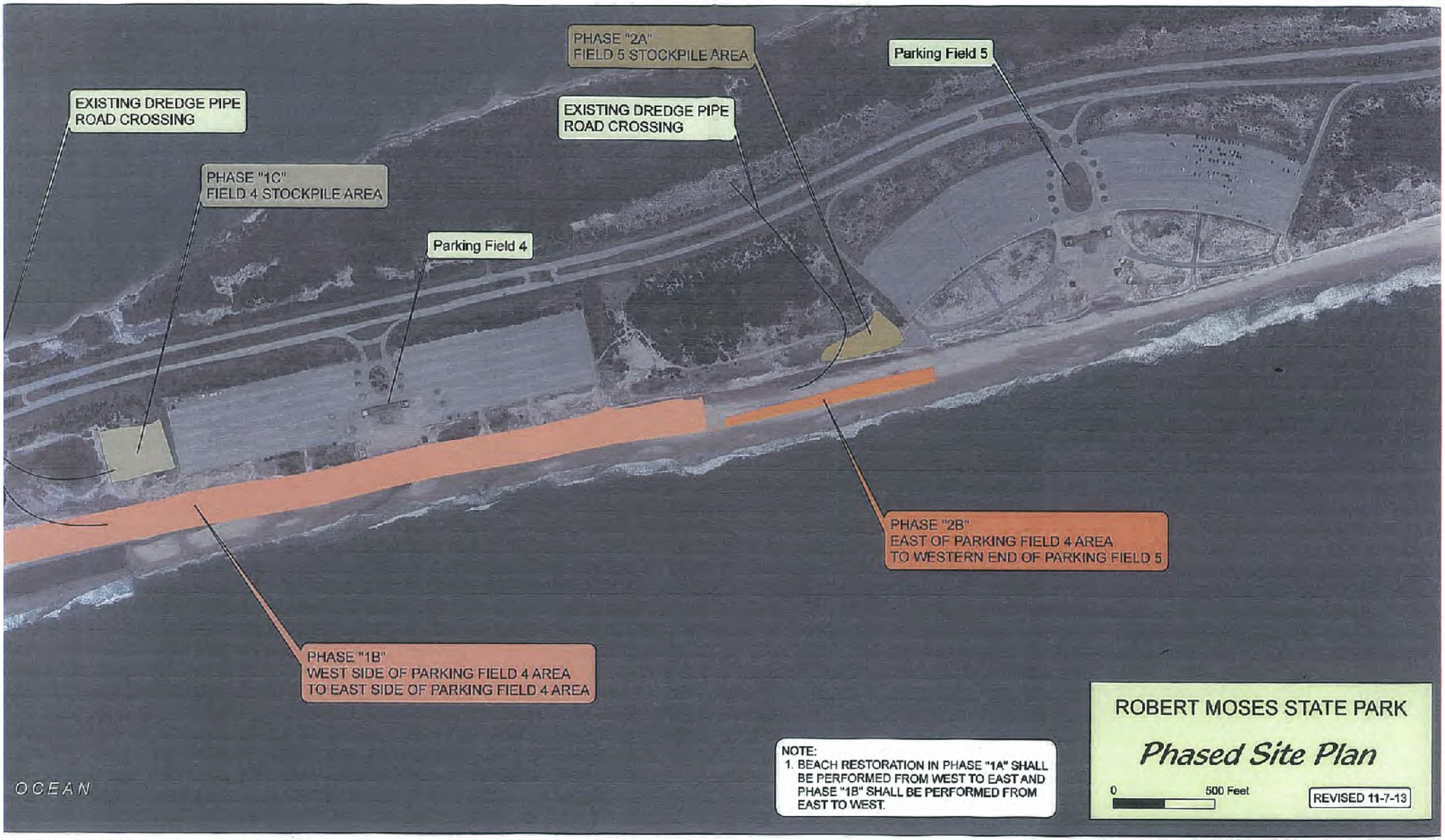


Figure 1a
Beach Restoration Site Plan



NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 1-4728-0955/00029 Mod3
DATE 4/8/13

Figure 1b
Beach Restoration Site Plan

BACKGROUND

Superstorm Sandy's damage to the Park was severe: most of the Park's beaches were significantly eroded by severe wind, wave, and tidal action, and a portion of the Park's iconic traffic circle was destroyed. Governor Cuomo issued an emergency declaration on the day of the storm (October 28, 2012), which authorized state agencies to carryout activities to address the storm's immediate effects. Pursuant to the emergency declaration, and to permit recreational use of the park during the summer of 2013, the New York State Department of Transportation (NYSDOT) reconstructed the traffic circle and OPRHP (through the Office of General Services) completed boardwalk repairs and beach stabilization south of Parking Fields 4 and 5.

HCR's decision whether to provide CDBG-DR funding for the application is a discretionary action which requires review under the National Environmental Policy Act of 1969 (NEPA) and the State Environmental Quality Review Act (SEQRA). The CDBG-DR funding would be provided by HCR, by and through the Housing Trust Fund Corporation (HTFC), which is the Responsible Entity (RE) for environmental reviews. This Environmental Assessment (EA) is being prepared to assist HCR in its determination whether to grant funding to OPRHP for the proposed project. As part of this project, HCR is undertaking the decision making process required by Executive Order 11988 in accordance with HUD regulations at 24 CFR 55.20 (*Subpart C - Procedures for Making Determinations on Floodplain Management*) to determine the potential effect that the proposed project would have on the 100-year floodplain located in the Towns of Babylon and Islip, Suffolk County, New York. HCR is also preparing this EA as lead agency under SEQRA.

The project has received permits from the New York State Department of Environmental Conservation (NYSDEC) and the United States Army Corps of Engineers (USACE); these permits are included in Appendices A and B respectively. As part of its permitting process, USACE consulted with the United States Department of the Interior Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), as required by Section 7 of the Endangered Species Act of 1973 and other federal statutes consistent with those agencies' memoranda of agreement regarding consultation under federal laws; this correspondence is included in Appendix C. HCR has considered the information provided by USFWS and NMFS as part of this EA. Additionally, USACE has undertaken consultation with the New York State Historic Preservation Office (SHPO) under Section 106 of the National Historic Preservation Act of 1966; SHPO correspondence is included in Appendix D. The New York State Department of State (NYSDOS) has also made a determination about the project's consistency with the state's Coastal Management Program; NYSDOS correspondence is included in Appendix E.

Finally, documentation of the 8-step decision-making process required by 24 CFR 55.20 to determine whether alternatives to construction within the floodplain would meet the purpose and need of the proposed project is included in Appendix F.

Under the proposed action, OPRHP may also seek to use CDBG-DR funds to acquire additional stockpile sand (up to 200,000 cubic yards) should it become available from other sources. All stockpile sand would be tested for contaminants and grain size in accordance with state and federal permits, and then placed in previously approved stockpile areas in a manner that avoids impacts to natural resources.

HCR is tiering this environmental review solely with respect to this additional up to 200,000 cubic yards of sand. OPRHP has stated that it would not undertake any dredging to obtain this additional sand, and that it would procure such sand only as it becomes available from dredge projects permitted by USACE and NYSDEC. However, it is not yet known from what source the additional sand would be obtained, the amount of sand, or whether the sand can be obtained at all within the project schedule. Because of these variables, HCR will undertake a more focused, site specific analysis of this additional 200,000 cubic yards of material when more information becomes available.

This NEPA Tier 2 and SEQRA review will focus on hazardous materials and potential impacts to fish and wildlife associated with the additional up to 200,000 cubic yards that may be obtained for other sources

to be stockpiled. The Tier 2 review would include consultation with USFWS and NMFS, as necessary, and would be coordinated to the extent practicable with any USACE and NYSDEC permitting actions. The use of the up to 200,000 cubic yards of additional sand will not commence until such environmental reviews and permitting are completed and HCR approves the use of Tier 2 funds for this purpose. However, this Tier 1 EA constitutes the complete environmental assessment of the 400,000 cubic yard dredging and placement of sand in the Captree Channel: No further review of that portion of the proposed project is anticipated.

PURPOSE AND NEED FOR THE PROPOSED PROJECT

The proposed project would remove shoal areas and would maintain safe navigation in Captree State Boat Channel, restoring the channel to its historic configuration. The dredged material would be used to restore a public beach, damaged by Superstorm Sandy, to its pre-storm conditions and to offset continued beach erosion. A portion of the beach restoration area is located near the traffic circle surrounding the Robert Moses Water Tower, the Park's central access point and vital traffic management facility. As Robert Moses State Park receives millions of visitors per year, the restoration of the beach and access roadways is an important part of the area's post-Sandy recovery. The proposed project would support previous investments made to restore the Park and strengthen its beaches against future storms.

EXISTING CONDITIONS ON THE PROJECT SITE AND POTENTIAL IMPACTS

Robert Moses State Park, which receives up to 3.5 million visitors per year, is located in southern Suffolk County, on the western end of Fire Island (See Figure 2). The Park, which is the oldest state park on Long Island, is well known for its public beaches, which stretch for approximately 5 miles along the Atlantic Ocean. The Park is accessible from Long Island via the Robert Moses Causeway across Great South Bay and serves visitors from the five boroughs of New York City and throughout Suffolk and Nassau Counties.

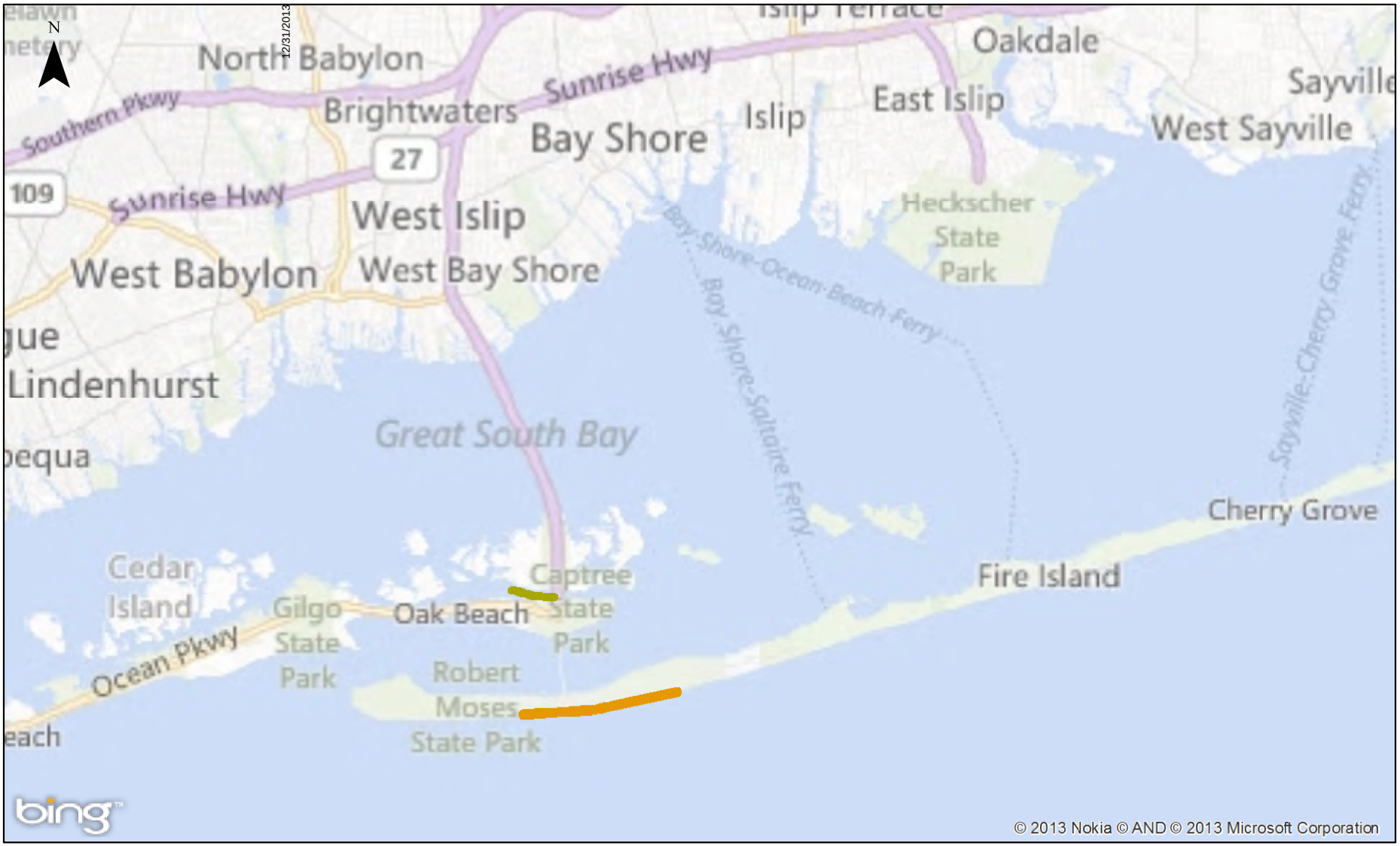
The proposed project site is located within two towns: Babylon and Islip. The closest residences to the Park are located approximately 4,000 feet to the north, across the Fire Island Inlet, in the Gilgo-Oak Beach-Captree community, part of the Town of Babylon. Many of the residences in the area are second homes, with fewer than 300 residents counted in the 2010 Census.

CULTURAL RESOURCES

A number of structures within Robert Moses State Park have been determined eligible for listing on the New York State and National Registers of Historic Places (S/NR), including a bathhouse and a picnic shelter near Parking Field #3. The Park is located adjacent to the NR listed Fire Island Light Station Historic District. The proposed project, which involves dredging and beach stabilization, will not impact these eligible S/NR structures and thus the project will not result in an adverse effect on cultural resources (See also Appendix D).

NATURAL RESOURCES

Robert Moses State Park includes diverse wildlife population. The Northern harriers, double-crested cormorants, great cormorants, green and great blue herons, great and snowy egrets and ibis are seen feeding during various seasons. The Canada goose, smaller brant, mallard, black duck and red-breasted merganser are the most commonly seen of the 24 recorded duck-like species. Five species of plover dwell at water's edge with the sanderling being most prevalent. Oystercatchers are frequently spotted prying at mollusk shells. From September to mid-October, kestrels, peregrine falcons and even the monarch butterfly migrate through the Park. In addition, many species of neotropical songbirds use this flyway. Often seen throughout the winter months is the yellow-rumped warbler which feeds on the park's bayberry thickets. The thickets are also a popular feeding area for the resident white-tailed deer. Fox, raccoon, and mice are also present.



0 0.5 1 2 Miles

Beach Restoration Area

Dredging Area

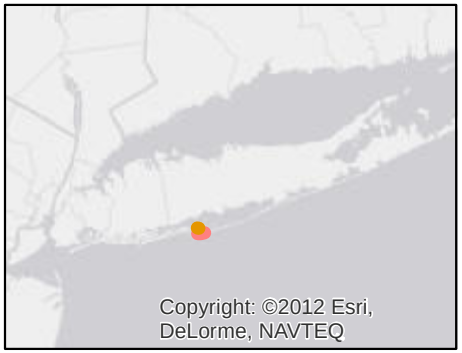


Figure 2

Project Location

Robert Moses State Park State Boat Channel Dredging and Beach Stabilization Project

There are two federally listed species present in the area of the proposed project:

- The piping plover (*Charadrius melodus*) is a threatened migratory shorebird species present within the project area. This species arrives along Atlantic Ocean beaches to breed in March and April, where it remains until departure to overwintering grounds between July and September. The piping plover's breeding grounds consist of dry sandy beaches or areas that have been filled with dredged sand, often near dunes in areas with little or no beach grass.
- The seabeach amaranth (*Amaranthus pumilus*) is a threatened coastal plant found within the project area, generally from May-November, with peak presence in August and September. This annual species grows along sandy beaches of the Atlantic coast between dunes and the high tide mark, as well as in beach stabilization sites. The plants grow close to the surface and can range in size from less than an inch to more than a foot across. Flowering and seed production usually starts in July and continue until the plants die in the fall.

Aquatic Natural Resources

Several listed species of whales occur seasonally in the waters off New York. Federally endangered North Atlantic right whales (*Eubalaena glacialis*) are found off the coast of New York from September 1 - March 31. Federally endangered humpback whales (*Megaptera novaeangliae*) are found off the coast of New York from February-April and from September- November. Fin (*Balaenoptera physalus*) and Sperm (*Physeter macrocephalus*) whales are also seasonally present in the waters off of New York, but are typically found in deeper offshore waters. Although listed species of whales can be found in the offshore waters of New York, due to the depths and near shore location of the project site, listed whales are extremely unlikely to occur in the Project area.[1]

Four species of federally threatened or endangered sea turtles occur seasonally in New York waters. The sea turtles in these waters are typically small juveniles with the most abundant being the federally threatened Northwest Atlantic distinct population segment (DPS) of loggerhead (*Caretta caretta*) followed by the federally endangered Kemp's ridley (*Lepidochelys kempi*). New York waters have also been found to be warm enough to support federally endangered green sea turtles (*Chelonia mydas*) from June through October. While federally endangered leatherback sea turtles (*Dermochelys coriacea*) may be found in the waters off New York during the warmer months, this species is less likely to occur in the Project area as it is typically found in more offshore waters. Studies in New York waters have indicated that sea turtles mainly occur in areas where the water depth was between 16 and 49 feet and waters were slow-moving or still. The habitat characteristics of the Project area (i.e., depths of less than 12 feet) where dredging will occur, are inconsistent with the preferred sea turtle foraging depths in New York waters; however, transient green, loggerhead, and Kemp's ridley sea turtles may pass near the Project area from June to October each year.[2]

Atlantic sturgeon (*Acipenser oxyrinchus*) occur in estuarine and marine waters along the U.S. Atlantic coast and may be present in East Captree State Channel. The New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. The range of Atlantic sturgeon from all five DPSs extends from Labrador Inlet, Labrador, Canada to Cape Canaveral, FL. After emigration from the natal estuary, subadult and adult Atlantic sturgeon forage within the marine environment, typically in waters less than 50 meters in depth, using coastal bays, sounds, and ocean waters. Therefore, adult and subadult Atlantic sturgeon from any of five DPSs could occur in the project area; however, as Atlantic sturgeon spawn in freshwater portions of large rivers and early life stages are not tolerant of salinity, no eggs, larvae or juvenile Atlantic sturgeon are likely to occur in East Captree State Channel.[3]

[1] NMFS letter to Stephen Ryba, dated September 3, 2013 (Appendix C)
[2] Ibid.
[3] Ibid.

Winter flounder (*Pseudopleuronectes americanus*) is one of the aquatic species that may be present in and around Captree State Boat Channel, which will be dredged as part of the proposed project. Winter flounder is typically found in shoal habitats and is one of the more common recreational flatfish species present in New York waters. Juveniles and adults occur year-round off the southern coast of Long Island and migrate inshore to spawn during the winter or early spring, generally between February and April. Spawning usually occurs at night in shallow, inshore estuarine waters with sandy bottoms. Off the southern coast of Long Island, eggs are present from March to April, and larvae are present from March through May. First year winter flounder remain within the estuarine system year-round in shallow waters; juveniles beyond their first year have been found to overwinter in estuaries. Older juveniles and adults typically migrate out of estuarine waters in the fall and early winter, preferring deeper ocean waters during these seasons.[4] The area of this Essential Fish Habitat (EFH) is a 10-minute latitude by 10-minute longitude square area (approximately 116.5 square miles) with numerous bays and embankments throughout the entire habitat. The project area is approximately 3,550 feet long by 400-feet in width, representing an extremely small fraction of the entire EFH (e.g., less than 0.05% of the total EFH). Studies suggest that the winter flounder habitat choice is cued by either fine-grained sediments or low current velocities.[5] Current velocities in the project area during peak tidal exchange can exceed more than 2 knots, making the area a relatively high velocity area. Therefore, it is less likely that, with all the available low velocity areas within this EFH, winter flounder would choose to spawn in the area proposed for dredging. Also, the sandy substrate would not be expected to be a preferred habitat for egg and larvae recruitment.

By complying with the terms and conditions in the USACE and NYSDEC permits, and in consideration of the information provided as part of the consultation with USFWS and NMFS, the proposed project is not expected to result in significant adverse impacts to natural resources.

FLOODPLAINS AND WETLANDS

The proposed project is located within the 100-year floodplain (Zone VE) which is an area subject to a 100-year flood event, with additional hazards due to storm-induced velocity wave action. As described in Appendix F, the proposed project would not result in significant adverse impacts within the 100-year floodplain.

Tidal wetlands are present throughout the project site as it located along the oceanfront; a large portion of the project site is mapped as NYSDEC regulated wetland (2020 LZ. Littoral Zone). No freshwater wetlands are present on the project site. While the proposed project would place dredged material in the mapped tidal wetlands and in adjacent buffer areas, the project would comply with all relevant conditions of the NYSDEC Tidal Wetlands permit (as listed below in section *Conditions for Approval*) and is not expected to result in significant adverse impacts to the tidal wetlands present on the project site.

COASTAL ZONE MANAGEMENT ACT

Based on an analysis of the proposed project's consistency with New York State's coastal policies provided in Appendix E, HCR has determined and concurred with the determination of NYSDOS that the proposed project is consistent with these policies.

AIR QUALITY

As noted below in the Environmental Assessment Checklist at page 16, the proposed project would not generate any new stationary or mobile sources of air pollutants and therefore has no potential to affect air quality. Similarly, the construction associated with the Project is not anticipated to have a significant adverse impact on air quality for the following reasons:

[4] AKRF, 2013
[5] Stoner, 1985, (Appendix B)

- Dredging operations will involve use of dredging equipment including several boats, several large capacity diesel-powered pumps and miscellaneous small motors and equipment. Although the pumps will operate continuously during dredging operations, they are relatively few in number and will be continuously re-located as dredging operations progress.
- The dredging operation is temporary, and air emissions will be eliminated at the conclusion of the project, thereby avoiding pollutant concentrations in any one spot.
- Beach restoration will involve use of a small number of trucks and earth-moving equipment. The number of such equipment will be limited, will re-locate continually as the work area advances, and will cease operation upon completion of the work.
- The dredging project is relatively small, and will not involve the large-scale equipment used on major ocean dredging projects or inlet bypass projects in the open ocean.
- Most of the dredging operation will occur in the winter and early spring when recreational activities on the water and beach are minimal.
- All equipment used will meet state and federal regulatory requirements including those relating to air emissions and allowable fuel types.
- Most operations will occur in relatively isolated coastal areas, on the waterways and beaches, and will not be in the vicinity of other major sources of air emissions (e.g. highways, industrial/commercial facilities, power generating facilities).
- Commutation of workers to the work site and associated vehicular trips will be minimal, since the operation will typically involve a relatively small number of operators and crew (less than 10).
- The operation will not generate dust, and will not involve handling of contaminated sediments.
- The project will have supervision and oversight by State representatives to ensure proper and efficient movement of materials and equipment, and to check on the operation and condition of equipment.

NOISE AND VIBRATION

As noted below in the Environmental Assessment Checklist at page 16, the proposed project would not result in a new permanent facility that would generate noise on the project site. The construction of the proposed project is not anticipated to result in significant adverse noise impacts for the following reasons:

- Although dredging equipment will operate continuously during dredging operations, dredging equipment would continuously move through the project area and would be adjacent to each individual noise receptor for only a limited period of time. Furthermore, the number and size of dredging equipment will be scaled appropriately for any given day's operations, and therefore would generate no more noise than necessary to accomplish each day's dredging schedule.
- The dredging operation is temporary, and any noise generated by the project equipment will cease at the conclusion of the project.
- As noted below under Construction/Implementation of the Proposed Project, dredging operations are expected to begin in February 2014 and would last approximately 90 to 120 days. Therefore, dredging operations will take place outside of the peak summer season when recreational activities on the water and beach are minimal and fewer residents along Captree Channel would utilize the outdoor portions of their residences.
- Beach restoration will involve use of a small number of trucks and earth-moving equipment. This equipment will re-locate continually as the work area advances being adjacent to each individual noise receptor for only a limited period of time, and will cease operation upon completion of the work.

OTHER ENVIRONMENTAL IMPACT AREAS

The above and other impacts areas are analyzed in the Environmental Assessment Checklist attached hereto which shows that the proposed project will not result in significant adverse impacts in any of these impact areas.

CONSTRUCTION/IMPLEMENTATION OF THE PROPOSED PROJECT

The proposed project would dredge an approximately 3,550-foot by 400-foot area of the existing Captree State Boat Channel west of the Robert Moses Bridge (see Figures 3a through 3d) to a maximum depth of 14 feet below Mean Low Water (MLW). The resulting 400,000 cubic yards of material will be placed on the beach as stabilization material.

The dredged material would be placed in phases; the phases were developed based on discussions with NYSDEC, USACE, and USFWS in order to minimize potential effects on piping plover nesting and foraging areas along this section of beach. The phasing schedule prioritizes areas known for past nesting piping plover activity; these areas will be restored during the initial phases of the project so that the restoration activities can be completed before the nesting period begins. Another important consideration in the phasing schedule is the need to restore critical areas, such as the traffic circle.

The phases of the project are as follows:

- The Phase 1A area is located generally south of the traffic circle, stretching for approximately 3,700 linear feet.
- The Phase 1B area stretches for approximately 4,700 linear feet, along the beach south of Parking Field 4.
- The Phase 2B stabilization area stretches for approximately 1,100 linear feet between Parking Fields 4 and 5. Phase 2B would only be performed if conditions at the project site are acceptable to avoid impacts to piping plover nesting habitat.

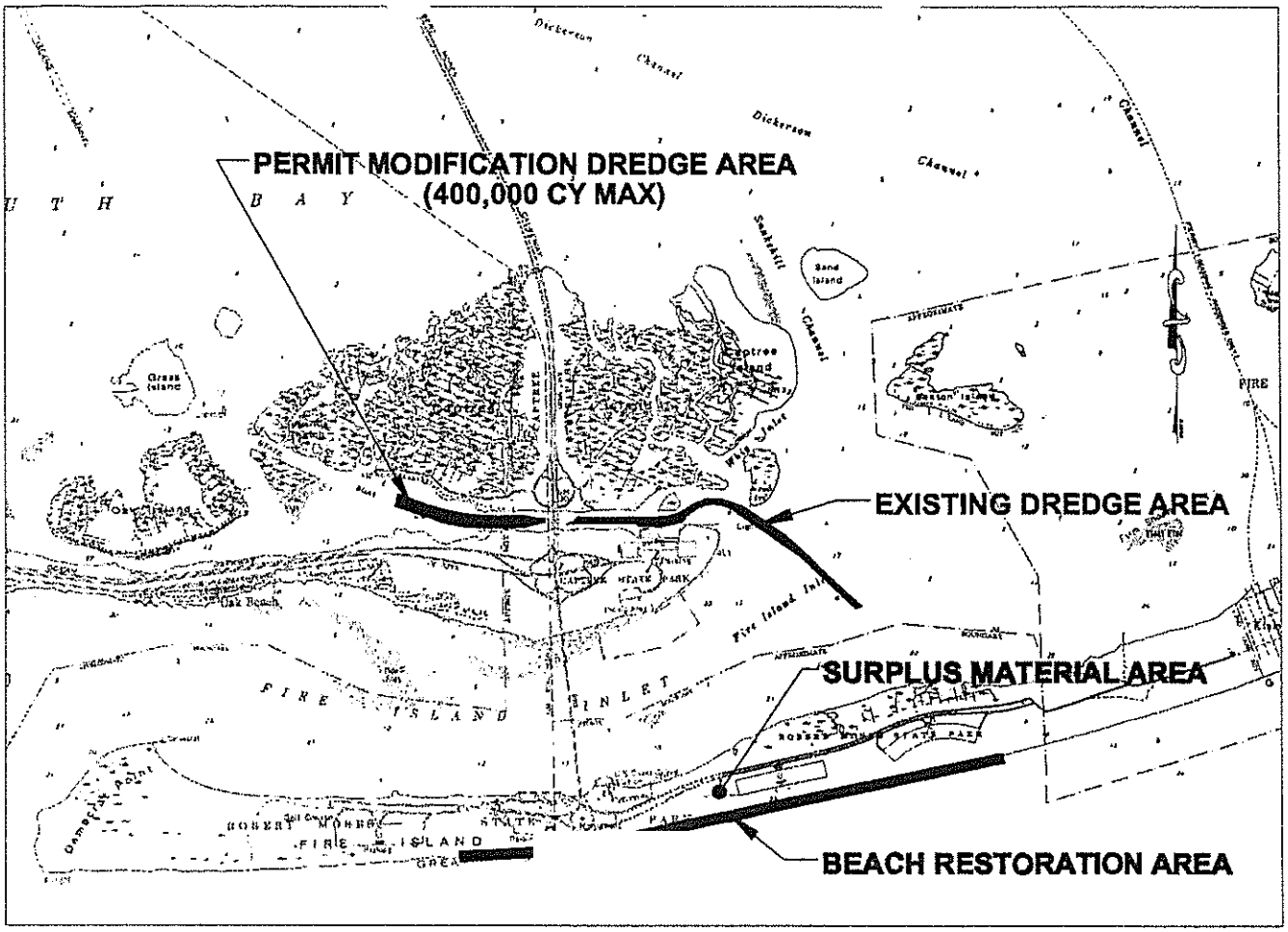
Dredged material that is not used for placement would be stockpiled in two designated areas and used for restoration projects in the future:

- The Phase 1C stockpile area would be located at the west end of Parking Field 4.
- The Phase 2A stockpile area would be located behind the dune line at the west end of Parking Field 5.

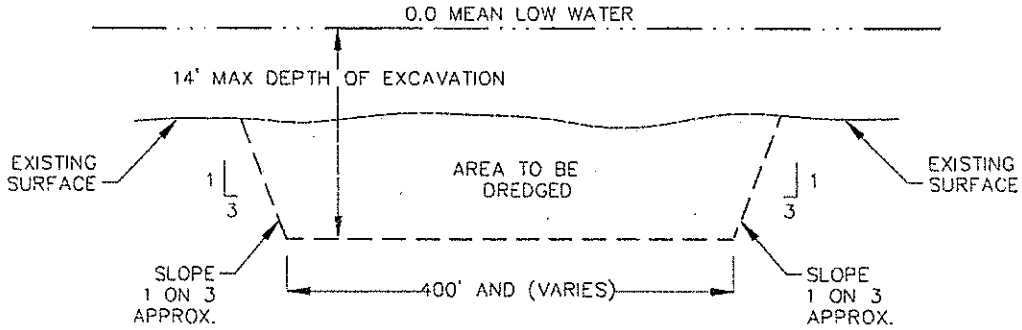
As mentioned above, should additional stockpile sand that meets the characteristics required for placement on the beach become available from other dredging operations, OPRHP may consider seeking permit modifications to use this additional stockpile sand for beach stabilization. Such activity would not occur unless additional Tier 2 environmental review under NEPA and applicable review under SEQRA were completed. This activity would be subject to all permits and approvals being granted for such work. Additional placement of sand would only occur if conditions at the project site are acceptable to avoid impacts to piping plover nesting habitat.

Dredging would be performed by means of a hydraulic dredge. The material would be pumped directly onto the beach utilizing two existing pipelines; one pipeline is located near the western edge of Parking Field 4 and one is located near the western edge of Parking Field 5. The dredged material would be placed on the beach and distributed throughout the beach mechanically. Any remaining material would be placed in an upland site which would be contained by an embankment with a return flow leading into bay by means of a spillway. This stockpiled material would be transported to beach areas where needed by truck at a later time.

Figure 3a
Dredging Area



2,000 0 2,000 4,000
SCALE: 1" = 4,000'



TYPICAL CHANNEL SECTION
FOR MODIFICATION AREA ONLY

NAN-2010-00491-M2

PREPARED BY

Cashin Associates, P.C.
ENGINEERING·PLANNING·CONSTRUCTION MANAGEMENT

PERMIT MODIFICATION

KEY LOCATION MAP

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

CAPTREE CHANNEL
TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK
DATE: MARCH 2010, REV. APRIL 4, 2011
MODIFICATION DATE: JULY 2, 2013

Figure 3b
Dredging Area

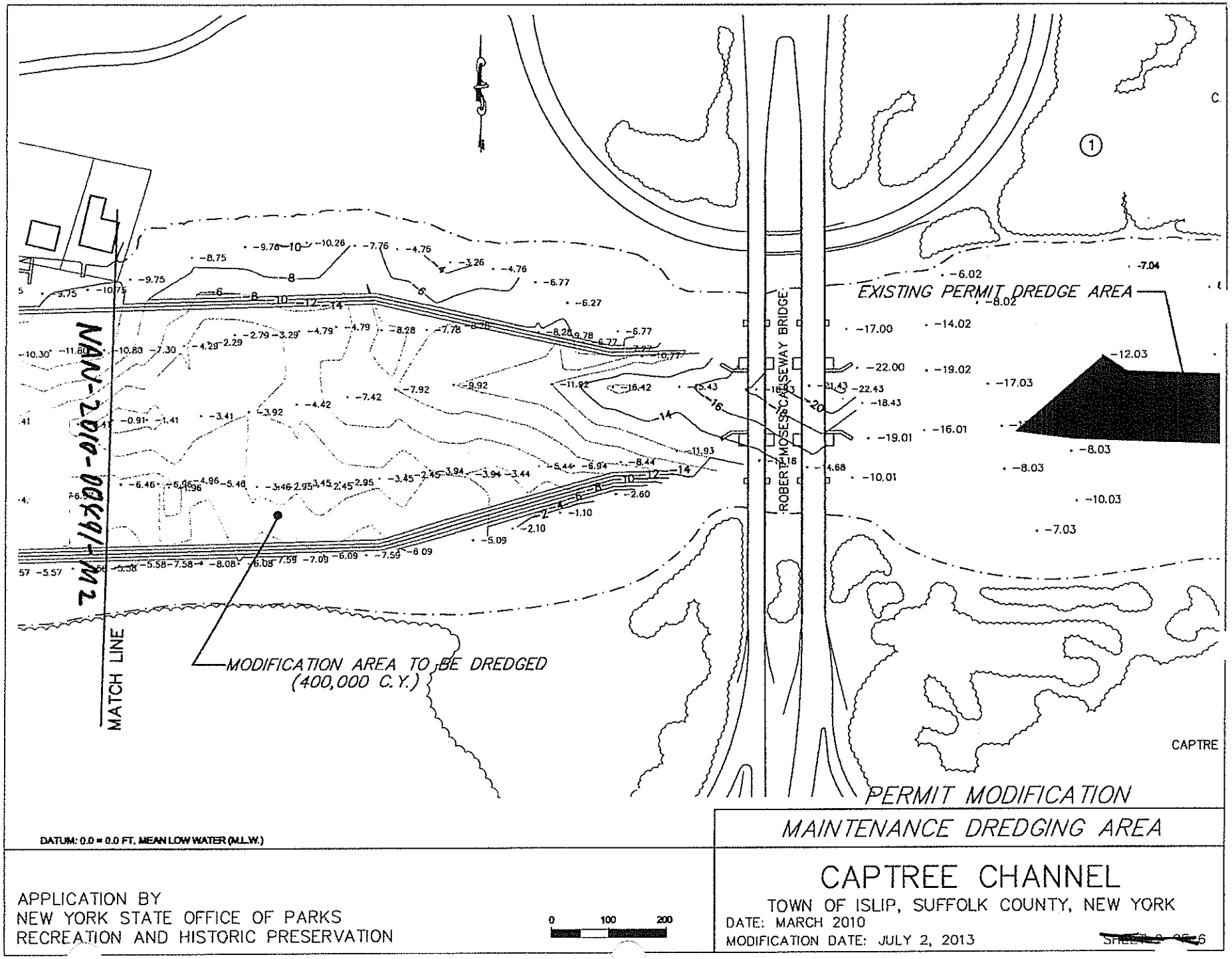


Figure 3c
Dredging Area

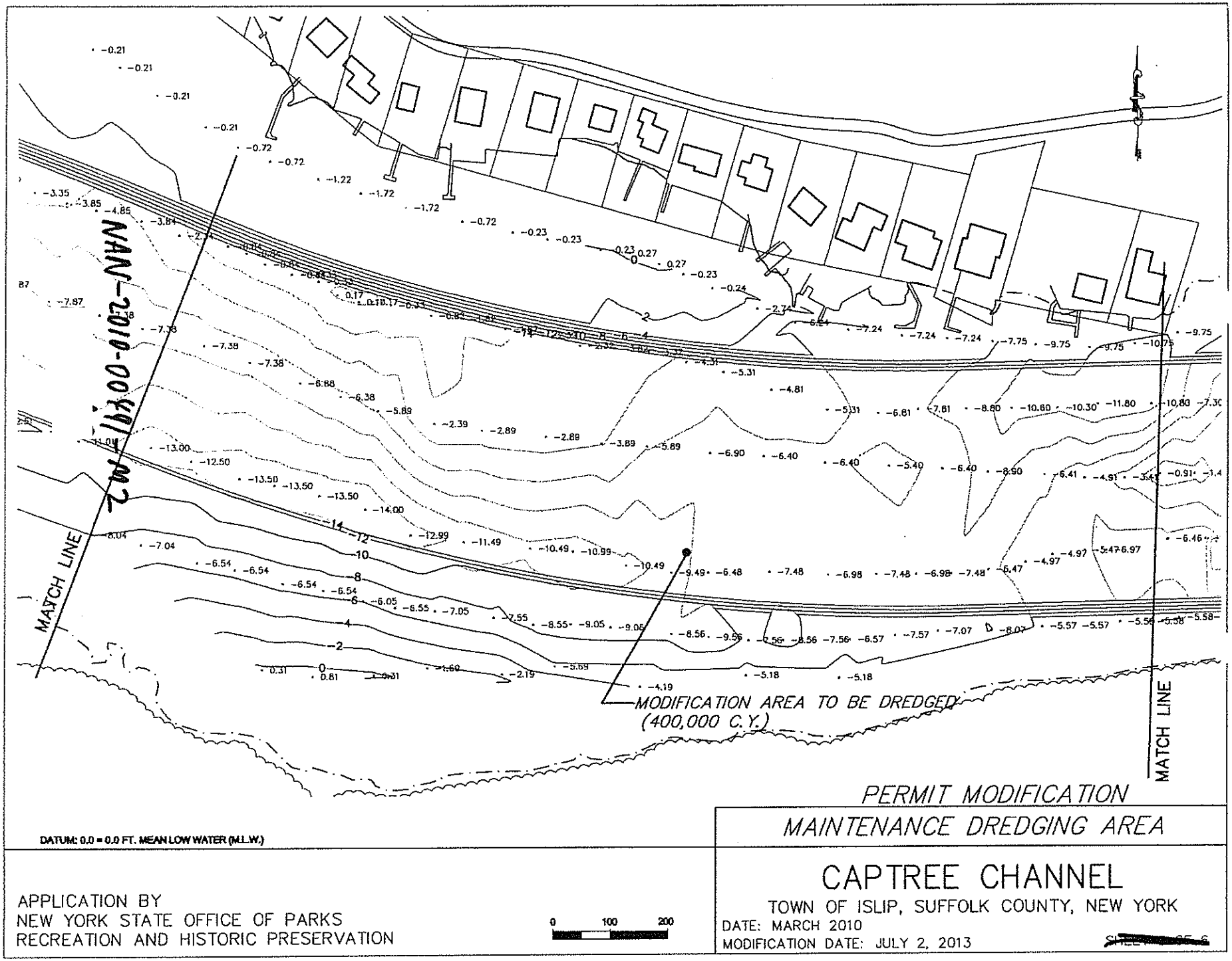
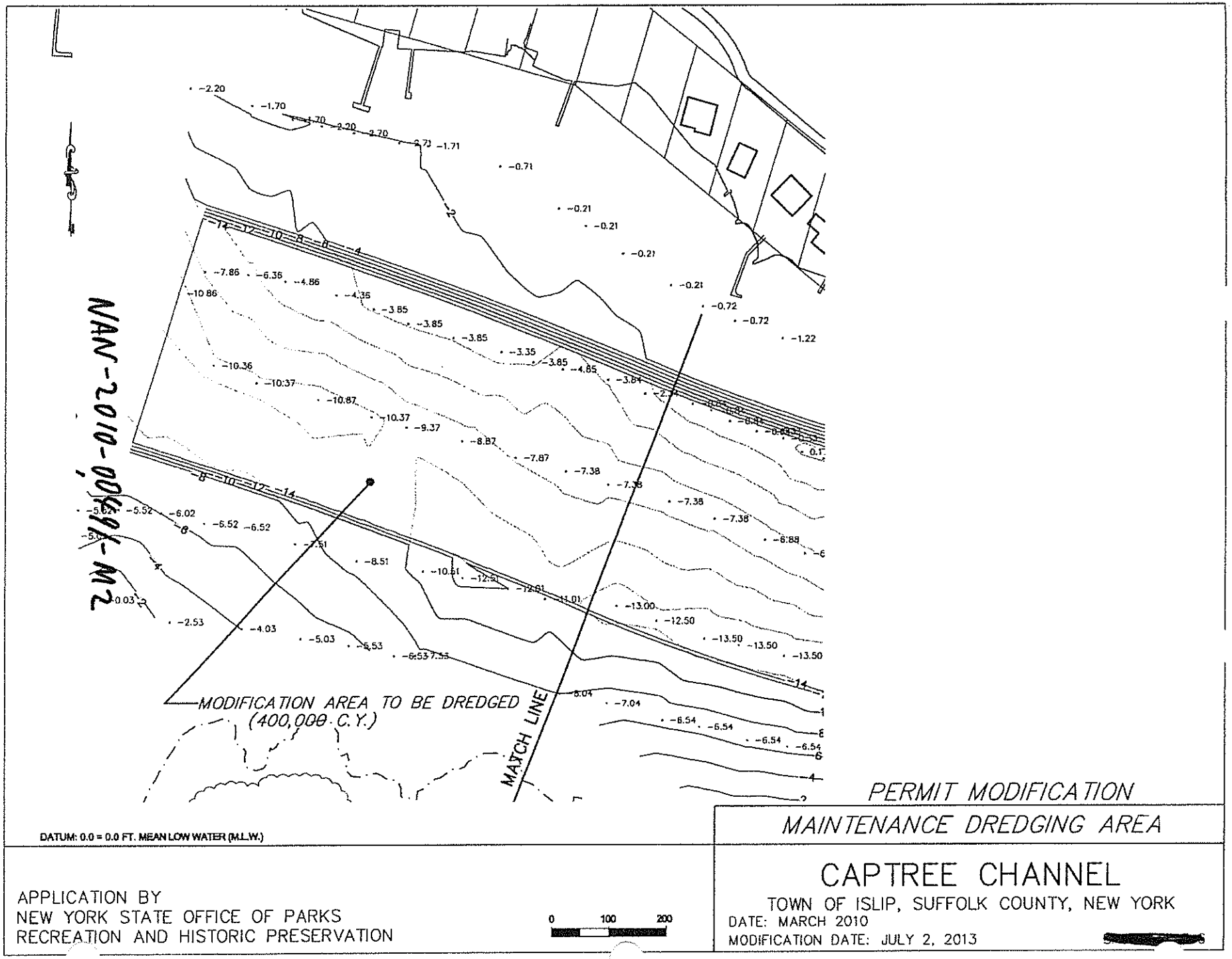


Figure 3d
Dredging Area



The dredging operation is expected to begin on February 1, 2014, and would last approximately 90-120 days. All work will be conducted in accordance with the permit conditions summarized below under the section *Conditions for Approval*.

SUMMARY OF FINDINGS AND CONCLUSIONS

The proposed project would be consistent with surrounding land uses in that it would restore a damaged natural area and associated recreational facilities to a prior state. As shown below in the *Environmental Assessment Checklist*, no land development, neighborhood, socioeconomic, or community facility impacts would result from the proposed project. Impacts to natural resources would be avoided and/or minimized through the permit conditions summarized above. As shown below in the *Statutory Checklist*, the proposed project would comply with all relevant regulations listed in 24 CFR subparts 58.5 and 58.6.

The proposed project also does not result in any cumulative adverse impacts with the beach renourishment project that occurred at Robert Moses State Park during the first quarter 2013 in response to the New York Governor's declaration of an emergency as that project is now complete and will not overlap with this proposed project. Nor would other dredging and beach renourishment projects currently being done by USACE in other areas of Long Island result in significant adverse cumulative impacts with the proposed project because the review and consultation by USACE with the other federal and state natural resource agencies, and the conditions imposed in the permits for all such projects, will minimize impacts to public health and the environment, thus avoiding significant adverse cumulative impacts.

Alternatives and Project Modifications Considered [24 CFR 58.40(e), Ref. 40 CFR 1508.9]
No other reasonable courses of action were identified outside of the proposed project. Because the purpose of the proposed project is to stabilize and restore the Robert Moses Beach to its pre-Sandy condition, there is no practicable alternative to conducting this activity in a 100-year floodplain. The phasing of the proposed project incorporates considerations to avoid and minimize potential impacts to natural resources and to prioritize areas critical to the restoration of the Park.

No Action Alternative [24 CFR 58.40(e)]
The No Action alternative would result in the continued loss of oceanfront beach and wildlife habitat and its recreational function, and restrict access to a heavily used State Park, which could result in substantial adverse impacts to the natural environment and the surrounding community. Without the beach stabilization, future storms and northeasters would increase beach erosion, reducing habitat for terrestrial species that utilize the beach. With additional beach erosion, the roadway, parking lot areas, the water tower and other park infrastructure could also be impacted or destroyed, preventing recreational use by millions of park visitors. Continued loss of oceanfront beach could impact the residences and businesses on Long Island that rely on the barrier island for storm protection. For the numerous commercial and recreational vessels using Captree Boat Channel, the channel would remain difficult to navigate and would continue to exist above its historic navigation depth. Accordingly, the No Action alternative is not the preferred alternative as it does not meet the purpose and need of the proposed action.

Measures Incorporated to Minimize Impacts [24 CFR 58.40(d), 40 CFR 1508.20]
As noted above, a number of measures to protect natural resources on and around the project site are incorporated into the design of the project activities and are outlined in prescribed permit conditions summarized below.

CONDITIONS FOR PERMIT APPROVAL

USACE Permit Conditions

In coordination with USFWS, USACE issued Permit #NAN-2010-00491-M2 on December 13, 2013 for 10 years of maintenance dredging at East Captree State Channel, Fire Island Inlet, and the Atlantic Ocean, and subsequent beach stabilization at Robert Moses State Park. Permit #NAN-2010-00491-M2 is the second modification to a permit originally issued on May 12, 2011 and previously modified on March 1, 2013. The NAN-2010-00491-M2 permit supersedes and replaces the initial and first modified permits, and the M2 permit modification encompasses the proposed action's one-time dredge and stabilization event.

The conditions of Permit #NAN-2010-00491-M2, based on consultation with USFWS and NMFS through those agencies' memoranda of agreement for consultation, include the following:

- The time limit for completing the work authorized ends on May 12, 2021;
- Do not dredge between January 15 and September 30 of any year to avoid impacts to Essential Fish Habitat and Species, with the exception of one maintenance dredging cycle authorized during the period between January 15, 2014 and September 30, 2014;
- Do not discharge authorized dredged material onto the shoreline beaches between April 1st and September 1st of any calendar year to protect piping plovers;
- Assure the dredged material discharged onto the shoreline beach placement areas is consistent with the grain size on the existing naturally occurring shoreline beach, and finish/grade these areas to the same slope as the adjacent shoreline beach, without piles, ridges or holes left in the dredged materials;
- Do not use a hopper dredge in order to avoid potential impacts to endangered or threatened sea turtles;
- Allow authorized dredged material to settle within the diked dewatering sites to the maximum extent practicable to minimize sediment reentry into the waterway;
- Keep all mechanized beach grading equipment landward of the ambient tide line;
- Do not use authorized dredged materials to construct additional dunes in the areas fronting the existing overwash area between Parking Fields 2 and 3, and do not place any of the dredged material in the overwash area, in order to allow ongoing sustainment/recreation of this overwash habitat area;
- Monitor and manage, as appropriate, all areas nourished with the authorized dredged materials as has occurred in the past for piping plovers and seabeach amaranth, in coordination with USFWS and NYSDEC;
- By December 1st of each year for the life of the permit, provide USFWS and USACE an annual written report of piping plover activity or lack thereof for all areas nourished with the authorized dredged materials;
- Do not plant vegetation within any areas nourished with the authorized dredged materials; and
- Do not install snow/sand fencing in any areas nourished with the authorized dredged materials.

NYSDEC Permit Conditions

NYSDEC's permit modification #1-4728-00955 was issued on November 8, 2013 for dredging of the Captree State Boat Channel and beach stabilization at Robert Moses State Park. Permits and approvals included in this authorization include a Tidal Wetlands Permit (#1-4728-00955/00029), Water Quality Certification (#1-4728-00955/00030), Coastal Erosion Management Permit (#1-4728-00955/00031), and an Excavation & Fill in Navigable Waters Permit (#1-4728-00955/00032). These authorizations comprise

the second modification to permits originally issued on April 6, 2011 and previously modified on March 1, 2013.

Each permit issued by NYSDEC includes a standard set of permit conditions; these standard conditions are not listed below. The following conditions of permit #1-4728-00955 apply specifically to all four of the aforementioned authorizations:

- All activities authorized by the permit must be in strict compliance with the approved plans submitted as part of the permit application.
- At least 48 hours prior to the commencement of the project, the permittee and the contractor shall sign and return a notification form included with the permit which would certify that they are fully aware of and understand all terms and conditions of the permit. Within 30 days of completion of the project, another portion of the notification form must be returned, along with photographs of the completed work.
- A Notice of Commencement must be completed for each dredging occurrence specifying the disposal site. Upon completion, a Notice of Completion must be submitted.
- The permittee must provide a survey/estimate of the total volume of sand in each of the stockpile areas by April 1 of the year.
- To protect spawning finfish, shellfish, and nesting shorebirds, including threatened and/or endangered species, no regulated activities may occur between January 15 and September 30, inclusive, [other than one dredging season in 2014, based on the incorporation of special conditions outlined in this section];
- Dredging shall be undertaken no more than once in any calendar year unless specifically authorized by the department;
- No disturbance to vegetated tidal wetlands or protected buffer areas as a result of the permitted activities;
- Debris or excess material shall be completely removed to an approved upland area for disposal;
- No disturbance to vegetated or bare dune areas;
- No staging of equipment in dune areas;
- Storage of equipment and materials shall be confined within the project area and/or upland areas greater than 75 feet from the tidal wetland boundary;
- Disturbance along access routes and staging areas shall be completely restored to the original condition;
- Refueling must occur in improved areas such as parking areas or streets, and no fuel lines shall be placed or buried within beach areas;
- Dredging shall be conducted so as to leave a uniform bottom elevation free of mounds or holes;
- Side slopes of the dredge channel will have a maximum of 1:3 slope;
- Dredged material discharge pipe is to be located a minimum of 30 feet landward of mean high water with a diffuser attached to the end of the pipe;
- All material shall be placed landward of apparent high water;
- All material deposited on the beach shall be of compatible grain size to the naturally occurring beach, and the sand deposition area must be finished to a natural grade and contoured to establish suitable habitat nesting and foraging habitat for piping plovers;
- Surplus dredge material must be placed in the primary and secondary surplus material site areas as shown on the approved plans;

- If booster pumps are used, the barges must remain in navigable waters and must not be grounded on shoals or beach areas;
- No unreasonable interference with navigation;
- Necessary precautions shall be taken to preclude contamination of any wetland or waterway by environmentally deleterious materials associated with the project; and
- Within 30 days of completion of the dredging operation, an as-dredged depth survey of the dredged area must be submitted to NYSDEC.

As noted above, OPRHP also undertook coordination with NYSDEC regarding potential impacts to aquatic resources that may be present at the project site. As a result, an additional set of special conditions was added to the Tidal Wetlands Permit (#1-4728-00955/00029):

- A turbidity monitoring plan must be submitted for NYSDEC approval 15 days prior to the start of any in-water work. At a minimum, the protocol must indicate that turbidity will be monitored for one continuous hour each day during operations. Monitoring must be conducted up current, down current, and adjacent to the dredge operation at each of 3 stations selected each day along the dredge route.
- OPRHP will provide funding, not to exceed $15,000, to the School of Marine and Atmospheric Sciences at SUNY Stony Brook, to design a study quantifying winter flounder spawning between Fire Island and Montauk Point.
- With the exception of the material placement and grading work after April 1, 2014, suitable piping plover habitat created by the activities authorized by the permit will be symbolically fenced by March 31 each year and managed in accordance with a particular USFWS guidance document.
- Activities authorized by the aforementioned permit conducted after April 1 must be conducted under the supervision of a NYSDEC approved environmental monitor to insure no disturbance to the piping plover occurs.
- All material deposited on the beach must be of compatible grain size with the naturally occluding beach. And the sand deposition area must be finished to a natural grade and contoured to establish suitable habitat nesting and foraging habitat for piping plover. If at any time during the dredging operation the composition of the dredged material changes and becomes unsuitable for placement, dredging operations must cease and a plan to correct the problem must be developed and approved by NYSDEC.

LIST OF SOURCES, AGENCIES AND PERSONS CONSULTED

New York State Office of Parks, Recreation and Historic Preservation, Division for Historic Preservation
Letter dated November 12, 2013 to Scott G. Fish, OPRHP Long Island Region.

State of New York Department of State, Division of Coastal Resources
Letter dated July 25, 2013 to Gregory T. Greene, Cashin Associates.

United States Department of the Interior, Fish and Wildlife Service
Letter dated November 7, 2013 to Jodi McDonald, USACE.

United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.
Letter dated September 3, 2013 to Stephen A. Ryba, USACE

December 4, 2013 letter from Cashin Associates to Army Corps of Engineers, attaching study by Allan W. Stoner et al "Behavior of winter flounder, *Pseudopleuronectes americanus*, during the reproductive season: laboratory and field observations on spawning, feeding and locomotion", March 24, 1999

ESRI, ArcGIS, various data.

FEMA – Special Flood Hazard Area
http://www.fema.gov/floodplain-management/special-flood-hazard-area
Last accessed December 30, 2013.

FEMA – Map Service Center
https://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1
Last accessed December 30, 2013.

National Wild and Scenic Rivers – New York
http://www.rivers.gov/new-york.php
Last accessed December 30, 2013.

New York State Office of Parks, Recreation and Historic Preservation
State Preservation Historical Information Network Exchange (SPHINX)
http://nysparks.com/shpo/online-tools/
Last accessed December 31, 2013.

NYSDEC - Unique Geologic Features
http://www.dec.ny.gov/permits/53826.html
Last accessed December 30, 2013.

NYSDEC – Critical Environmental Areas
http://www.dec.ny.gov/permits/25153.html
Last accessed December 30, 2013.

US Census Bureau - American Fact Finder
http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk
Last accessed December 30, 2013.

USEPA, Region 2 –Nassau Suffolk Aquifer System
http://www.epa.gov/region02/water/aquifer/nasssuff/nassau.htm
Last accessed December 30, 2013.

USEPA, Green Book – Nonattainment Status for Each County by Year
http://www.epa.gov/oaqps001/greenbk/anay_ak.html
Last accessed December 30, 2013.

ENVIRONMENTAL ASSESSMENT CHECKLIST

Evaluate the significance of the effects of the proposal on the character, features and resources of the project area. Enter relevant base data and verifiable source documentation to support the finding. Then enter the appropriate impact code from the following list to make a determination of impact. **Impact Codes: (1)** - No impact anticipated; **(2)** - Potentially beneficial**; (3)** - Potentially adverse; **(4)** - Requires mitigation; **(5)** - Requires project modification. Note names, dates of contact, telephone numbers and page references. Attach additional material as appropriate. Note conditions or mitigation measures required.

Land Development	Code	Source or Documentation
Conformance with Comprehensive Plans and Zoning	2	The proposed project involves the restoration of an existing natural area and would not result in changes to land use. Zoning does not apply in the beach area, which is a State Park, nor in the navigation channel where the dredging will occur. The proposed project is consistent with the New York State Coastal Management Program, as discussed by the New York State Department of State in a letter dated July 25, 2013 (see Appendix E)
Compatibility and Urban Impact	2	The proposed project would be compatible with existing land use on the project site since it would restore a damaged natural area and a well-used public park. The proposed project would also restore a navigation channel used by commercial and recreational boaters from the nearby waterfront communities to its historic depth.
Slope	2	The core purpose of the proposed project is to restore a natural area eroded by Superstorm Sandy. The design, mechanism, and schedule by which the dredged material will be placed on the beach have been approved by the relevant regulatory agencies.
Erosion	2	As noted above, the core purpose of the proposed project is to restore a natural area that was eroded by a major storm. The proposed project will dredge a channel that has been filled by previous erosion events and will use that dredge material in a beneficial way, to restore a beachfront area. Furthermore, the proposed project will also stockpile dredged material for use in future erosion protection projects.
Soil Suitability	1	The proposed project would not introduce any new structures and therefore the suitability of existing soil in supporting a particular land use is not relevant to the proposed project. The dredged material has been tested and is deemed suitable for placement as beach stabilization material.
Hazards and Nuisances including Site Safety	1	The proposed project would not result in any hazards, nuisances, or threats to public safety. The project site is located in an area vulnerable to flooding and storm impacts, however the project would not introduce any new occupied structures. While the proposed project would help restore a public recreation facility, the project is not expected to generate new users that would be affected by hazards, nuisances, or other public safety concerns.
Energy Consumption	1	The proposed project would not introduce a new facility and therefore would not consume energy, neither directly or indirectly.

Neighborhood Impact	Code	Source or Documentation
Noise - Contribution to Community Noise Levels	1	The proposed project would not result in a new permanent facility that would generate noise on the project site. The nearest residential receptors are across Fire Island Inlet from the project site, over 4,000 feet away. Noises and increased human activity that would be generated during the construction of the proposed project would likely cause disturbances to and displace some wildlife, but these effects would be temporary and localized to the specific segments of the project site undergoing construction activities.
Air Quality Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels	1	The proposed project would not generate any new stationary or mobile sources of air pollutants and therefore has no potential to affect air quality. Equipment used in the construction activities will be permitted by relevant agencies and will utilize appropriate measures to minimize pollutant emissions.
Environmental Design Visual Quality - Coherence, Diversity, Compatible Use and Scale	2	The goal of the proposed project is to restore the beachfront portions of the Park to their previous state and therefore the proposed project would not introduce any new elements out of character with the beach and Park. Captree State Boat Channel is already used for navigation and boating purposes, and therefore the proposed dredging is not expected to induce any subsequent growth. The sampling analysis of the material to be dredged has indicted that the material is compatible with the existing sand on these beaches and therefore no impacts to visual aesthetics of the beach are expected. As shown in Appendix D, the SHPO has concurred that the project would not result in adverse effects on cultural resources.

Socioeconomic	Code	Source or Documentation
Demographic Character Changes	1	While the CDBG program is primarily intended to benefit low and moderate income households and increase housing opportunities, the CDBG-DR funds are specifically targeted to disaster recovery and rebuilding. Since the actions comprising the proposed project are limited to natural resources, the project has no potential to affect the demographic characteristics of nearby communities or alter residential, commercial, or industrial uses, or harm community institutions. The proposed project is designed to restore the beach to its prior state and return it to its existing users, some of which may comprise low income and minority households.
Displacement	1	The actions comprising the proposed project are limited to natural resources and have no potential to displace individuals or families; destroy jobs, local businesses, or community facilities; or disproportionately affect particular populations.
Employment and Income Patterns	1	The actions comprising the proposed project are limited to restoring natural resources and have no potential to affect employment opportunities or income patterns.

Community Facilities and Services	Code	Source or Documentation
Educational Facilities	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new populations that would increase the student population of the area and therefore the proposed project has no potential to affect educational facilities.
Commercial Facilities	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new development that would require retail services or other commercial facilities.
Health Care	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new development that would require the availability of routine or emergency health services.
Social Services	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new development that would require the proximity of social services. The proposed project would not introduce any new populations that would overburden existing facilities.
Solid Waste	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new development that would generate solid waste.
Waste Water	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new development that would generate any wastewater.
Storm Water	1	The proposed project is limited to restoring natural resources and improving navigation and would not add any new impermeable surfaces that would require the collection and disposal of storm water.
Water Supply	1	The proposed project is limited to restoring natural resources and improving navigation and would not introduce any new development that would generate any demand for water supply.
Public Safety - Police	1	The proposed project is limited to restoring natural resources and improving navigation and would not add any new demand on police services.
- Fire	1	The proposed project is limited to restoring natural resources and improving navigation and would not add any new demand on fire department services.
- Emergency Medical	1	The proposed project is limited to restoring natural resources and improving navigation and would not add any new demand on emergency medical services.
Open Space and Recreation - Open Space	2	The core goal of the proposed project is to restore a valuable and highly used open space resource (Robert Moses State Park) to its pre-storm state. The restoration of the Park is not expected to add a significant number of new users and therefore, the proposed project is not expected to overburden existing open space resources.
- Recreation	2	The restoration of the Park is not expected to add a significant number of new users and therefore, the proposed project is not expected to overburden existing recreational resources. As noted above, the core goal of the proposed project is to ensure the Park can continue to be used as a recreational resource during the summer of

		2014. In addition, the dredging of Captree State Boat Channel would allow increased and safer access to the channel by recreational boaters.
- Cultural Facilities	1	Robert Moses State Park includes a number of resources eligible for listing on the State and National Registers of Historic Places. As documented in Appendix D, USACE has consulted with SHPO as required under Section 106. In a letter dated November 12, 2013, SHPO has concurred that the project will have no adverse effect on eligible resources
Transportation	1	The proposed project would not introduce any new development that would require new or improved transportation connections. One of the objectives of the proposed project is to stabilize the beach in front of the Park's traffic circle—which serves as the only access point to the park—in order to allow for the safe use of the traffic circle and surrounding roadways.

Natural Features	**Code**	**Source or Documentation**
Water Resources	1	The proposed project would not introduce any new development and therefore would not generate any demand for groundwater as water supply nor would the project introduce new septic systems that may affect groundwater in the area.
Surface Water	1	The proposed project would not result in any development that would require the discharge of sewage effluent into nearby waterbodies, increase impervious surface area, or affect water levels in surface water bodies. The dredging activities associated with the proposed project would temporarily increase turbidity in Captree State Boat Channel but this effect is expected to be temporary and would not affect surface water quality.
Unique Natural Features and Agricultural Lands	1	The core goal of the proposed project is to restore a natural area damaged by Superstorm Sandy and to strengthen the natural features of the Park (i.e. the beach and sand dunes) against future storms. There are no agricultural lands located on the project site and therefore the proposed project has no potential to affect these resources.
Vegetation and Wildlife	3	As noted throughout this EA, the proposed project may affect but is not likely to adversely affect two federally-listed species present on and near the project site. Consultation regarding these species has been undertaken with relevant regulatory agencies. Measures to avoid and/or minimize impacts to these threatened species are incorporated as permit conditions, in permits granted to the project by relevant regulatory agencies. Overall, the proposed project would restore the beach to its pre-Sandy conditions and provide additional breeding and growth habitat for the area's vegetation and wildlife.

COMPLIANCE with STATUTES and REGULATIONS listed at 24 CFR 58.6

FLOOD INSURANCE / FLOOD DISASTER PROTECTION ACT

1. Does the project involve the acquisition, construction or rehabilitation of structures, buildings or mobile homes?

☒ No; flood insurance is not required. The review of this factor is completed.
☐ Yes; continue.

2. Is the structure or part of the structure located in a FEMA designated Special Flood Hazard Area?
☐ No. Source Document (FEMA/FIRM floodplain zone designation, panel number, date): _
(Factor review completed).
☐ Yes. Source Document (FEMA/FIRM floodplain zone designation, panel number, date). (Continue review).

3. Is the community participating in the National Insurance Program (or has less than one year passed since FEMA notification of Special Flood Hazards)?
☐ Yes - Flood Insurance under the National Flood Insurance Program must be obtained and maintained or the economic life of the project, in the amount of the total project cost. A copy of the flood insurance policy declaration must be kept in the Environmental Review Record.
☐ No (Federal assistance may not be used in the Special Flood Hazards Area).

COASTAL BARRIERS RESOURCES ACT

1. Is the project located in a coastal barrier resource area
☐ No; Cite Source Documentation:
(This element is completed).
☒ Yes; Federal assistance may not be used in such an area.

While typically HUD funding is not allowed for projects located within the Coastal Barrier Resource System, there are limited exceptions. The proposed project is exempt from the provisions of the Coastal Barrier Resources Act. Please see below.

The proposed project is located within the Coastal Barrier Resources System; however, the project falls within the exemptions of the Coastal Barrier Resources Act ("CBRA"). The proposed project involves dredging within an existing shipping channel (the Captree State Boat Channel) to the channel's historic depth pursuant to a permit issued by the USACE. The dredged sand will then be placed onto a portion of the beach in Robert Moses State Park to return the beach to its condition before Superstorm Sandy. This activity falls under the CBRA's exemption for "nonstructural projects for shoreline stabilization…designed to mimic, enhance, or restore a natural stabilization system." 16 U.S.C. § 3505(a)(6)(G). The proposed project meets § 3505(a)(6)(G)'s precondition that it be consistent with the CBRA's purposes:

- The project minimizes the loss of human life by replacing the beach to its original pre- Sandy condition in order to avoid further erosion and loss of the Robert Moses Beach, and to reestablish the functionality of these beaches as part of the coastal barriers that contribute to the resiliency of upland communities. Additional loss of the beach could result in the collapse of a public roadway and traffic circle, potentially resulting in the loss of life. The Project involves renourishing the beach with sand and not the development of buildings or structures that the CBRA seeks to avoid. By keeping Robert Moses State Park as a park use with a public beach, no residential development in this coastal area will occur; thus the Project minimizes danger to human life by preserving Robert Moses Beach as a public park.

- The proposed project minimizes wasteful federal expenditures as it returns one of the oldest state parks on Long Island, with an estimated 3.5 million visitors each year, to its pre-Sandy condition. The beach is a popular summer recreational destination in the New York City area and provides much needed comfort to persons of all ages and socioeconomic backgrounds during hot summer days. The maintenance of Robert Moses Beach is an activity that is protective of both human health and the environment. Federal funding is not being used for commercial or residential development that CBRA construes as wasteful. Rather the federal funding is being used for a beneficial purpose that is consistent with the CBRA's purpose.
- The proposed project minimizes damage to fish, wildlife, and other natural resources. Without the Project, the beach can continue to erode, impacting the wildlife and natural resources of the Robert Moses State Park. Continued erosion also impacts aquatic life. All work to be performed for the proposed project will comply with the terms of USACE's Sections 10/404 permit and the Articles 15, 25, 34 permit from NYSDEC, including the Section 401 Water Quality Certification (please see section *Conditions for Approval* above for a summary of conditions associated with these permits). The proposed project preserves Robert Moses State Park's natural resources by preventing further erosion and loss of the beach.

This activity also falls under the CBRA § 3505(a)(5) exemption, which allows for federal funding for maintenance or improvements of existing federal navigation channels and related structures, including the disposal of dredged materials related to such activity. This exemption applies even if the proposed project were not to meet the purposes of CBRA.

The legislative history of the CBRA supports the finding that the project falls within the exemptions. See S. REP. NO. 419, 97th Cong., 2d Sess. 8 (Oct. 1, 1982) (listing, as an exemption from the CBRA,"[n]onstructural projects such as the planting of dune grass or beach nourishment which mimic, enhance, or restore natural stabilization systems would be permitted for shoreline stabilization"); H.R. REP. NO. 841, 97th Cong., 2d Sess. 17 (Oct. 18, 1982) ("Nonstructural projects for shoreline stabilization, such as the planting of dune grass or other beach nourishment which mimic, enhance, or restore natural stabilization systems would be permitted [under the CBRA]."); Coastal Barrier Resources Act Advisory Guidelines, 48 Fed. Reg. 45,664, 45,667 (Oct. 6, 1983) (noting that "[t]he legislative history cites the planting of dune grass or other beach nourishment activities as examples of these projects"). See also 127 Cong. Rec. 7572 (Apr 28, 1981) (remarks of Sen. John Chafee, the CBRA's sponsor) (specifically naming "dredge and fill activities" as an exception to the CBRA's prohibition on federal assistance).

In granting the Sections 10/404 permit, USACE consulted with USFWS, as required by a Memorandum of Agreement between the Department of Interior and the Department of the Army to address consultation between USACE and USFWS under NEPA, the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, and other relevant statutes. USFWS's concurrence in its November 7, 2013 letter is contingent upon the implementation of the permit conditions proposed by USACE as part of the consultation correspondence and amended by USFWS. These permit conditions are also summarized above in section *Conditions for Approval.*

AIRPORT RUNWAY CLEAR ZONES AND CLEAR ZONES DISCLOSURES

1. Does the project involve the sale or acquisition of existing property within a Civil Airport's Runway Clear Zone, Approach Protection Zone or a Military Installation's Clear Zone?

☒ No; Cite Source Documentation: Please see Figure 4.
Project complies with 24 CFR 51.303(a)(3).

☐ Yes; Disclosure statement must be provided to buyer and a copy of the signed disclosure statement must be maintained in this Environmental Review Record.

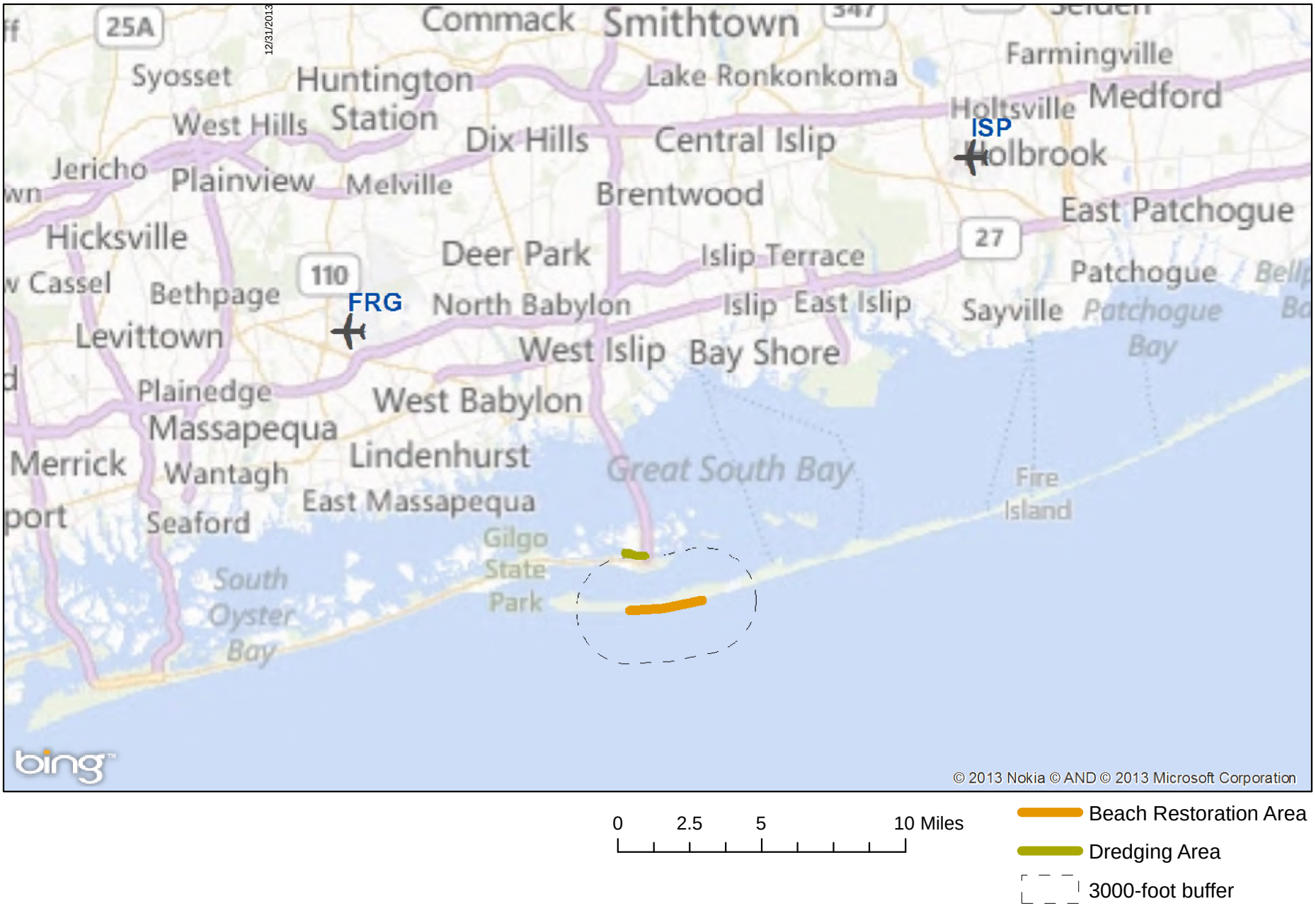


Figure 4

Nearest Airports

Robert Moses State Park State Boat Channel Dredging and Beach Stabilization Project

COMPLIANCE with STATUTES and REGULATIONS listed at 24 CFR 58.5

DIRECTIONS - Once the review process for each compliance factor has been completed, the Statutory Checklist must then be filled out. Specifically, the RE must indicate whether the activity does or does not affect the resources under consideration. Consult the guidance provided in the table below or the web sites. Indicate **Status "A"** on the worksheet if the project does not require formal consultation with an outside agency and does not affect the resource in question. Document the determination made and the sources of information were used—information sources are provided in the guidance. If the activity triggers formal compliance consultation with the oversight agency or affects the resource, indicate **Status as "B".** Any compliance documentation should also be attached to the Checklist and included in the ERR.

Compliance Factors:

Statutes, Executive Orders, and Regulations listed at 24 CFR §58.5	Status A/B	Compliance Documentation
Historic Preservation [36 CFR Part 800]	B	Robert Moses State Park includes a number of resources eligible for listing on the State and National Registers of Historic Places. As documented in Appendix D, USACE has consulted with SHPO as required under Section 106. In a letter dated November 12, 2013, SHPO has concurred that the project will have no adverse effect on eligible resources.
Floodplain Management [Executive Order 11988; 24 CFR Part 55]	B	As noted previously, the project site is located within the 100-year floodplain. Because the purpose of the proposed project is to stabilize and restore the beach of Robert Moses State Park to its pre-Sandy condition, there is no practicable alternative to conducting this activity in a 100-year floodplain. However, because the proposed project is limited to restoring a natural area damaged during a storm, and would not introduce any permanent structures within the floodplain or add any new populations that would be put at risk to flooding hazards, the proposed project is not inconsistent with Executive Order 11988. Documentation of the 8-step decision-making process required by 24 CFR 55.20 to determine whether alternatives to construction within the floodplain would meet the purpose and need of the proposed project is included in Appendix F. As required by the applicable regulations, the Responsible Entity (HCR) issued an Early Notice and Public Review of a Proposed Activity in a 100-year Floodplain to all interested agencies, groups, and individuals. The notice, which was issued on December 18, 2013, invited all interested parties to comment on the proposed project and to request further information. The public comment period remained open until January 2, 2013. Appendix F provides a summary of public comments received and the project sponsors' responses to these comments.

Wetland Protection [Executive Order 11990; 3 CFR, §§ 2, 5]	B	As shown in Figures 5 and 6, tidal wetlands cover the project site as it comprises a beachfront area. As noted above, because the purpose of the proposed project is to stabilize and restore the beach of Robert Moses State Park to its pre-Sandy condition, there is no practicable alternative to conducting this activity outside of a wetland. The proposed project has received a permit from NYSDEC under Article 25 of New York's Environmental Conservation Law (Tidal Wetlands Act). The permit (included in Appendix A) includes a number of conditions to avoid and/or minimize impacts to tidal wetlands. These permit conditions are also summarized in section *Conditions for Approval.* An analysis of the proposed project's impacts to wetlands pursuant to the 8-step analysis of 24 CFR Part 55 is also provided in Appendix F.

Coastal Zone Management Act [16 U.S.C. 1451, §§ 307(c), (d)]	B	The proposed project is located within New York State's Coastal Zone. In a letter dated July 25, 2013 (see Appendix E), NYSDOS, which enforces New York State's Coastal Management Program, determined that the proposed project would be consistent with the program's criteria.

Sole Source Aquifers [40 CFR Part 149]	A	Suffolk County is part of the Nassau-Suffolk Aquifer System (designated in 43 CFR 26611). The proposed project would have no potential to adversely affect any designated aquifer sources. The proposed project is subject to a Memorandum of Understanding between HUD and the United States Environmental Protection Agency (USEPA), which establishes a formal agreement under which projects applying for HUD funding are reviewed for potential impacts to designated sole source aquifers (SSAs). Appendix G includes a copy of the aforementioned MOA and a list of criteria questions that screen the proposed project to confirm that no further review by USEPA is required.

Endangered Species Act [50 CFR Part 402]	B	As noted above, there are two federally-listed species present on or near the project site: the piping plover, a threatened shorebird that breeds on beaches along the Atlantic Ocean near the project site; and the seabeach amaranth, an annual coastal plant. As part of its consultation process with other Federal agencies in granting a dredging permit modification to OPRHP to allow for the proposed project, USACE has consulted with USFWS under Section 7 of the ESA. In a letter dated November 7, 2013 (see Appendix C), USFWS concurred with USACE conclusions that the proposed project may affect but is not likely to adversely affect the federally-listed piping plover and seabeach amaranth. USFWS concurrence in its November

U.S. Fish and Wildlife Service

National Wetlands Inventory

Robert Moses State Park - NWI

Dec 27, 2013

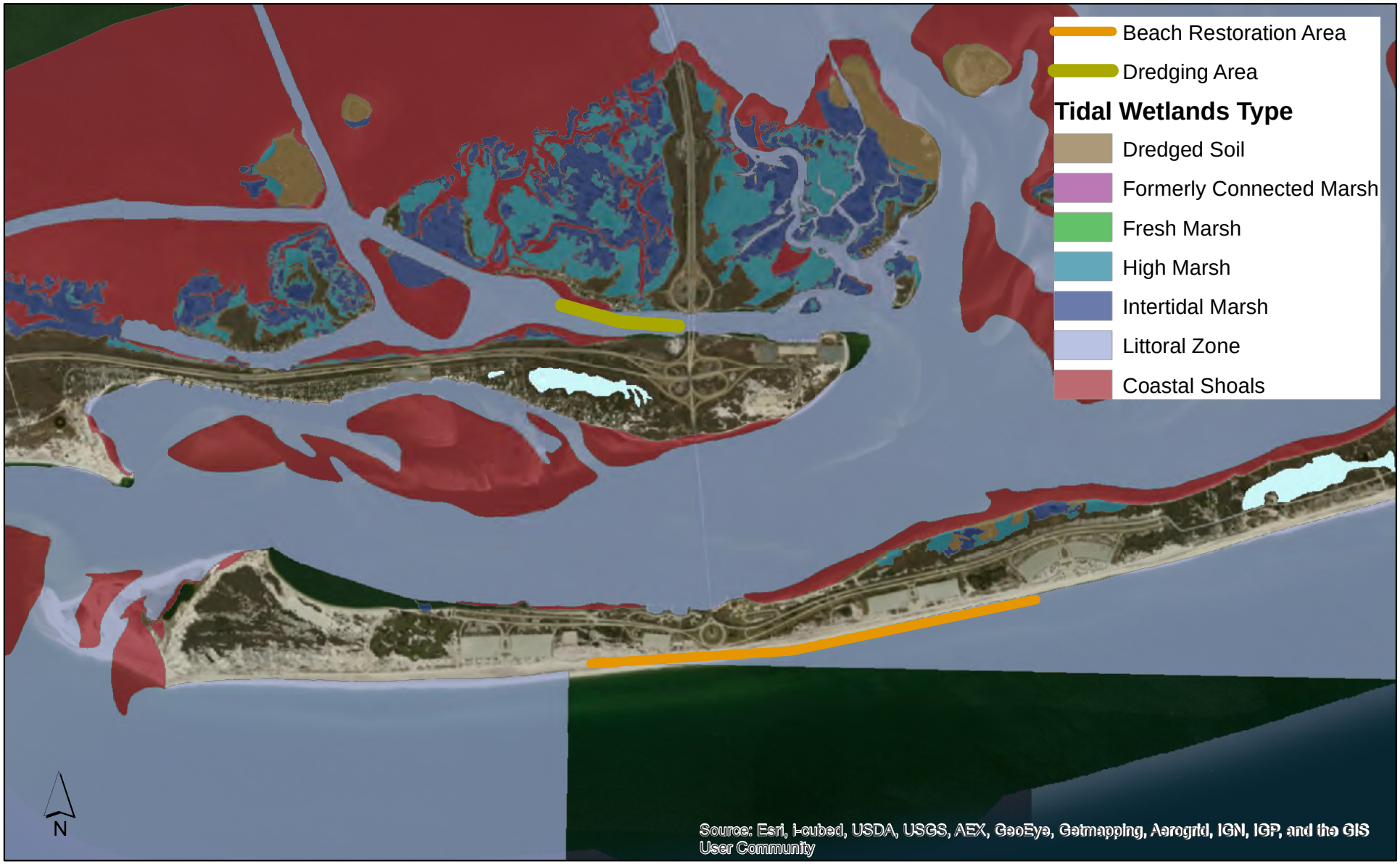
Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Figure 5
National Wetlands Inventory Listings



Wetlands Data Source:
New York State Department of Environmental Conservation (NYSDEC). Publication date 1999 Albany, NY
http://cugir.mannlib.cornell.edu/datatheme.jsp?id=111

Notes:
This map is for informational purposes only. It uses the most current data available and is deemed accurate, but is not guaranteed.

0 0.5 1 2 Miles

Figure 6

NYSDEC Regulated Tidal and Freshwater Wetlands

Robert Moses State Park State Boat Channel Dredging and Beach Stabilization Project

		7th letter is contingent upon the implementation of the permit conditions proposed by USACE as part of the consultation correspondence and amended by USFWS. These permit conditions are also summarized above in section *Conditions for Approval.* In a September 3, 2013 letter, NMFS concluded that the proposed project is not likely to adversely affect any listed species under NMFS jurisdiction, including whales, sea turtles, and Atlantic Sturgeon, and that no further consultation under section 7 of the ESA is required.

Wild and Scenic Rivers Act [16 U.S.C. 1271, §§ 7(b), (c)]	A	There are no nationally designated Wild and Scenic Rivers on or near the project site.

Clean Air Act [40 CFR Parts 6, 51, 93]	A	Suffolk County is a non-attainment area for ozone and particulate matter. However, the proposed project would not generate any new stationary or mobile sources of air pollutants and therefore has no potential to affect air quality or affect the New York State Implementation Plan (SIP). Equipment used in the construction activities will be permitted by relevant agencies and will utilize appropriate measures to minimize pollutant emissions.

Farmland Protection Policy Act [7 CFR Part 658]	A	There is no designated farmland located on or near the project site and therefore the proposed project has no potential to convert farmland to non-agricultural uses.

Environmental Justice [Executive Order 12898]	A	The Council on Environmental Quality's guidance (*Environmental Justice Guidance under the National Environmental Policy Act*, December 1997) requires minority communities to be identified where the minority population exceeds 50 percent, or where the minority population percentage is meaningfully greater than the minority population in the comparison areas. CEQ guidance does not specify a threshold to be used for identifying clusters of low-income populations. NYSDEC's policy for environmental justice defines "a low-income community" as a census block group or contiguous area where the low-income population or the percentage of individuals living below the poverty threshold as defined by the U.S. Census Bureau is equal to or greater than 23.59 percent of the total population. The proposed project site comprises two Census block groups: Census Tract 1244.02, Block Group 3 (which covers the eastern portion of Jones Beach Island and a small portion of Fire Island) and Census Tract 1470.04, Block Group 1 (which covers most of Fire Island). In the 2010 census, the two block groups had a reported population of 426 and 327, respectively. Census Tract 1244.02, Block Group 3 had a reported 9 percent minority population and less than 2 percent of households living below federal poverty thresholds; Census Tract 1470.04,

		Block Group 1 had a 7 percent minority population and 8 percent of the population living below the poverty thresholds. As a comparison, Suffolk County overall has a minority population of approximately 14 percent and 6 percent of persons living below the poverty level. Therefore, there are no environmental justice communities present within ½ mile of the project site that may be affected by the proposed project. Furthermore, since the proposed project is limited to the restoration of natural resources and would not result in any significant adverse impacts, no further environmental justice analysis is required.

Noise Abatement and Control [24 CFR Part 51, Subpart B]	A	The proposed project would not result in a new permanent facility that would generate noise on the project site or introduce any new noise sensitive uses. The nearest residential receptors are across Fire Island Inlet from the project site, over 4,000 feet away. Noises and increased human activity that would be generated during the construction of the proposed project would likely cause disturbances to and displace some wildlife, but these effects would be temporary and localized to the specific segments of the project site undergoing construction activities.

Explosive and Flammable Operations [24 CFR Part 51, Subpart C]	A	This criterion is applicable to HUD-assisted projects that involve new residential construction, conversion of non-residential buildings to residential use, rehabilitation of residential properties that increase the number of units, or restoration of abandoned properties to habitable condition. As the proposed project is limited to the restoration of a natural area, the criterion does not apply.

Toxic Chemicals and Radioactive Materials [24CFR Part 58, § 5(i)(2)]	A	This criterion requires that properties proposed for use in HUD programs be free of hazardous materials, contamination, toxic chemicals and gases and radioactive substances. Since the proposed project does not involve any properties and is limited to the restoration of a natural area, this criterion does not apply. The material to be dredged in Captree State Boat Channel has been tested and deemed appropriate for placement as beach stabilization material.

Airport Clear Zones and Accident Potential Zones [24 CFR Part 51, Subpart D]	A	The proposed project is not located within 3000 feet of a civil airport or within 15,000 feet of a military airfield; therefore, this criterion does not apply.

DETERMINATION

The preparers have complied with all provisions of 24 CFR Part 58, Subpart E—Environmental Review Process: Environmental Assessments, examining alternatives to the project itself, feasible ways to modify the project to eliminate or minimize adverse impacts, and based on steps (a) through (f) found in the regulations, determined one of the following:

(1) Finding of No Significant Impact (FONSI), whereby the Responsible Entity may proceed to Dissemination and publication of the FONSI, per regulations found at 24 CFR Part 58, sec. **58.43(a).**

PREPARER

Name: Dina Rybak, AICP (AKRF, Inc.)

Signature:

Date: January 29, 2014

Appendix A

NYSDEC Permits and Correspondence

NYSDEC PERMIT

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 1
SUNY @ Stony Brook
50 Circle Road, Stony Brook, NY 11790-3409
Phone: (631) 444-0365 • Fax: (631) 444-0360
Website: www.dec.ny.gov

Joe Martens
Commissioner

October 11, 2013

NYS Office of Parks, Recreation & Historic Preservation
c/o Scott Fish, NYSOPRHP, Long Island Region
PO Box 247
Babylon, NY 11702

Re: NYSDEC Permit Modification # 1-4728-00955/00029
Captree State Boat Channel, Captree State Park, Islip
Dredge Channel West of Robert Moses Bridge

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit modification. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather.

Sincerely,

Kevin Kispert
Environmental Analyst II

Enclosures
KAK/file
cc: P. Scully, NYSDEC Region 1
NYSDEC Review Team
J. McDonald, USACE
Cashin Associates PC

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
NYS OFFICE OF PARKS REC & HISTORIC PRESERVATION
625 BROADWAY

ALBANY, NY 12238
(518) 474-0456

Facility:
CAPTREE STATE PARK

ROBERT MOSES CAUSEWAY & OCEAN PKWY
ISLIP, NY 11702

Environmental Contact:
CASHIN ASSOCIATES PC
1200 VETERANS MEMORIAL HWY
HAUPPAUGE, NY 11788
(631) 348-7600

Facility Location: in ISLIP in SUFFOLK COUNTY
Facility Principal Reference Point: NYTM-E: 647.2 NYTM-N: 4500.5
Latitude: 40°38'32.1" Longitude: 73°15'33.0"

Authorized Activity: Hydraulically dredge a 3,550' by 400 ' area of the existing Captree State Boat Channel west of the Robert Moses Bridge to a maximum depth of 14' below Mean Low Water to remove shoal areas and maintain safe navigation placing the resultant 400,000 cy of material on the ocean beach at Robert Moses State Park fields 3 through 5 for beach nourishment in a continuation of the effort conducted during the spring of 2013. All work must be done as shown on the attached plans prepared by Cashin Associates PC, sheets 1 - 6, last revised 7/18/13, stamped NYSDEC approved on 10/10/13.

Permit Authorizations

Tidal Wetlands - Under Article 25
Permit ID 1-4728-00955/00029

New Permit	Effective Date: 4/6/2011	Expiration Date: 4/5/2016
Modification # 1	Effective Date: 3/1/2013	Expiration Date: 4/5/2016
Modification # 2	Effective Date: 10/11/2013	Expiration Date: 4/5/2016

Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 1-4728-00955/00030

New Permit	Effective Date: 4/6/2011	Expiration Date: 4/5/2016
Modification # 1	Effective Date: 3/1/2013	Expiration Date: 4/5/2016
Modification # 2	Effective Date: 10/11/2013	Expiration Date: 4/5/2016

Coastal Erosion Management - Under Article 34
Permit ID 1-4728-00955/00031

New Permit	Effective Date: 4/6/2011	Expiration Date: 4/5/2016
Modification # 1	Effective Date: 3/1/2013	Expiration Date: 4/5/2016
Modification # 2	Effective Date: 10/11/2013	Expiration Date: 4/5/2016

Excavation & Fill in Navigable Waters - Under Article 15, Title 5
Permit ID 1-4728-00955/00032

New Permit	Effective Date: 4/6/2011	Expiration Date: 4/5/2016
Modification # 1	Effective Date: 3/1/2013	Expiration Date: 4/5/2016
Modification # 2	Effective Date: 10/11/2013	Expiration Date: 4/5/2016

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: GEORGE W HAMMARTH, Deputy Regional Permit Administrator
Address: NYSDEC REGION 1 HEADQUARTERS
KAK SUNY @ STONY BROOK|50 CIRCLE RD
STONY BROOK, NY 11790 -3409

Authorized Signature: George W. Hammarth Date 10/11/13

Distribution List

CASHIN ASSOCIATES PC
Habitat - TW
Flood Control and Coastal Erosion
Wildlife
KEVIN A KISPERT

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Permit Attachments

Site Plan 7/18/2013

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: TIDAL WETLANDS; WATER QUALITY CERTIFICATION; COASTAL EROSION MANAGEMENT; EXCAVATION & FILL IN NAVIGABLE WATERS

1. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Cashin Associates PC, sheets 1 - 6, last revised 7/18/13, stamped NYSDEC approved on 10/10/13.

2. **Notice of Commencement** At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.

3. **Notice of Maintenance Dredging** For maintenance dredging projects, the permittee shall submit a Notice of Commencement prior to each dredging occurrence, specifying the disposal site (including an updated site plan). Upon completion, a Notice of Completion shall be submitted to the address indicated on that notice form, including the amount of material dredged and deposited at the approved disposal site.

4. **Estimate of Stockpile Volume** The permittee shall provide a survey/estimate of the total volume of sand in each of the "Surplus Material Areas"by April 1 of each year. The estimate shall be submitted to Region 1 Coastal Erosion Management, attention Mr. Eric Star at the above mailing address, or e-mail at exstar@gw.dec.state.ny.us

5. **Prohibition Period for Fish, Shellfish, Birds** To protect spawning finfish including winter flounder, shellfish, and nesting shorebirds, including threatened and/or endangered species, no regulated activities may occur between January 15 and September 30, inclusive, of any calendar year.

6. **Dredging Once Per Year** Dredging shall be undertaken no more than once in any calendar year unless specifically authorized by the department.

7. **No Disturbance to Vegetated Tidal Wetlands** There shall be no disturbance to vegetated tidal wetlands or protected buffer areas as a result of the permitted activities.

8. **No Construction Debris in Wetland or Adjacent Area** Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

9. **No Disturbance to Dune Areas** There shall be no disturbance to vegetated or bare dune areas.

10. **No Staging Equipment in Dune** There shall be no staging of equipment in dune areas.

11. **Storage of Equipment, Materials** The storage of construction equipment and materials shall be confined within the project work area and/or upland areas greater than 75 linear feet from the tidal wetland boundary.

12. **Restore Access and Staging Areas** Any disturbance along the access routes and staging areas shall be completely restored to the original condition.

13. **Refueling Operations** All refueling operations must occur in improved areas such as parking areas or streets. The permittee must notify the Department immediately at 800-457-7362 if a chemical or fuel spill occurs.

14. **No Fuel Lines on Beach** There shall be no fuel lines placed or buried within any beach areas.

15. **Leave a Uniform Bottom Elevation** All dredging shall be conducted so as to leave a uniform bottom elevation free of mounds or holes.

16. **Grade Channel Side Slopes** All side slopes of the dredge channel will have a maximum of 1:3 slope.

17. **Dredge Pipe Location** The dredged material discharge pipe is to be located a minimum of 30 linear feet landward of mean high water with a diffuser attached to end of pipe.

18. **Dredged Materials above AHW** All material shall be placed landward of apparent high water.

19. **Dredged Materials on the Beach** All material deposited on the beach shall be of compatible (equivalent or larger) grain size to the naturally occurring beach, and the sand deposition area must be finished to a natural grade and contoured to establish suitable habitat nesting and foraging habitat for piping plovers. If at any time during the dredging operation the composition of the dredged material changes and becomes unsuitable for beach placement, dredging operations shall cease immediately and the office of Regional Habitat - TW shall be contacted with a proposed plan to correct the problem and/or for alternative placement. No further activity will commence without the department's approval.

20. **Surplus Material Placement** Any surplus dredge material must be placed in the primary and secondary surplus material site areas as shown on the approved plans.

21. **Booster Pump Use** If booster pumps are used, the barges must remain in navigable waters and must not be grounded on shoals or beach areas.

22. **Dredged Depth Survey** Within 30 days of completion of the dredging operation, an as-dredged depth survey of the dredged area shall be submitted to

Regional Habitat - TW
NYSDEC REGION 1 HEADQUARTERS
SUNY @ STONY BROOK|50 CIRCLE RD
STONY BROOK, NY11790 -3409
Attn: Compliance

23. **No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.

24. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC REGION 1 HEADQUARTERS
SUNY @ STONY BROOK|50 CIRCLE RD
STONY BROOK; NY11790 -3409

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Tidal Wetlands, Water Quality Certification, Coastal Erosion Management, Excavation & Fill in Navigable Waters.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

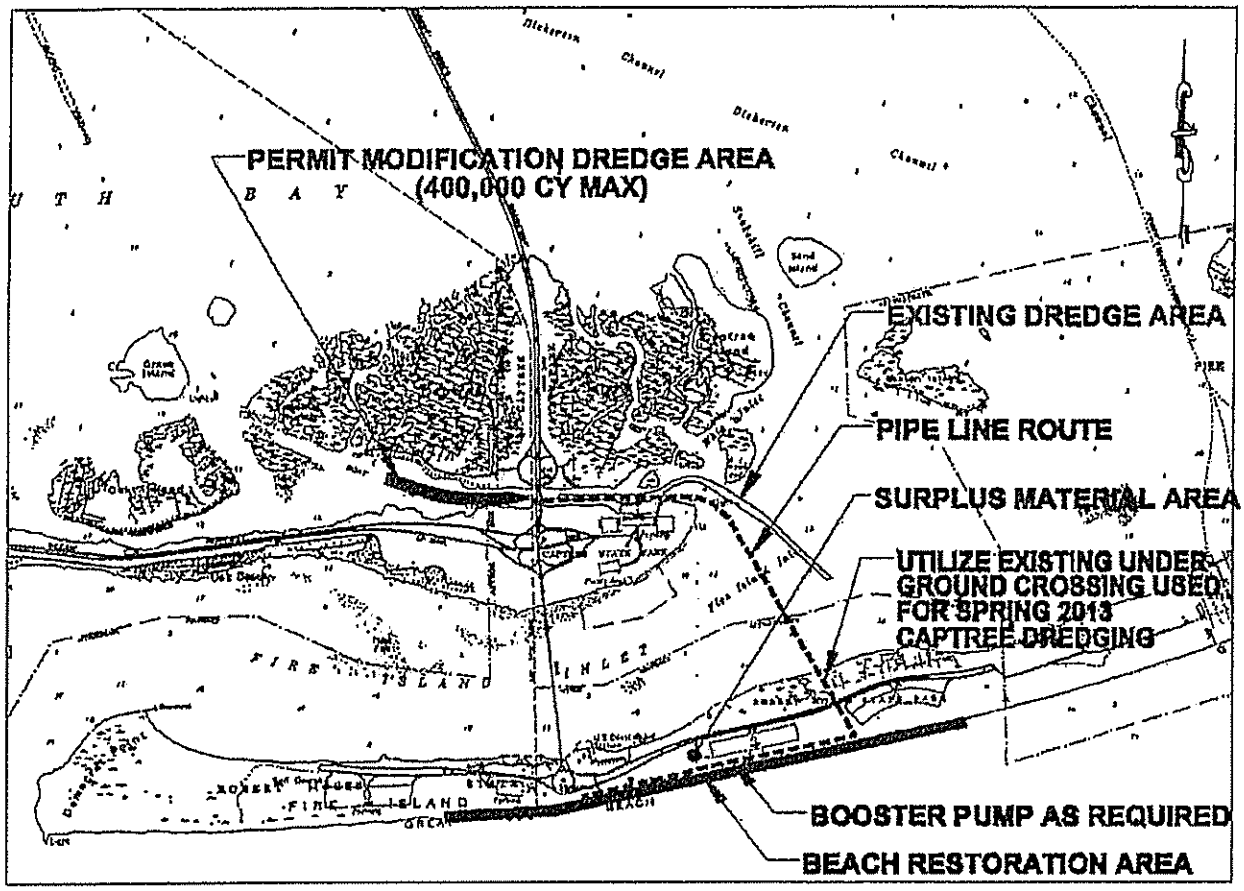
NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

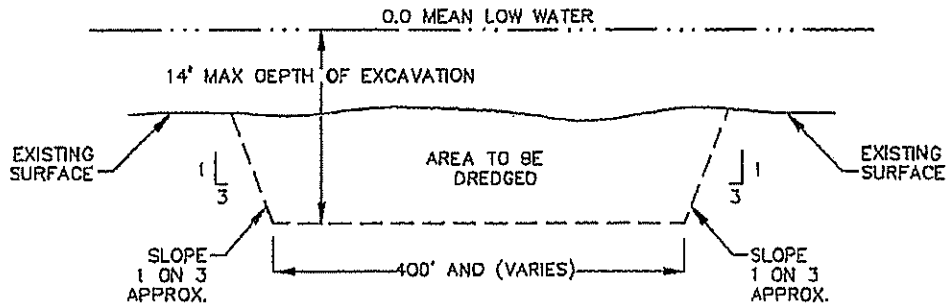
Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.





TYPICAL CHANNEL SECTION

FOR MODIFICATION AREA ONLY

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4728-00955/00032
DATE 10/10/13
pages 1-6 Mod #3

PREPARED BY

Cashin Associates, P.C.
ENGINEERING · PLANNING · CONSTRUCTION MANAGEMENT

PERMIT MODIFICATION

KEY LOCATION MAP

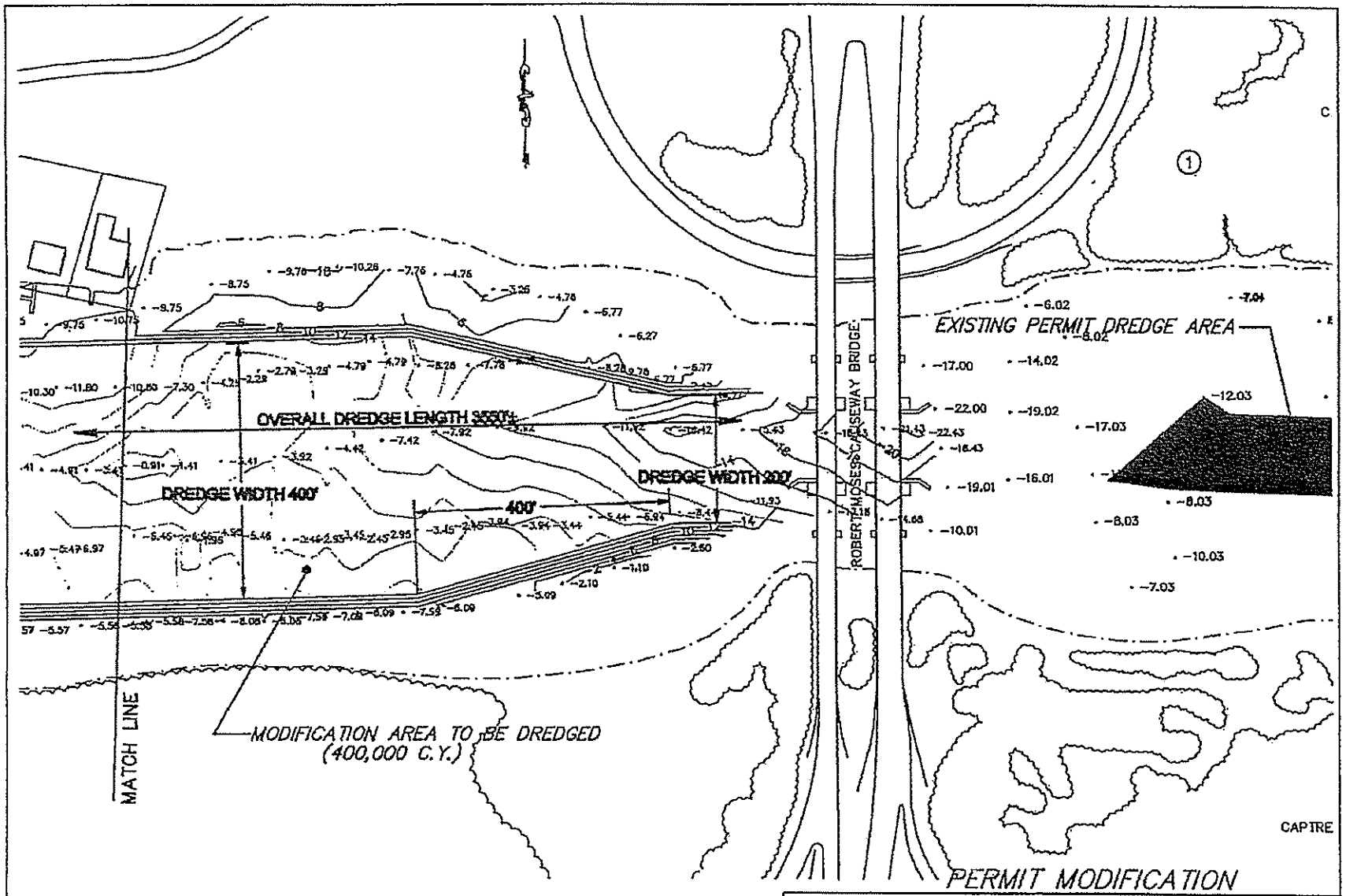
APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

MODIFICATION DATE: JULY 2, 2013
REVISED: JULY 18, 2013

SHEET 1 OF 6



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

MAINTENANCE DREDGING AREA

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

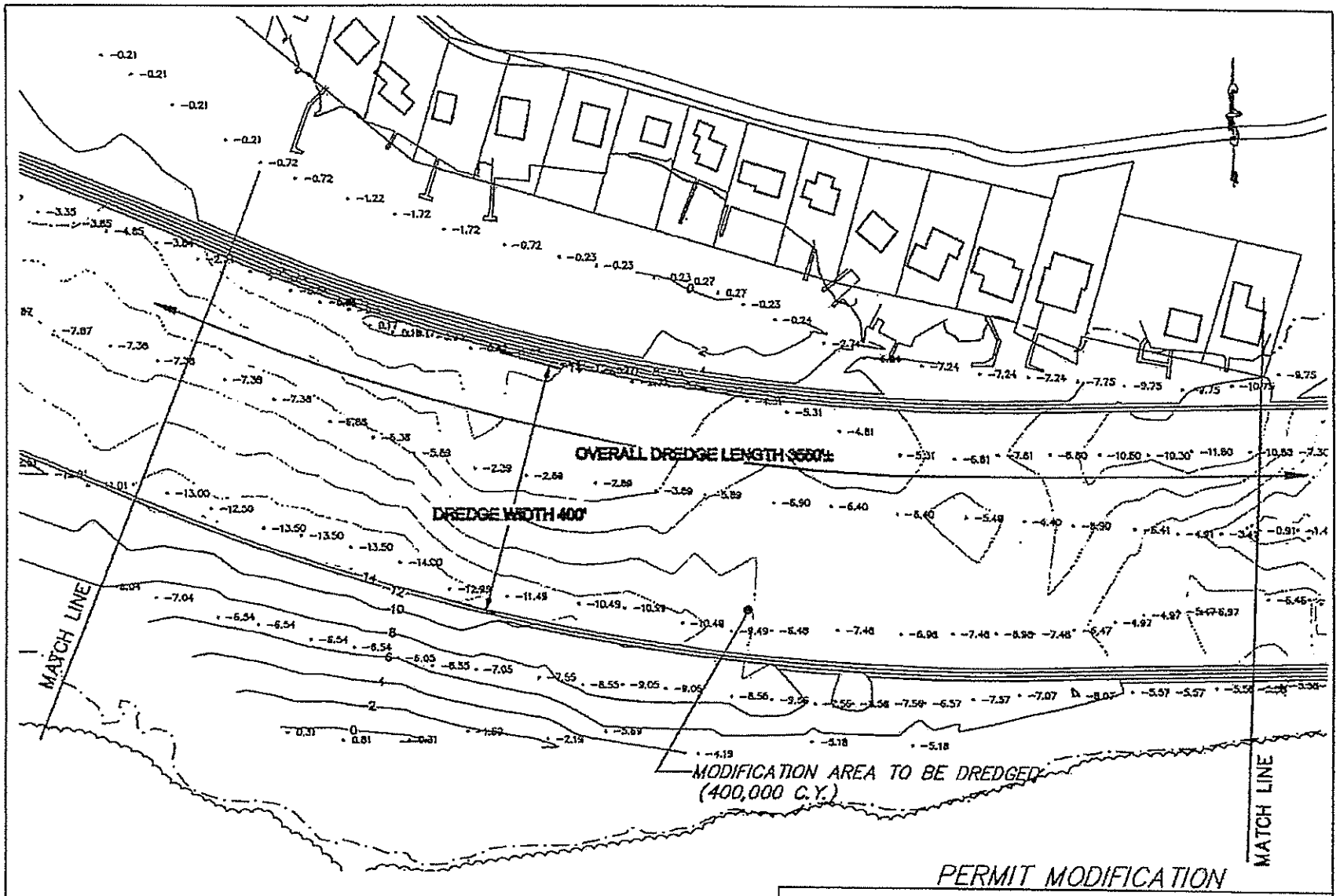
0 100 200

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

MODIFICATION DATE: JULY 2, 2013
REVISED: JULY 18, 2013

SHEET 2 OF 6



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

PERMIT MODIFICATION

MAINTENANCE DREDGING AREA

CAPTREE CHANNEL

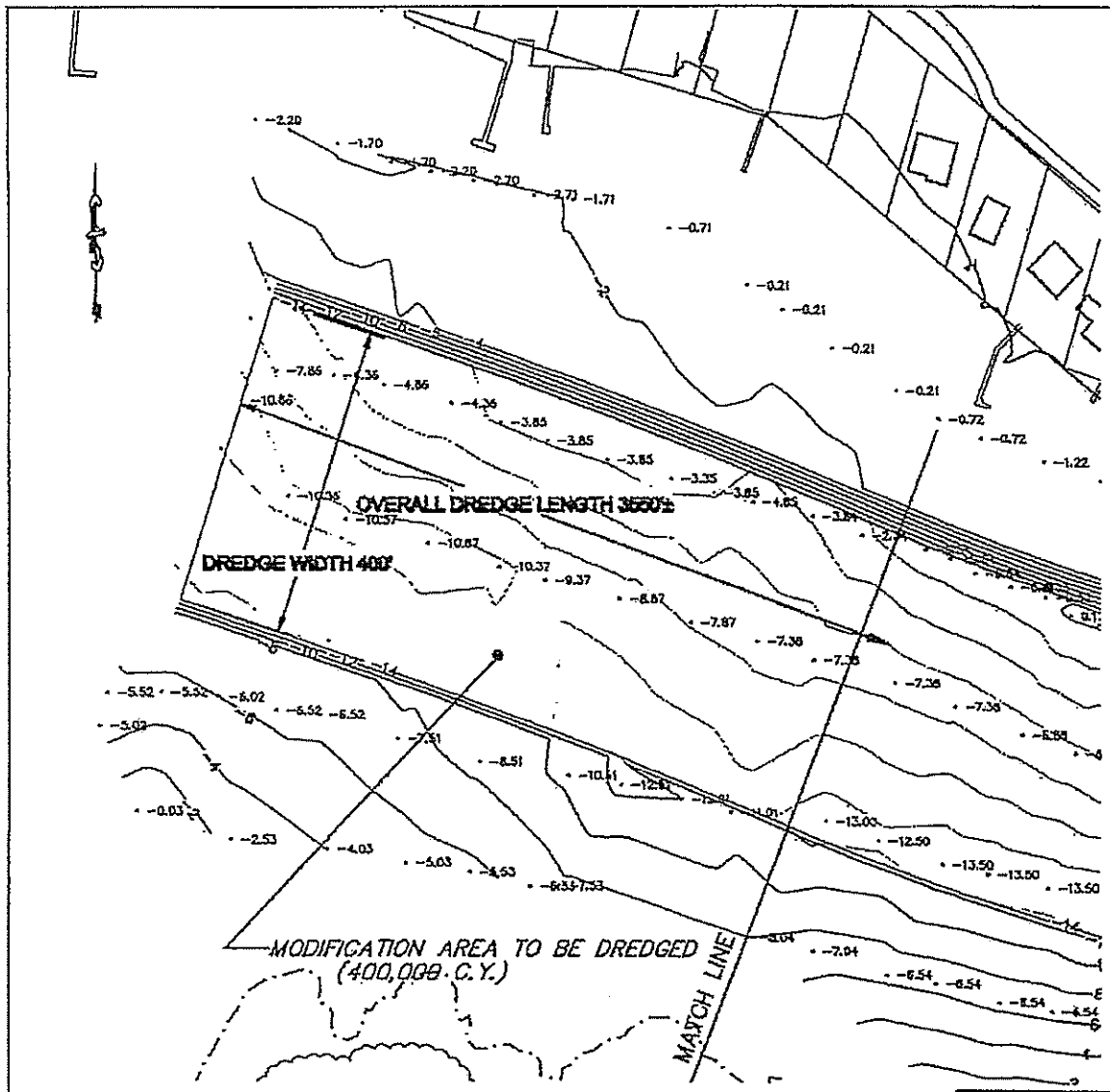
TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

MODIFICATION DATE: JULY 2, 2013
REVISED: JULY 18, 2013

SHEET 3 OF 6

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

PERMIT MODIFICATION

MAINTENANCE DREDGING AREA

CAPTREE CHANNEL

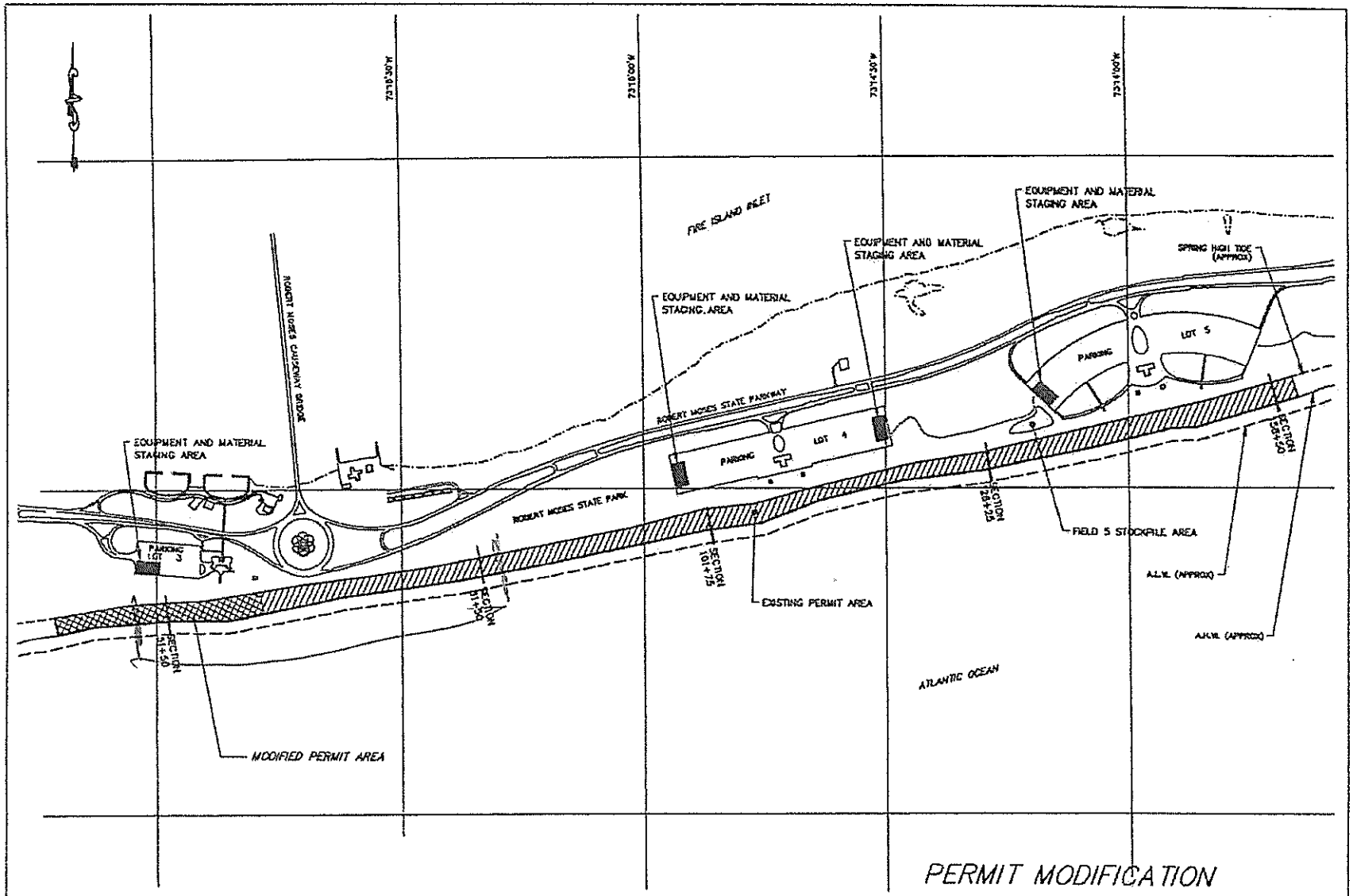
TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

MODIFICATION DATE: JULY 2, 2013
REVISED: JULY 18, 2013

SHEET 4 OF 6

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200



PERMIT MODIFICATION

BEACH RESTORATION AREA

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

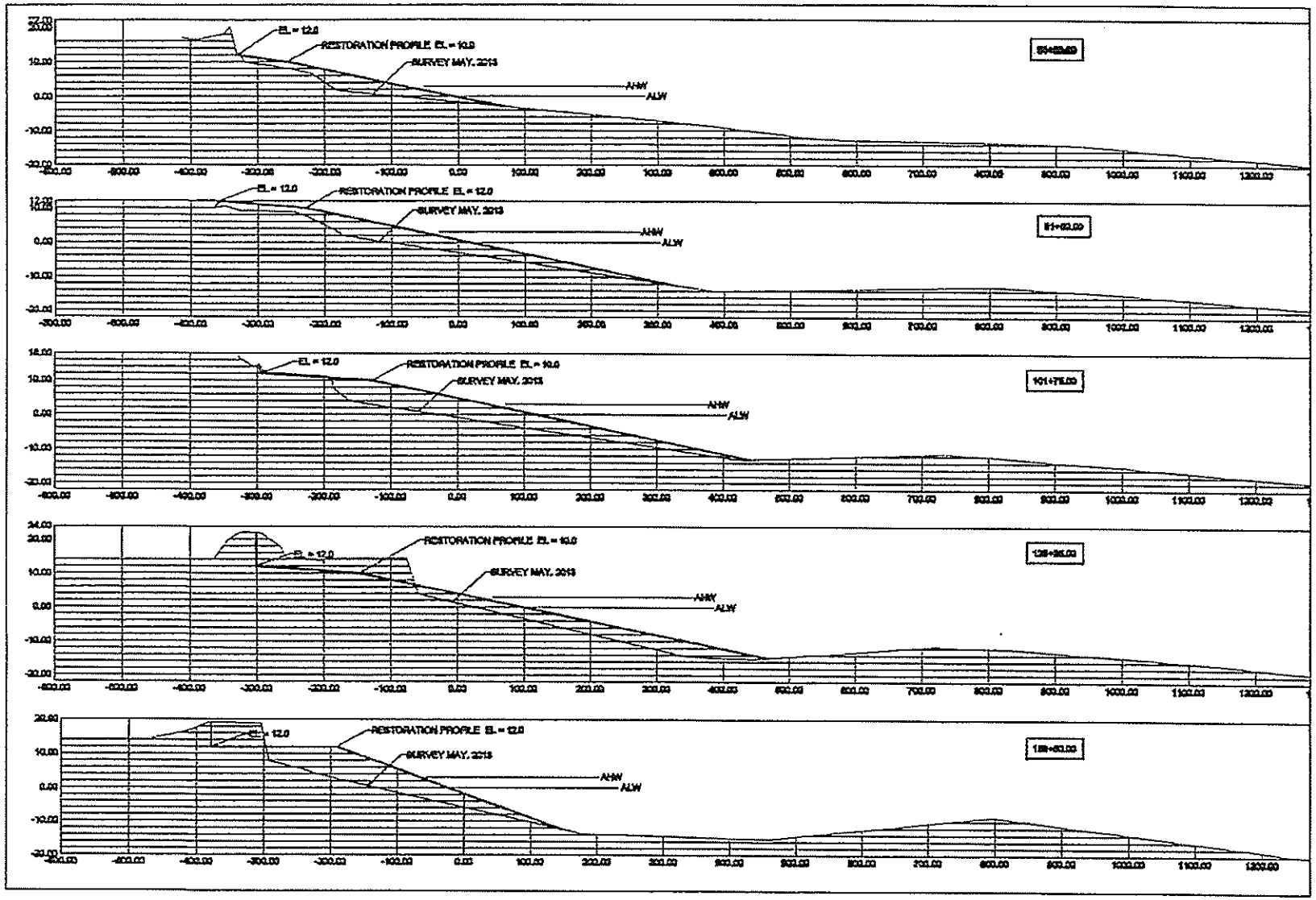
MODIFICATION DATE: JULY 2, 2013

REVISED: JULY 18, 2013

SHEET 5 OF 6

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 600 1200



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

PERMIT MODIFICATION

CROSS SECTIONS

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

MODIFICATION DATE: JULY 2, 2013

SHEET 6 OF 6

NYSDEC PERMIT MODIFICATION WITH BEACH RESTORATION PHASING

New York State Department of Environmental Conservation
Division of Environmental Permits, Region 1
SUNY @ Stony Brook
50 Circle Road, Stony Brook, NY 11790-3409
Phone: (631) 444-0365 • **Fax:** (631) 444-0360
Website: www.dec.ny.gov

Joe Martens
Commissioner

PERMIT MODIFICATION

November 8, 2013

NYS Office of Parks, Recreation & Historic Preservation
c/o Scott Fish, NYSOPRHP, Long Island Region
PO Box 247
Babylon, NY 11702

Re: NYSDEC Permit # 1-4728-00955/00029
Dredge Captree State Boat Channel West of RM Bridge
Captree State Park, Islip

Dear Permittee:

The Department of Environmental Conservation (DEC) has reviewed your request to modify the above referenced permit in accordance with the Uniform Procedures Regulations (6NYCRR Part 621). It has been determined that the proposed modifications will not substantially change the scope of the permitted actions or the existing permit conditions. Therefore, the permit is hereby modified to authorize the following:

Conduct a one-time only dredge event during the Spring of 2014, to remove 400,000 cy of material from the channel west of the Robert Moses Bridge, placing all the resultant material at Robert Moses State Park on the beach adjacent to parking fields 3, 4 and 5 for beach nourishment and in stock-pile areas, all as shown on the attached two-page site plans prepared by Cashin Associates PC, last revised, 11/7/13, and the attached document entitled "Written Description of the Beach Nourishment Timeline" dated 11/7/13, both stamped "NYSDEC Approved" on 11/8/13. This dredge event is authorized during the Prohibition Period (January 15 to September 30) described in special condition # 5 of the above referenced permit subject to the design constraints described in the approved plans, and the following five additional special conditions.

1. **Monitor Dredge Operations:** A turbidity monitoring plan must be submitted for DEC approval 15 days prior to start of any in-water work. At a minimum, the protocol must indicate that turbidity will be monitored in Nephelometric Turbidity Units (NTU) for 1 continuous hour each day during operations. Monitoring must be conducted up current, down current, and adjacent to the dredge operation at each of 3 stations selected each day along the dredge route.

2. **Fund Design of Winter Flounder Study:** NYS OPRHP will provide funding, not to exceed $15,000, to the School of Marine and Atmospheric Sciences at SUNY Stony Brook, to design a study quantifying winter flounder spawning between Fire Island Inlet and Montauk Point".

3. **Symbolically Fence Created Habitat Areas By March 31.**
With the exception of the material placement and grading work after April 1, 20 14 authorized herein, suitable piping plover habitat created by, or coincident with, the activities authorized by this permit and outside of lifeguard-protected areas shall be symbolically fenced by March 31 each year and managed in accordance with the US Fish & Wildlife Service guidance document identified below. This includes the Feb/March 2014 project area at which work will be concluded by March 31. *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.*

4. Environmental Monitor Required For Work After March 31
Activities authorized by this permit modification conducted after April 1 must be conducted under the supervision of a Department approved environmental monitor to insure that no disturbance to the state and federally-listed piping plover, which has been documented to breed in the project area, occurs as a result of the authorized activities. The monitor shall be present whenever work is underway and shall report on a weekly basis to the NYS DEC Wildlife Office, Attention: Chip Hamilton (fxhamilt@gw.dec.state.ny.us or (631)444-0308). If the monitor observes the presence of piping plovers in the construction area or determines that the project activities are disturbing piping plovers, the monitor must stop the project and immediately contact the Department staff member identified above.

5. Dredged Materials on the Beach
All material deposited on the beach shall be of compatible (equivalent or larger) grain size to the naturally occurring beach, and the sand deposition area must be finished to a natural grade and contoured to establish suitable habitat nesting and foraging habitat for piping plovers. If at any time during the dredging operation the composition of the dredged material changes and becomes unsuitable for beach placement, dredging operations shall cease immediately and the office of Regional Habitat - TW shall be contacted with a proposed plan to correct the problem and/or for alternative placement. No further activity will commence without the department's approval

This letter is a modification to the original permit and must be available at the job site whenever authorized work is in progress. All other terms and conditions remain as written in the original permit.

Sincerely,

Roger Evans
Regional Permit Administrator

KAK/file
cc: P. Scully, NYSDEC Region 1
NYSDEC Review Team
Cashin Associates PC

Robert Moses State Park
Beach Nourishment Timeline
Captree Channel Permit Modification
Permit # 1-4728-00955/00029

Prepared for: NYS Office of Parks, Recreation and Historic Preservation
Belmont Lake State Park
PO Box 247
Babylon, NY 11702-0247

NYS Department of Environmental Conservation
Division of Environmental Permits, Rcgion 1
SUNY@ Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409

Prepared by: Cashin Associates
1200 Veterans Memorial Highway
Hauppauge, NY 11788

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4728-00955/00029 mod 3
DATE 11/8/13

Phase 1C Area
This area is the stockpile area located at the west end of Parking Lot 4 located behind the dune line.

Phase 1 Material Transport
Material for all Phase 1 areas will be transported to site from the existing dredge pipe which underpasses the parkway just east of the traffic circle

Phase 2A Area
This area is the Field 5 Stockpile Area which is located behind the dune line at the west end of Parking Field 5.

Phase 2B Area
This area begins mid-way between Parking Filed 4 and Parking Field 5and continues to the west side of Parking Lot 5. Nourishment of this beach area will be contingent on whether nesting shorebird activity is observed when the nourishment is set to begin. If beach nourishment activities can not be completed in this area, any remaining material will be placed in the Phase 2A Stockpile Area, located behind the dune line.

Phase 2 Material Transport
Material for Phase 2 areas will be transported to the deposition areas using the existing dredge pipe that underpasses the parkway just west of Parking Lot 5.

Plover Monitoring
Beginning March 1, 2014 and during all phases of the nourishment operation a certified nesting shorebird monitor will be on site to monitor any shorebird activity within proximity of dredge operations and material placement activities taking place in known/historic shorebird nesting areas. Monitoring will continue until operations are no longer in areas of concern.

Phase Timing
Based on the estimated time needed for public bidding, award of contract, and mobilization by the contractor, it is estimated that the start date for dredging and beach restoration will be February 1, 2014. A 90-120 day dredging project is expected. Beach restoration work in the more sensitive areas (Phase 1) will be during February and March 2014, before shorebird nesting activity is expected.

The Phase 2 work in areas not known for potential shorebird nesting will take place after March 2014. Phase 2B (the area between Parking Field 4 and 5) will only be performed if conditions are acceptable (no significant shorebird activities identified). If Phase 2B can not be performed, the dredge material will be deposited in the Field 5 Stockpile Area (Phase 2A), which is located behind the primary dune and away from potential shorebird nesting habitat.

N Y S D E C
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4722-00955/00029 Mod 3
DATE 11/8/13

Robert Moses State Park
Written Description of the Beach Nourishment Timeline for
Captree Channel Permit Modification #1-4728-00955/00029

A phasing schedule has been developed based on discussions with NYSDEC to eliminate or minimize potential effects on shorebird nesting and foraging areas along the section of the ocean beach at Robert Moses State Park that is to receive nourishment under the above referenced permit. The phasing schedule has been developed to provide for beach restoration in areas known for past nesting shorebird activity during the initial phase of the nourishment project, so that the restoration activities will be completed before nesting shorebird activity begins.

Restoration work in the later phase of the project will occur in areas not regarded as potential shorebird nesting habitat based on current beach conditions and historical nesting shorebird activity. Another important condition in the phasing schedule is to provide sand nourishment in areas that are in critical need of restoration (i.e. in front of the traffic circle and tower) early on in the project. The proposed schedule will be subject to change depending on conditions present during the late winter and spring 2014, when the dredging and beach restoration are anticipated to occur.

Intermittent plover activity has been recorded for beach areas between Parking Lot 3 and Parking Lot 4. However, existing conditions indicate that portions of the beach appear unsuitable for shorebird nesting because the beach is narrow and subject to wash over during extreme high tide events. The beach area in front of the tower and traffic circle was severely eroded during Superstorm Sandy. It should be noted that beach restoration of the severely eroded beach segments will improve potential shorebird nesting habitats. The areas referenced in the phase plan are shown in the attached maps.

The dredging operation will utilize two dredge pipes already existing beneath the parkway; one located near the west side of Field 4, and one near the west side of Field 5.

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4728-00955/00029 mod 3
DATE 11/8/13

Phase 1A Area
This area begins just east of the traffic circle and continues west to the west side of Field 3. The Phase 1A area in front of traffic circle is not suitable for shorebird nesting because it has been an active erosion area which has resulted in unsuitable habitat. The work in this area will begin at the western end and proceed in a west to east direction.

Phase 1B Area
Upon completion of Phase 1A, work in this area will begin at the eastern boundary and progress east to west until the Phase 1A area is reached. Complete nourishment of this beach area will be contingent on whether nesting shorebird activity is observed when the nourishment is set to begin. If Phase 1B area can not be completed fully, remaining material will be placed in stockpile areas. The eastern terminus of Phase 1B may be adjusted based on field conditions at the time and work progress experienced during Phase 1A work.

Anticipated Schedule

Phase	Time Frame	Approximate Volume (cy)
1A	February	110,000
1B	March	130,000
1C (Stockpile)	March	40,000
2A (Stockpile)	April	100,000
2B	May	20,000
Total	**120 days**	**400,00**

Note: Amount of beach nourishment/stockpile material in each area may be changed based on condition of beach at the time work is to occur.

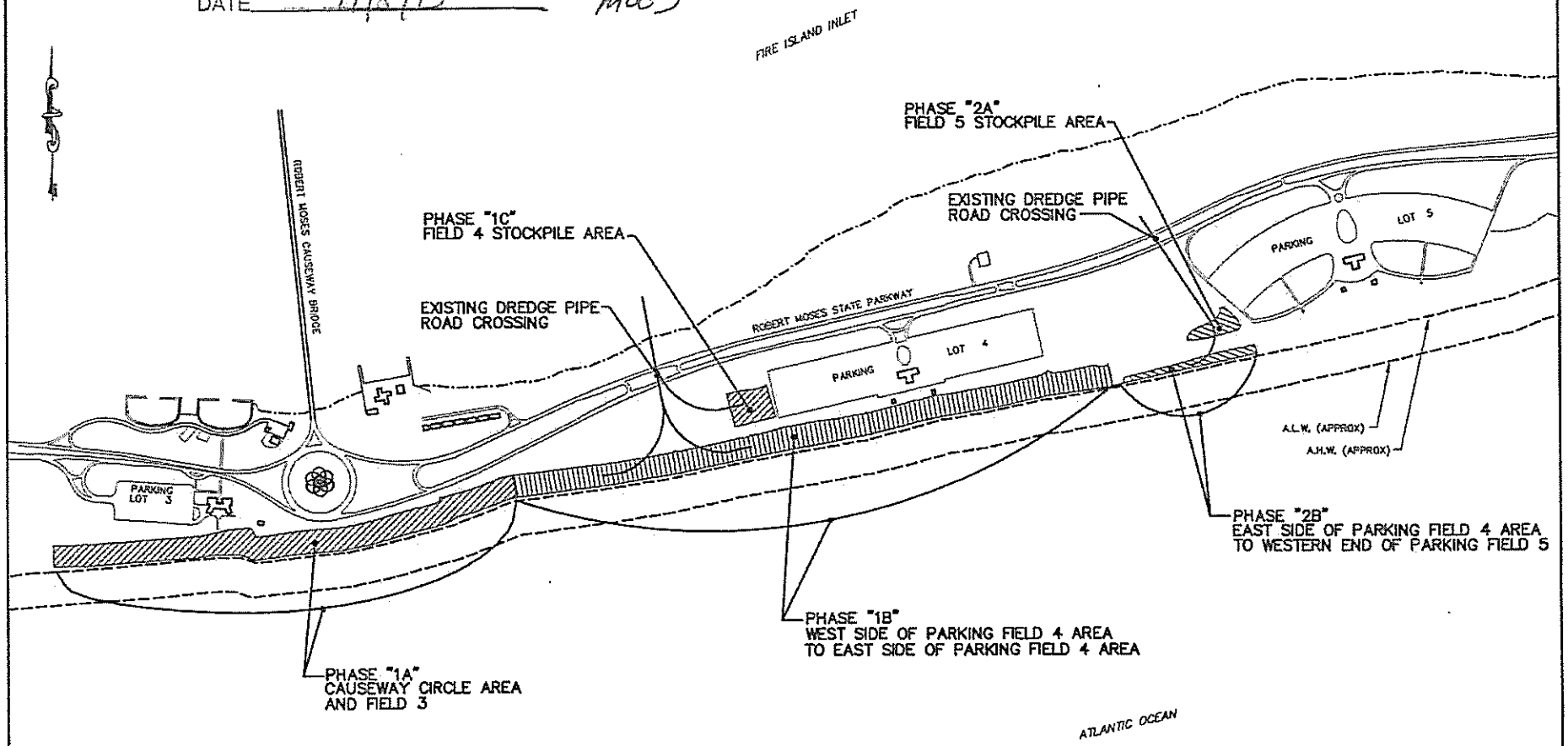
NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 1-4728-00955/00029 mod. 3
DATE 11/8/13

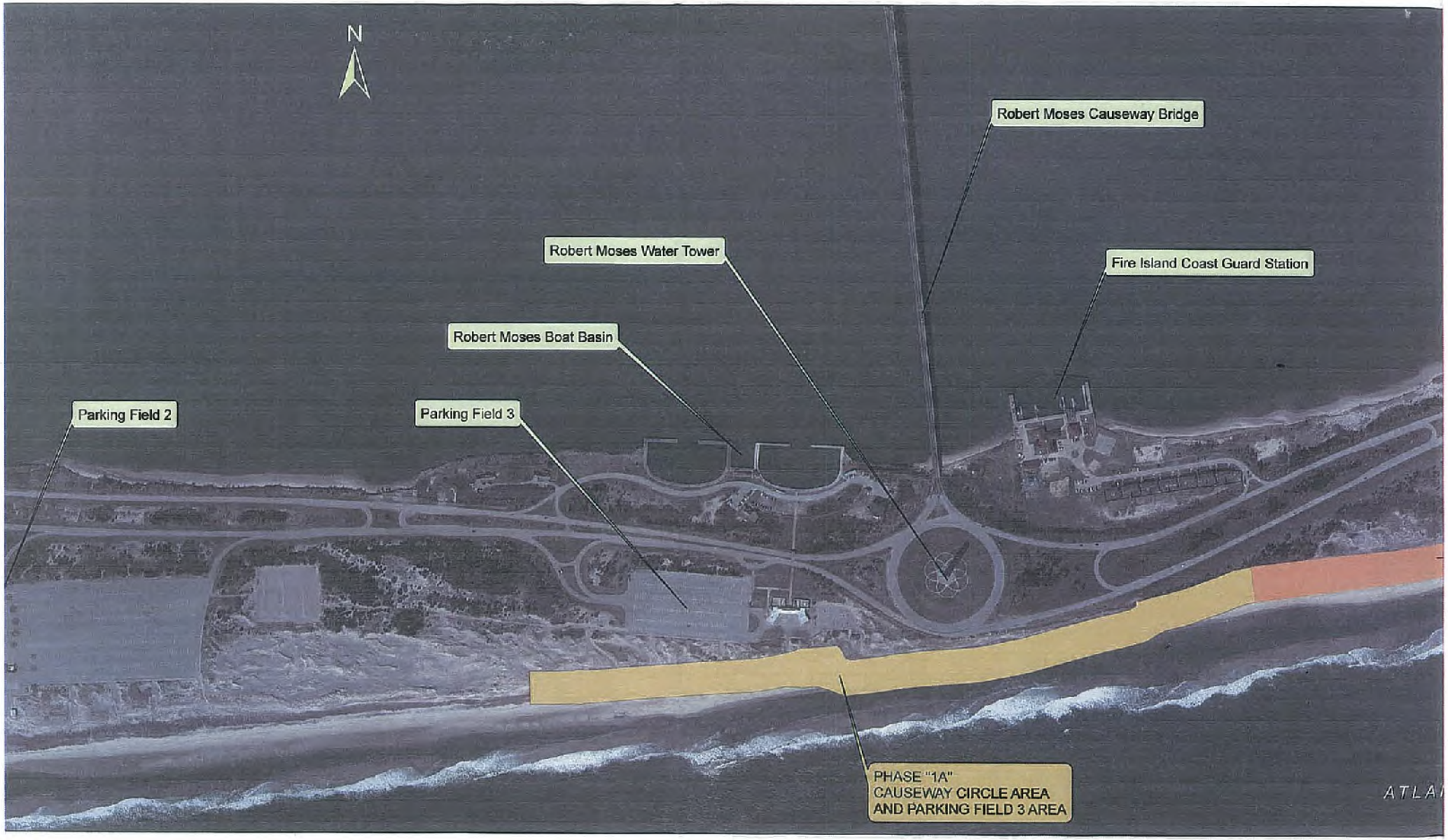
Cashin Associates, P.C.

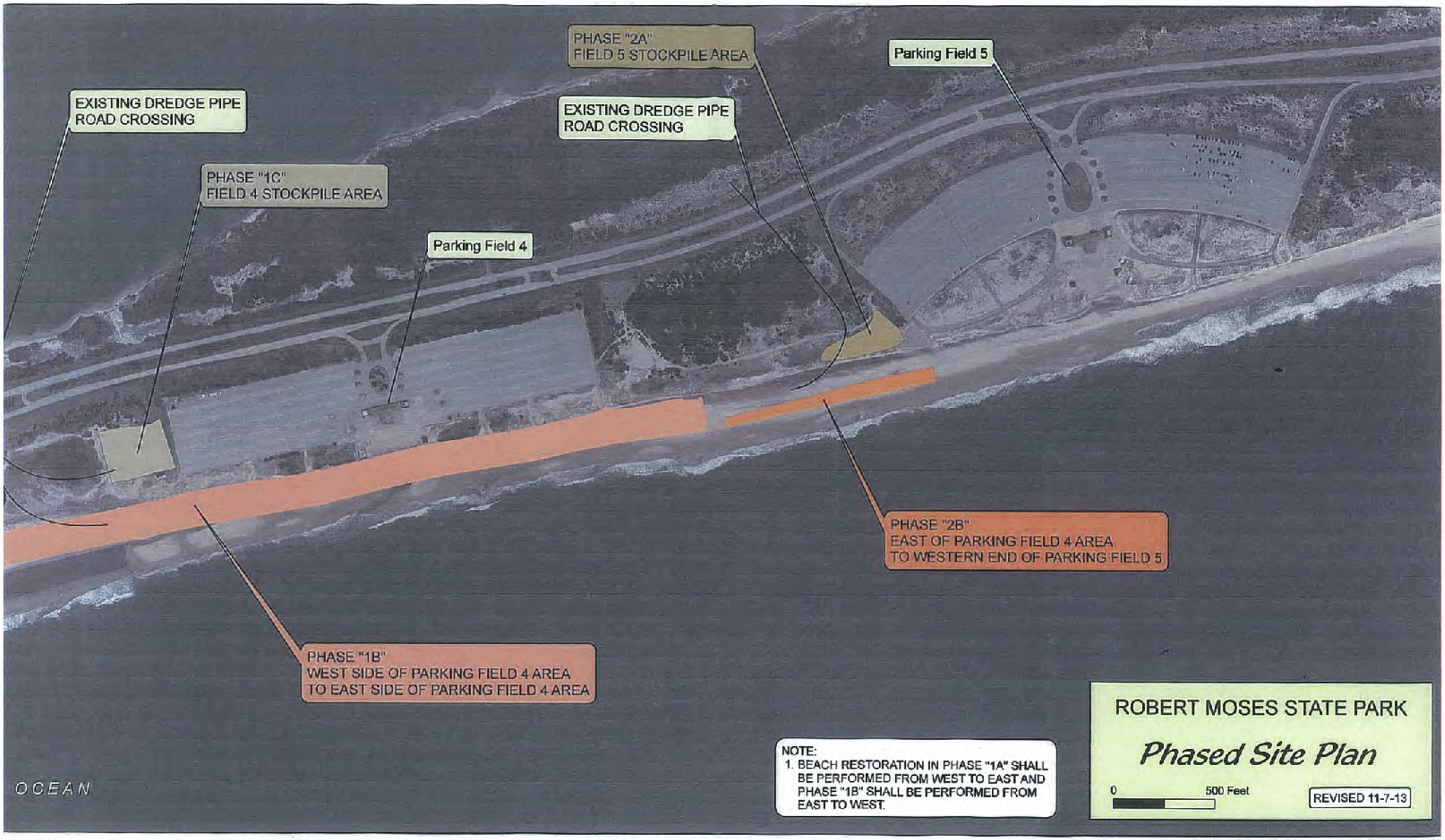
ENGINEERING · PLANNING · CONSTRUCTION MANAGEMENT

CLIENT: NEW YORK STATE OFFICE OF PARKS RECREATION AND HISTORIC PRESERVATION		SHEET 1 OF 1
PROJECT: ROBERT MOSES STATE PARK BEACH NURISHMENT		CA NO.: 12035.004
TITLE: FIGURE 1 – BEACH RESTORATION PHASE PLAN	DATE: OCT 2013	SCALE: 1"=1200'
		REVISION 2 – NOV. 7, 2013

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4728-00955/00029
DATE 11/8/13 mod3




N
Robert Moses Causeway Bridge
Robert Moses Water Tower
Fire Island Coast Guard Station
Robert Moses Boat Basin
Parking Field 2
Parking Field 3
PHASE "1A"
CAUSEWAY CIRCLE AREA
AND PARKING FIELD 3 AREA



NOTE:
1. BEACH RESTORATION IN PHASE "1A" SHALL BE PERFORMED FROM WEST TO EAST AND PHASE "1B" SHALL BE PERFORMED FROM EAST TO WEST.

ROBERT MOSES STATE PARK

Phased Site Plan

0 500 Feet

REVISED 11-7-13

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4728-0955/00029 Mod 3
DATE 4/8/13

Appendix B

USACE Permits and Correspondence

Cashin Associates, P.C.
ENGINEERING • PLANNING • CONSTRUCTION MANAGEMENT
Est. 1959

December 4, 2013

Regulator Branch
NY District U.S. Army Corps of Engineers
26 Federal Plaza
Room 1937
New York, NY 10278

Attn: Jun Yan, P.E.
Project Manager, Eastern Section

Subject: Permit Modification for Captree Channel
NAN-2010-00491-

Dear Mr. Yan,

This information is being provided in response to your email dated November 19, 2013 to Cashin Associates regarding the emails received by your office from the National Marine Fisheries Service (NMFS) dated November 18, 2013 and from the US Fish and Wildlife Service (USFWS) dated November 18, 2013 declining allowance to extend the dredge window past the January 15th close date (NMFS) and to place sand on the beach after April 1 (USFWS) on the above referenced project. As stated in previous communications with your office, the dredging and beach nourishment project is being conducted by the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) to address erosion resulting from Superstorm Sandy, and the work is needed to protect the beach and adjacent infrastructure including Robert Moses Parkway and traffic circle. We would like to support OPRHP's original waiver request sent to you via email on November 13, 2013 with the following additional information.

OPRHP maintains 20 state parks and historic sites on Long Island and most if not all of these areas experienced damage as a result of Superstorm Sandy. In particular, the seven parks located along the south shore of Long Island had extensive damage to their infrastructure as well as severe erosion issues. With nearly 20 million visitors attracted to these sites annually, OPRHP took a phased approach to the post-Sandy rebuild initiative. First was to rebuild the infrastructure so all of these areas would be partially or completely repaired and accessible prior to the 2013 tourist season. This first phase included ocean beach restoration in severely eroded areas (e.g. ocean beach in front of Parking Field 5 at Robert Moses State Park). In the follow up phase, OPRHP addressed the need for sand nourishment at additional oceanfront beaches affected by Superstorm Sandy, and in areas requiring further restoration after initial actions. This is the reason why unlike other entities in the NY/NJ region all of the beach nourishment did not take place within the first year after Sandy as stated by NMFS. In addition and as stated previously in earlier communications with USACE, the permit application for the above mentioned project was submitted in July 2013 and is still in the agency permit approval stage. With an expected 90-120 day dredging project schedule it will be impossible to complete this project before the January 15 no dredge date.

1200 Veterans Memorial Highway • Hauppauge, NY 11788 • (631) 348-7600 • FAX (631) 348-7601
80 SW 8th Street • Suite 2809 • Miami, FL 33130 • (305) 579-2006 • FAX (305) 579-2035
www.cashinassociates.com

The EFH where the project is located is a 10-minute latitude by 10-minute longitude square area (approximately 116.5 square miles) with numerous bays and embankments throughout the entire habitat. The project area is 3,660 feet long by 400-feet in width, representing an extremely small fraction of the entire EFH (approximately 0.05 square miles or less than 0.05% of the total EFH).

NMFS's email states that winter flounder eggs are demersal and adhesive-sink to the bottom and stick together. They also state that larvae, although planktonic for a short period of time after metamorphosis, settle back down into the sediments and have limited mobility in the early stages. This suggests that larvae are most likely found in the same general location as eggs. Some studies (Stoner, unpubl data, Crawford and Carey, 1985) suggest that these life stage characteristics result in spawning habitats tending to be where hydrodynamic features retain eggs and larvae. These studies also suggest that habitat choices are cued by either fine-grained sediments or low current velocities. Current velocities in the project area during peak tidal exchange can exceed more than 2 knots making the area a relatively high velocity area. Therefore it is highly unlikely that with all the available low velocities areas found within the EFH that winter founder would choose to spawn in an area where their eggs would be swept away by these strong currents. The section of channel to be dredged does not include any significant coves, inlets, small embayments, tributary channels or other sheltered areas with moderate current velocities. OPRHP believes that no significant adverse impact to winter flounder will result from the proposed project and therefore no mitigation measures are necessary. Therefore, we request a one time waiver be granted so dredging may be allowed after the January 15th, 2014 no dredge window.

Please note the OPRHP has discussed this issue with the NYSDEC, and a plan was developed suitable to NYSDEC. The plan included actions deemed beneficial to the winter flounder resource by NYSEDC including the funding of research to improve knowledge of flounder spawning habitats along the south shore of Long Island, and suspended sediment field studies to assess dredging operations. The research was suggested by NYSDEC as a means to help provide long-term benefits to the winter flounder resource by improving scientific database for the future decision-making related to the flounder resource and dredging impacts.

With regard to the special conditions requirements from the USFWS addressing federally listed threatened species, OPRHP will comply with the requirements that no beach nourishment shall take place after April 1 of any given year.

If you require any additional information please do not hesitate to contact me.

Regards,

Keith W. Brewer
Senior Environmental Scientist
Cashin Associates

Cc: Scott Fish (OPRHP)
12035.011
I:\PROJECTS\NYS\12035.011 Robert Moses Application\Modification of Captree Permit\CORRESPONDENCE\ response ltr to ACOE-dec 4-2013.doc

Behavior of winter flounder, *Pseudopleuronectes americanus*, during the reproductive season: laboratory and field observations on spawning, feeding, and locomotion

Allan W. Stoner

Allen J. Bejda

John P. Manderson

Beth A. Phelan

Linda L. Stehlik

Jeffrey P. Pessutti

Northeast Fisheries Science Center
National Marine Fisheries Service, NOAA
74 Magruder Road, Highlands, New Jersey 07732
E-mail address (for A. W. Stoner): al.stoner@noaa.gov

Abstract.—Continuous observations in a large research aquarium (121 kL) over a 14-week period were combined with field collection in the Navesink River estuary, New Jersey, to explore the behavior of winter flounder (*Pseudopleuronectes americanus*) during and after the spawning season. Ten males and ten females held in the aquarium spawned over a 60-day period, with an average of 40 spawns per female and 147 spawns per male. Males initiated all observed spawning events, which occurred throughout the night, but primarily between sunset and midnight. Spawning by one pair frequently elicited sudden convergence and spawning by secondary males (up to six individuals); consequently, strictly paired spawning was uncommon (22% of events). Males and females were almost entirely nocturnal during the reproductive season but became increasingly diurnal during the postspawning season.

Males and females arrived in the estuary in ripe spawning condition; fish with high gonadosomatic indices were collected during most of February and March 1997. All of the ripe females were >20 cm in total length and at least two years old, whereas ripe males measuring 10–15 cm were common. Ripe males were found throughout the system whereas ripe females were concentrated in the middle reach of the estuary. Field collections revealed that females began feeding, primarily on ampeliscid amphipods and on siphons of the clam *Mya arenaria* earlier in the season than males. Males in the laboratory also began feeding late in the season, after most spawning had ended. Field and laboratory results combine to indicate that male spawning strategy is adapted to maximize numbers of eggs fertilized. There is probably high genetic diversity in the offspring from any one female owing to frequent spawning and to multiple males participating in individual spawning events.

Manuscript accepted 24 March 1999
Fish. Bull. 97: 999–1016 (1999).

Winter flounder, *Pseudopleuronectes americanus*, is an important commercial and recreational fishery species in estuarine and continental shelf habitats along the Atlantic coast of North America from Labrador to Georgia (Scott and Scott, 1988). A large number of investigations have been devoted to this species and its life history is relatively well known (Klein-MacPhee, 1978; Able and Fahay, 1998). Winter flounder populations include several substocks that mix during summer residence on the shelf, but adults return to natal estuaries to spawn (Saila, 1961; Poole, 1966; Howe and Coates, 1975; Pierce and Howe, 1977; Phelan, 1992). In the Mid-Atlantic Bight, adults make seasonal migrations into the estuaries of New York and New Jersey (Perlmutter, 1947; Phelan, 1992) where they spawn in shallow inshore waters during late winter (Scarlett and Allen, 1992).

Winter flounder in the mid-Atlantic region are believed to mature at 2–3 years, at 20–25 cm total length (Perlmutter, 1947, Danila, 1978; Witherell and Burnett, 1993). Considerable attention has been given to seasonal movement (Perlmutter, 1947; Saila, 1961; Howe and Coates, 1975; Phelan, 1992) and to fecundity and reproductive state in wild populations (Kennedy and Steele, 1971; Danila, 1978; Burton and Idler, 1984; Nelson et al., 1991); however, information on spawning behavior is limited to observations made by Breder (1922) of fish in small laboratory tanks.

In this investigation we expanded Breder's (1922) description of spawning and courtship in winter flounder by making continuous observations on a population of winter flounder in a large research aquarium for a 14-week period during and after the reproductive period. We determined the total number of spawning events for males and females in the population and examined seasonal and diurnal variation in spawning, feeding, and locomotory activity. On the basis of field collection we described population structure, gonadal development, feeding, and localized movements by a wild population of winter flounder in an

estuarine spawning ground during winter and spring 1997.

Methods

Laboratory observations

Experimental animals Winter flounder were collected in nearshore waters between Rockaway Point and Coney Island, New York, on 27 January 1997 with a 9.2-m otter trawl fished from RV *Gloria Michelle*. Flounder were held in live cars with flow-through seawater and transported in large ice chests to the laboratory. Mature ripe males were identified by the extrusion of sperm under light pressure applied to the body. Females were identified by the presence of full ovaries distending the body, occupying a large portion of the body cavity, and extending almost to the caudal peduncle. Ten males and ten females, each greater than 200 mm in TL (total length), were marked with Peterson tags (13 mm diameter) before release into the research aquarium. To provide visual identification of gender on videotape, males and females were marked with orange and white tags, respectively. These colors were distinguishable with low-light video cameras during both day and night. At the beginning of the experiment the mean total length of male flounders was 29.8 cm (SD=3.2, range=24.3–34.4 cm). Mean length of females was 28.5 cm (SD=2.6, range=23.5–30.8 cm). Four fish (two males and two females) died near the end of the 14-week observational period; these were not replaced. The fish were remeasured for total length at the end of the experiment to estimate growth.

Research aquarium Observations of the winter flounder were made in the research aquarium at the James J. Howard Marine Sciences Laboratory at Sandy Hook, New Jersey. The aquarium (121 kL volume) is an oval 10.6 m long, 4.5 m wide, and 3 m deep, with eight rectangular windows (0.7 m wide and 1.2 m high), one in each end and three along each side. There is a recirculating system so that 10% of the water is replaced each week. Seawater upwells through coarse sand which covers the bottom of the aquarium (46 m^2) to a depth of 40 cm, then exits through drains at the top of the tank.

For this experiment, photoperiod in the aquarium room, which was controlled by a computer-driven bank of fluorescent lamps (Duro-Test, Vita-Lite: model CRI91; 5500°K), was programmed to follow the natural sequence at the location of the laboratory (40°28'N, 74°00'W), with a 13.5-h dark period at the end of January, when fish were first introduced into the system, and a 10-h dark period at the end of the study in mid-May. During nighttime hours, light intensity on the sediment surface was 0.17 lux (1.98×10^{-6} mEinsteins PAR [photosynthetic active radiation]). Light intensity increased at the time of twilight to 2.0 lux (2.92×10^{-5} mEinsteins PAR) for 20 min, followed by a natural rise in intensity to 206 lux (0.0027 mEinsteins PAR) at midday. Return to nighttime conditions followed an exact reverse pattern.

Water temperature was held at 4.0°C (±0.5°C) from the beginning of the observations until 27 March, when a cooling system malfunction allowed temperature to rise to 7.5°C. To follow conditions in the Navesink River, we held water temperature at 7.5°C until 10 April, then raised temperature ~0.5°C per day to 15°C on 14 April. This temperature was maintained until the end of observations on 13 May 1997.

Finely chopped pieces of frozen surf clam (*Spisula solidissima*) were made continuously available as food for the flounders. The food was renewed at least once per week during the early part of the period when feeding was light, and increased with ingestion rate to near-daily additions by 1 April 1997. The food was placed on the bottom in an area approximately 2 m in diameter within camera view so that all feeding bouts could be counted.

Recording observations Two low-light-sensitive video-tape cameras were set at the end windows of the aquarium to make continuous recordings of courtship and spawning events over a large portion of the tank from bottom to water surface. Each of these cameras viewed 53% (24.6 m^2) of the tank bottom with minimal overlap in coverage. Recordings were made from about 1530 h through 0500 h between 29 January and 18 April 1997, after preliminary taping and routine visual observation indicated that virtually all activity was nocturnal. The validity of this approach was confirmed by cameras at the side windows set for 24-h recording throughout the study period. Twenty-four-hour recording from the end cameras was initiated 19 April 1997, concurrent with increasing daytime activity of the fish.

Spawning events were divided into two classes. An event was considered "definite" when characteristic behavior patterns were clearly observed in the recorded image. However, because most spawning occurred in darkness, some spawning events were not observed clearly. These likely but less certain spawning events were scored "probable." Two forms of courtship were recorded; these are described in the "Results" section. Records were kept of the numbers of males and females involved in each courtship and spawning encounter. A feeding event was scored once,

regardless of feeding duration, when a fish entered the food distribution area and made obvious feeding motions toward the clam pieces. Analysis of video tape from the two cameras for four dates during midspawning season revealed that there were no significant differences in daily counts of spawning, courtship, and feeding as recorded by the two cameras (paired-sample t tests, $P>0.30$); therefore, the second camera was used only as a backup for recorder failure (e.g. on four dates).

Two other low-light cameras were set at side windows to provide data on locomotory activity and swimming speeds. Each viewed a 3.6-m wide section of the opposite tank wall and about 4.6 m^2 of bottom, and recordings were made for 5 min at the beginning of each hour. An index of locomotory activity was provided by the number of fish passing a central line in view of the camera. Swimming speeds (cm/sec) were determined by timing the passage of fish between two points 142 cm apart on the tank wall. Whenever possible, the gender of fish passing through this view was noted. The two cameras provided essentially identical information, and recordings from only one were analyzed for each day.

Observations were also made on the relative abundance of winter flounder larvae in the aquarium. Flounder larvae were almost constantly present in the aquarium after mid-February, and an index of their abundance was recorded each day. Because the larvae demonstrated diurnal vertical migration, observations were made at approximately 1200 h and general abundance was scored from zero to four. A score of one was recorded when only a few larvae were observed in any field of view and a score of four was given when thousands of larvae were present at all of the tank windows.

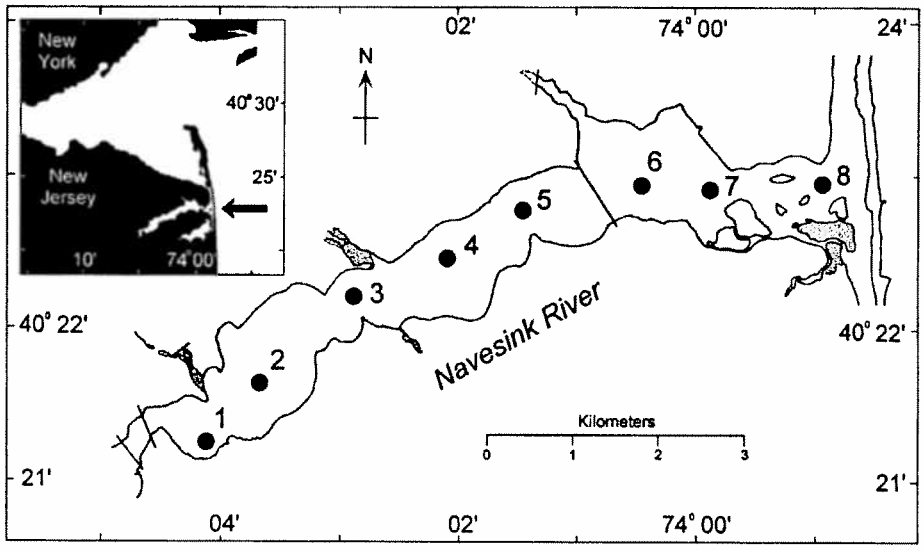


Figure 1

The Navesink River estuary, New Jersey, showing the stations where collections were made for winter flounder during winter and spring 1997.

Field collections

To monitor the location, reproductive condition, and sex ratio of winter flounder in a wild population, weekly daytime otter-trawl surveys were conducted from 7 February to 24 April 1997 in the Navesink River estuary, New Jersey (Fig. 1), which is a known spawning area for the species (Scarlett[1]). Eight fixed stations were established approximately 1 km apart throughout the system. Two 5-min tows (at 4.4 ±0.9 km/h) were made at each station with a 5-m semi-balloon otter trawl with 3.5-cm wings and body and a 6-mm codend liner. Abundance of winter flounder was reported in catch per unit of effort standardized as number of individuals per 100 m of tow distance, which was estimated with a global positioning system (GPS).

Winter flounder collected in the trawl surveys were measured to the nearest millimeter of total length, blotted dry, and weighed to the nearest gram. Gender was determined by inspecting the gonads, and each fish was classified as immature, ripe, or spent. The gonads were weighed to the nearest gram, and gonadosomatic indices (GSI) were calculated according to LeCren (1951) as

$$GSI = 100\ (gonad\ weight/total\ body\ weight).$$

The stomach of each winter flounder was removed, preserved in 10% formalin solution, and later transferred to 70% ethanol. Diet was analyzed as in Stehlik (1993), and fullness of the foregut was estimated visually on a scale from 0% to 100%. Prey items were identified to the lowest possible taxon and the proportion of the total volume of stomach contents con-

[1] Scarlett, P. G. 1991. Temporal and spatial distribution of winter flounder (*Pseudopleuronectes americanus*) spawning in the Navesink and Shrewsbury Rivers, New Jersey. Dep. of Environmental Protection, Div. Fish, Game and Wildlife, Bureau of Marine Fisheries, Nacote Creek Marine Fisheries Laboratory, Star Route, Abseron, New Jersey, 12 p. Unpubl. report.

tributed by each prey type was estimated visually (Williams, 1981). Fullness was averaged for fish grouped by date, gender, and stage of reproductive development. Fish examined were 63–460 mm TL.

Bottom water temperature, salinity, and dissolved oxygen were measured weekly at each station with YSI (Yellow Springs Instruments) oxygen and temperature-conductivity meters. HydroLab DataSonde II instruments were deployed near the bottom on piers extending from the south shore of the Navesink River near stations 1 and 6 to record temperature, salinity, and dissolved oxygen each hour.

Results

Laboratory observations

Behavior Two forms of simple courtship behavior were observed in the research aquarium: "following" and "avoidance." "Following" was defined as oriented locomotion of one or more fish behind another, typically on the sediment surface. A following could be relatively slow or fast (approx. 20–50 cm/sec), continued for 5–20 sec, and sometimes resembled chasing. Turns by the lead fish were followed by the fish behind, and, in most cases, the distance between fish decreased but contact was never made. In all cases where genders of the fish could be determined the lead was female. One or more "followers" were always male. "Avoidance" was characterized by brief contact (<1 s) between a "follower" and the female being followed, then by rapid acceleration and evasive turning by the female. Typically, the female swam 1–2 m off the bottom. In at least 50% of such encounters additional males converged rapidly on the female, eliciting strenuous evasive swimming by the female.

Our observations of spawning in winter flounder were relatively similar to those of Breder (1922), except that females never initiated spawning. Spawning occurred after initial contact by a male as described above. Instead of fleeing, the female remained near the sediment surface (<1.0 m above it) and the pair immediately made several very rapid circles with diameters typically less than two body lengths. Spawning events could be detected even in the far reaches of the tank during darkness because the female nearly always rotated momentarily to the vertical position so that the white underside of her body was clearly visible on the outside of the circles. Participation by multiple males in the spawning event was common, and in approximately 10% of spawning events, one to several males converged on the spawning location immediately after the female had departed, making rapid undulating motions on the sediment surface. Despite convergence of males on spawning females and spawning locations, agonistic behavior among males was never observed. In less than 2% of observed spawning events, a second spawning by the same female occurred a short distance from the first encounter. In most cases the female avoided further contact.

Spawning Spawning began on 8 February 1997, about 2 weeks after the fish were introduced into the research aquarium. One or more spawnings occurred in camera view every day, except 14 February, until 1 April (Fig. 2A); maxima were evident in mid-February and mid-March. The last spawnings were observed on 8 April. In total, 211 spawning events were recorded, 34% of which were definite. In analyses that follow, we considered the "spawning season" in the aquarium to be the period between 8 February and 8 April, 1997. The "postspawning season" was the remainder of the observational period, 9 April through 13 May 1997.

Spawning began near or just before sunset (1700–1800 h) and reached maximum frequency around 2100 h (Fig. 3A). Seventy-five percent of all observed events occurred before midnight. Although some spawning occurred as late as 0430 h, only 10% occurred after 0200 h, when the fish became relatively inactive.

When the total number of spawning events during the observation period was extrapolated to the total dimensions of the aquarium and divided by the ten females in the system, we estimated that the average female flounder spawned 40 times during the reproductive season. It is unknown whether individual fish spawned over this extended observation period. However, given that the mean total number of spawns per night was just six, individuals probably spawned over a period of at least one week. Two facts suggest that a subset of the females may have been completely spent during the first three weeks of the spawning period: the nightly spawning frequency was bimodal, with a minimum on 2 March (Fig. 2A), and female feeding increased rapidly after approximately 3 March (Fig. 4).

None of the observed spawning events involved more than one female flounder, but multiple males were engaged in the majority of spawnings. In 151 events with records for the number of males, only 22.5% were pair spawnings, 11.3% had two males, 3.3% had three males, and the majority involved four to six males (62.9%). Given these numbers, a conservative estimate for the total number of male spawnings within camera view is 780. By extrapolating to total tank dimensions and dividing among the ten males

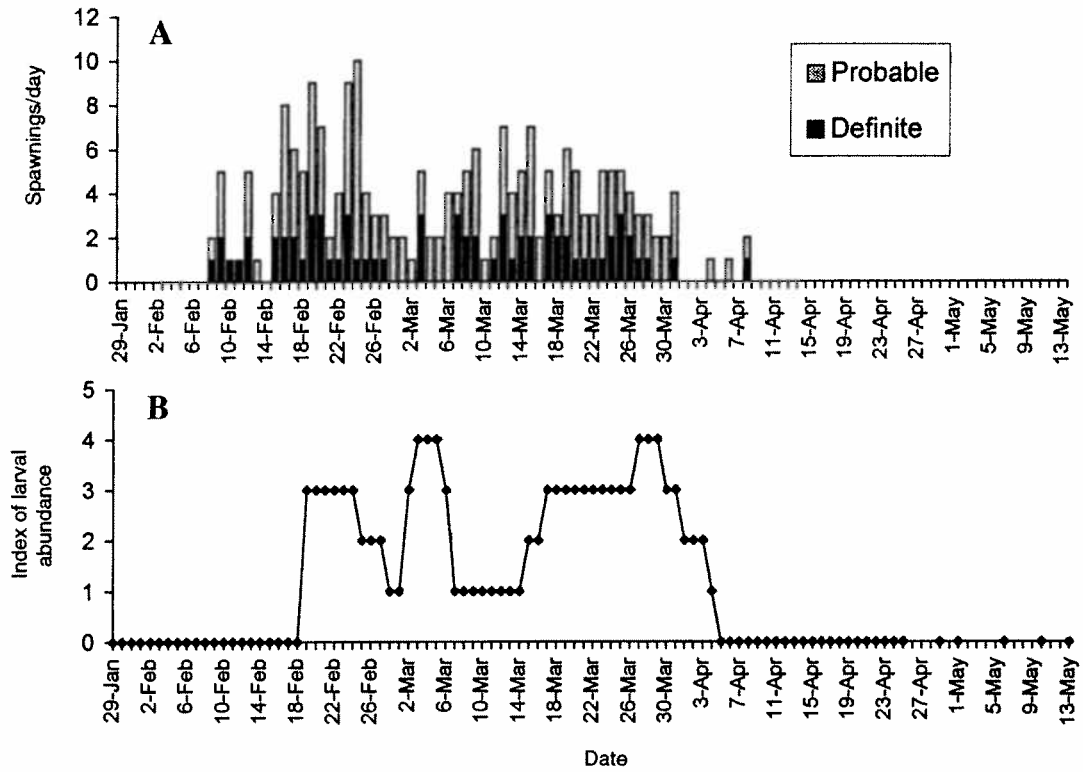


Figure 2

(**A**) Number of winter flounder spawnings observed on a daily basis in the research aquarium. (**B**) Larval abundance in the research aquarium as a function of date. The index represents only newly hatched larvae because older larvae were extracted by aquarium filtration.

in the system, we estimated that each male (on average) spawned approximately 147 times during the season.

Larval abundance The first winter flounder larvae were observed in the aquarium on 19 February, 11 days after the first spawning was observed. A week of low larval abundance occurred in March, but larvae were constantly present until 5 April (Fig. 2B). Because there was no appreciable food for fish larvae in the aquarium, most of the larvae observed were at yolksac and early stages.

Courtship behavior The spawning season was characterized by a high frequency of following behavior (Fig. 5A). Only a small amount of following was observed in the days before and after the spawning season, but 50–200 following events were observed each night between 8 February and 8 April, decreasing steadily after mid-March. This pattern reflected spawning frequency (Fig. 2A), and there was a weak but positive correlation (r=0.531, P<0.001) between the two forms of behavior.

Avoidance events were approximately one order of magnitude less frequent than following events (Fig. 5), but the seasonal patterns were similar, and there was a positive correlation between these behaviors (r=0.786, P<0.001). The correlation between avoidance and spawning was also positive (r=0.441, P<0.001). Most courtship behavior occurred after sunset between 1700 and 0400 h, with a broad mode around 2100 h (Fig. 3, B and C). Very few interactions occurred in daylight.

Feeding and growth The seasonal pattern of feeding was entirely different from the patterns of spawning, following, and avoidance behaviors. First feeding occurred on 10 February, then increased slowly over time—some apparent oscillations, however, were embedded in the overall trend (Fig. 4). For example, an approximately 10-day periodicity occurred between 12 February and 20 March; this was independent of the dates when fresh food was added. All feeders that could be identified prior to 18 March were female. Females were responsible for 90% of all feeding events recorded (n=3673), and this percentage

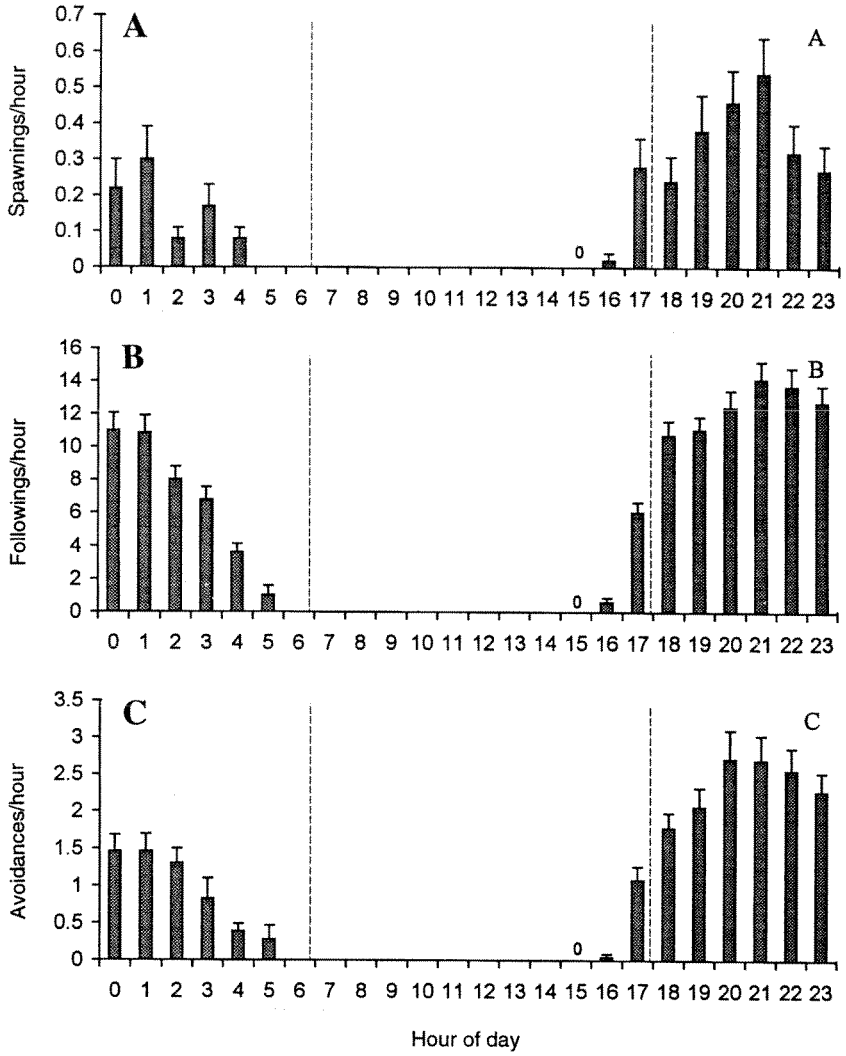


Figure 3

Hourly frequency of **(A)** spawning, **(B)** following, and **(C)** avoidance behavior by winter flounder during the spawning season in the research aquarium. Values represent mean numbers of observed events per hour ±1 standard error. The dashed vertical lines show the times of artificial sunrise and sunset in the aquarium at the midpoint of the spawning season. Photoperiod was maintained on a natural cycle for the latitude of the laboratory.

did not differ appreciably between spawning (90.3%) and postspawning (89.8%) periods.

It is possible that feeding frequency was related to water temperature. During the time when water temperature was 4°C (until 25 March), average feeding frequency was 14 bouts/day (SD=17, n=45). During the period when temperature was 9°C (26 March–8 April), feeding frequency increased to 94 bouts/day (SD=47, n=11), and when the temperature was 15°C (14 April–13 May) there were 159 bouts/day (SD=107, n=17).

Diurnal feeding periodicity was similar in males and females. During spawning season, most feeding occurred in the hours immediately following sunset and ended before sunrise (Fig. 6, A and C). After spawning ended, feeding (particularly by females) was dispersed throughout day and night, and maximum feeding occurred from afternoon to early evening, primarily 1300–1900 h (Fig. 6B). The least feeding activity occurred from approximately midnight until 1100 h. Feeding by males during the postspawning season continued to be much less frequent than feeding by females; however, the diurnal pattern shifted similarly to an earlier period of maximum activity (Fig. 6D).

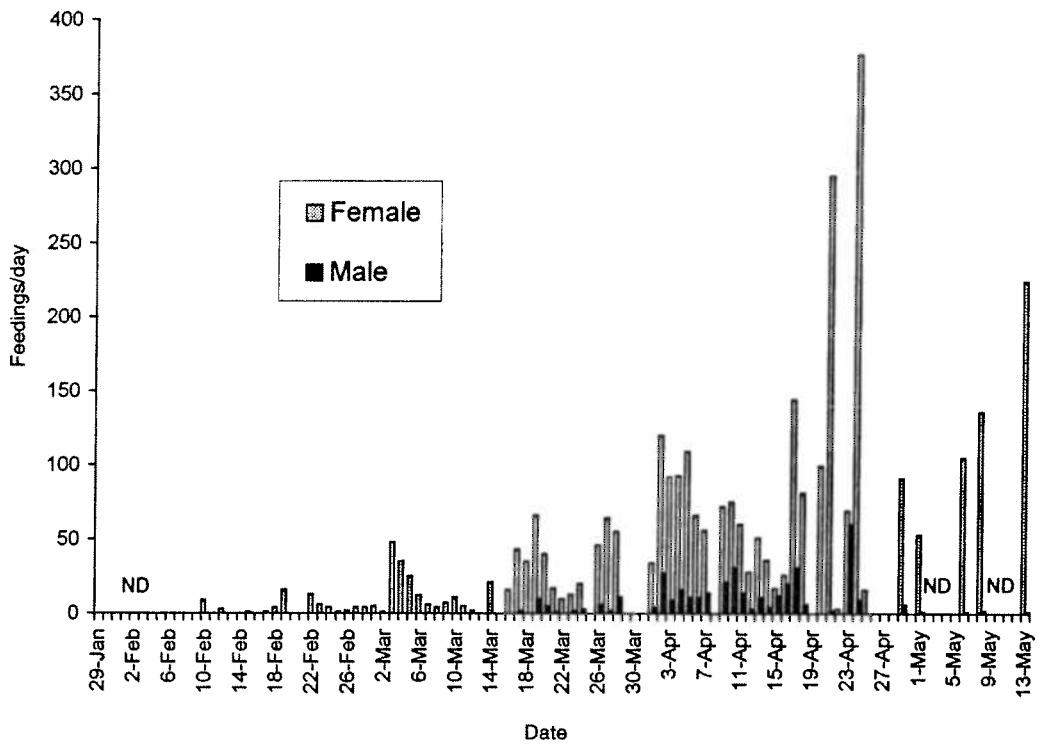


Figure 4

Total number of feeding bouts observed in the research aquarium shown on a daily basis for female and male winter flounder. ND = no data available.

Most female winter flounder demonstrated growth in total length (mean=1.0 cm, SD=1.0) during the three-month experimental period, despite the cold temperature and high spawning activity. Change in length of males (mean=0.1 cm, SD=0.6) was less but the gender difference was not significant (Student's t=–1.91, df=7, P<0.098) because of large individual variation.

Locomotory pattern General activity in winter flounder during the spawning season began near sunset and remained high throughout the night until sunrise (Fig. 7, A and C). After spawning ended, approximately equal levels of activity were observed during day and night, with highest levels during afternoon and evening hours. Diurnal patterns of locomotion were somewhat different in males and females. During the spawning season, male fish began moving somewhat earlier in the evening than females, and the general level of activity was higher. Postspawning, female fish shifted more strongly to an afternoon activity pattern whereas males continued a high level of activity into the night and early morning hours (Fig. 7).

Swimming speeds of winter flounder were generally near 20–25 cm/sec, and there was no apparent effect of date or time of day during active hours. However, male fish were significantly faster (overall mean=26.1 cm/sec, SD=6.6) than females (mean=21.2 cm/sec, SD=4.6; Student's t=14.61, P<0.001).

Field observations

Physical conditions Temperature in the Navesink River estuary ranged from 2.2°C in mid-February to 11°C at the end of the field study in late April, and there was relatively little temperature variation among the eight field stations (Fig. 8A). Salinity near station 6 in the eastern part of the study area ranged from 15 to 23 ppt over the study period. At station 1 in the western part of the study area, salinity was 10–21 ppt, except for a brief period of low salinity (7–10 ppt) on 1 April 1997. Therefore, the entire sampling area was polyhaline, and there was a slightly wider range of salinity in the west than in the east. Dissolved oxygen was always high (>8 mg/L) at the two sites where measurements were made continuously.

Population structure, reproduction, and migration Numbers of winter flounder in the Navesink River

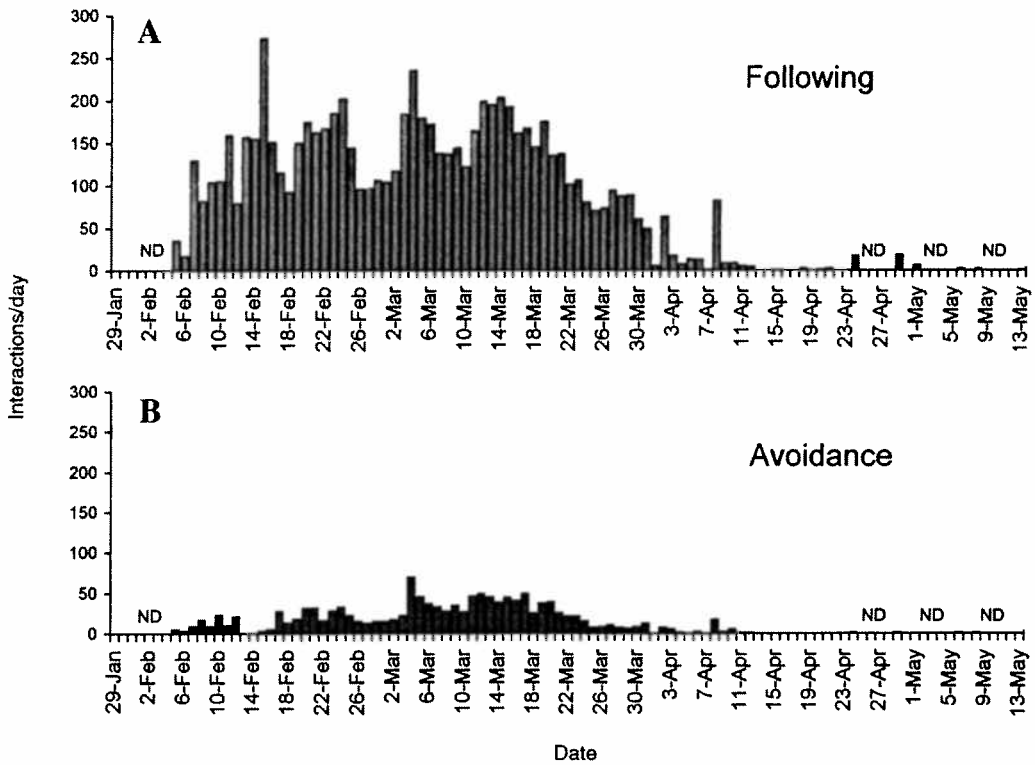


Figure 5

Daily frequencies for **(A)** pursuit and **(B)** avoidance behavior exhibited by adult winter flounder in the research aquarium.

estuary increased steadily between mid-February and early March, concurrent with the rise in water temperature (Fig. 8). Abundance remained relatively stable for the remainder of the collection period. Of the 389 winter flounder collected, 49% were female (mean length=28.9 cm, SD=8.9) and 32.5% were male (mean=25.1 cm, SD=6.9). Gender could not be determined for 18.5%, all of which were small individuals considered to be age-1 fish (mean=10.2 cm, SD=2.3). Females were significantly more abundant than males (Table 1; F=4.62, P<0.05), with a sex ratio of 1.5 to 1, and this pattern was consistent throughout the sampling period; analysis of variance (ANOVA) showed a nonsignificant *Date × Gender interaction* (P=0.58; Table 1).

The majority of ripe female flounder were collected in the first half of the survey period (Fig. 9A); all of these fish were larger than 20 cm TL. Ripe females were divided into two obvious groups based on gonadosomatic index (GSI). Sixty-five percent of ripe females had GSIs greater than 20% (mean=30.9, SD=9.1). A second group of nearly spent females had GSIs of 3–8%. All female winter flounder collected after mid-March had GSIs less than 6%.

Table 1

Results of analysis of variance on catch data for winter flounder in the Navesink River during winter 1997. ANOVA was performed on natural log-transformed data on catch per unit effort. *** = $P < 0.001$; ** = $P < 0.01$; * = $P < 0.05$; ns = $P > 0.05$.

Source of variation	df	Sum of squares	F ratio
Date	9	0.002	3.27 **
Station	7	0.004	7.25 ***
Gender	1	0.0003	4.62 *
Date × Station	63	0.009	2.10 ***
Date × Gender	9	0.0005	0.84 ns
Station × Gender	7	0.004	7.22 ***
Date × Station × Gender	63	0.003	0.59 ns
Error	160	0.011	

Male winter flounder formed two size groups, small fish (<20 cm TL) assumed to be age-1 fish and larger individuals (20–35 cm TL). Through the end of February all males larger than 20 cm were reproduc-

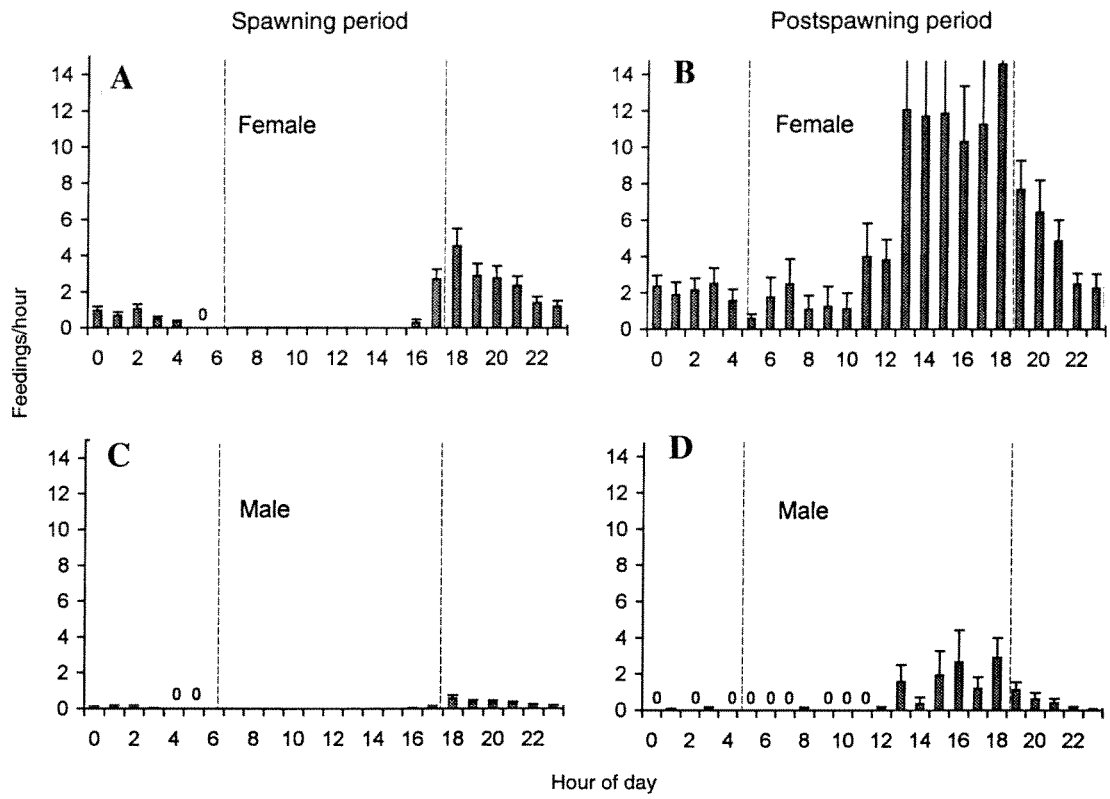


Figure 6

Hourly frequency of feeding during spawning and postspawning periods for **(A, B)** female and **(C, D)** male winter flounder in the research aquarium. Values represent mean numbers of observed events per hour ±1 standard error. The dashed vertical lines show the times of artificial sunrise and sunset in the aquarium at the midpoint of the spawning season. Photoperiod was maintained on a natural cycle for the latitude of the laboratory.

tively ripe, as were 40% of males between 10 and 15 cm. A steady decline in male GSI began in March (Fig. 9B), but ripe males (mean GSI=7.3, SD=4.4) were collected later than ripe females, through 11 April.

Although the number of fish collected at any one station was not large, the *Station × Gender interaction* in the ANOVA indicated that male and female flounder had different distributional patterns in the estuary (Table 1). Males were more abundant than females at stations in the lower estuary (stations 7 and 8), whereas females were more abundant in the middle and upper reaches (stations 1–6) (Fig. 10). These gender-specific distribution patterns were generally consistent, as indicated by the nonsignificant *Date × Station × Gender* interaction term in the ANOVA (Table 1). Ripe males were collected throughout the estuary in proportions ranging from 14% of individuals at station 6, to 100% at stations 1 and 2. In contrast, all ripe females were collected at stations 1–4, with the exception of one partially spent female collected at station 7.

The length distribution of female winter flounder at most of the sampling stations showed two modes (Fig. 11). Large females (mean length=29.7 cm, SD=0.6) were collected at all eight stations but were most abundant in the middle reach (stations 3–6). Small females (<20 cm TL), all of which were reproductively immature, were most abundant in the upper estuary, with approximately equal numbers of small fish at stations 1–4. Size groups were less obvious in male winter flounder (Fig. 11), but it is clear that the mean size of male fish was larger at stations in the lower river (stations 5–8) than in the upper river, and small fish were most abundant at stations 1–3. From 28 March through the end of the sampling period, large numbers of flounders were collected only at station 6. Virtually all the fish in the lower river during this late part of the collecting season were spent.

Feeding Stomach fullness in winter flounder varied with date, gender, and age (Fig. 12). Highest full-

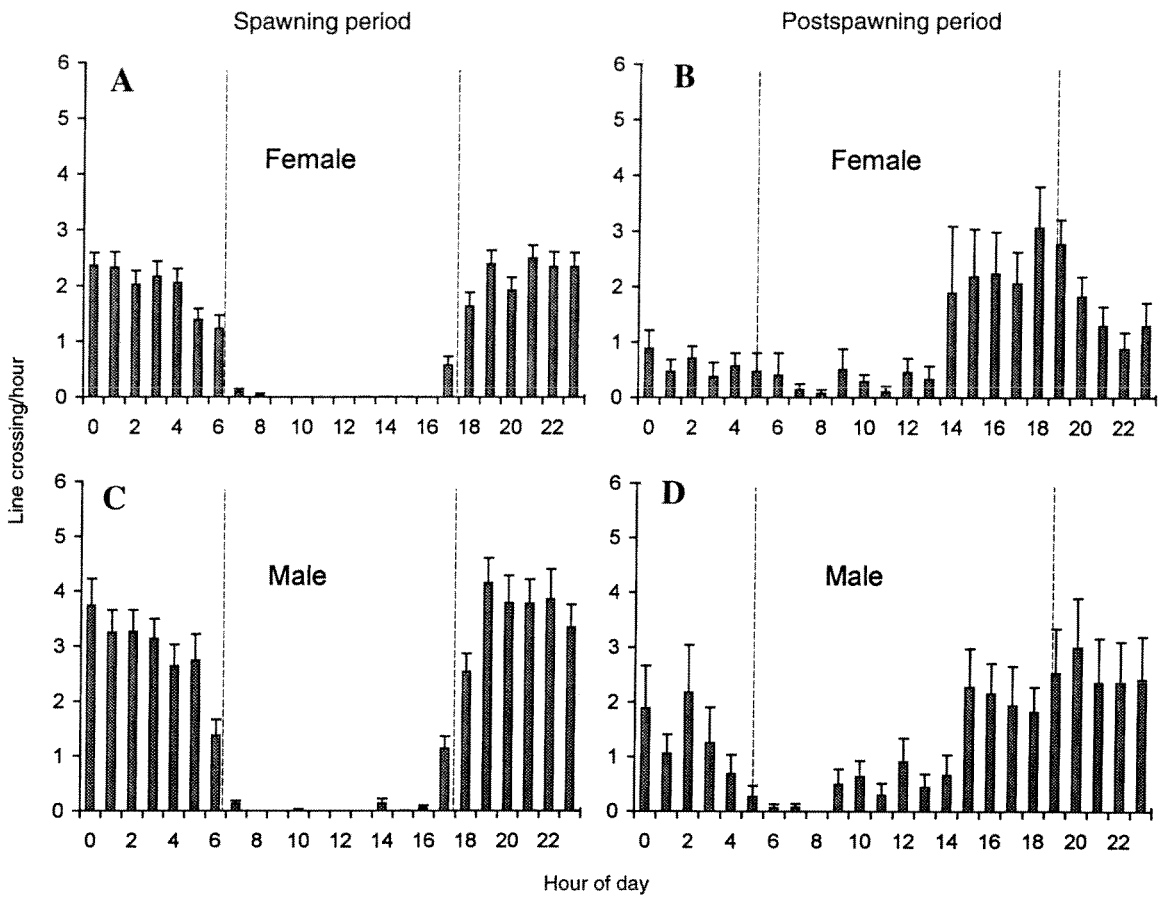


Figure 7

Locomotory activity in adult winter flounder in the research aquarium shown on an hourly basis for **(A, B)** females and **(C, D)** males during the spawning and postspawning periods. See text for the method used in generating this index of activity. The dashed vertical lines show the times of artificial sunrise and sunset in the aquarium at the midpoint of the spawning season. Photoperiod was maintained on a natural cycle for the latitude of the laboratory.

ness indices (59%–84%) occurred in immature fish, most containing substantial amounts of food. Average fullness in females was also high throughout the survey period (60%–80%), but variation was large and associated with reproductive state. Ripe females had an average fullness of just 24%, whereas spent females had an average fullness of 72%. Variation among males was even higher, with an obvious increase in fullness from about 1% early in the survey to a range of 70%–90% during the last three collection dates (Fig. 12). Ripe males had average stomach fullness of only 17%, whereas average fullness of spent males was 69%. Therefore, the rapid increase in stomach fullness of males in late March was associated with rapidly declining numbers of ripe males. Stomach fullness was weakly correlated with GSI in both females (r=–0.439) and males (r=–0.582) because fullness in fish with a low GSI spanned the entire range from 0%–100%.

Siphons of soft clam (*Mya arenaria*) were the most abundant prey items taken by winter flounder, on the basis of both percentage volume and frequency of occurrence. Of the 257 flounders that contained prey, 150 contained siphons with diameters of 3–13 mm. However, diet varied with collection site (Fig. 13). Siphons of *M. arenaria* were most abundant in fish collected in the middle reach of the estuary (stations 3–6), whereas another clam, *Macoma balthica*, was most abundant in fish from the upper reach (station 1). Ampeliscid amphipods, mysids, shrimps, and other crustaceans were the most important food items in the lower estuary.

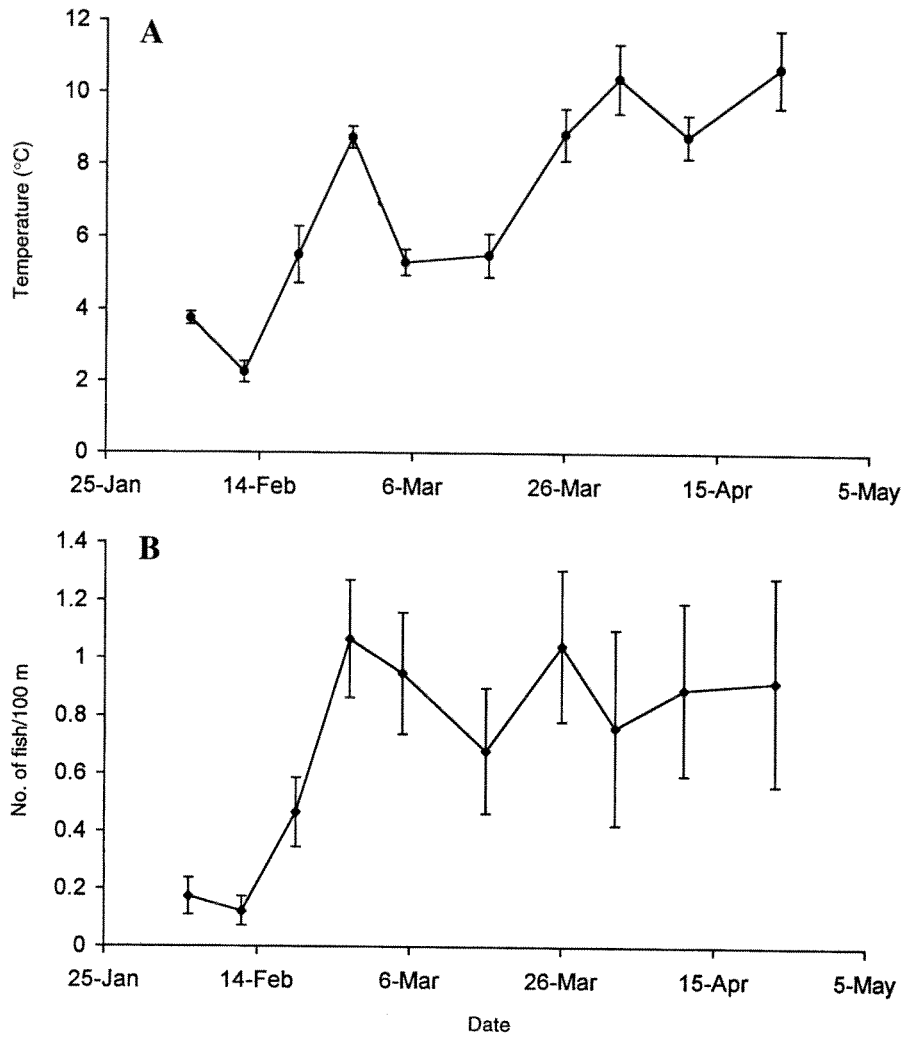


Figure 8

(A) Water temperature and **(B)** abundance of winter flounder in the Navesink River estuary during winter and spring 1997. Temperature values are means and ranges of temperature at the eight sampling stations. Values for flounder abundance are mean catch (±1 standard error) per 100-m distance over the bottom sampled by a 5-m otter trawl.

Discussion

Spawning behavior

Direct observation of spawning behavior has been documented for only a few flatfish, but spawning modes appear to vary substantially among species. Midwater pair-spawning has been observed in plaice (*P. platessus*; Forster, 1953), and in Dover sole (*Microstomus pacificus*; Baynes et al., 1994), but winter flounder spawned near the bottom and pairwise spawning (22%) was less common than spawnings involving multiple males (78%). Also, winter flounder spawning may be less elaborate or ritualized than in plaice or Dover sole or Caribbean bothids (Konstantinou and Shen, 1995). Although this could be an artifact of confinement, our research aquarium, with a bottom surface area of 46 m^2 and 3 m depth, was much larger than tanks where pair spawning has been observed in other species and where the density and size of fish were lower.

Our long-term observation of a single spawning population in the aquarium allowed us to record several different forms of reproductive behavior not reported earlier (Breder, 1922). Most notably, we were able to observe and record individual encounters

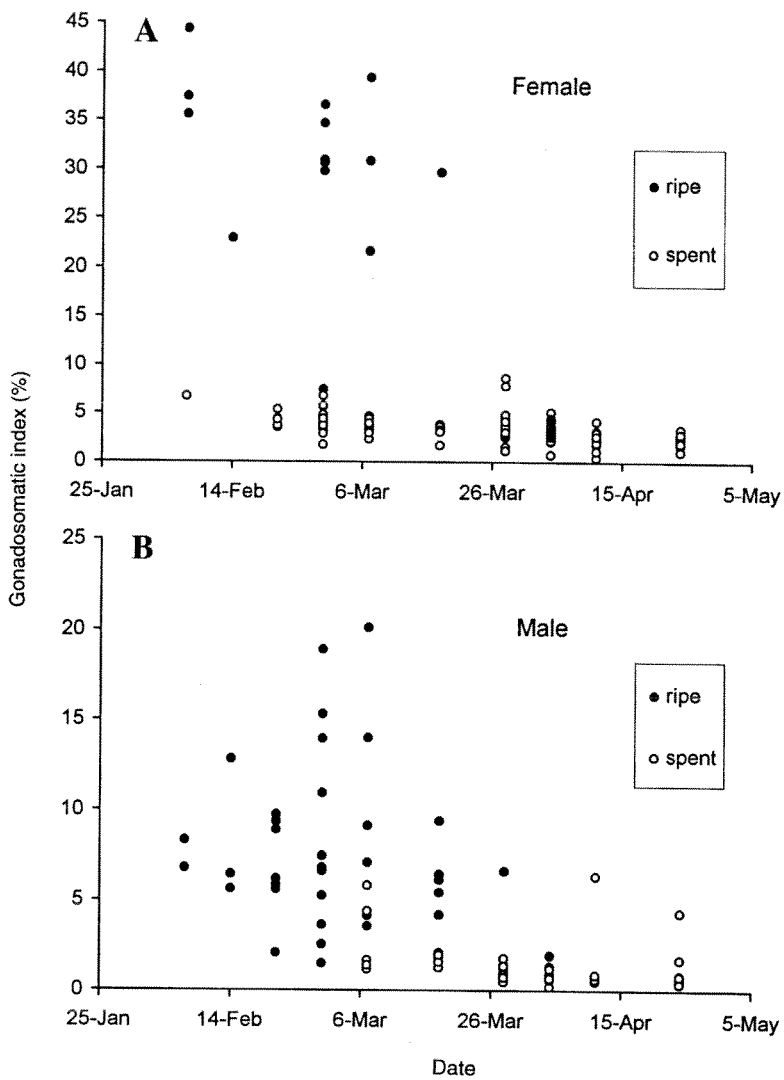


Figure 9

Gonadosomatic index (GSI) for winter flounder **(A)** females and **(B)** males shown as a function of collection date. The index was calculated according to LeCren (1951) as $GSI = 100(gonad\ weight/total\ body\ weight)$. Observational conclusions about the reproductive state of individual fish are shown by dots for ripe fish and circles for spent fish. Note the different *y*-axes.

between males and females. Unlike Breder, and in thousands of observed encounters, we never observed females initiating spawning activities. Breder acknowledged that his relatively small tanks may have altered normal behavioral patterns and was correct in predicting that males would be more active than females in a more open environment. In fact, males attempted to initiate spawning in the laboratory long before and after females were receptive. A similar phenomenon most likely occurs in the field, where males are ripe and capable of spawning for a longer period of time than females. Similarly, Rijnsdorp (1989) has observed that male plaice are in spawning condition for a period twice as long as that for females. As in our observations with winter flounder, Baynes et al. (1994) observed that males of *Microstomus* were much more active than females, and male attempts to initiate spawning were often rejected.

Male winter flounder were able to detect the presence of a spawning female from distances of at least 5–10 m in the research aquarium and frequently con-

verged suddenly on a spawning pair or group. A variety of sensory mechanisms could play a role in detecting opportunities for egg fertilization. Male fish may respond to the obvious visual signal of light reflected from the white underside of spawning fish. It is also possible that hydroacoustic cues were emitted from vigorous bouts of spawning that occurred just above the bottom. It is less likely that spawning was detected by an olfactory cue because there was almost instantaneous response to spawning activity and there was little horizontal current in the aquarium. However, olfactory cues may be important in certain circumstances. Occasionally, males converged on locations where spawning had occurred although the spawners had departed, and these spawning locations were sometimes visited by additional males for several minutes after the initial spawning event. Future research will be needed to determine the precise mechanisms of spawning group formation and detection.

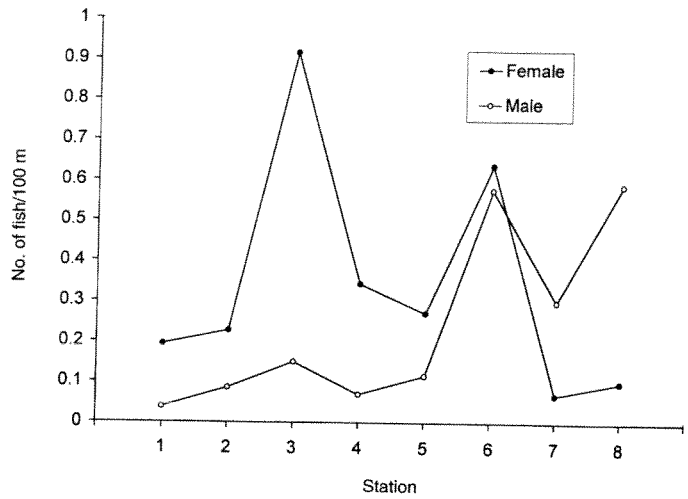


Figure 10

Mean catch by station number of male and female winter flounder per 100 m distance over the bottom in the Navesink River estuary. Values plotted are means for all dates combined.

In female winter flounder just one batch of oocytes matures per year (Burton and Idler, 1984); nevertheless, spawning in the aquarium population of winter flounder had a duration of 60 days. It is clear that individual females spawn many times over a period of at least one week, and perhaps longer. Circumstantial evidence indicates that individual males were capable of spawning over most of the reproductive season in the research aquarium. Large numbers of males were often engaged in single spawning events; the total number of spawnings yielded a high average spawning frequency by males that would necessitate several weeks of spawning by each; and feeding by males did not begin until most females stopped spawning. It is unknown whether male winter flounder produce more than one batch of sperm or simply release one batch over time (Bert et al., 1988).

Spawning in the aquarium occurred over a broad range of times, but always during hours of darkness or just before. Nocturnal spawning in winter flounder is probably a function of endogenous diurnal rhythms rather than light level because Breder (1922) noted that spawning occurred between 2200 and 0330 h even under artificial light. Spawning times vary with flatfish species and are probably species-specific. For example, plaice (Nichols, 1989) and other pleuronectids (Woodhead, 1966) are also known to spawn primarily at night, but *Bothus ocellatus* spawns only around the time of sunset (Konstantinou and Shen, 1995).

The role of multiple releases of eggs and sperm is poorly understood but may be important in the reproductive biology and recruitment of winter flounder. Although release of gametes could not be recorded or verified beyond the fact that larvae were produced in the aquarium, it is evident that numerous males spawned in response to one female. It is likely, therefore, that eggs released in a single spawning event were often fertilized by more than one male. Given that the average female fish spawned 40 times during the reproductive season in the aquarium and that most of the males appeared to remain ripe throughout the observation period, it is likely that many, if not all, of the males could have contributed genetic material to the offspring of each female. Genetic diversity of embryos produced in the field could be high for similar reasons.

Although male winter flounder appeared to be in a constant state of readiness for spawning, future experiments will be needed to determine whether frequency of spawning and fertilization success is uniform among individuals and how this might be influenced by size structure, sex ratio, or density of fish on the spawning ground. For example, small (10–15 cm) but reproductively ripe males were abundant in the Navesink River estuary. It is possible that these small individuals have a lower frequency of success than large males in inducing females to spawn, given the order-of-magnitude difference in body weight between 10 and 22 cm fish. However, Baynes et al. (1994) observed female Dover sole spawning with males smaller than themselves, and

Spawning, migration, and habitat use

Previous studies have shown that winter flounder in the mid-Atlantic region migrate to shallow inshore waters to spawn during the late winter (Perlmutter, 1947; Poole, 1966; Scarlett and Allen, 1992), and it is known that the Navesink-Shrewsbury River estuarine system is an important spawning ground (Phelan, 1992; Scarlett[1]). Phelan's study and our investigation provide direct evidence that winter flounder immigrate to the Navesink estuary between early February and March. Flounder abundance was lowest when water temperature was lowest (2.2°C in mid-February) and increased rapidly with subsequent temperature rise. In fact, high and relatively constant catches of winter flounder occurred in the Navesink estuary at temperatures of 6–11°C. This is consistent with earlier observations that adult winter flounder emigrated from bays in southern New Jersey when water temperature declined below 3.5°C and returned when temperature rose to 6°C (Danila, 1978). Most adult males and females had ripe gonads upon entry to the system in late winter, and most were spent by the end of April. This pattern of seasonality is consistent with previous findings (Pearcy, 1962; Scarlett and Allen, 1992).

It is likely that the most important spawning area for winter flounder in the Navesink River was in the middle reach. Reproductively ripe male winter flounder were found throughout the estuary; however, highest numbers of ripe females were found west of station 5, and only one nearly spent female was collected farther down the estuary. Scarlett and Allen (1992) found that the middle reach of the Manasquan River estuary, New Jersey, was a major spawning ground for winter flounder, as were the upper reaches of the Mystic River estuary, Connecticut (Pearcy, 1962), and Narragansett Bay, Rhode Island (Powell[2]).

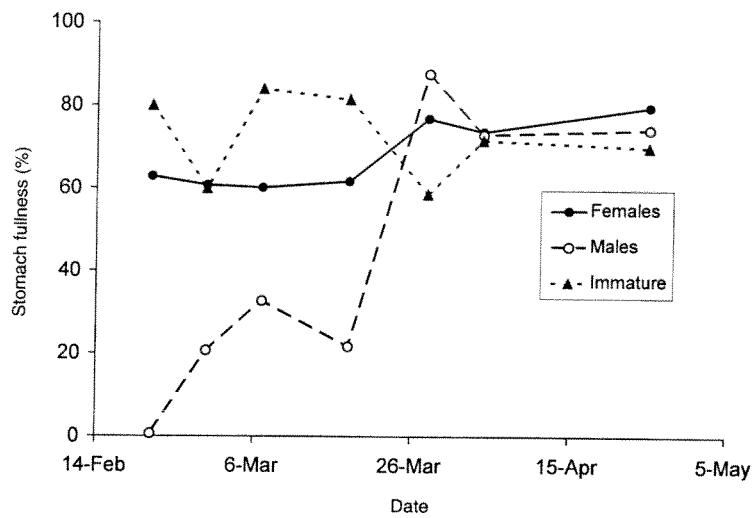


Figure 12

Temporal variation in percent stomach fullness of winter flounder in the Navesink River estuary. Fullness indices are shown by adult gender and for immature fish.

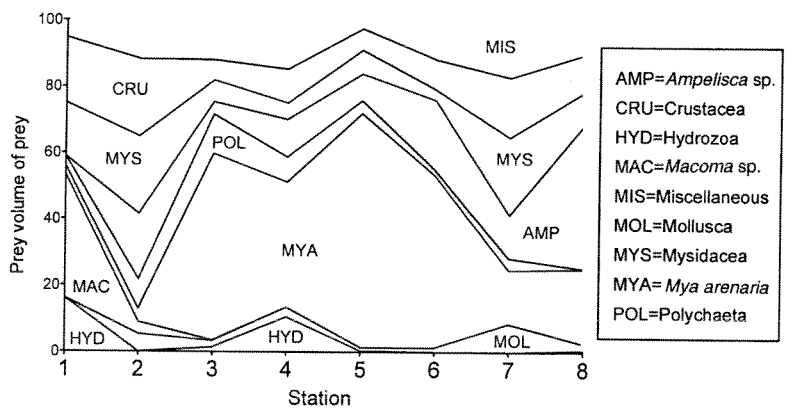


Figure 13

Composition of diet by percentage volume in winter flounder collected at eight stations along the length of the Navesink River estuary during winter and spring 1997.

Several different physical and chemical factors could affect the location of spawning habitats. Temperature may have influenced the seasonal migration to the Navesink estuary; however, there was little variation in temperature along the axis of the estuary, and other factors probably influenced exact spawning location. McCracken (1963) found that adult winter flounder died in 8 ppt salinity; therefore, upstream migration is probably limited by this variable. Neither males nor females were abundant in locations where salinity was frequently near or below 10 ppt.

[2] Powell, J. C. 1989. Winter flounder tagging study, 1986–1988, with comments on movements. Rhode Island Division of Fish, Wildlife, and Estuarine Research, P.O. Box 218, West Kingston, Rhode Island 02892. Unpubl. report.

The location of spawning in an estuary may also be related to temperature and salinity requirements of the demersal eggs. Scarlett and Allen (1992) collected eggs at salinities of 14–32 ppt and temperatures of 0.9–10°C in the Manasquan estuary, about 30 km south of our study site. Rogers (1976) found that the highest proportion of viable hatches occurred at 3°C over a salinity range of 15–35 ppt. At temperatures over 3°C, the optimal range was 15–25 ppt, which closely matches temperature and salinity ranges in the middle reach of the Navesink River.

Other factors that may influence the choice of spawning habitat by winter flounder are hydrodynamic properties and associated sediment characteristics. Strong flood tidal currents that characterize the lower Navesink River attenuate rapidly in the middle reach (Chant[3]). This attenuation is associated with deepening of the estuary and general reduction of sand bars, decrease in the mean grain size of sediments, and increase in sediment organic content (Stoner, unpubl. data). It is unknown whether spawning winter flounder respond to any of these habitat characteristics; however, the depositional qualities of the upper estuary and flood-dominated circulation may aid in the retention of winter flounder eggs and the evolution of habitat choice in spawners. Crawford and Carey (1985) noted that winter flounder spawned in two sites in an estuarine lagoon in Rhode Island where hydrodynamic features retained larvae. It is plausible that habitat choice, cued by either fine-grained sediments or low current velocities, could be associated with such retention features.

Seasonal variation in feeding activity

The general conclusion has been that winter flounder are opportunistic feeders, consuming polychaetes, small crustaceans, molluscs, and other prey according to their abundance (Pearcy, 1962; Richards, 1963; Klein-MacPhee, 1978; Franz and Tancredi, 1992; Martell and McClelland, 1994; Steimle et al., 1994; Carlson et al., 1997). Winter flounder collected in the Navesink River during this investigation consumed a mixture of invertebrate prey, but the vast majority of the diet was siphons of the soft clam *Mya arenaria*. The abundance of spent and feeding flounder in the lower estuary may, in fact, be associated with the observed abundance of this preferred prey in that location.

Cessation of feeding by adult winter flounder during the winter has been noted previously (Tyler, 1972; Martell and McClelland, 1994), but we found that feeding was influenced strongly by gender and reproductive state. Both in the field and in the aquarium, female flounder appeared to resume feeding immediately after they completed spawning for the season. Early feeding probably provides an advantage for female fish because ovarian development for the next spawning season begins immediately after spawning (Burton and Idler, 1984). In the field, males did not begin feeding until the end of March, and feeding in the aquarium was light until after the last spawning events. We conclude that male behavior is dedicated to fertilizing the maximum number of eggs, at the expense of feeding and late winter growth.

There is now substantial evidence for seasonal variation in daily activity and feeding rhythms in winter flounder. During the summer, winter flounder are primarily diurnal in general activity (Olla et al., 1969) and feeding (MacDonald and Waiwood, 1987). Bharadwaj (1988) found that adults fed throughout the day and night in November, speculating that this was related to maturation of gonads for the winter spawning season. In our aquarium observations, adult winter flounder were almost entirely nocturnal throughout the spawning season, remaining buried during the day. Daytime activity began again when spawning was completed and increased throughout the remainder of the postspawning period. Primarily daytime activity during the nonspawning season could be associated with visual predation modes (Olla et al., 1969), but it remains to be determined how mates are located in darkness and why spawning occurs at night.

Conclusions

This study provides the first detailed observations on winter flounder spawning since Breder's (1922) original description over 75 years ago, and the combination of laboratory and field work provides new insight into the biology and ecology of spawners. The behavior of male winter flounder appears adapted to maximize encounters with reproductive females and numbers of eggs fertilized. From our field collections, it is apparent that one-year-old male winter flounder (10 cm TL) are capable of spawning, whereas female spawners all appeared to be at least two years old. Males also became reproductively ripe earlier in the season than did females and remained ripe to a later date than most females. Males were more active than females, had higher swimming speeds, and initiated all spawning events. The males fed very little during the reproductive season and appeared

[3] Chant, R. J. 1998. Institute of Marine and Coastal Sciences, Rutgers University, P.O. Box 231, New Brunswick, New Jersey 08903. Unpubl. data.

to sacrifice winter growth to maintain a high level of reproductive behavior.

Spawning frequency was high in both males and females. Individual females were capable of spawning as many as 40 times over a period of at least one week, and males spawned throughout the season (at a rate at least three times the female rate) and perhaps several times per day. Clearly, individual records of spawning behavior would be useful in understanding the reproductive role of one-year-old males and in determining the duration of spawning in individual females. Given the frequency of spawning in both male and female winter flounder and the fact that several males may release sperm in response to egg-laying by one female, we conclude that the genetic diversity of offspring produced by a female in one year is probably very high.

Although our data provide new insights into the natural history and reproductive behavior of winter flounder, several questions important to sound management of spawning stocks remain to be answered. For example, we do not know if reproductive populations are scattered in estuarine and coastal waters or are concentrated in spawning aggregations on specific spawning grounds. We saw a concentration of ripe fish in the middle reach of the Navesink River estuary, but ripe fish were also present in a variety of habitats in adjacent Raritan Bay during the winters of 1997 and 1998 (Stoner and coauthors, personal obs.), and it is possible that winter flounder spawn in more than one location over the spawning season. It is also important to learn whether or not spawning behavior and reproductive output from a spawning ground are density-dependent.

Acknowledgments

We wish to thank D. McMillan and the staff of the Coastal Ecology Branch for help in collecting adult winter flounder for the experiments, J. Vitaliano for assistance with video systems, and T. Kalmar for help in analyzing video tapes. We are also grateful to the maintenance staff at the Howard Laboratory, who provided dependable seawater and lighting systems for the long duration of our aquarium study. B. Olla, A. Studholme, and anonymous reviewers provided helpful criticism of the manuscript.

Literature cited

Able, K. W., and M. P. Fahay.
1998. The first year in the life of estuarine fishes in the Middle Atlantic Bight. Rutgers Univ. Press, New Brunswick, NJ, 342 p..

Baynes, S. M., B. R. Howell, T. W. Beard, and J. D. Hallam.
1994. A description of spawning behaviour of captive Dover sole, *Solea solea* (L.). Neth. J. Sea Res. 32:271–275.

Bert, A., D. L. Kramer, K. Nakatsuru, and C. Spry.
1988. The tempo of reproduction in *Hyphessobrycon pulchripinnis* (Characidae), with a discussion on the biology of 'multiple spawning' in fishes. Environ. Biol. Fishes 22:15–27.

Bharadwaj, A. S.
1988. The feeding ecology of the winter flounder, *Pseudopleuronectes americanus* (Walbaum), in Narragansett Bay, Rhode Island. M.S. thesis, Univ. Rhode Island, Kingston, RI, 129 p.

Breder, C. M.
1922. Description of the spawning habits of *Pseudopleuronectes americanus* in captivity. Copeia 102:3–4.

Burton, M. P., and D. R. Idler.
1984. The reproductive cycle in winter flounder, *Pseudopleuronectes americanus* (Walbaum). Can. J. Zool. 62:2,563–2,567.

Carlson, J. K., T. A. Randall, and M. E. Mroczka.
1997. Feeding habits of winter flounder (*Pleuronectes americanus*) in a habitat exposed to anthropogenic disturbance. J. Northw. Atl. Fish. Sci. 21:65–73.

Chan, T.-Y., and A. J. Ribbink.
1990. Alternative reproductive behaviour in fishes, with particular reference to *Lepomis macrochira* and *Pseudocrenilabrus philander*. Environ. Biol. Fishes 28:249–256.

Crawford, R. E., and C. G. Carey.
1985. Retention of winter flounder larvae within a Rhode Island salt pond. Estuaries 8:217–227.

Danila, D. J.
1978. Age, growth, and other aspects of the life history of the winter flounder, *Pseudopleuronectes americanus* (Walbaum), in southern New Jersey. M.S. thesis, Rutgers Univ., New Brunswick, NJ, 79 p.

Forster, G. R.
1953. The spawning behaviour of plaice. J. Mar. Biol. Assoc. U.K. 32:319.

Franz, D. R., and J. T. Tancredi.
1992. Secondary production of the amphipod *Ampelisca abdita* Mills and its importance in the diet of juvenile winter flounder (*Pleuronectes americanus*) in Jamaica Bay, New York. Estuaries 15:193–203.

Howe, A. B., and P. G. Coates.
1975. Winter flounder movements, growth, and mortality off Massachusetts. Trans. Am. Fish. Soc. 104:13–29.

Kennedy, V. S., and D. H. Steele.
1971. The winter flounder (*Pseudopleuronectes americanus*) in Long Pond, Conception Bay Newfoundland. J. Fish. Res. Board Can. 28:1,153–1,165.

Klein-MacPhee, G.
1978. Synopsis of biological data for the winter flounder, *Pseudopleuronectes americanus* (Walbaum). U.S. Dep. Commer., NOAA Tech. Rep. NMFS Circ. 414, 43 p.

Konstantinou, H., and D. C. Shen.
1995. The social and reproductive behavior of the eyed flounder, *Bothus ocellatus*, with notes on the spawning of *Bothus lunatus* and *Bothus ellipticus*. Environ. Biol. Fishes 44:311–324.

LeCren, E. D.
1951. The length–weight relationship and seasonal cycle in gonad weight and condition in the perch (*Perca fluviatilis*). J. Anim. Ecol. 20:201–219.

MacDonald, J. S., and K. G. Waiwood.
1987. Feeding chronology and daily ration calculations for

winter flounder (*Pseudopleuronectes americanus*), American plaice (*Hippoglossoides platessoides*), and ocean pout (*Macrozoarces americanus*) in Passamaquoddy Bay, New Brunswick. Can. J. Zool. 65:499–503.

Martell, D. J., and G. McClelland.
1994. Diets of sympatric flatfishes, *Hippoglossoides platessoides, Pleuronectes ferrugineus, Pleuronectes americanus*, from Sable Island Bank, Canada. J. Fish Biol. 44:821–848.

McCracken, F. D.
1963. Seasonal movements of the winter flounder, *Pseudopleuronectes americanus* (Walbaum) on the Atlantic coast. J. Fish. Res. Board Can. 20:551–586

Nelson, S. A., J. E. Miller, D. Rusanowsky, R. A. Greig, G. R. Sennefelder, R. Mercaldo-Allen, C. Kuropat, E. Gould, F. P. Thurberg, and A. Calabrese.
1991. Comparative reproductive success of winter flounder in Long Island Sound: a three-year study (biology, biochemistry and chemistry). Estuaries 14:318–331.

Nichols, J. H.
1989. The diurnal rhythm in spawning of plaice (*Pleuronectes platessa* L.) in the southern North Sea. J. Cons. Int. Explor. Mer 45:277–283.

Oliviera, R. F., and V. C. Almada.
1998. Mating tactics and male–male courtship in the lek-breeding cichlid *Oreochromis mossambicus*. J. Fish Biol. 52:1,115–1,129.

Olla, B. L., R. Wicklund, and S. Wilk.
1969. Behavior of winter flounder in natural habitat. Trans. Am. Fish. Soc. 98:717–720.

Pearcy, W. G.
1962. Ecology of an estuarine population of winter flounder, *Pseudopleuronectes americanus* (Walbaum). Bull. Bingham Oceanogr. Collect. Yale Univ.18:5–78.

Perlmutter, A.
1947. The blackback flounder and its fishery in New England and New York. Bull. Bingham Oceanogr. Collect. Yale Univ. 11(2), 92 p.

Phelan, B. A.
1992. Winter flounder movements in the inner New York Bight. Trans. Am. Fish. Soc. 121:777–784.

Pierce, D. E., and A. B. Howe.
1977. A further study on winter flounder group identification off Massachusetts. Trans. Am. Fish. Soc. 106:131–139.

Poole, J. C.
1966. Growth and age of winter flounder in four bays of Long Island. N.Y. Fish Game J. 13:206–220.

Richards, S. W.
1963. The demersal fish population of Long Island Sound. Bull. Bingham Oceanogr. Collect. Yale Univ.18:1–101.

Rijnsdorp, A. D.
1989. Maturation of male and female North Sea plaice (*Pleuronectes platessa* L.). J. Cons. Int. Explor. Mer. 46:35–51.

Rogers, C. A.
1976. Effects of temperature and salinity on the survival of winter flounder embryos. Fish. Bull. 74:52–58.

Saila, S. B.
1961. A study of winter flounder movements. Limnol. Oceanogr. 6:292–298.

Scarlett, P. G., and R. L. Allen.
1992. Temporal and spatial distribution of winter flounder (*Pleuronectes americanus*) spawning in Manasquan River, New Jersey. Bull. N.J. Acad. Sci. 37(1):13–17.

Scott, W. B., and M. G. Scott.
1988. Atlantic fishes of Canada. Can. J. Fish. Aquat. Sci. 219, 731 p.

Stehlik, L. L.
1993. Diets of the brachyuran crabs *Cancer irroratus*, *C. borealis*, and *Ovalipes ocellatus* in the New York Bight. J. Crustacean Biol. 13:723–735.

Steimle, F. W., D. Jeffress, S. A. Fromm, R. N. Reid, J. J. Vitaliano, and A. B. Frame.
1994. Predator–prey relationships of winter flounder, *Pleuronectes americanus*, in the New York Bight apex. Fish. Bull. 92:608–619.

Tyler, A. V.
1972. Food resource division among northern, marine, demersal fishes. J. Fish. Res. Board Can. 29:997–1,003.

Williams, M. J.
1981. Methods for analysis of natural diet in portunid crabs (Crustacea, Decapoda, Portunidae). J. Exp. Mar. Biol. Ecol. 52:103–113.

Witherell, D. B., and J. Burnett.
1993. Growth and maturation of winter flounder, *Pleuronectes americanus*, in Massachusetts. Fish. Bull. 91:816–820.

Woodhead, P. M. J.
1966. The behaviour of fish in relation to light in the sea. Ann. Rev. Oceanogr. Mar. Biol. 4:337–403.

DEPARTMENT OF THE ARMY PERMIT

Permittee: New York State Office of Parks, Recreation and Historic Preservation
P.O. Box 247
Babylon, NY 11702
(631) 669-1000
(518) 474-00440

Permit Number: NAN-2010-00491–M2

Permit Date: DEC 1 3 2013

Issuing Office: US Army Corps of Engineers New York District,

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer. You are authorized to perform work in accordance with the terms and conditions specified below.

Work Description:

East Channel: Dredge, with ten-years maintenance, via hydraulic cutterhead dredge, approximately 169,000 cubic yards of material from an irregular-shaped 120-foot-wide to 220-foot-wide by 7,500-foot-long area of the Captree State Boat Channel East of the Robert Moses Causeway Bridge, to a depth of 14-feet below Mean Low Water, including overdepth dredging. The resultant dredged material will be pumped directly on the ocean beaches at Robert Moses State Park or at the state-approved upland designated surplus material areas. Approximately 4,700 cubic yards of material will be deposited below the Spring High Water (SHW) line if used for beach nourishment. One subsequent maintenance dredging event will be undertaken with removal of 50,000 cubic yards of material.

West Channel: Dredge, with ten-years maintenance, via hydraulic cutterhead dredge, approximately 400,000 cubic yards of sand from an irregular-shaped 400-foot-wide by 3,550-foot-long area of the Captree State Boat Channel west of the Robert Moses Bridge, to a depth of approximately 14-feet below Mean Low Water, including overdepth dredging. The resultant dredged material will be pumped directly on the ocean beaches at Robert Moses State Park or at the state-approved upland designated surplus material areas. Approximately 108,000 cubic yards of material would be deposited below the Spring High Water (SHW) line.

Project Location: IN: Captree State Boat Channel, Great Oyster Bay, and Atlantic Ocean

AT: Robert Moses State Park Town of Islip, Suffolk County, New York

PERMITTEE: NYS Office of Parks, Recreation and Historic Preservation
PERMIT NUMBER: NAN-2010-00491-M2

DEC 1 3 2013

Permit Conditions: General Conditions:

1. The time limit for completing the work authorized ends on **12 MAY 2021**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Permit Conditions: Special Conditions:

(A) The permittee understands and agrees that, if future operations of the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

(B) The permittee shall not dredge between January 15 and September 30 of any year to avoid Essential Fish Habitat and Species impacts, except as noted in Special Condition P, below.

DEC 13 2013

(C) The permittee shall not discharge herein authorized dredged material on to the shoreline beaches between April 1st and September 1st of any calendar year to protect piping plovers.

(D) The permittee shall assure the dredged material discharged on to the shoreline beach shall be consistent with the grain size on the existing naturally occurring shoreline beach.

(E) The permittee shall finish / grade herein authorized shoreline beach placement areas to the same slope as the adjacent shoreline beach, without piles, ridges or holes left in the herein authorized dredged materials.

(F) The permittee shall not use a hopper dredge in order to avoid potential impacts to endangered or threatened sea turtles

(G) The permittee shall allow the herein authorized dredged material to settle within the diked dewatering sites to the maximum extent practicable to minimize sediment reentry into the waterway.

(H) The permittee shall keep all mechanized beach grading equipment landward of the ambient tide line.

(I) This modified Department of the Army permit shall be known as Department of the Army Permit Number NAN-2010-00491-M2, and it supersedes and replaces the initially-issued Department of the Army Permit Number NAN-2010-00491 issued on 12 May 2011 to the subject permittee; and its first modification, Department of the Army Permit Number NAN-2010-00491-M1 issued on 1 March 2013 to the subject permittee.

(J) The permittee shall not use the authorized dredged materials to construct additional dunes in the areas fronting the existing overwash area between Parking Fields 2 and 3 in order to allow ongoing sustainment / recreation of this overwash habitat area.

(K) The permittee shall not place any of the herein authorized dredged material in the overwash area between Parking Fields 2 and 3.

(L) The permittee shall monitor and manage, as appropriate, all areas nourished with the herein authorized dredged materials as has occurred in the past for piping plovers and seabeach amaranth, in coordination with the US Fish and Wildlife Service and New York State Department of Environmental Protection.

(M) The permittee shall, not later than December 1st of each year for the remaining life of this permit, provide to the US Fish and Wildlife Service and this permit's issuing office an annual written report of piping plover activity, or lack of piping plover activity, for all areas nourished with the herein authorized dredged materials.

(N) The permittee shall not plant any vegetation within any areas nourished with the herein authorized dredged materials.

DEC 13 2013

(O) The permittee shall not install snow/sand fencing in any areas nourished with the herein authorized dredged materials.

(P) For Calendar Year 2014 only, the permittee is herein authorized to perform one maintenance dredging cycle during the period between 15 January 2014 and 30 September 2014.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code 403).
(X) Section 404 of the Clean Water Act (33 U.S. Code 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act 1972 (33 U.S.C. 1413)

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
b. This permit does not grant any property rights or exclusive privileges.
c. This permit does not authorize any injury to the property or rights of others.
d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: in issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
d. Design or construction deficiencies associated with the permitted work.
e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's / Permittee's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.
b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

PERMITTEE: NYS Office of Parks, Recreation and Historic Preservation
PERMIT NUMBER: NAN-2010-00491-M2

DEC 1 3 2013

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

12/13/13

NY State Office of Parks, Recreation and Historic Preservation (Permittee) — (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

13 DEC 13

DEC 1 3 2013
(DATE)

"FOR AND IN BEHALF OF"

Paul E. Owen
Colonel, US Army
Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below. A copy of the permit signed by the transferee should be sent to this office.

(Transferee) — (DATE)

DEPARTMENT OF THE ARMY PERMIT

Permittee: New York State Office of Parks, Recreation and Historic Preservation
P.O. Box 247
Babylon, NY 11702
(631) 669-1000
(518) 474-00440

Permit Number: NAN-2010-00491–M2

Permit Date: DEC 1 3 2013

Issuing Office: US Army Corps of Engineers New York District,

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer. You are authorized to perform work in accordance with the terms and conditions specified below.

Work Description:

East Channel: Dredge, with ten-years maintenance, via hydraulic cutterhead dredge, approximately 169,000 cubic yards of material from an irregular-shaped 120-foot-wide to 220-foot-wide by 7,500-foot-long area of the Captree State Boat Channel East of the Robert Moses Causeway Bridge, to a depth of 14-feet below Mean Low Water, including overdepth dredging. The resultant dredged material will be pumped directly on the ocean beaches at Robert Moses State Park or at the state-approved upland designated surplus material areas. Approximately 4,700 cubic yards of material will be deposited below the Spring High Water (SHW) line if used for beach nourishment. One subsequent maintenance dredging event will be undertaken with removal of 50,000 cubic yards of material.

West Channel: Dredge, with ten-years maintenance, via hydraulic cutterhead dredge, approximately 400,000 cubic yards of sand from an irregular-shaped 400-foot-wide by 3,550-foot-long area of the Captree State Boat Channel west of the Robert Moses Bridge, to a depth of approximately 14-feet below Mean Low Water, including overdepth dredging. The resultant dredged material will be pumped directly on the ocean beaches at Robert Moses State Park or at the state-approved upland designated surplus material areas. Approximately 108,000 cubic yards of material would be deposited below the Spring High Water (SHW) line.

Project Location: IN: Captree State Boat Channel, Great Oyster Bay, and Atlantic Ocean

AT: Robert Moses State Park Town of Islip, Suffolk County, New York

PERMITTEE: NYS Office of Parks, Recreation and Historic Preservation
PERMIT NUMBER: NAN-2010-00491-M2

DEC 1 3 2013

Permit Conditions: General Conditions:

1. The time limit for completing the work authorized ends on **12 MAY 2021**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Permit Conditions: Special Conditions:

(A) The permittee understands and agrees that, if future operations of the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

(B) The permittee shall not dredge between January 15 and September 30 of any year to avoid Essential Fish Habitat and Species impacts, except as noted in Special Condition P, below.

DEC 13 2013

(C) The permittee shall not discharge herein authorized dredged material on to the shoreline beaches between April 1st and September 1st of any calendar year to protect piping plovers.

(D) The permittee shall assure the dredged material discharged on to the shoreline beach shall be consistent with the grain size on the existing naturally occurring shoreline beach.

(E) The permittee shall finish / grade herein authorized shoreline beach placement areas to the same slope as the adjacent shoreline beach, without piles, ridges or holes left in the herein authorized dredged materials.

(F) The permittee shall not use a hopper dredge in order to avoid potential impacts to endangered or threatened sea turtles

(G) The permittee shall allow the herein authorized dredged material to settle within the diked dewatering sites to the maximum extent practicable to minimize sediment reentry into the waterway.

(H) The permittee shall keep all mechanized beach grading equipment landward of the ambient tide line.

(I) This modified Department of the Army permit shall be known as Department of the Army Permit Number NAN-2010-00491-M2, and it supersedes and replaces the initially-issued Department of the Army Permit Number NAN-2010-00491 issued on 12 May 2011 to the subject permittee; and its first modification, Department of the Army Permit Number NAN-2010-00491-M1 issued on 1 March 2013 to the subject permittee.

(J) The permittee shall not use the authorized dredged materials to construct additional dunes in the areas fronting the existing overwash area between Parking Fields 2 and 3 in order to allow ongoing sustainment / recreation of this overwash habitat area.

(K) The permittee shall not place any of the herein authorized dredged material in the overwash area between Parking Fields 2 and 3.

(L) The permittee shall monitor and manage, as appropriate, all areas nourished with the herein authorized dredged materials as has occurred in the past for piping plovers and seabeach amaranth, in coordination with the US Fish and Wildlife Service and New York State Department of Environmental Protection.

(M) The permittee shall, not later than December 1st of each year for the remaining life of this permit, provide to the US Fish and Wildlife Service and this permit's issuing office an annual written report of piping plover activity, or lack of piping plover activity, for all areas nourished with the herein authorized dredged materials.

(N) The permittee shall not plant any vegetation within any areas nourished with the herein authorized dredged materials.

DEC 13 2013

(O) The permittee shall not install snow/sand fencing in any areas nourished with the herein authorized dredged materials.

(P) For Calendar Year 2014 only, the permittee is herein authorized to perform one maintenance dredging cycle during the period between 15 January 2014 and 30 September 2014.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S. Code 403).
(X) Section 404 of the Clean Water Act (33 U.S. Code 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act 1972 (33 U.S.C. 1413)

2. Limits of this authorization:

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
b. This permit does not grant any property rights or exclusive privileges.
c. This permit does not authorize any injury to the property or rights of others.
d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability: in issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
d. Design or construction deficiencies associated with the permitted work.
e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's / Permittee's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.
b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

PERMITTEE: NYS Office of Parks, Recreation and Historic Preservation
PERMIT NUMBER: NAN-2010-00491-M2

DEC 1 3 2013

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

12/13/13

NY State Office of Parks, Recreation and Historic Preservation (Permittee) — (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

13 DEC 13

DEC 1 3 2013
(DATE)

"FOR AND IN BEHALF OF"

Paul E. Owen
Colonel, US Army
Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below. A copy of the permit signed by the transferee should be sent to this office.

(Transferee) — (DATE)

Appendix C

NMFS and USFWS Correspondence

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

SEP - 3 2013

Stephan A. Ryba, Chief
Eastern Section
New York District, Corps of Engineers
Jacob K. Javits Federal Building
New York, New York 10278-0090

Re: Permit Modification NAN-2010-00491-M2

Dear Mr. Ryba,

We have completed an informal consultation under section 7 of the Endangered Species Act (ESA) on the Army Corps of Engineers (ACOE) authorization to modify a permit by increasing the dredge amount in the East Captree State Channel. We concur with your determination that the proposed action is not likely to adversely affect any NMFS listed species. The justification for our determination is provided below.

Proposed Project

On February 15, 2011, we concurred with your determination that the granting of the ACOE Permit Number NAN-2010-00491 is not likely to adversely affect any listed species under NMFS jurisdiction. You are proposing to authorize the New York State Office of Parks, Recreation and Historic Preservation to increase the dredge amount by 320,000 cubic yards (CY) from the East Captree State Channel, Great Oyster Bay at the Town of Islip, Suffolk County, New York. You are also proposing to dredge approximately 400,000 CY of material from the Captree State Channel west of the Robert Moses Bridge. All dredging will be conducted via a hydraulic cutterhead dredge. The surplus dredge material will be pumped directly on the ocean beaches in Robert Moses State Park or placed in a state-approved upland designated surplus material area. The increase in dredging will increase the dredge material beach placement area to include the beaches seaward of the parking field 3. No work will take place between January 15 and September 30 of each calendar year.

NMFS Listed Species in the Action Area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR §402.02). For this project, the action area includes the project footprint as well as the underwater area where effects of dredging and beach nourishment (*i.e.,* increase in suspended sediment) will be experienced. Based on analysis of hydraulic dredging activities (ACOE 1983), increased sediment levels are likely to be present for no more than approximately 1,150 meters downstream of the dredge.

The exact size of the plume is influenced by the particular dredge used, the dredge operator, sediment type, strength of current and tidal stage and is likely to vary throughout the project. Regardless of these variables, the maximum distance of increased suspended sediment is likely to be 1,150 meters from the dredge. As such, the action area is considered to be that area within East Captree State Channel located within a 1,150 meter radius from the area to be dredged. Additionally, the action includes the beaches where beach nourishment will occur. This area is expected to encompass all of the effects of the proposed project.

Whales

Several listed species of whales occur seasonally in the waters off New York. Federally endangered North Atlantic right whales (*Eubalaena glacialis*) are found off the coast of New York from September 1 – March 31. Federally endangered humpback whales (*Megaptera novaeangliae*) are found off the coast of New York from February-April and from September-November. Fin (*Balaenoptera physalus*) and Sperm (*Physeter macrocephalus*) whales are also seasonally present in the waters off of New York, but are typically found in deeper offshore waters. Although listed species of whales can be found in the offshore waters of New York, due to the depths and near shore location of the project site, listed whales are extremely unlikely to occur in the action area and will not be considered further in this consultation.

Sea turtles

Four species of federally threatened or endangered sea turtles occur seasonally in New York waters. The sea turtles in these waters are typically small juveniles with the most abundant being the federally threatened Northwest Atlantic distinct population segment (DPS) of loggerhead (*Caretta caretta*) followed by the federally endangered Kemp's ridley (*Lepidochelys kempi*). New York waters have also been found to be warm enough to support federally endangered green sea turtles (*Chelonia mydas*) from June through October. While federally endangered leatherback sea turtles (*Dermochelys coriacea*) may be found in the waters off New York during the warmer months, this species is less likely to occur in the action area for this project as it is typically found in more offshore waters.

Studies in New York waters have indicated that sea turtles mainly occur in areas where the water depth was between 16 and 49 feet and waters were slow-moving or still (*i.e.,* less than 2 knots) (Morreale and Standora 1990). The habitat characteristics of project area (*i.e.,* depths of less than 12 feet) where dredging will occur, are inconsistent with the preferred sea turtle foraging depths in New York waters; however, transient green, loggerhead, and Kemp's ridley sea turtles may pass near the action area from June to October each year.

Atlantic Sturgeon
Atlantic sturgeon (*Acipenser oxyrinchus*) occur in estuarine and marine waters along the U.S. Atlantic coast and may be present in East Captree State Channel. The New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. The range of Atlantic sturgeon from all five DPSs extends from Labrador Inlet, Labrador, Canada to Cape Canaveral, FL. After emigration from the natal estuary, subadult and adult Atlantic sturgeon forage within the marine environment, typically in waters less than 50 meters in depth, using coastal bays, sounds, and ocean waters (Vladykov and Greeley, 1963; Murawski and Pacheco, 1977; Dovel and Berggren, 1983; Smith, 1985; Collins and Smith, 1997; Welsh *et al.*, 2002; Savoy and Pacileo, 2003; Stein *et al.*, 2004; Laney *et al.*, 2007; Dunton *et al.*, 2010; Erickson *et al.*, 2011; Wirgin and King, 2011; D. Fox, pers. comm.; T. Savoy, pers. comm.). Therefore, adult and subadult Atlantic sturgeon from any of five DPSs could occur in the action area; however, as Atlantic sturgeon spawn in freshwater portions of large rivers and early life stages are not tolerant of salinity, no eggs, larvae or juvenile Atlantic sturgeon are likely to occur in East Captree State Channel.

Effects of the Action
On February 15, 2011, we concurred with your determination that dredging and the placement of dredged materials for beach nourishment within Captree Channel and along Robert Moses State Park, was not likely to adversely affect ESA-listed sea turtles. We believe that the proposed modifications (*i.e.,* increasing the dredge amount in the East Captree State Channel) will not modify the action in a way that will increase the risk to ESA-listed sea turtles beyond what was considered in our February 15, 2011, determination, as sea turtles are not likely to be present in this area during the time of proposed dredging. Therefore, the effects of this action on ESA-listed sea turtles will be insignificant or discountable.

On February 6, 2012, we published two final rules listing the five DPSs of Atlantic sturgeon. Our February 15, 2011, determination did not consider the effects of the action on Atlantic sturgeon. Therefore, this section will focus on the effects of the action to Atlantic sturgeon.

Entrainment/Impingement
Adult, sub-adult, and juvenile Atlantic sturgeon are not known to be vulnerable to entrainment or impingement in cutterhead dredges. Cutterhead dredge heads are placed within the sediments at the dredge site, and sturgeon should be able to avoid interaction with the dredge because of the low intake velocity of the machinery. Clarke (2011) reports that suction is lowered as the diameter of the pipeline decreases, and that animals would need to be very close to the intake pipe to feel any suction at all. Studies by the Norfolk District of the ACOE demonstrated, through telemetry in the James River, that Atlantic sturgeon were unaffected by the noise associated with dredges, or the presence of cutterhead dredges themselves (Cameron 2009), nor did they exhibit an alarm response or significant changes in their behavior. When the cutterhead dredge was in full-operation it did not impede their passage in-river, and individuals were not entrained during dredging activities. As such, all effects to Atlantic sturgeon will be insignificant.

Water quality effects
Dredging and placement of dredged material as beach nourishment may cause a temporary increase in suspended sediment in the nearshore area. If any sediment plume does occur, it is expected to be small and suspended sediment is expected to settle out of the water column within a few hours. Turbidity levels associated with hydraulic dredging activities produce sediment plumes typically ranging from 11.5 to 282.0 mg/L (ACOE 2007, Anchor Environmental 2003).

Studies of the effects of turbid waters on fish suggest that concentrations of suspended solids can reach thousands of milligrams per liter before an acute toxic reaction is expected (Burton 1993). The studies reviewed by Burton demonstrated lethal effects to fish at concentrations of 580.0 mg/L to 700,000.0 mg/L depending on species. Studies with striped bass adults showed that pre-spawners did not avoid concentrations of 954.0 to 1,920.0 mg/L to reach spawning sites (Summerfelt and Moiser 1976 and Combs 1979 in Burton 1993). While there have been no directed studies on the effects of total suspended solids (TSS) on Atlantic sturgeon, Atlantic sturgeon sub-adults and adults are often documented in turbid water and Dadswell (1984) reports that sturgeon are more active under lowered light conditions, such as those in turbid waters. As such, Atlantic sturgeon are assumed to be as least as tolerant to suspended sediment as other estuarine fish such as striped bass. The TSS levels expected for dredging (11.5 to 282.0 mg/L) are below those shown to have an adverse effect on fish (580.0 mg/L for the most sensitive species, with 1,000.0 mg/L more typical; see summary of scientific literature in Burton 1993) and benthic communities (390.0 mg/L (EPA 1986)). Based on this information, the effect on Atlantic sturgeon of suspended sediment resulting from dredging activities will be insignificant.

Effects on migration and foraging
Dredging can affect sturgeon by reducing prey species through the alteration of the existing biotic assemblages. Some disturbance or removal of benthic invertebrates, which may serve as Atlantic sturgeon prey, may occur in the areas to be dredged. Although a reduction in the amount of potential sturgeon prey may occur, the area affected by the dredging is small and East Captree State Channel has not been found to support suitable habitat and biota for sturgeon foraging. Accordingly we have determined that any effects.of dredging to foraging Atlantic sturgeon will be insignificant.

The proposed dredging operations are not likely to alter the habitat in any way that prevents sturgeon from using any portion of the action area as a migratory pathway. As such, the effects of proposed action on Atlantic sturgeon migration are expected to be insignificant and discountable.

Conclusions

Based on the analysis that any effects to listed species will be insignificant or discountable, we are able to concur with the determination that the proposed project is not likely to adversely affect any listed species under NMFS jurisdiction. Therefore, no further consultation pursuant to section 7 of the ESA is required. Reinitiation of consultation is required and shall be requested by the Federal agency or by us, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, reinitiation would be required. Should you have any questions about this correspondence please contact Daniel Marrone at (978) 282-8465 or by e-mail (Daniel.Marrone@noaa.gov).

Sincerely,

for John K. Bullard
Regional Administrator

ec: Marrone, F/NER3

File Code: Sec 7 ACOE Increase dredge amount in East Captree State Channel
PCTS: NER-2013-10030

References

Army Corps of Engineers (ACOE). 2001. Monitoring of Boston Harbor confined aquatic disposal cells. Compiled by L.Z. Hales, ACOE Coastal and Hydraulics Laboratory. ERDC/CHL TR-01-27.

ACOE. 2007. Winthrop Shores Reservation Restoration Program Endangered Species Biological Assessment. Prepared by Normandeau Associates. Submitted to NMFS Northeast Regional Office on February 7, 2007. 46 p.

Atlantic Sturgeon Status Review (ASSRT). 2007. http://www.nero.noaa.gov/prot_res/CandidateSpeciesProgram/AtlSturgeonStatusReviewReport.pdf.

Burton, W.H. 1993. Effects of bucket dredging on water quality in the Delaware River and the potential for effects on fisheries resources. Versar, Inc., 9200 Rumsey Road, Columbia, Maryland 21045.

Cameron, S. 2009. ACOE Norfolk. Assessing the impacts of channel dredging on Atlantic sturgeon movement and behavior. Presentation. In press.

Cameron, S. 2010. "Assessing the Impacts of Channel Dredging on Atlantic Sturgeon Movement and Behavior". Presented to the Virginia Atlantic Sturgeon Partnership Meeting. Charles City, Virginia. March 19, 2010.

Clarke, D. 2011. Sturgeon Protection. Dredged Material Assessment and Management Seminar. U.S. Army Corps of Engineers.

Collins, M. R. and T. I. J. Smith. 1997. Distribution of shortnose and Atlantic sturgeons in South Carolina. North American Journal of Fisheries Management. 17: 995-1000.

Dadswell, M.J., B.D. Taubert, T.S. Squiers, D. Marchette, and J. Buckley. 1984. Synopsis of biological data on shortnose sturgeon, *Acipenser brevirostrum* Lesueur 1818. NOAA Technical Report, NMFS 14, National Marine Fisheries Service. 45 pp.

Dadswell, M. 2006. A review of the status of Atlantic sturgeon in Canada, with comparisons to populations in the United States and Europe. Fisheries 31: 218-229.

Dovel, W. L. and T. J. Berggren. 1983. Atlantic sturgeon of the Hudson River estuary, New York. New York Fish and Game Journal 30: 140-172.

Dovel, W.L., A.W. Pekovitch and T.J. Berggren. 1992. Biology of the shortnose sturgeon (*Acipenser brevirostrum* Lesueur, 1818) in the Hudson River estuary, New York. Pages 187-216 in C.L. Smith, editor, Estuarine Research in the 1980s. State University of New York Press, Albany, New York.

Dunton *et al.* 2010. Abundance and distribution of Atlantic sturgeon (*Acipenser oxyrinchus*) within the Northwest Atlantic Ocean, determined from five fishery-independent surveys. *Fish. Bull. 108(4):450–465.*

Environmental Protection Agency (EPA). 1986. Quality Criteria for Water. EPA 440/5-86-001.

ERC (Environmental Research and Consulting, Inc.) 2011. Acoustic telemetry study of the movements of juvenile sturgeons in reach B of the Delaware River during dredging operations. Prepared for the US Army Corps of Engineers. 38 pp.

Erickson *et al.* 2011. Use of pop-up satellite archival tags to identify oceanic-migratory patterns for adult Atlantic Sturgeon, Acipenser oxyrinchus oxyrinchus Mitchell, 1815. *J. Appl. Ichthyol. 27: 356–365.*

Laney, R.W., J.E. Hightower, B.R. Versak, M.F. Mangold, W.W. Cole Jr., and S.E. Winslow. 2007. Distribution, Habitat Use, and Size of Atlantic Sturgeon Captured during Cooperative Winter Tagging Cruises, 1988-2006. American Fisheries Society Symposium 56: 000-000.

Morreale, S.J. 1999. Oceanic migrations of sea turtles. PhD Thesis. Cornell University.

Morreale, S.J. 2003. Assessing health, status, and trends in Northeasten sea turtle populations. Interim report: Sept. 2002-Nov. 2003.

Morreale, S. J. and V. J. Burke. 1997. Conservation and Biology of Sea Turtles in the Northeastern United States, p.41-46. In: T. Tyning (Editor), Status and Conservation of Turtles of the Northeastern United States. Serpents Tale Natural History Book Distributors, Lanesboro, Minnesota. V. Burke, School of Natural Resources, Univ. Missouri, 112 Stephens Hall, Columbia, Missouri 65211 USA.

Morreale, S.J. and E.A. Standora. 1990. Occurrence, movement, and behavior of the Kemp's ridley and other sea turtles in New York waters. Annual report for the NYSDEC, Return A Gift To Wildlife Program: April 1989 -April 1990.

Morreale, SJ., and E.A Standora. 1993. Occurrence, movement, and behavior of the Kemp's ridley and other sea turtles in New York waters. Okeanos Ocean Research Foundation Final Report April 1988-March 1993. 70 pp.

Morreale, SJ. and E.A Standora. 2005. Western North Atlantic waters: Crucial developmental habitat for Kemp's ridley and loggerhead sea turtles. Chel. Conserv. BioI. 4(4):872-882.

Murawski, S. A. and A. L. Pacheco. 1977. Biological and fisheries data on Atlantic Sturgeon, *Acipenser oxyrhynchus* (Mitchill). National Marine Fisheries Service Technical Series Report 10: 1-69.

Savoy, T. and D. Pacileo. 2003. Movements and important habitats of subadult Atlantic sturgeon in Connecticut waters. Transactions of the American Fisheries Society 132: 1-8.

Savoy, T. 2007. Prey Eaten by Atlantic Strugeon in Connecticut Waters. American Fisheries Society Symposium 56: 157-165.

Smith, T. I. J. 1985. The fishery, biology, and management of Atlantic sturgeon, *Acipenser oxyrhynchus*, in North America. Environmental Biology of Fishes 14(1): 61-72.

Smith, T. I. J. and J. P. Clungston. 1997. Status and management of Atlantic sturgeon, *Acipenser oxyrinchus*, in North America. Environmental Biology of Fishes 48: 335-346.

Standora, E.A., S.J. Morreale, and V.J. Burke. 1992. Application of recent advances in satellite microtechnology: Integration with sonic and radio tracking of juvenile Kemp's ridleys from Long Island, New York. In: Salmon, M., and Wyneken, J. (Compilers). Proceedings of the Eleventh Annual Workshop on Sea Turtle Biology and Conservation. NOAA Tech. Memo. NMFS-SEFSC-302, pp. 111-113.

Stein, A. B., K. D. Friedland, and M. Sutherland. 2004. Atlantic sturgeon marine distribution and habitat use along the northeastern coast of the United States. Transactions of the American Fisheries Society 133: 527-537.

Vladykov, V.D. and J.R. Greeley. 1963. Order Acipenseroidea. Pages 24-60 in Fishes of the Western North Atlantic. Memoir Sears Foundation for Marine Research 1(Part III). xxi + 630 pp.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
3817 Luker Road
Cortland, NY 13045

November 7, 2013

RECEIVED BY REGULATORY
NOV 1 5 2013
NY DIST. CORPS OF ENGINEERS

Ms. Jodi McDonald
Chief, Regulatory Branch
U.S. Army Corps of Engineers
New York District
Jacob K. Javits Federal Building
New York, NY 10278-0090

Attn: Ms. Leslie Bowles-Early, Regulatory Branch

Dear Ms. McDonald:

This is the report submitted by the U.S. Fish and Wildlife Service (Service) pursuant to, and in accordance with, provisions of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). The Service has reviewed the U.S. Army Corps of Engineers New York District's (Corps) ESA determinations for the proposed East Captree State Channel Dredging (Public Notice No. [PN] NAN-2010-00491-M2, published July 17, 2013) and Fire Island Inlet Dredging (PN NAN-2013-00917, published on July 18, 2013) projects both dated July 17, 2013. The East Captree State Channel dredging project would occur in Captree Channel, Great Oyster Bay in Islip, Suffolk County, NY. The Fire Island Inlet dredging project would occur in Fire Island Inlet and the Atlantic Ocean, at Robert Moses State Park (RMSP) in the Towns of Babylon and Islip, Suffolk County, NY. The Corps requested Service concurrence with their determinations in the above-referenced correspondences that the proposed projects may affect, but are not likely to adversely affect the federally-listed piping plover (*Charadrius melodus;* threatened).

The Corps has submitted separate ESA determinations for each project. The Service recommends that the Corps conduct one ESA consultation for the two projects since: 1) dredge material placement would occur in the same areas; 2) they would both affect the same species; 3) they were both proposed by the same applicant; they would both be completed in the same time-frame.

Proposed Action

East Captree State Channel Dredging Project

The applicant, The New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), has requested authorization from the Department of the Army for the proposed dredging of approximately 400,000 cubic yards of sand from the West Captree Channel and placed along approximately 12,000 linear feet of Atlantic Ocean beach at RMSP. This proposed action would be authorized by a modified existing Corps permit.

The project history and currently-proposed action are described as follows:

Previous Project Activities

A Corps permit was issued to the NYSOPRHP in 2011 for 10-year maintenance dredging, via hydraulic dredge, of approximately 169,000 cubic yards of material from the irregularly-shaped East Captree Channel with dredge material placement on ocean beaches in RMSP or placed in state-approved upland designated surplus material areas. The Corps issued a modification to expand the authorized dredging area and prism for an additional 320,000 cubic yards of material for emergency shoreline repair work needed in response to Superstorm Sandy and completed consultation pursuant to section 7 of the ESA (Service correspondence dated March 6, 2013). Dredging for this portion of the project (the east channel) was completed in April-May of 2013 with dredge material placement in Fields 4 and 5 of RMSP. No piping plovers were observed during NYSOPRHP-funded monitoring of these areas while construction activities occurred.

Permit Modification for Additional Dredging/Currently Proposed Project

The NYSOPRHP is now requesting a second modification for 10-year maintenance dredging of an additional 400,000 cubic yards from the Captree State Channel west of the Robert Moses Bridge. The irregularly-shaped West Captree Channel is approximately 400 feet by 3,550 feet in length and is proposed to be dredged, via hydraulic dredge, to a depth of approximately 14 feet below mean low water. The dredged materials would be pumped directly on approximately 12,000 linear feet of ocean beaches in RMSP (figure included in the PN depicts an area between Fields 2 and 3 eastward to Field 5) or the dredged material would be placed in state-approved upland designated surplus material areas (figure included in the PN depicts an area just west of Field 4 of RMSP). Approximately 108,000 cubic yards of material would be deposited below the spring high water line.

The stated purpose of the proposed action is to maintain safe navigable water depths for the vessels that use the waterway by removing sand shoaling resulting from Superstorm Sandy and provide beach nourishment for adjacent beaches damaged by Superstorm Sandy.

The Fire Island Inlet Dredging Project

The applicant, NYSOPRHP, has requested authorization from the Department of the Army for the proposed dredging of approximately 1,200,000 cubic yards of sand from Fire Island Inlet and placed along approximately 11,000 linear feet of Atlantic Ocean beach at RMSP.

The project is described in the PN as follows:

The applicant is requesting authorization to hydraulically dredge approximately 1,200,000 cubic yards of sand dredged from Fire Island Inlet (specific areas of the inlet to be dredged will be determined by the Corps). The sand dredged material would consist of approximately 93 percent sand, approximately 0.8 percent gravel and approximately 6.2 percent silt. Approximately 800,000 cubic yards of the sand dredged material would be placed directly on approximately 15,000 feet of the oceanfront shoreline at RMSP seaward of Parking Lot 2 (Field 2) through Parking Lot 5 (Field 5). (The PN was inconsistent in the text of the project description and the figure that was included. The PN states that the linear feet of beach where dredge material placement would occur is 9,500 and the figure depicts the area to extend from parking lot/Field 2 through parking lot/Field 4. The Service confirmed through e-mail correspondence with the Corps that the placement area extend through parking lot/Field 5. Service measured this distance to be approximately 15,000 linear feet.) The approximately 800,000 cubic yards of sand dredged material would be placed above the apparent high tide mark by hydraulic pipeline and mechanically distributed along the beach.

Approximately 400,000 cubic yards of dredged material would be stockpiled in an existing upland placement area (northwest portion of RMSP, just east of the Fire Island Inlet jetty) for future shoreline beach restoration after storm events. The sand dredged material being placed in the upland emergency stockpile site would be within an existing sand embankment with a return flow leading into the back-bay by means of a spillway. This stockpiled sand dredged material would be transported by truck to eroded beach areas when and where needed at a later time along RMSP.

The applicant's stated purpose for this proposed action is to continue to mitigate/restore the loss of oceanfront beach as a result of Superstorm Sandy along RMSP.

The cross-sections included in each of the project's public notices and coordination with the Corps (Bowles pers. comm. 2013) indicates that each of these projects involve the placement of dredge material on the ocean beaches along RMSP from below the mean high water line to the upper portions of the beach but do not include dune construction. However, NYSOPRHP has indicated that they may repair dunes damaged from Superstorm Sandy within the project area with the dredge material either during the initial construction or at a later date with the stock-piled material.

Presence of Federally-listed Species in Project Area

There are two federally-listed species present in the proposed project area. The piping plover (*Charadrius melodus*; threatened) is present within the project area along Atlantic Ocean beaches

to breed from the time they arrive from southerly wintering areas in March and April until departure to wintering grounds in July-September. Seabeach amaranth (*Amaranthus pumilus*; threatened) is an annual coastal plant that grows on Atlantic Ocean beaches within this project area generally from May-November, with peak presence in August and September.

The NYSOPRHP, with some assistance from the Service and/or the Service's contractor, monitors and manages RMSP for piping plovers and seabeach amaranth. Management includes the installation of symbolic fencing (fence-posts connected by flagged string) to protect breeding/growing areas each year and installation of predator exclosures over nests. Piping plover breeding areas within RMSP include Democrat Point (a spit of land that extends west of the Fire Island Inlet jetty) and the area between the Fire Island Jetty eastward through Field 4. There is no recent history (last ten years) of plover breeding or seabeach amaranth presence in Field 5.

Piping plover abundance (number of pair) in RMSP over the last five years is listed as follows (N/A = Not applicable, no breeding pairs of plovers):

	2009	**2010**	**2011**	**2012**	**2013**
Democrat Point	22	9	9	16	10
Fire Island Inlet Jetty – Field 2 Parking Lot	1	1	1	2	2
Field 3	1	0	1	1	0
Field 4	0	1	1	0	0

As listed above, in 2013, a total of 10 pair of plovers nested at Democrat Point and two pair nested between the jetty and the Field 2 parking lot (just west of the dredge placement area). A total of 1 seabeach amaranth plant was observed at Democrat Point and four plants between the Fire Island Inlet jetty and the Field 2 parking lot during preliminary surveys during the on-going 2013 growing season. The single plant at Democrat Point is low for this area that had 58 plants in 2012 and a 5-year high of 562 plants in 2009. The total of 4 plants in Field 2 is below average, where although 3 plants were observed in 2012, 62 plants (a 5-year high) were observed in 2011. No plants were observed in Fields 3 or 4, both of which only occasionally have any plants, with a 5-year high of 3 plants in 2012 at Field 3 and 4 plants in 2011 in Field 4. Primary limiting factors of plover abundance and productivity include red fox, gull, crow, and peregrine falcon predation, off-road vehicles (ORV), un-leashed dogs, loss of habitat from erosion, flooding, vandalism of nests and fencing and beach raking of foraging habitat (Citizens Campaign for the Environment 2012). One of the recovery criteria for the piping plover is achieving a 5-year average productivity (number of chicks fledged per pair) of 1.5 fledged chicks per pair. The productivity for each portion of RMSP for the last 5 years is listed as follows (N/A = Not applicable, no breeding pairs of plovers):

	2009	2010	2011	2012	2013
Democrat Point	0.55	0.40	1.33	0.62	1.2
Fire Island Inlet Jetty – Field 2 Parking Lot	0	0	4.0	2.50	0.50
Field 3	0	N/A	0	0	N/A
Field 4	N/A	0	0	N/A	N/A

Potential Project Impacts and Conservation Measures

The piping plover recovery plan recognizes that beach nourishment/dredge material placement can have positive short-term benefits to piping plovers, especially where beaches are seriously eroded and the sand placement provides for a wider beach that can provide breeding and foraging habitat (provided the substrate is suitable and the sand is graded to a natural slope) (U.S. Fish and Wildlife Service 1996). However, while beach nourishment/dredge material placement projects can be beneficial to piping plovers in the short-term, these projects can also directly and/or indirectly adversely affect this species.

Direct Impacts

Direct impacts of beach nourishment activities to piping plovers include:

- Crushing of eggs/unfledged chicks;
- Disturbance of foraging and breeding behaviors; and
- Alteration of breeding and foraging habitat

The Corps' July 17, 2013, ESA determination for the Fire Island Inlet dredging project provided the following conservation measures that address these direct impacts:

- Authorized beach placement activities are not permitted between April 1 and September 1 of any calendar year to protect piping plovers.
- The dredged material deposited on the beach shall be consistent with the grain size on the naturally occurring beach.
- The authorized beach placement area shall be finished to the same slope as the surrounding beach. The area shall be graded at a gentle uniform slope with no piles, ridges or holes left in the final graded beach placement materials.

The Corps' July 17, 2013, ESA determination for the East Captree State Channel references the original permit's condition that: Authorized beach placement activities are not permitted between April 1 and September 1 of any calendar year to protect piping plovers. The Corps' determination did not include additional conditions in the original permit that would also address

the proposed actions impact on federally-listed species. As such, the Service recommends the Corps include the following additional conditions in their permit modification:

- The dredged material deposited on the beach shall be consistent with the grain size on the naturally occurring beach.

- The authorized beach placement area shall be finished to the same slope as the surrounding beach. The area shall be graded at a gentle uniform slope with no piles, ridges or holes left in the final graded beach placement materials.

These measures will insure that all construction activities for both projects will not occur when plovers are breeding, thereby avoiding the crushing of eggs and unfledged chicks or disturbing breeding behaviors. The appropriate grain size and grading will insure that the existing and created habitats will be suitable for plover breeding and the proposed action will not adversely alter the habitat.

The Corps also provided the following additional measure in their July 17, 2013, ESA determination for the Fire Island Inlet dredging project:

- If piping plovers have not utilized suitable breeding habitat in the authorized beach placement area by July 1, the permittee may request permission to begin beach nourishment operations prior to the end of the plover nesting season (September 1). To obtain this permission, the permittee shall submit a written request with a Corps-approved environmental monitor's report documenting that piping plovers have not utilized the authorized beach placement area during the current year. The Corps will review the documented request in consultation with the Service within 2 weeks. Written permission must be obtained from the Corps prior to initiation of any work.

The Service concurs with this measure since it is unlikely that any nests will be initiated after July 1(U.S. Fish and Wildlife Service 2008). Accordingly, the effects of this measure are not likely to adversely affect federally-listed species.

In regards to the alteration of breeding, foraging and sheltering or growing habitat, there is concern with the potential loss of habitat at Democrat Point, the area in RMSP with the greatest concentration of breeding plovers where seabeach amaranth plants also occur. Democrat Point extends west of the Fire Island Inlet and, depending upon the Corps' assessment of the inlet, may extend into the federal channel. The western, sparsely vegetated tip of this spit had historically been removed as part of the maintenance dredging of the Inlet and vegetation (primarily beach grass) has encroached over much of the higher elevations. Dense vegetation limits plover breeding and seabeach amaranth habitat suitability. As such, the Service recommends the following measures be incorporated into the Fire Island Inlet dredging project to address the loss/alteration of habitat:

- Democrat Point shall be preserved to the greatest extent practicable.

- Vegetation shall be removed from at least a 2,500 square feet area at Democrat Point in March of 2014, prior to the 2014 breeding/growing season. The specific area to be restored shall be determined through coordination with the Service.

Indirect Impacts

Indirect adverse effects of beach nourishment activities to piping plovers include:

- Disturbance to prey base and temporarily reduced prey availability (beach invertebrates and wrack line);

- Reduction of potential for formation and maintenance of optimal piping plover breeding and foraging habitat;

- Disturbance to plovers through enhancing beaches to attract increased recreational activities;

- Increased predator populations/activity that could utilize habitat created by the project;

- Creation of suboptimal piping plover and seabeach amaranth habitat and a potential population sink; and

- Potential for snow fencing, vegetation planting, and beach raking.

Disturbance to Prey Base

Beach nourishment associated with dredging from both of these projects will result in burial and suffocation of terrestrial and intertidal invertebrate species that piping plovers feed upon, which in turn would result in temporal and local changes in foraging resources (Land Use Ecological Services, Inc. 2002). These dredging/nourishment projects will completely remove or bury the wrack line within the construction footprint. While the completed projects will increase the quantity of available nesting and foraging habitat above current conditions, artificially created habitats may be inferior to naturally accreted beach and overwash habitats *(e.g.*, Jones *et al.* 2007; Peterson *et al.* 2000). Therefore, the positive benefits of these projects may not be realized until re-colonization of benthic organisms occurs and natural coastal processes begin to "reshape" the constructed features. The Corps reported intertidal benthos communities recovered from beachfill impacts within six months, and adverse impacts to the intertidal benthic community were significant when sand particle size of nourished material did not match that of the existing beach, based upon monitoring of beach nourishment impacts on the New Jersey shoreline of the Atlantic Ocean (U.S. Army Corps of Engineers 2001).

As stated above, the Corps' July 17, 2013, ESA determination for the Fire Island Inlet project provided the following conservation measure in their determination and the Service recommends this measure be incorporated into the East Captree State Channel dredging project that addresses this impact:

- The dredged material deposited on the beach shall be consistent with the grain size on the naturally occurring beach.

The PNs for each project state that the dredge materials consist primarily (greater than 90 percent) of sand, the primary substrate present on the RMSP ocean beaches. Since the dredge material is similar in size to the beach material, recovery of the benthic community is likely to occur within six months. Accordingly, this conservation measure addresses the disturbance to the prey base and this impact is deemed temporary and not likely to significantly affect piping plovers.

Reduction of Potential for Habitat Formation

The Proposed Plan could result in indirect adverse effects to piping plovers and seabeach amaranth by impeding natural processes of shoreline movement (e.g., cross-island sediment transport by overwash), thereby preventing the natural formation of high quality overwash-created habitats essential for the recovery of these species (Cohen *et al.* 2002; Elias *et al.* 2000). High quality habitats for piping plovers that are created by overwash include sparsely vegetated upper beach foredune habitats, blowouts (breaks in the dunes, often formed during storms), over-wash fans (over-topping of dunes and landward transport of sand) and interdunal swales (Strauss 1990). Overwash fans are present within the project areas at the ocean beaches west of the Field 4 parking lot, and in between Fields 2 and 3. The overwash fan west of the Field 4 parking lot is adjacent to a roadway that is an important access route to the eastern portion of the park as well as Fire Island communities located east of the RMSP. This area and the remaining combined dredge material placement areas consist primarily of bathing beaches, parking lots and associated infrastructure adjacent to the ocean shoreline that limits the likelihood of overwash occurring un-impeded. However, the area between Fields 2 and 3 (approximately 300 feet wide) is between parking lots and relatively far from the access road (approximately 1,500 feet). Prohibiting dune construction/repair and sand fence installation (further described below) at the ocean beach in this area will allow for overwash during storm events and the creation/maintenance of suitable plover breeding and foraging habitat, as well as seabeach amaranth growing habitat. As such, the Service recommends that the following measure be incorporated into both project descriptions to address this impact:

- No dune construction/repair should occur in the areas fronting the existing overwash area between Fields 2 and 3 to promote the creation/maintenance of overwash habitat.

Additionally, Service observations indicate that RMSP staff regularly places refuse from beach raking in back dune areas. This material attracts predators (rodents, fox, gulls, crows, etc.) and is not suitable substrate for plover breeding or seabeach amaranth growing. Accordingly, the Service recommends the following measure be incorporated into both dredging projects to address the potential alteration of habitat within the overwash area between Fields 2 and 3:

- No beach rake refuse shall be placed on the overwash area between Fields 2 and 3.

Increase in Recreational Activities

Indirect effects of disturbance to piping plovers also occur by limiting breeding habitat to ocean-side habitats that are simultaneously made more attractive for recreational activities by beach stabilization/dredge material placement projects. Recreational activities that are likely to adversely affect piping plovers on the project sites include an increase in beach patrons and associated activities (ORV use, sunbathing, sports, playing loud music, etc.), unleashed pets, fireworks, kite-flying, and increase in garbage and refuse concomitant with increased recreational activities. Kite-flying may disturb piping plovers since they may perceive kites as avian predators (U.S. Fish and Wildlife Service 1996).

The NYSOPRHP permits recreational ORV access to ocean beaches from an area west of Field 2 to the Fire Island Inlet jetty (approximately 4,500 linear feet). One pair of plovers nested in this ORV area, west of dredge material placement areas for both projects, in 2013, due to park closure from Superstorm Sandy damages. Symbolic fencing was installed to protect the nest, and in accordance with Service guidelines (further described below), the NYSOPRHP closed the area to vehicles when unfledged chicks were in the area. ORV access was provided along the north shore of Fire Island west of Field 2 while the ocean beach ORV area was closed. NYSOPRHP is currently coordinating with the Service in preparing an application package for an Incidental Take Permit pursuant to section 10 of the ESA, including a Habitat Conservation Plan, for the continued permitting of ORV access at RMSP, as well as overall piping plover management at select Long Island State Parks where operational activities have the potential to adversely affect piping plovers.

The level of recreational impacts within potential piping plover nesting areas is expected to increase in the near term. Wide beaches with little human disturbance at the time piping plovers initiate nesting (March to April) often experience heavy recreational pressure later in the nesting season (May through August), potentially creating sufficient disturbance to cause abandonment of nests, interfere with foraging, cause broods to be separated from adults, or attract predators. However, Hoopes (1993) found no correlation between rates of disturbance and productivity rates, and attributed this to intensive management of recreation within his study area, including restrictions on dogs and ORVs and use of symbolic fences to protect nests and provide refuge areas for chicks. Accordingly, the degree to which increases in recreational activity and predator habitat result in mortality or disturbances to plovers and their chicks appears to depend on the degree to which the protection measures are implemented.

Many of the indirect effects of the project can be avoided with the implementation of protective measures and recreational activity management as described in Service guidelines entitled, "*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*," (U.S. Fish and Wildlife Service 1994) also found as an appendix to the Piping Plover Recovery Plan (U.S. Fish and Wildlife Service 1996).

These protective measures include, but are not limited to, erecting and maintaining symbolic fencing between April 1 and September 1, or until the last plover chick is fledged (deemed fledged at 35 days old in areas where vehicles permitted) for the protection of portions of the

suitable habitats created or manipulated by a proposed project to reduce recreational impacts from humans, the effects of preserving ORV access to the ocean beach, and creating habitat for predators. This fencing should be installed in historic breeding areas and suitable habitat prior to April 1 and adjusted throughout the season as needed. When chicks are present the areas to the low-water line should be closed to ORVs until the chicks have fledged (again, 35 days).

Seabeach amaranth colonization is unlikely to occur on intensively used recreational beaches, but would be more likely in areas fenced for the protection of piping plovers and other beach nesting birds (U.S. Fish and Wildlife Service 2002).

The Corps' July 17, 2013, ESA determinations for these projects provided the following conservation measures in their determination to address this impact:

- All nourished areas will be monitored and managed as appropriate, as has occurred in the past by The Nature Conservancy (TNC), which has a conservation easement on this privately owned area; (Service note: this statement is not correct - TNC does not have a conservation easement on this area and does not monitor and manage the project areas. The NYSOPRHP monitors and manages the project areas for piping plovers and seabeach amaranth.)

- By December 1 of each calendar year for the duration of this permit, the permittee shall provide to the Service and Corps an annual report of plover activity, or lack of plover activity, for each authorized beach placement area.

Per the above discussion, the Service concludes that these measures adequately address the potential impact of increased recreational activities on the piping plover and seabeach amaranth.

Predators

The Proposed Plan would potentially create habitat for predators of the piping plover. As stated above, red fox, gulls, crows, feral cats and dogs, and free-roaming pets are considered significant predators of the piping plover (U.S. Fish and Wildlife Service 1996). Hunting efficiency of foxes and other predators may be increased by confining piping plover breeding areas to predictable bands of linear oceanfront habitat. Irregular barrier island features may allow piping plovers to be more efficient in eluding predators (U.S. Fish and Wildlife Service 2008). The red fox has been identified as a primary predator of piping plover eggs and chicks on the project site, with crows, gulls, and falcons also observed as predators, as well (Citizens Campaign for the Environment 2012). As such, we recommend that the Corps insures that predator management be implemented to address this impact. Such management should include the installation of predator exclosures over nests and trapping/removal of predators, as appropriate, in coordination with the Service and the NYSDEC.

Creation of Suboptimal Habitat

The creation of an artificially stabilized beach is likely to lead to accelerated plant competition, and the creation of a population "sink" for piping plovers due to the reduction in the quality of

foraging habitat for piping plovers, increased recreational activities, the creation of habitat for predators of piping plovers, and allowance for ORV access through portions of the breeding and growing areas. The proposed actions are also likely to create habitat for seabeach amaranth. These plants could be crushed by ORVs or beach patrons if not properly protected. As such, without the implementation of the above-described Service guidelines, the proposed actions could perpetuate the artificial creation and maintenance of suboptimal beach habitat for piping plovers and seabeach amaranth. The implementation of the Service guidelines will address this impact, as well.

Snow Fencing/Vegetation Planting/Beach Raking

The project descriptions do not include the installation of snow fencing or the planting of beach grass; however, these practices are common in attempting to stabilize nourished beaches and have occurred on other sites on Long Island, with or without federal (Service, Corps) or state (New York State Department of Environmental Conservation) coordination and authorization (including, but not limited to, the on-going Westhampton Interim Storm Damage Protection Project, New York State Department of Transportation's dredging of Fire Island Inlet in 2013, the Corps' filling of the breach at Cupsogue County Park in 2013). Vegetation planting and snow fence placement, in association with beach nourishment/dredge material placement will artificially accelerate growth of dense vegetation that precludes use of habitat by piping plovers and seabeach amaranth and degrades the habitat for these species (U.S. Fish and Wildlife Service 1996). This effect will limit the amount of available suitable habitat for these species and will create suboptimal habitat conditions on the ocean beaches and in overwash areas, such as the one between Fields 2 and 3.

Artificially planted areas that rapidly grow into dense areas of perennial vegetation preclude use by both species. Weakley and Bucher (1992) report that stabilization of seabeach amaranth habitat allows for succession to a densely-vegetated perennial community, rendering the beaches only marginally suitable for seabeach amaranth, which is rarely encountered in areas that have been snow fenced.

Another beach management practice not mentioned in the project description which presently occurs at RMSP and will likely continue over the life of the project is beach raking during the plover breeding season or seabeach amaranth growing season. Mechanized beach cleaning adversely affects piping plovers and seabeach amaranth through the direct crushing of piping plover nests and chicks and seabeach amaranth plants, prolonged disturbance to plover foraging and breeding behaviors and removal of piping plover's natural wrack-line feeding habitat (U.S. Fish and Wildlife Service 1996).

Based on the prevalence of these practices on artificially nourished beaches on Long Island, the Service is concerned that these practices may occur over the 10 year life of the East Captree State Channel dredging project (Service's understanding that Fire Island Inlet project is a one-time event).

Accordingly, the Service recommends that the following measures be included as conditions of the permit for both projects to address these impacts:

- No vegetation should be planted within the dredge material placement area seaward of the seaward base of the primary dune.

- No snow/sand fencing should be installed seaward of the seaward slope of the primary dune, or in the overwash area between Fields 2 and 3.

- While breeding plovers and broods are present, beach raking/cleaning should not occur within symbolically-fenced areas or within wrack lines directly seaward of symbolic fencing and/or areas where recent (within last 5 years) plover breeding had occurred to preserve the wrack-line, an important forage area for plovers.

Should any of these beach management activities occur within the project areas during the life of the project (10 years), the Corps will need to re-initiate consultation pursuant to section 7 of the ESA.

Conclusion

The Service anticipates that both the direct and indirect effects of the above-described projects to piping plovers and seabeach amaranth can be avoided and minimized through implementation of the above-described measures.

Accordingly, the Service does not concur with the Corps' ESA determinations made for these projects, as proposed. However, if the Corps implements the above-described conservation measures, then we concur that the project, including the conservation measures, would be unlikely to adversely affect the piping plover and seabeach amaranth. If future changes in recreational patterns or species conditions that may affect listed species result from implementation of the proposed projects, we recommend that the Corps reinitiate consultation with the Service.

The Service is available to assist in coordinating with the applicant in implementing these conservation measures. For further information please contact Steve Sinkevich of the Long Island Field Office, at 631-286-0485.

Sincerely,

for Patricia Cole
David A. Stillwell
Field Supervisor

References

Bowles-Early, Leslie. 2013. Personal communication. U. S. Army Corps of Engineers New York District. Eastern Permits Section, NY.

Citizens Campaign for the Environment. 2012. 2012 Federally-listed Species Data Report for the U.S. Army Corps of Engineers Fire Island Inlet and Shore Westerly Beach Erosion Control and Navigation Project. Farmingdale, NY

Cohen, J.B., L.M. Houghton, A. Novak, J.D. Fraser, and S.P. Elias Gerken. 2002. Annual Report Monitoring Study, Limiting Factors of Piping Plover Nesting Pair Density and Productivity on Long Island, New York. Interim Report for the 2002 Breeding Season. Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University, Blacksburg, VA. 91 pp.

Elias, S.P., J.D. Fraser, and P.A. Buckley. 2000. Piping Plover Brood Foraging Ecology on New York Barrier Islands. *Journal Wildlife Management*. 64(2): 346-354.

Hoopes, E.M. 1993. Relationship Between Human Recreation and Piping Plover Foraging Ecology and Chick Survival. M.S. Thesis. University of Massachusetts, Amherst, MA. 106 pp.

Land Use Ecological Services, Inc. 2002. Draft Environmental Impact Statement, Western Fire Island and Fire Island Pines Beach Nourishment Project. Baiting Hollow, NY. 66 pp., plus Appendices.

Peterson, C.H, D.H.M. Hickerson, and G.G. Johnson. 2000. Short-term Consequences of Nourishment and Bulldozing on the Dominant Large Invertebrates of a Sandy Beach. *Journal of Coastal Research* Vol. 16(2): 368-378.

Strauss, E. 1990. Reproductive Success, Life History Patterns, and Behavioral Variation in Populations of Piping Plovers Subjected to Human Disturbance (1982-1989). Ph.D. Dissertation. Tufts University, Medford, MA. 143 pp.

U.S. Army Corps of Engineers. 2001. The New York District's Biological Monitoring Program for the Atlantic Coast of New Jersey, Asbury Park to Manasquan Section Beach Erosion Control Project Final Report. Engineer Research and Development Center, Waterways Experiment Station, Vicksburg, MS.

U.S. Fish and Wildlife Service. 2008. Biological Opinion on the Effects of the National Park Service's Short-term Protection Projects, 2008, on the Piping plover and Seabeach amaranth. New York Field Office, Cortland, NY

_____. 2002. Biological Opinion on the Effects of Beach Nourishment and Restoration Activities, Townsend Inlet to Hereford Inlet, Cape May County, New Jersey on the Piping Plover (*Charadrius melodus*) and Seabeach Amaranth (*Amaranthus pumilus*). Prepared for the U.S. Army Corps of Engineers' Philadelphia District. 106 pp.

_____. 1996. Piping Plover (*Charadrius melodus*), Atlantic Coast Population, Revised Recovery Plan. Hadley, MA.

_____. 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. U.S. Fish and Wildlife Service, Northeast Region. Hadley, MA.

Weakley, A.S. and M. Bucher. 1992. Status Survey of Seabeach Amaranth (*Amaranthus pumilus* Rafinesque) in North and South Carolina, Second Edition (After Hurricane Hugo). Report to North Carolina Plant Conservation Program, North Carolina Department of Agriculture, Raleigh, NC, and Endangered Species Field Office, U.S. Fish and Wildlife Service, Asheville, NC. 178 pp.

cc: NYSDEC, Stony Brook, NY (C. Hamilton)
NYSOPRHP, Babylon, NY (A. McIntyre)

Appendix D

SHPO Correspondence

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

New York State Office of Parks, Recreation and Historic Preservation

Division for Historic Preservation
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

November 12, 2013

Scott G. Fish
OPRHP Long Island Region
P.O. Box 247
Babylon, New York 11702
(via e-mail only)

Re: CDBG-DR, OPRHP
State Boat Channel Dredging and Beach Renourishment/Robert Moses Beach/Sandy Reconstruction
BABYLON, Suffolk County
13PR05308

Dear Mr. Fish:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, it is the SHPO's opinion that your project will have No Adverse Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places.

If I can be of any further assistance do not hesitate to contact me at (518) 237-8643, ext. 3263.

Sincerely,

John A. Bonafide
Director,
Technical Preservation Services Bureau

cc: Julian Adams

Appendix E

NYSDOS Correspondence

Cashin Associates, P.C.
ENGINEERING • PLANNING • CONSTRUCTION MANAGEMENT
Est. 1959

July 2, 2013

NYS Department of Environmental Conservation
NYS DEC Region One
SUNY @ Stony Brook
50 Circle Road, Room 121
Stony Brook, New York 11790-3409

Attn: Mr. Roger Evans
Regional Permit Administrator

Re: New York State Office of Parks, Recreation and Historic Preservation
Maintenance Dredge: Captree Boat Channel
USACE Application Number NAN-2010-00491-EMI
NYSDEC Application # 1-4728-00955/00029

Dear Mr. Evans:

Cashin Associates (CA) on behalf of New York State Office of Parks, Recreation and Historic Preservation (OPRHP) would like to submit a modification to the dredging permit on the above referenced applications to include an updated set of plans indicating extension of channel dredging area (to include the channel west of Robert Moses Bridge), channel depths and profiles, and an extension of the material placement area at Robert Moses State Park including all of the ocean beach in front of Parking Field 3 (as well as the Robert Moses Parkway traffic circle/tower area, Parking Fields 4 and 5 beaches and Parking Field 5 Stockpile Area which were included in the original permit).

This dredging effort will be a continuation of the work completed in portions of the State Boat Channel extending east of the boat basin earlier this year. This additional dredging is needed to maintain safe navigation in the portion of the State Boat Channel west of the Captree Boat Basin, in areas where substantial shoaling of sand deposits has occurred. The purpose of the beach restoration is to further restore the Park's recreational beach areas after the severe erosion caused by Superstorm Sandy, and to provide further protection of park infrastructure including the traffic circle and tower area.

Enclosed is the following information:

- New Key Location Map depicting extended beach restoration area, modified dredge area and new typical channel section (Sheet 1).
- Existing bathymetry of modification dredge area (Sheets 2 through 4).
- New beach restoration area depicting extended beach nourishment area (Sheet 5).
- Grain Size Distribution Analysis of sediments from shoaling areas, with sample location map.
- Cross Section Profiles at designated survey stations depicted on Sheet 5 (Sheet 6).

1200 Veterans Memorial Highway • Hauppauge, NY 11788 • (631) 348-7600 • FAX (631) 348-7601
80 SW 8th Street • Suite 2809 • Miami, FL 33130 • (305) 579-2006 • FAX (305) 579-2035
www.cashinassociates.com

If you require any additional information, please do not hesitate to contact me.

Very truly yours,
CASHIN ASSOCIATES, P.C.

Gregory T. Greene
Director of Environmental Programs

Cc: Scott Fish (OPRHP)

I:\PROJECTS\NYS\12035.011RM Permit App\Modification for Captree Permit\Cover Ltr\NYSDECS.doc

NEW YORK STATE DEPARTMENT OF STATE
COASTAL MANAGEMENT PROGRAM

Coastal Assessment Form

A. INSTRUCTIONS (Please print or type all answers)

1. State agencies shall complete this CAF for proposed actions which are subject to Part 600 of Title 19 of the NYCRR. This assessment is intended to supplement other information used by a state agency in making a determination of significance pursuant to the State Environmental Quality Review Act (see 6 NYCRR, Part 617). If it is determined that a proposed action will not have a significant effect on the environment, this assessment is intended to assist a state agency in complying with the certification requirements of 19 NYCRR Section 600.4.

2. If any question in Section C on this form is answered "yes", then the proposed action may affect the achievement of the coastal policies contained in Article 42 of the Executive Law. Thus, the action should be analyzed in more detail and, if necessary, modified prior to either (a) making a certification of consistency pursuant to 19 NYCRR Part 600 or, (b) making the findings required under SEQR, 6 NYCRR, Section 617.11, if the action is one for which an environmental impact statement is being prepared. If an action cannot be certified as consistent with the coastal policies, it shall not be undertaken.

3. Before answering the questions in Section C, the preparer of this form should review the coastal policies contained in 19 NYCRR Section 600.5. A proposed action should be evaluated as to its significant beneficial and adverse effects upon the coastal area.

B. DESCRIPTION OF PROPOSED ACTION

1. Type of state agency action (check appropriate response):

   (a) Directly undertaken (e.g. capital construction, planning activity, agency regulation, land transaction) X
   (b) Financial assistance (e.g. grant, loan, subsidy) ____
   (c) Permit, license, certification X

2. Describe nature and extent of action: DREDGING OF CAPTREE CHANNEL, SEE PROJECT DESCRIPTION ON JOINT APPLICATION.

3. Location of action:

SUFFOLK	BABYLON	CAPTREE STATE PARK
County	City, Town or Village	Street or Site Description

4. If an application for the proposed action has been filed with the state agency, the following information shall be provided:

   (a) Name of applicant: NEW YORK STATE OFFICE OF PARKS

   (b) Mailing address: PO BOX 247, BABYLON, NEW YORK 11702

   (c) Telephone Number: Area Code (631) 669-1000

   (d) State agency application number: _____

5. Will the action be directly undertaken, require funding, or approval by a federal agency?

   Yes X No _____ If yes, which federal agency? ACOE

C. COASTAL ASSESSMENT (Check either "YES" or "NO" for each of the following questions)

1. Will the proposed activity be located in, or contiguous to, or have a significant effect upon any of the resource areas identified on the coastal area map:

		YES	NO
(a)	Significant fish or wildlife habitats?	✓	
(b)	Scenic resources of statewide significance?		✓
(c)	Important agricultural lands?		✓

2. Will the proposed activity have a significant effect upon:

(a)	Commercial or recreational use of fish and wildlife resources?	✓	
(b)	Scenic quality of the coastal environment?		✓
(c)	Development of future, or existing water dependent uses?	✓	
(d)	Operation of the State's major ports?		✓
(e)	Land and water uses within the State's small harbors?		✓
(f)	Existing or potential public recreation opportunities?	✓	
(g)	Structures, sites or districts of historic, archeological or cultural significance to the State or nation?		✓

3. Will the proposed activity involve or result in any of the following:

(a)	Physical alteration of two (2) acres or more of land along the shoreline, land under water or coastal waters?	✓	
(b)	Physical alteration of five (5) acres or more of land located elsewhere in the coastal area?	✓	
(c)	Expansion of existing public services of infrastructure in undeveloped or low density areas of the coastal area?		✓
(d)	Energy facility not subject to Article VII or VIII of the Public Service Law?		✓
(e)	Mining, excavation, filling or dredging in coastal waters?	✓	
(f)	Reduction of existing or potential public access to or along the shore?		✓
(g)	Sale or change in use of state-owned lands located on the shoreline or under water?		✓
(h)	Development within a designated flood or erosion hazard area?	✓	
(i)	Development on a beach, dune, barrier island or other natural feature that provides protection against flooding or erosion?		✓

4. Will the proposed action be located in or have a significant effect upon an area included in an approved Local Waterfront Revitalization Program? ... | | ✓ |

D. SUBMISSION REQUIREMENTS

If any question in Section C is answered "Yes", AND either of the following two conditions is met:

Section B.1(a) or B.1(b) is checked; or
Section B.1(c) is checked AND B.5 is answered "Yes",

THEN one copy of the Completed Coastal Assessment Form shall be submitted to:

New York State Department of State
Division of Coastal Resources
41 State Street, 8th Floor
Albany, New York 12231

If assistance of further information is needed to complete this form, please call the Department of State at (518) 474-6000.

E. REMARKS OR ADDITIONAL INFORMATION

Preparer's Name: CASHIN ASSOCIATES, P.C. (GREGORY T. GREENE) - AGENT
(Please print)

Title: Director of Environmental Programs Agency: CASHIN ASSOCIATES, P.C.

Telephone Number: (631) 348-7600 Date: April 8, 2010

Federal Consistency Assessment Form
State and Local Coastal Policies Evaluation

The following is an analysis of proposed dredging activities by NYSOPRHP for the Captree Boat Channel with respect to the New York State Coastal Policies:

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

The subject channel is part of the State Boat Channel and provides access to and from Captree Boat Basin. The proposed action is for the State to dredge the channel to maintain its twelve foot depth below mean water. The proposed action will allow for safe passage of vessels to and from the Captree Boat Basin, which serves as the home port for the party boat fishing fleet, as well as other tour and charter boats. A public boat launching ramp is also present at Captree. The state boat channel in vicinity of Captree Boat Basin also serves as an important channel for recreational boaters and fishermen. The proposed placement of dredge sand is at Robert Moses State Park, a major ocean beach recreational facility for the region.

Policy 7: Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.
The proposed dredging is located in the federally designated Significant Coastal Fish & Wildlife Habitat (SCFWH) known as "Great South Bay-West" and the proposed material placement area is located in the SCFWH "Democrat Point".

In order to insure that the proposed work will have little to no impact on the significant coastal fish and wildlife habitat, dredging will be performed during the late fall and winter months (September 15 – December 15), within accepted "windows" as prescribed by NYSDEC. Dredging during this time of the year will help to minimize potential impacts on aquatic organisms, and allow for material placement when wildlife populations, including nesting shorebirds, are least sensitive to disturbance.

Policy 11: Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.

There are no buildings or structures to be constructed as part of this work.

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

The proposed project includes material placement along the ocean beach in Robert Moses State Park. Restoration of the overall width of the ocean beaches in this area will help mitigate the existing erosion problems, and help to maintain this valuable ocean beach recreational resource.

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.

The proposed dredging at this location will remove sandy sediment which has created serious shoaling in portions of the channel. This shoaling has narrowed the channel, and has made it difficult for vessels

to safely navigate this area. The dredging of the channel will restore it to its prior navigable condition. The channel improvement will not interfere with natural coastal processes which supply beach materials to adjacent lands and will not cause an increase in erosion. The dredged sands will be used to restore beaches which have experienced erosion during storm events over the past several years.

Policy 17: Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.

The proposed work will not include construction of man-made structures for flooding or erosion control features. The restoration of beaches through placement of dredged sands will involve a non-structural measure to minimize damage to natural resources and property from flooding and erosion.

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

The proposed action is for the State to dredge the channel so as to allow continued vessel access to and from the Captree Boat Basin which supports a large array of water-related activities, both commercial and private including the Captree Party Boat Fishing Fleet. This channel is also part of the State Boat Channel, which is the major west to east navigational channel for recreational vessels in this part of Great South Bay.

Policy 20: Access to the 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.

The proposed action is for the State to dredge channel which will increase public access to the water for recreational purposes. The Captree Boat Channel allows access to and from the Captree Boat Basin located within Captree State Park. The use of the dredged sands for beach restoration at Robert Moses State Park will help protect a major regional recreational resource.

Policy 21: Water-dependent and water-enhanced recreation will be encouraged and facilitated, and will be given propriety over non-water-related use along the coast.

The proposed action is for the State to dredge channel which will increase public access to the water for both water-dependent and water-enhanced recreational purposes. The Captree Boat Channel allows access to and from the Captree Boat Basin located within Captree State Park.

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.

The proposed action is for the State to dredge channel which will maintain public access to the water for recreational purposes. The Captree Boat Channel allows access to and from the Captree Boat Basin located within Captree State Park.

Policy 28: Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.

The proposed project will not include any ice management that would interfere with hydroelectric

power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.

Policy 30: Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.

Presently, no municipal, industrial, or commercial pollutants are discharged onsite or into the water. The proposed project will not create a facility which could cause discharge of any municipal, industrial, or commercial pollutants to the site or adjacent water.

Policy 35: Dredging and filling in coastal waters and disposal of dredged material will be undertaken in a manner that meets existing State permit requirements and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands and wetlands.

The primary placement of the proposed dredging material will be placed along the ocean beaches of Robert Moses State Park. The placement of the material will be in conformance with all existing State permit requirements protecting significant fish and wildlife habitats, scenic resources, natural protective features, and wetlands.

Policy 38: The quality and quantity of surface water and groundwater supplies will be conserved and protected, particularly where such waters constitute the primary or sole source of water supply.

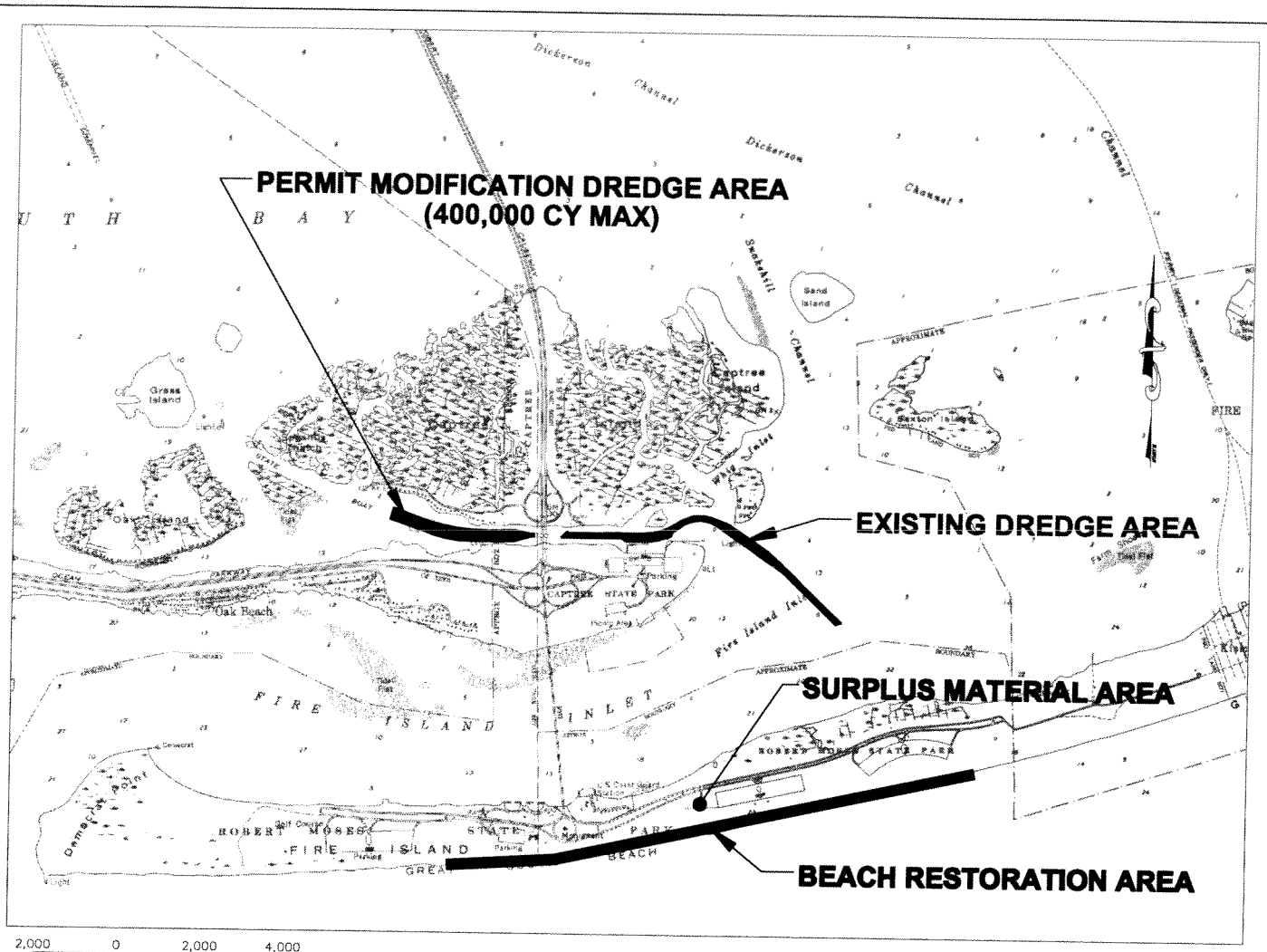
In order to minimize impact to the surface water, all propose dredging will be performed between late fall and early winter also, minimizing potential impacts on aquatic organisms, and allow for dredge material placement when wildlife populations are least sensitive. Flow from the placement process will be contained above the apparent high tide line and mitigated in such a manner as to minimize impact to the surrounding surface waters.

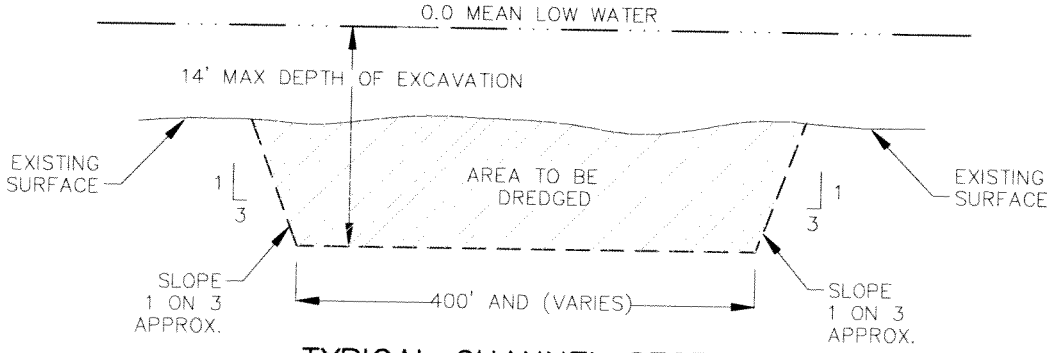
Policy 40: Effluent discharged from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.

There are no electric generating and industrial facilities presently at the project site or proposed to be constructed at the site.

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

In order to minimize impact to any tidal wetlands located within proximity to the dredge boundary, dredging will be performed in such a manner, as to prevent any undermining of the wetland edge that may result in wetland loss.





TYPICAL CHANNEL SECTION

FOR MODIFICATION AREA ONLY

PREPARED BY

Cashin Associates, P.C.

ENGINEERING PLANNING CONSTRUCTION MANAGEMENT

PERMIT MODIFICATION

KEY LOCATION MAP

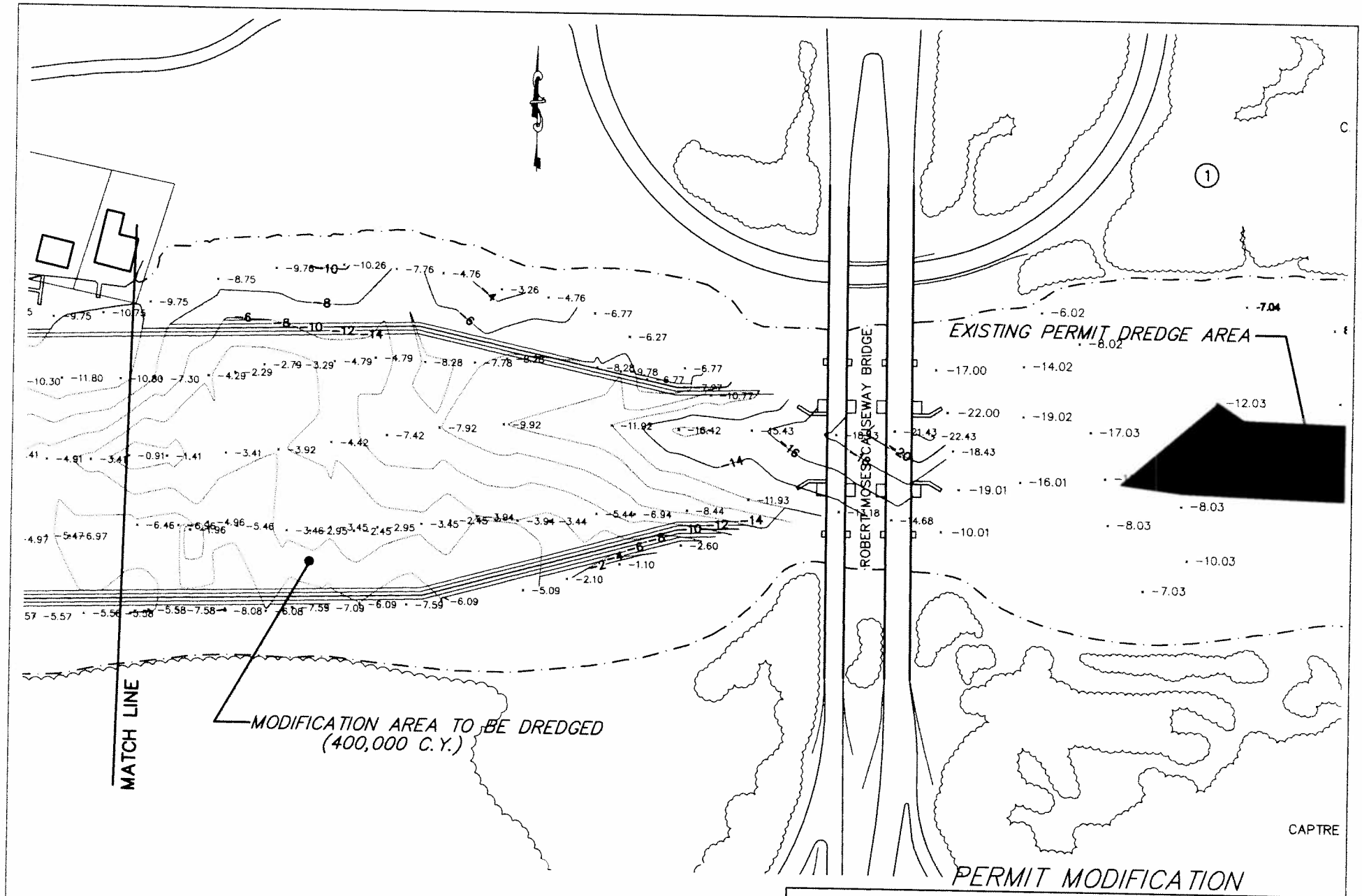
APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

DATE: MARCH 2010, REV. APRIL 4, 2011
MODIFICATION DATE: JULY 2, 2013

SHEET 1 OF 6



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

MAINTENANCE DREDGING AREA

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200

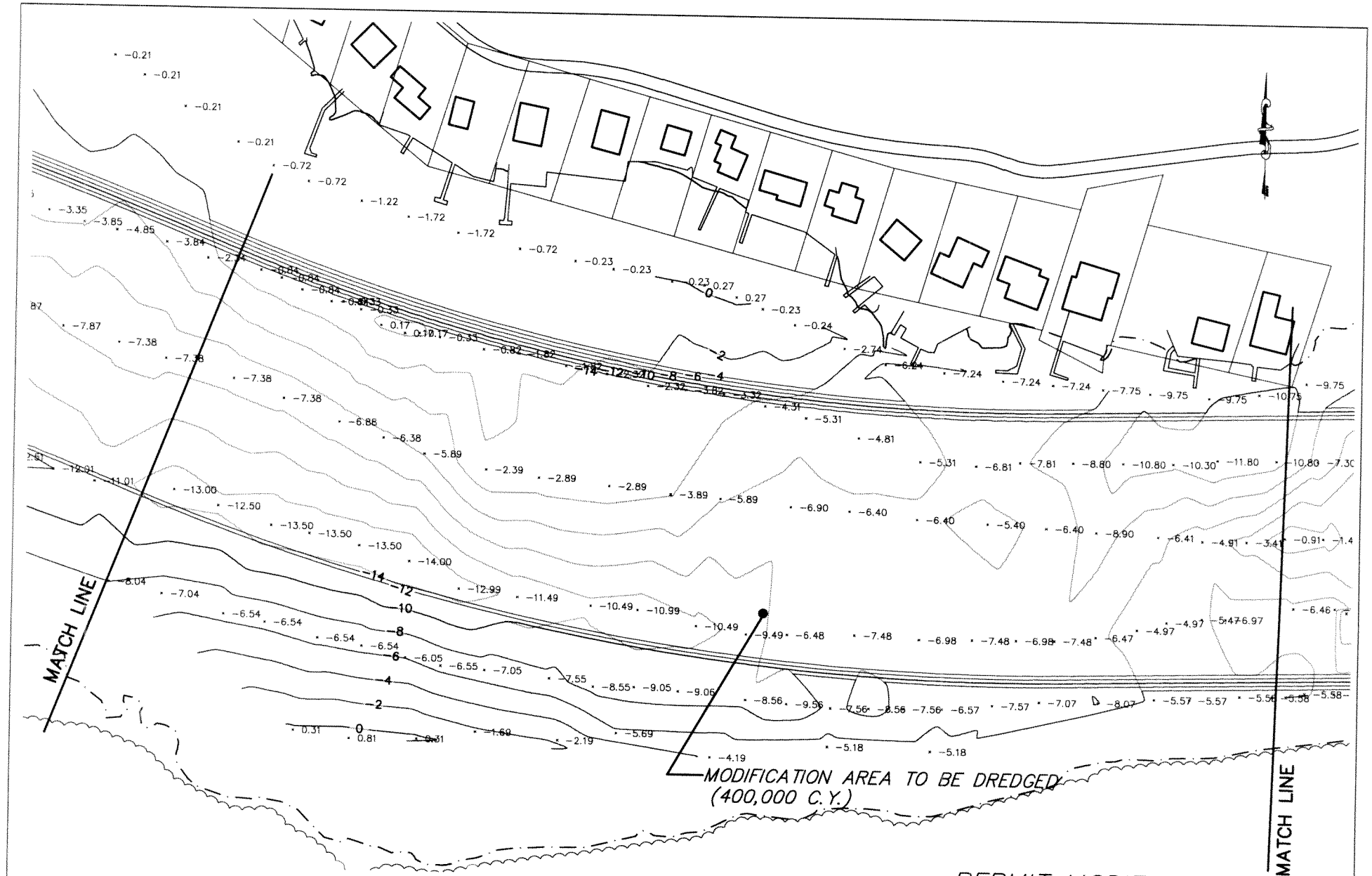
CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

DATE: MARCH 2010

MODIFICATION DATE: JULY 2, 2013

SHEET 2 OF 6



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

PERMIT MODIFICATION

MAINTENANCE DREDGING AREA

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

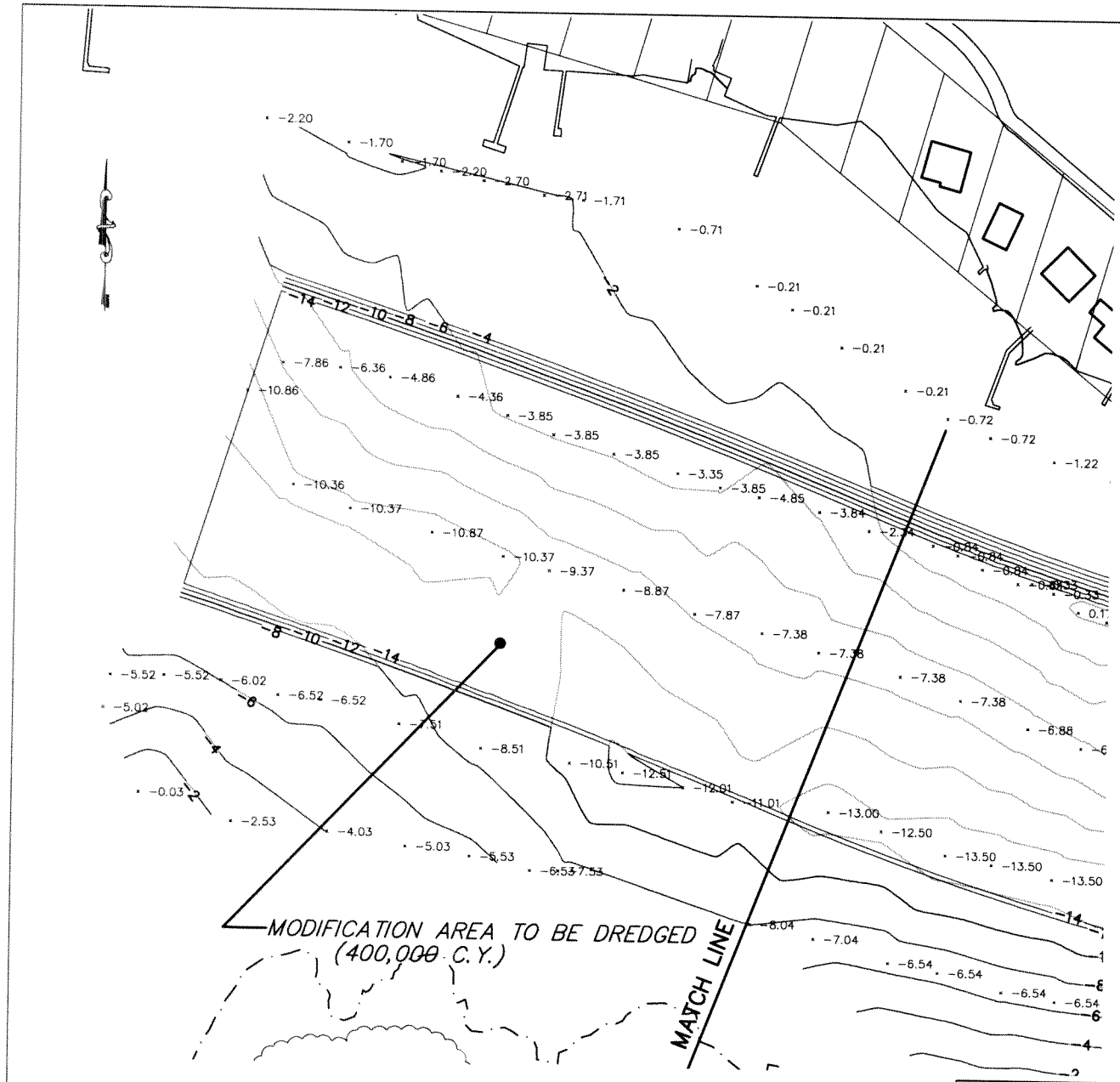
DATE: MARCH 2010

MODIFICATION DATE: JULY 2, 2013

SHEET 3 OF 6

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

PERMIT MODIFICATION

MAINTENANCE DREDGING AREA

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

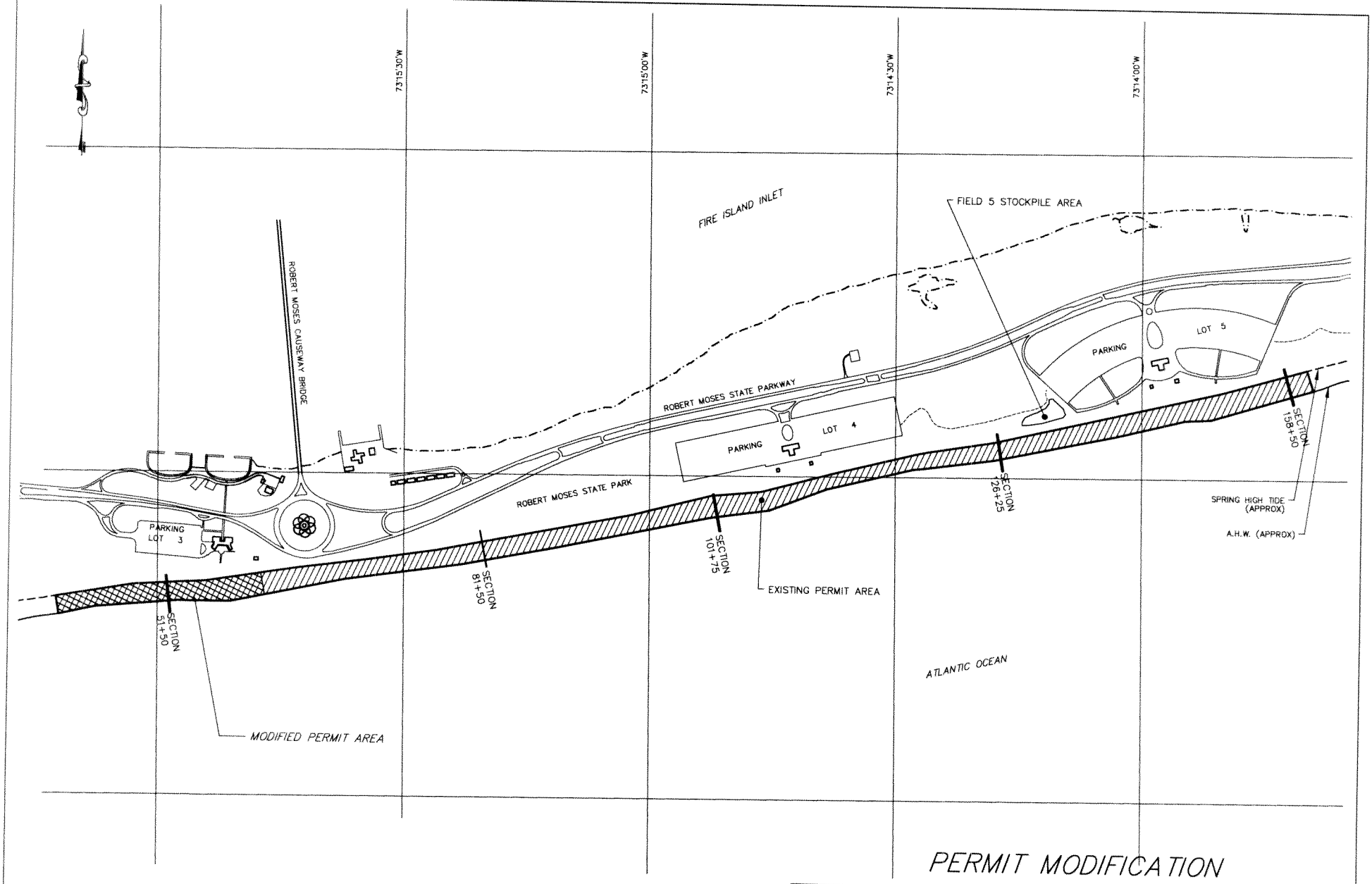
DATE: MARCH 2010

MODIFICATION DATE: JULY 2, 2013

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200

SHEET 4 OF 6



PERMIT MODIFICATION

BEACH RESTORATION AREA

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

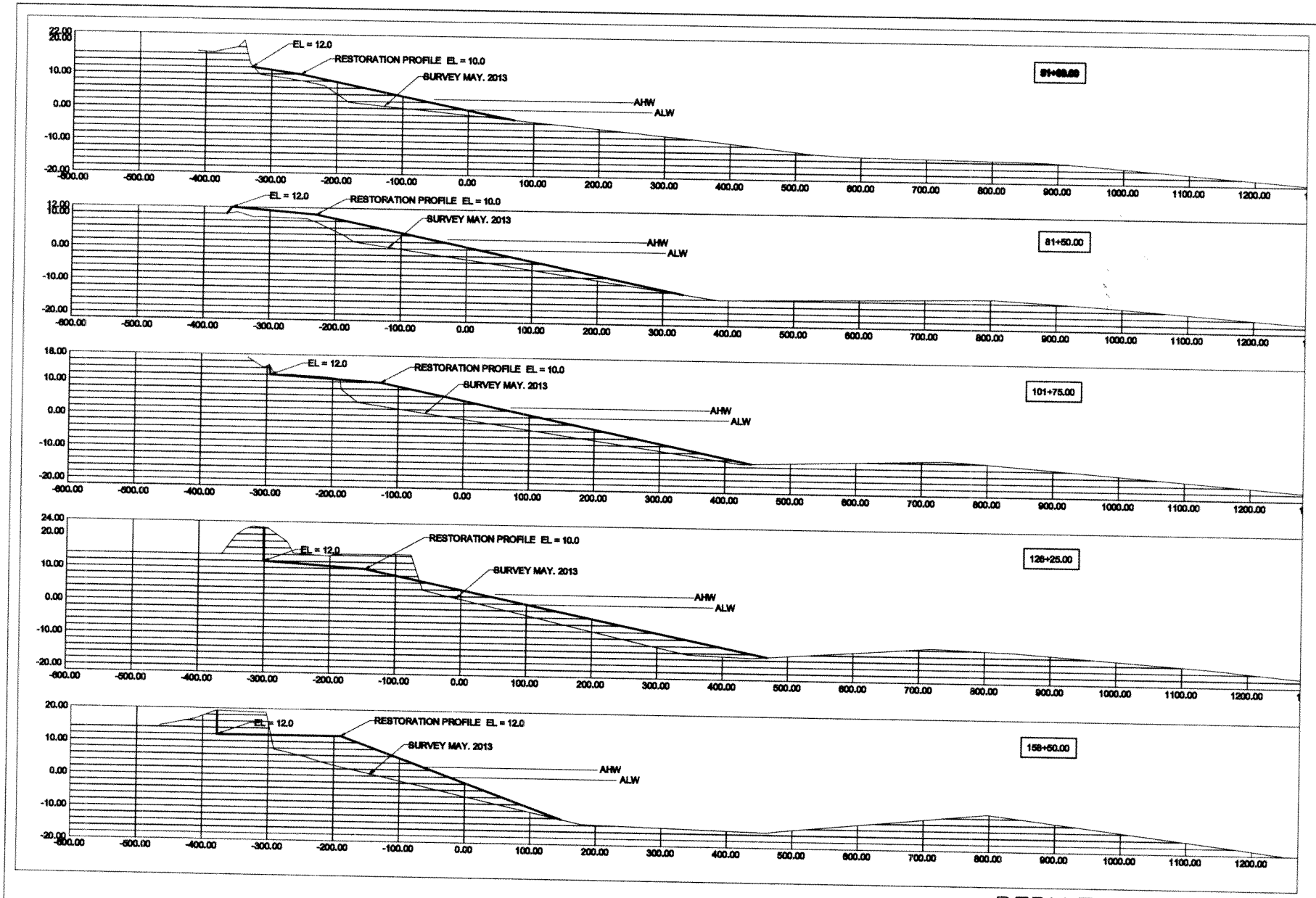
DATE: MARCH 2010

MODIFICATION DATE: JULY 2, 2013

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 600 1200

SHEET 5 OF 6



DATUM: 0.0 = 0.0 FT. MEAN LOW WATER (M.L.W.)

PERMIT MODIFICATION

CROSS SECTIONS

APPLICATION BY
NEW YORK STATE OFFICE OF PARKS
RECREATION AND HISTORIC PRESERVATION

0 100 200

CAPTREE CHANNEL

TOWN OF ISLIP, SUFFOLK COUNTY, NEW YORK

MODIFICATION DATE: JULY 2, 2013

SHEET 6 OF 6

Bay Environmental Consulting LLC
123 Bay Ave., Bayport, NY, 11705
(631) 235-9806

Memorandum

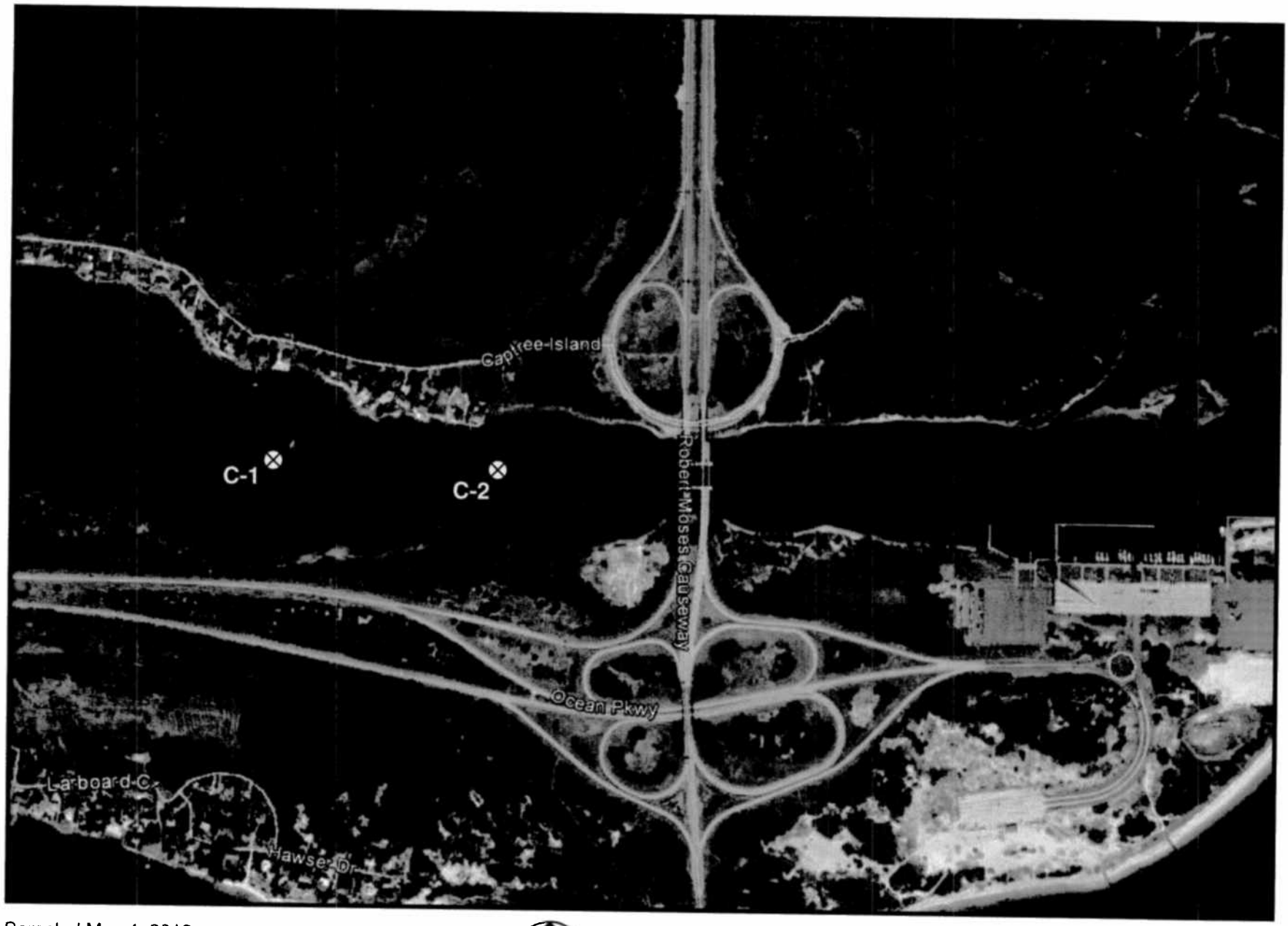
To: Keith W. Brewer
From: Bay Environmental Consulting LLC
Date: May 30, 2013
Subject: Grain Size Distribution Analysis
Reference: Captree Channel Dredging/Robert Moses Restoration Project

The following data depicts the results of the grain size distribution analysis performed by Bay Environmental Consulting LLC for the Captree Channel Dredging/Robert Moses Restoration Project beach placement and surplus stockpile area. Samples were collected by Cashin Associates on May 4, 2013.

Table 1. Grain Size Distribution Percentages of Sediment Samples (Captree Channel)

Sample #	Survey Station Lat/Lon	Grain Size Distribution (percent of total)		
		Gravel	Sand	Silt/Clay
C-1	40 38 35 N 73 16 03 W	0	96.4	3.6
C-2	40 38 35.5 N 73 16 17.5 W	0	95.8	4.2

Note: Sediment sampling locations for Captree Channel are shown on attached map.



Sampled May 4, 2013

north

Not to Scale

Sediment Sample Locations

Captree Channel

STATE OF NEW YORK
DEPARTMENT OF STATE
ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001

ANOREW M. CUOMO
GOVERNOR

CESAR A. PERALES
SECRETARY OF STATE

July 25, 2013

Gregory T. Greene
Cashin Associates, PC
Director of Environmental Programs
1200 Veterans Memorial Highway
Hauppauge, NY 11788

RE: F-2010-0387
U.S. Army Corps of Engineers/New York District Permit Application - NYS OPRHP (Captree Channel Dredging) - Dredging of the Captree State Park Navigation Channel with the removal and placement of 169,000 cy of sand. Material is to be placed at one or more of three locations including: along the beach at Robert Moses State Park, within a diked surplus area on the upland bay side of Robert Moses State Park, or an upland diked surplus area at Captree State Park. Great South Bay, Town of Islip, Suffolk County.
General Concurrence - Modification to Previously Reviewed Activity

Dear Gregory T. Greene:

The Department of State received your proposed modification of the above-referenced activity on July 5, 2013. The Department previously reviewed the original proposal and concurred with a consistency certification for it, or otherwise indicated it had no objection to authorization of the proposed activity.

The proposed modification the extension of the maintenance dredging area to include the channel to the west of the Robert Moses Bridge and an extension of the placement area to extend west to Parking Field 3 and traffic circle/tower area. Approximately 400,000cy of additional material will be removed from this extended area for beach placement, as per the modified plans dated July 2, 2013.

The Department of State has determined that this modification of the activity previously reviewed by this Department would not result in coastal zone effects that would be substantially different than those originally reviewed by the Department, and that the modified proposal meets the Department's general consistency concurrence criteria. Therefore, further Department of State review of this modification to the previously reviewed activity, and the Department's concurrence with an individual consistency certification for the proposed activity, are not required.

This General Concurrence is without prejudice to and does not obviate the need to obtain all other applicable licenses, permits, or other forms of authorization or approval that may be required pursuant to existing State statutes.

When communicating with us regarding this matter, please contact Jennifer Street at (518) 474-6000 (e-mail: Jennifer.Street@dos.ny.gov) and refer to our file #F-2010-0387.

Sincerely,

Jeffrey Zappieri
Supervisor, Consistency Review Unit
Division of Coastal Resources

JZ/jls
cc: COE/New York District – Mary Ann Miller (NAN-2010-00491-EMI)
DEC/Region 1 – Kevin A. Kispert (1-4728-00955/00009)

Appendix F

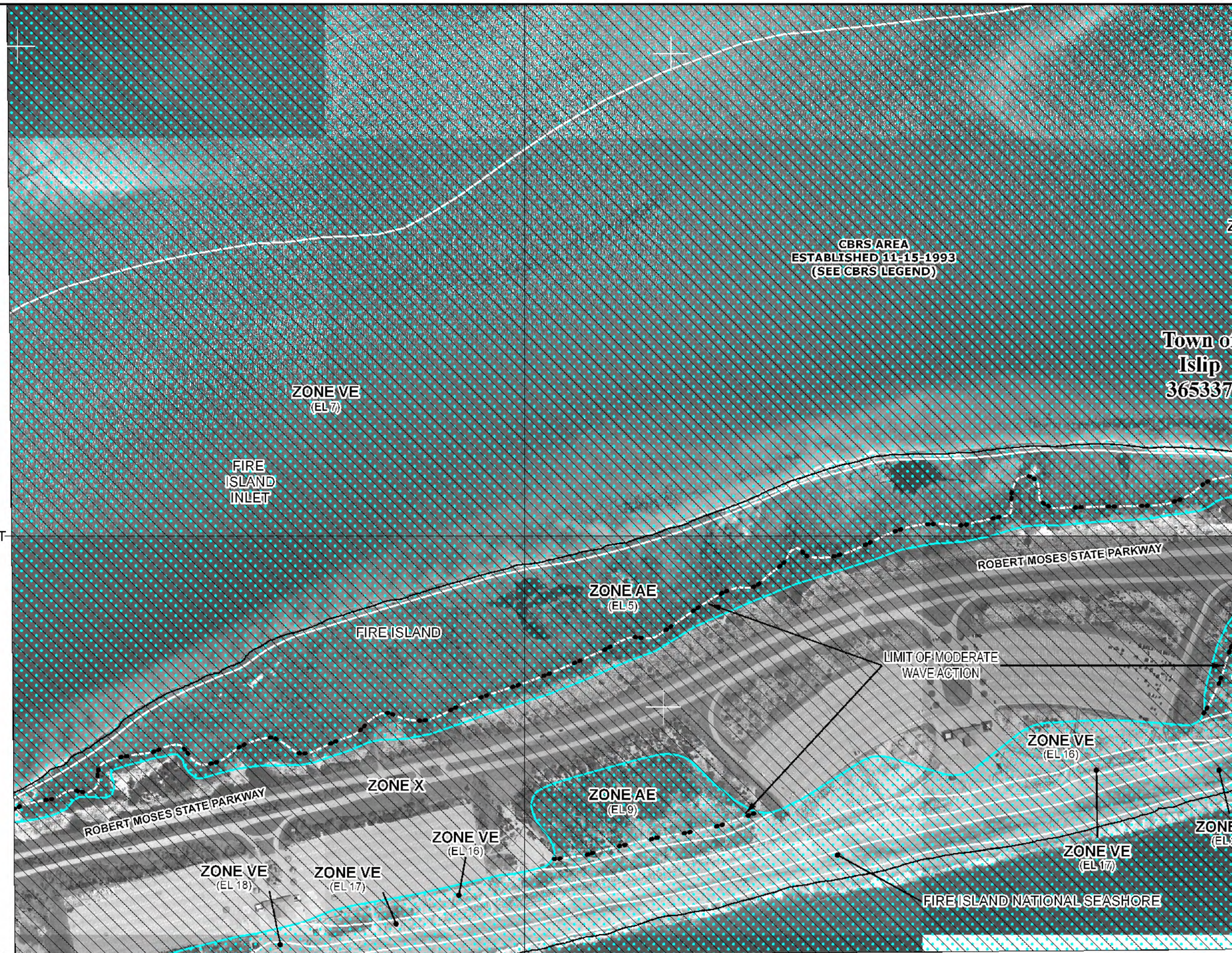
FEMA Flood Insurance Rate Maps and Floodplain Management Documentation

National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0888H

FIRM

FLOOD INSURANCE RATE MAP

for SUFFOLK COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
ISLIP, TOWN OF	365337

- NOTE -

THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

PANEL 888 OF 1026

MAP SUFFIX: H

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36103C0888H

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

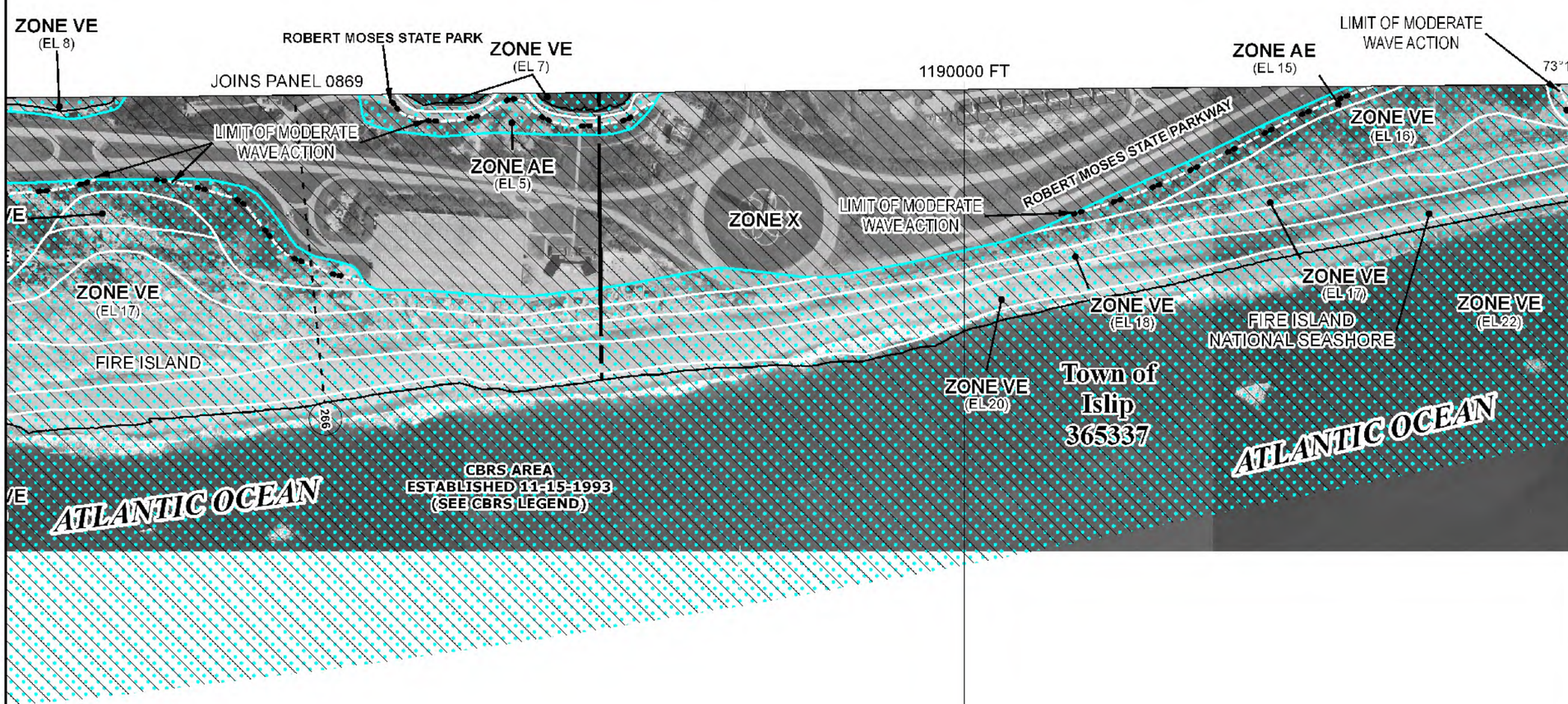
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1007H

FIRM

FLOOD INSURANCE RATE MAP

for SUFFOLK COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
BABYLON, TOWN OF	360790
ISLIP, TOWN OF	365337

NOTE
THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

PANEL 1007 OF 1026

MAP SUFFIX: H

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36103C1007H

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

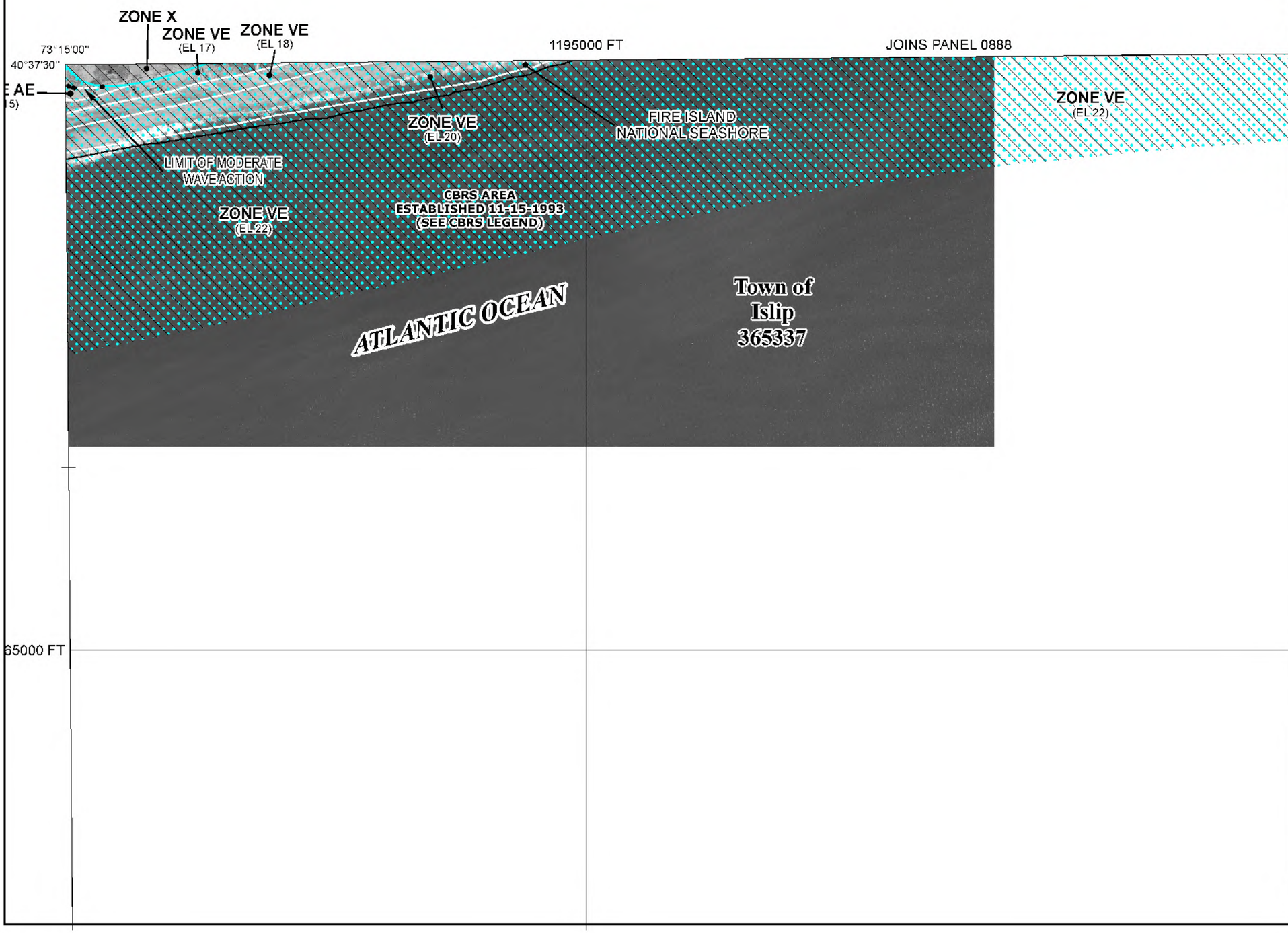
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1026H

FIRM

FLOOD INSURANCE RATE MAP

for SUFFOLK COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
ISLIP, TOWN OF	365337

- NOTE -
THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

PANEL 1026 OF 1026
MAP SUFFIX: H
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36103C1026H

MAP REVISED
SEPTEMBER 25, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Executive Order 11988 – Floodplain Management
Executive Order 11990 – Protection of Wetlands
Robert Moses State Park Boat Channel Dredging & Beach Stabilization Project

HUD regulations at 24 CFR Part 55, as amended on November 15, 2013, implement Executive Order 11988 for Floodplain Management and Executive Order 11990 for the Protection of Wetlands. Executive Order 11988 requires federal agencies (or a state agency implementing a federal funding program) to reduce the loss of life and property caused by floods; minimize impacts of floods on human safety, health and welfare; and preserve the natural and beneficial functions of floodplains. Under this Order, federal agencies should first look at avoiding all actions in or adversely affecting floodplains unless no practicable alternatives exist. If no practicable alternatives exist, then federal agencies must evaluate the potential effects of the proposed action, and strive to reduce or eliminate the long- and short-term adverse impacts associated with occupancy and modifications of the floodplain. Similarly, Executive Order 11990 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Under 24 CFR Part 55, non-critical actions[1] are allowed in the 100-year floodplain and within wetlands if the actions are reviewed in accordance with the 8-step process outlined in 24 CFR § 55.20. It should be noted that the project is exempt from the floodplain management and protection of wetlands review under 24 CFR 55.12(c)(3) which exempts the approval of financial assistance for certain projects designed to restore and preserve the natural and beneficial functions and values of floodplains and wetlands if (i) the property is cleared of all existing structures and related improvements; (ii) the property is dedicated for permanent use of flood control, wetland protection, park land, or open space; and (iii) a permanent covenant or comparable restriction is placed on the property's continued use to preserve the floodplain or wetland from future development. Here, the project site, located in the Captree Boat Channel and the beach at Robert Moses State Park, does not contain structures and involves land that is either a waterway for ship navigation or dedicated parkland. Moreover, development is not permitted at the project site due to the fact that the land is mapped as New York State parkland. Thus, the project is exempt from the 8-step process outlined in 24 CFR § 55.20. Nonetheless, an analysis has been completed below. Overall, the Robert Moses State Park Boat Channel Dredging and Beach Stabilization Project will not result in a short-term or long-term adverse impact on the 100-year floodplain or wetlands because the purpose of the project is to restore the beach on the barrier island to its pre-Sandy condition, thus minimizing the impacts of flooding from future storms and further loss of wetland.

Step One: Determine if the Proposed Action is in the 100-year Floodplain or Results in New Construction in a Wetland

The portion of the project where dredged material will be pumped onto the beach at Robert Moses State Park in the area adjacent to Parking Fields 3, 4, and 5 is within the 100-year floodplain. The project will thus affect approximately 40 acres in the 100-year floodplain.

---

[1] A critical action includes storage of volatile materials, irreplaceable record storage or construction of a hospital or nursing home.

The project is located within a wetland (i.e., NYSDEC regulated wetland 2020 LZ. Littoral Zone). An individual permit under Section 404 of the Clean Water Act was issued by USACE on December 13, 2013; a permit modification was issued by NYSDEC under Article 25 of the Environmental Conservation Law on November 8, 2013.

Step Two: Initiate Public Notice

HCR published an "Early Notice and Public Review of a Proposed Activity in a 100-Year Floodplain" for the Project in *Newsday* on Wednesday, December 18, 2013. The 15-day comment period ran through and included January 2, 2014. A copy of the newspaper notice is attached hereto at Exhibit A. The notice was also sent on December 18, 2013 to the public agencies, individuals and other potentially interested parties listed in Exhibit A. Responses to comments made on this early floodplain notice are attached hereto at Appendix B.

USACE also published notice on July 17, 2013 regarding the project. The notice was sent to adjacent property owners, interested members of the public, and federal, state and local agencies. No comments from the public were received.

Step Three: Identify and Evaluate Practicable Alternatives to Locating in the 100-Year Floodplain or Wetland

In order to restabilize the beach at Robert Moses State Park, there is no alternative to the proposed action. The proposed action will have a beneficial effect on the 100-year floodplain as it allows the barrier island to be restored to its pre-Sandy condition, thus protecting buildings and property located in the Towns of Islip and Babylon and other communities along the south shore of Long Island. The proposed action does not involve the construction of any buildings or increasing paved surfaces that could worsen flood conditions. Rather, the purpose of the proposed action is to protect and re-stablize the natural conditions of the barrier island, which will be maintained as a state park that is open to the public under the public trust doctrine, and by restricting development, protects the wetland. For the numerous commercial and recreational vessels using Captree Boat Channel, the channel would remain difficult to navigate and would continue to exist above its historic navigation depth if the project did not proceed. There is thus no alternative to dredging in the navigation channel to restore such channel to its natural depth.

USACE, in reviewing the proposed action, determined that the project would have no effect on wetland values and thus the work complies with Section 404(b)(1) guidelines. No alternative to the proposed action is available, nor is modifying or prohibiting the activity necessary. The NYSDEC tidal wetland permit prohibits disturbance to vegetated tidal wetlands or the placing of construction debris in the wetland or adjacent area.

Step Four: Identify the Impacts of the Proposed Action

All potential impacts of the project are described in this Environmental Assessment. The project will have a beneficial impact on the 100-year floodplain as it involves restabilizing the beach at Robert Moses State Park to its pre-Sandy condition. By ensuring that this barrier island is restored to its pre-Sandy condition, the barrier island will continue to provide flood protection

during hurricanes and other weather events for the residents and businesses located on the south shore of Long Island, including within the Towns of Islip and Babylon. Stabilizing the beach also maintains the tidal wetland and results in no impact to wetland values.

Step Five: Minimize Potential Adverse Impacts to the Floodplain and Wetland. Restore and Preserve Natural and Beneficial Floodplain and Wetland Functions and Values

By restabilizing the beach so that the barrier island is restored to its pre-Sandy condition, the project will protect life and property located on the south shore of Long Island. Continued loss of this barrier island from erosion and future storms, which would be the no-action alternative, could result in damage to homes and properties along the south shore if the natural barrier island were reduced in size. Thus, the project minimizes threats to life and property. The project preserves the natural and beneficial floodplain and wetland values.

Step Six: Re-evaluate Alternatives

As discussed above, there are no alternatives to the project. The no-action alternative would result in adverse impacts within the 100-year floodplain. If the barrier island were to shrink in size rather than be restored, the south shore of Long Island would no longer have the buffer area of protection that the barrier island provides. Moreover, the public use of the Park could be eliminated if further erosion were permitted to occur. Thus, there are no alternatives to restablizing the beach within the 100-year floodplain or within the wetland.

Step Seven: Issue Findings and Public Explanation

The project will result in benefits to the 100-year floodplain in that it will restore the beach at Robert Moses State Park to its pre-Sandy condition, maintaining the value of that floodplain and the existing wetlands, while also providing protection to property located along the south shore of Long Island that need the protection of the barrier island from future storm events.

Step Eight: Implement the Action

The project will be implemented if and only upon approval by all required agencies identified in this Environmental Assessment. A final floodplain/wetland notice will be published in mid-January 2014 in accordance with 24 CFR Part 55; such notice will be sent to the mailing list provided at Exhibit C.

Appendix A

NEWSDAY

AFFIDAVIT OF PUBLICATION

CARTER LEDYARD & MILBURN
2 WALL STREET
NEW YORK , NY 10005-2001

STATE OF NEW YORK)
SS.:
COUNTY OF SUFFOLK)

Legal Notice No. 17197251

R. Lopes

of Newsday LLC, Suffolk County, N.Y., being duly sworn, says that such person is, and at the time of publication of the annexed Notice was a duly authorized custodian of records of Newsday LLC, the publisher of NEWSDAY, a newspaper published in the County of Suffolk, County of Nassau, County of Queens, and elsewhere in the State of New York and other places, and that the Notice of which the annexed is a true copy, was published in the following editions/ counties of said newspaper on the following dates:

WEDNESDAY DECEMBER 18 2013 Suffolk

SWORN to before me this
18 Day of December, 2013.

Guy P. Wasser
Notary Public, State of New York
No. 01WA6045924
Commission Expires 10/20/2014
Qualified in Suffolk County

Legal Notice 17197251

EARLY NOTICE AND PUBLIC REVIEW OF A PROPOSED ACTIVITY IN A 100-YEAR FLOODPLAIN

December 18, 2013:

To: All Interested Agencies, Groups, & Individuals

This is to give notice that New York State Homes and Community Renewal (HCR), with the assistance of the Housing Trust Fund Corporation and the Office of Parks, Recreation and Historic Preservation, is undertaking the decision making process required by Executive Order 11988 in accordance with the U.S. Department of Housing and Urban Development (HUD) regulations at 24 CFR 55.20 (Subpart C - Procedures for Making Determinations on Floodplain Management) to determine the potential effect that the Robert Moses Boat Channel Dredging & Beach Stabilization Project (the "Project") would have on the 100-year floodplain located in the Town of Babylon, Suffolk County, New York. HCR is considering the submittal of a request to HUD for the release of Community Development Block Grant – Disaster Recovery program funds under Title I of the Housing and Community Development Act of 1974 for the Project.

The Project involves dredging in the Captree Boat Channel approximately 400,000 cubic yards of material and pumping the material onto the beach at Robert Moses State Park in the area adjacent to Parking Fields 3, 4 and 5. The Project also involves grading of the beach to required beach profiles. The Project is necessary to stabilize and restore the Robert Moses Beach to its pre-Hurricane Sandy condition and to prevent continued beach erosion that can negatively impact the natural environment of Robert Moses State Park. Because the purpose of the Project is to stabilize and restore the Robert Moses Beach to its pre-Sandy condition, there is no practicable alternative to conducting this activity in a 100-year floodplain. The no action alternative is expected to result in the destruction of natural habitat and park infrastructure and to severely impact public enjoyment of the Robert Moses State Park, which hosts approximately 3.5 million visitors each year. Under the no action alternative the beach would no longer function as part of the coastal barrier system that helps minimize the impacts of storm events on the park and shore communities. The Project will affect approximately 40 acres in the 100-year floodplain.

There are three primary purposes for this notice. First, people who may be affected by activities in floodplains and those who have an interest in the protection of the natural environment have an opportunity to express their concerns and provide information about these areas. Second, adequate public notice is an important public education tool. The dissemination of information about floodplains facilitates and enhances federal efforts to reduce the risks associated with the occupancy and modification of these special areas. Third, as a matter of fairness, when the federal government determines it will participate in actions taking place in floodplains, it must inform those who may be put at greater or continued risk.

Written comments should be submitted via email and further information can be requested at NYSCDBG_DR_ER@nyshcr.org. Written comments may also be received by HCR at the following address: Attention: Heather Spitzberg, Certifying Officer, NYS Homes and Community Renewal, 38-40 State Street, Hampton Plaza, Albany, NY 12207. Comments may be received by telephone at (518) 486-3379. All comments must be received on or before 5pm on January 2, 2014 or they will not be considered. Information regarding the Project will be available during normal business hours at the Housing Trust Fund Office at 25 Beaver Street, Fifth Floor, New York, NY 10004, attention Jay C. Juergensen (212-480-2370).

Heather Spitzberg, Certifying Officer
New York State Homes & Community Renewal

NEWSDAY PROOF

Customer: CARTER LEDYARD & MILBURN Contact: VICTOR GALLO Phone: 2127323200

Ad Number: 17197251 Start Date:12/18/2013 End Date: 12/18/2013 Times: 1

Price: $628.00 Size: 2 x 80 Section: CL Class: 11100

Printed By: L003 Date: 12/16/2013

Signature of Approval: _____ Date: _____

Zones:

Hon. Peter King
Member of Congress
United States House of Representatives
003 Park Boulevard
Massapequa Park, NY 11762

Hon. Chuck Schumer
United States Senator
United States Senate
145 Pine Lawn Road, #300
Melville, NY 11747

Hon. Kristin Gillibrand
United States Senator
United States Senate
55 Pinelawn Road, Suite 250 North
Melville, NY 11747

Hon. Philip Boyle
State Senator
New York State Senate
69 W Main Street Suite B
Bay Shore, NY 11706

Hon. Dean Skelos
Temporary President and Majority Coalition Leader
New York State Senate
5 Front Street
Rockville Centre, NY 11570

Hon. Joseph S. Saladino
Assembly Member
New York State Assembly
512 Park Blvd.
Massapequa Park, NY 11762

Hon. Andrew R. Garbarino
Assembly Member
New York State Assembly
59 Montauk Hwy
Bayport, NY 11705

Hon. Sheldon Silver
Speaker
New York State Assembly
250 Broadway, Suite 2307
New York, NY 10007

Hon. Steven Bellone
County Executive
Office of the Suffolk County Executive
00 Veterans Memorial Highway, P.O. Box 6100
Hauppauge, NY 11788-0099

Ms. Judith A. Pascale
County Clerk
Office of the Suffolk County Clerk
310 Center Drive
Riverhead, NY 11901

on. Tom Cilmi
egislator
uffolk County Legislature
5 East Main Street, Suite 5
ast Islip, NY 11730

Hon. Thomas F. Barraga
Legislator
Suffolk County Legislature
187 Sunrise Highway, Suite C
West Islip, NY 11795

on. Wayne R. Horsley
egislator and Presiding Officer
uffolk County Legislature
23 North Wellwood Avenue
indenhurst, NY 11757

Hon. Rich Schaffer
Town Supervisor
Town of Babylon
Babylon Town Hall
200 East Sunrise Highway
Lindenhurst, NY 11757

Ion. Tom Croci
'own Supervisor
'own of Islip
'own Hall
55 Main Street
slip, NY 11751

Hon. Ralph A. Scordino
Mayor
Village of Babylon
153 West Main Street
Babylon, NY 11702

Village of Ocean Beach
P.O. Box 457
Bay & Cottage Walks
Ocean Beach, NY 11770

Village of Saltaire
P.O. Box 5551
Bay Shore, NY 11706

Village of Lindenhurst
430 South Wellwood Avenue
Lindenhurst, NY 11757

Ms. Gail Adams
Director
U.S. Department of the Interior
Office of Intergovernmental and External Affairs
1849 C Street NW
Room 6213
Washington, DC 20240

irs. Judith A. Enck
egional Administrator
.S. Environmental Protection Agency, Region II
)0 Broadway
ew York, NY 10008

Ms. Bonnie Bellow
Public Affairs Director
Environmental Protection Agency
U.S. Region 2 (NJ, NY, PR, VI)
290 Broadway
New York, NY 10007-1866

.S. Environmental Protection Agency, Region II
ffice of Strategic Planning
90 Broadway, 25th Floor
lew York, NY 10007-1866

Ms. Maryanne Tierney
Acting Regional Administrator
U.S. Department of Homeland Security
Federal Emergency Management Agency (FEMA)
26 Federal Plaza
New York, NY 10278-0002

Ir. Steve Papa
ish and Wildlife Biologist
JS Fish and Wildlife Service
ong Island Field Office
40 Smith Road
hirley, NY 11967

US Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

Is. Kathryn Sullivan
Acting Administrator
Iational Oceanic and Atmospheric Administration
305 E. West Hwy #13632
Silver Spring, MD 20910

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. Jon Jarvis
Director
National Park Service
1849 C Street NW
Washington, DC 20240

Colonel Paul Owen
Commander
US Army Corps of Engineers
New York District Office
Regulatory Branch, Room 1937
26 Federal Plaza
New York, NY 10278-0090

Is. Tennille Smith Parker
.cting Director/Assistant Director
.S. Dept. of Housing and Urban Development
ffice of Block Grant Assistance and Disaster
Recovery
51 7th Street SW
Vashington, DC 20410

Mr. Vincent Hom
Director
U.S. Dept. of Housing and Urban Development,
Region II
Office of Community Planning and Development
26 Federal Plaza, Room 3513
New York, NY 10278-0068

Is. Mirza Orriols
eputy Regional Administrator
J.S. Department of Housing and Urban Development
lew York Regional Office
6 Federal Plaza
oom 3541
lew York, NY 10278-0068

Rear Admiral Daniel B. Abel
District Commander
U.S. Coast Guard First District
408 Atlantic Avenue
Boston, MA 02110

aptain Michael Carosotto
ommanding Officer
J.S. Coast Guard, Civil Engineering Unit Providence
00 Metro Center Blvd.
Varwick RI 02886

Hon. Joan McDonald
Commissioner
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

Mr. Frank Pearson
Acting Regional Director
New York State Department of Transportation,
Region 10
State Office Building
250 Veterans Memorial Highway
Hauppauge, NY 11788

Hon. Jerome Hauer
Commissioner
New York State Office of Emergency Management
1220 Washington Avenue
Suite 101, Building 22
Albany, NY 12226-2251

Hon. Rose Harvey
Commissioner
NYS Office of Parks, Recreation and Historic
Preservation
525 Broadway
Albany, NY 12207

Hon. Joe Martens
Commissioner
New York State Department of Environmental
Conservation
625 Broadway
Albany, NY 12233-0001

/Ir. James Tierney
ssistant Commissioner of Water Resources
Iew York State Department of Environmental
Conservation
25 Broadway
lbany, NY 12233-0001

Mr. Roger Evans
Regional Permit Administrator
Division of Environmental Permits
NYS Department of Environmental Conservation,
Region 1
SUNY @ Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409

Ion. Cesar A. Perales
ecretary of State
Iew York State Department of State
One Commerce Plaza
9 Washington Avenue
lbany, NY 12231-0001

Div. of Communities and Waterfronts
New York State Department of State
One Commerce Plaza
99 Washington Avenue
Albany, NY 12231-0001

/Ir. Paul TeNyenhuis
District Manager
uffolk County Soil and Water
Conservation District
23 Griffing Avenue
Riverhead, NY 11901

Mr. Daniel Collins, Sr.
Chairman of the Board of Trustees
Shinnecock Indian Nation
P.O. Box 5006
Southhampton, NY

/Ir. John M. Fowler
Executive Director
dvisory Council on Historic Preservation
100 Pennsylvania Ave., N.W., Suite 803
Vashington, DC 20004

Appendix B

Town of Islip filed the following comments, which are responded to below.

December 31, 2013 comments:

1. The ACOE permit has not yet been signed. Therefore, it is not yet an effective permit. Has it been signed?

   Response: The ACOE permit has been signed.

2. The typical cross section on the proposed channel indicates that the sides of the channel will be created with a 1 on 3 slope. This is unlikely. Typically a dredged channel has a side slope of no better than 1 on 6. If they review the post dredging survey of the east channel project; they will get a better idea of the actual angle of repose for the side slopes. The additional information document indicates that there will be no impact to the adjacent tidal wetlands by undermining. There should be some relevant examination of the final width of the channel side slopes.

   Response: Generally, side slope grades are based on the geophysical properties of the material on the channel banks (Standards and Specifications for Performing High Accuracy Hydrographic Surveys for Dredging Measurement, Payment and Contract Acceptance, U.S. Army Corps of Engineers). Side slope grades typically vary between from 1 on 1 (45 degree) and 1 one 5 (11 degree) dependent on the geophysical properties of the material, with loosely consolidated material (silt/clay) requiring a more gradual slope than sand or gravel. The side slope for this project is shown with a 1 on 3 slope whose sediment consists of more than 90% sand. The channel is located so that the distance between the upper edge of the dredge channel and the shoreline is typically between 100 to 400 feet along both sides of the channel. In limited areas near the bridge the distance from the upper edge of the channel to the shoreline is approximately 85', but only limited dredging is proposed here because the water depths are already 12 feet or greater. With this amount of buffer areas between the dredge limits and the shoreline, an angle of repose of 1 on 6, if it were to occur, would not reach the shoreline. The areas of tidal wetlands have the greatest buffer distance from the dredging limits, well over 100 feet. Overall, the limits of dredging were limited to prevent possible impacts to adjacent shorelines.

3. The permit indicates that there should be no dredging after December to avoid impacts to the native organisms. The special conditions that would allow dredging in February require an environmental monitor and turbidity data. The Town of Islip would like to know if the data could be evaluated to avoid any impacts to the aquaculture sites within the Town of Islip. The oyster farms should be protected from any adverse impacts from this project. It is also noted that the winter flounder study will be funded as a condition of this permit. The Town of Islip would like to receive the results of this study.

   Response: Turbidity monitoring will be performed to check for any unexpected excessive turbidity conditions. Monitoring will be performed under both incoming and outgoing tidal conditions. It should be noted that the oyster aquaculture area adjacent to Captree Island is approximately 4,200 feet from the eastern limit of dredging, and that the Sextant Island aquaculture area is approximately 8,800 feet away (almost two miles by waterway route).

Appropriate mitigation will be taken if significant adverse turbidity conditions are detected.

It should be noted that the Captree Channel east of the boat basin was dredged in winter/spring 2013 including a portion of the channel directly adjacent to the Captree Island aquaculture site, without any adverse impacts reported. The dredging actually provided a benefit to the aquaculture operation by moving boat traffic away from the site, with the channel being significantly widened to the south. Before the dredging the channel was restricted in the area to such an extent that boat traffic had to pass immediately adjacent to the aquaculture dock.

The results of the turbidity monitoring, as well as the winter flounder study work, will be public information and will be available when completed.

4. The anticipated start date of the project is February 1st. The Town of Islip would like to receive notice of the actual start date as soon as the contractor has notified the NYSOP that they will mobilize.

   Response: The Town of Islip will be notified of the start date for the dredging project.

5. The Town of Islip would like to receive any results of the project monitoring on the beach. If piping plovers are present or absent it would be useful to know.

   Response: Piping plover monitoring will be recorded with daily monitoring reports. The reports will be made available to the Town of Islip.

6. Will the beach renourishment area be planted to stabilize the sand? Will there be a need to use other techniques to protect the road and water tower section? This area is constantly threatened. Will this technique be sufficient to avoid future expense? Will there be any future consideration to using structural methods to stabilize this area. (Geotubes, trap bags, filter cloth and stone revetment, seawall, etc.?)

   Response: Reconstruction is not included as part of this beach restoration project. This project is designed to stabilize the dry and wet beach areas, and dune/berm restoration is not included. Dune construction including revegetation was performed seaward of the traffic circle and water tower as part of the immediate post-storm restoration by NYSDOT following Hurricane Sandy. This project will focus on restoring the height and width of the beach.

7. The Town of Islip would like to receive a copy of the post dredging survey for both the east and west sections of the project.

   Response: Post dredging surveys will be performed and the results will be available.

Questions from Islip Letter Dated December 30, 2013

1. What are the limits of dredging?

   Response: The limits of dredging are shown on the project plans submitted to the Town.

2. What is the quality of the dredged material? Has there been testing for grain size and contaminants?

   Response: As part of the permitting process, OPRHP submitted a NYSDEC Sediment Sampling Plan to NYSDEC Region 1 Permitting Office for technical review and approval under the Marine Habitat Protection (MHP) regulatory program. As part of the approval process it was recommended by the NYSDEC that sediment cores be collected at six locations within the project area and analyzed in accordance with the NYSDEC Sediment Sampling Plan protocol. The grain size distribution and total organic content results (sandy sediments with low organic content) indicated that no further priority pollutant analysis was required.

3. Will the channel cross section indicate any slumping of the bottom sediments adjacent to the Town of Islip wetlands?

   Response: The channel has been designed so that slumping of bottom sediments adjacent to wetlands will not occur. Sufficient buffer areas between the existing shoreline and the limits of dredging have been included in the channel design (see answers to question 2, December 31, 2013 letter above).

   This dredging project will occur west of the Captree drawbridge, not adjacent to any Town of Islip wetlands.

4. The Town of Islip owns bay bottom adjacent to Captree Island that is leased for aquaculture. Will the proposed dredging have any adverse impact on the oyster farms? The Town also leases an aquaculture area northwest of Sexton Island. Will the project have any adverse impact on this area?

   Response: No adverse impacts to the aquaculture areas are expected, as explained further in the answer to Question 3, Town or Islip, December 31, 2013 letter.

5. The Town of Islip would like a copy of the proposed dredging project plans.

   Response: Proposed dredging plans have already been forwarded to the Town.

The U.S. Coast Guard also sought additional information regarding the Project after receiving the early-floodplain notice, and indicated that the Project was not expected to effect U.S. Coast Guard operations.

Appendix C

Hon. Peter King
Member of Congress
United States House of Representatives
003 Park Boulevard
Massapequa Park, NY 11762

Hon. Chuck Schumer
United States Senator
United States Senate
145 Pine Lawn Road, #300
Melville, NY 11747

Hon. Kristin Gillibrand
United States Senator
United States Senate
55 Pinelawn Road, Suite 250 North
Melville, NY 11747

Hon. Philip Boyle
State Senator
New York State Senate
69 W Main Street Suite B
Bay Shore, NY 11706

Hon. Dean Skelos
Temporary President and Majority Coalition Leader
New York State Senate
55 Front Street
Rockville Centre, NY 11570

Hon. Joseph S. Saladino
Assembly Member
New York State Assembly
512 Park Blvd.
Massapequa Park, NY 11762

Hon. Andrew R. Garbarino
Assembly Member
New York State Assembly
859 Montauk Hwy
Bayport, NY 11705

Hon. Sheldon Silver
Speaker
New York State Assembly
250 Broadway, Suite 2307
New York, NY 10007

Hon. Steven Bellone
County Executive
Office of the Suffolk County Executive
100 Veterans Memorial Highway, P.O. Box 6100
Hauppauge, NY 11788-0099

Ms. Judith A. Pascale
County Clerk
Office of the Suffolk County Clerk
310 Center Drive
Riverhead, NY 11901

Hon. Tom Cilmi
Legislator
Suffolk County Legislature
96 East Main Street, Suite 5
East Islip, NY 11730

Hon. Thomas F. Barraga
Legislator
Suffolk County Legislature
187 Sunrise Highway, Suite C
West Islip, NY 11795

Hon. Wayne R. Horsley
Legislator and Presiding Officer
Suffolk County Legislature
123 North Wellwood Avenue
Lindenhurst, NY 11757

Hon. Rich Schaffer
Town Supervisor
Town of Babylon
Babylon Town Hall
200 East Sunrise Highway
Lindenhurst, NY 11757

Hon. Tom Croci
Town Supervisor
Town of Islip
Town Hall
655 Main Street
Islip, NY 11751

Hon. Ralph A. Scordino
Mayor
Village of Babylon
153 West Main Street
Babylon, NY 11702

Village of Ocean Beach
P.O. Box 457
Bay & Cottage Walks
Ocean Beach, NY 11770

Village of Saltaire
P.O. Box 5551
Bay Shore, NY 11706

Village of Lindenhurst
430 South Wellwood Avenue
Lindenhurst, NY 11757

Ms. Gail Adams
Director
U.S. Department of the Interior
Office of Intergovernmental and External Affairs
1849 C Street NW
Room 6213
Washington, DC 20240

Mrs. Judith A. Enck
Regional Administrator
U.S. Environmental Protection Agency, Region II
290 Broadway
New York, NY 10008

Ms. Bonnie Bellow
Public Affairs Director
Environmental Protection Agency
U.S. Region 2 (NJ, NY, PR, VI)
290 Broadway
New York, NY 10007-1866

U.S. Environmental Protection Agency, Region II
Office of Strategic Planning
290 Broadway, 25th Floor
New York, NY 10007-1866

Ms. Maryanne Tierney
Acting Regional Administrator
U.S. Department of Homeland Security
Federal Emergency Management Agency (FEMA)
26 Federal Plaza
New York, NY 10278-0002

Mr. Steve Papa
Fish and Wildlife Biologist
US Fish and Wildlife Service
Long Island Field Office
340 Smith Road
Shirley, NY 11967

US Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

Ms. Kathryn Sullivan
Acting Administrator
National Oceanic and Atmospheric Administration
1305 E. West Hwy #13632
Silver Spring, MD 20910

Mr. John Bullard
Regional Administrator
NOAA Fisheries Service
Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930-2276

Mr. Jon Jarvis
Director
National Park Service
1849 C Street NW
Washington, DC 20240

Colonel Paul Owen
Commander
US Army Corps of Engineers
New York District Office
Regulatory Branch, Room 1937
26 Federal Plaza
New York, NY 10278-0090

/ls. Tennille Smith Parker
\cting Director/Assistant Director
J.S. Dept. of Housing and Urban Development
)ffice of Block Grant Assistance and Disaster Recovery
·51 7th Street SW
Vashington, DC 20410

Mr. Vincent Hom
Director
U.S. Dept. of Housing and Urban Development, Region II
Office of Community Planning and Development
26 Federal Plaza, Room 3513
New York, NY 10278-0068

/ls. Mirza Orriols
)eputy Regional Administrator
J.S. Department of Housing and Urban Development
Jew York Regional Office
:6 Federal Plaza
Room 3541
Jew York, NY 10278-0068

Rear Admiral Daniel B. Abel
District Commander
U.S. Coast Guard First District
408 Atlantic Avenue
Boston, MA 02110

Captain Michael Carosotto
Commanding Officer
J.S. Coast Guard, Civil Engineering Unit Providence
300 Metro Center Blvd.
Warwick RI 02886

Hon. Joan McDonald
Commissioner
New York State Department of Transportation
50 Wolf Road
Albany, NY 12232

Mr. Frank Pearson
Acting Regional Director
New York State Department of Transportation, Region 10
State Office Building
250 Veterans Memorial Highway
Hauppauge, NY 11788

Hon. Jerome Hauer
Commissioner
New York State Office of Emergency Management
1220 Washington Avenue
Suite 101, Building 22
Albany, NY 12226-2251

Hon. Rose Harvey
Commissioner
NYS Office of Parks, Recreation and Historic Preservation
525 Broadway
Albany, NY 12207

Hon. Joe Martens
Commissioner
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-0001

/Ir. James Tierney
\ssistant Commissioner of Water Resources
Jew York State Department of Environmental
Conservation
;25 Broadway
\lbany, NY 12233-0001

Mr. Roger Evans
Regional Permit Administrator
Division of Environmental Permits
NYS Department of Environmental Conservation,
Region 1
SUNY @ Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409

Hon. Cesar A. Perales
Secretary of State
Jew York State Department of State
One Commerce Plaza
'9 Washington Avenue
\lbany, NY 12231-0001

Div. of Communities and Waterfronts
New York State Department of State
One Commerce Plaza
99 Washington Avenue
Albany, NY 12231-0001

/Ir. Paul TeNyenhuis
District Manager
Suffolk County Soil and Water
Conservation District
23 Griffing Avenue
Riverhead, NY 11901

Mr. Daniel Collins, Sr.
Chairman of the Board of Trustees
Shinnecock Indian Nation
P.O. Box 5006
Southhampton, NY

/Ir. John M. Fowler
Executive Director
\dvisory Council on Historic Preservation
100 Pennsylvania Ave., N.W., Suite 803
Vashington, DC 20004

Thomas J. Marquardt, A.I.C.P.
Principal Planner
Town of Islip Department of Planning and
Development - West
Town Hall West - 401 Main Street - Room 228
Islip, New York 11751

George W. Hammarth
Jew York State Department of Environmental
Conservation Region 1
Division of Environmental Permits
SUNY at Stony Brook
0 Circle Rd
Stony Brook, N.Y. 11790-3409

Newsday
235 Pinelawn Road
Melville, NY 11747

Appendix G

Sole Source Aquifer Review Screening

Daisy

MEMORANDUM OF UNDERSTANDING

BETWEEN

THE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGION II, NEW YORK, NEW YORK

AND

THE ENVIRONMENTAL PROTECTION AGENCY
REGION II, NEW YORK, NEW YORK

PURPOSE and GOAL

This Memorandum of Understanding (MOU) is established to assist the Environmental Protection Agency (EPA), Region II, and the Department of Housing and Urban Development (HUD), Region II, in meeting the Sole Source Aquifer (SSA) project review requirements of Section 1424(e) of the 1974 Safe Drinking Water Act (SDWA) PL 93-523.

The MOU establishes a formal agreement of each agency's responsibilities and the procedures to be followed in evaluating the potential groundwater impact of projects/activities submitted for HUD Federal financial assistance which are located within the project review area of a designated SSA in Region II.

Under Section 1424(e), an aquifer may be designated by EPA as a SSA if it is determined that the aquifer is the sole or principal source of drinking water for an area and, if contaminated, would create a significant hazard to public health. Following designation, no commitment of Federal financial assistance may be entered into for any project/activity within the SSA project review area which the EPA Administrator determines may contaminate the aquifer so as to create a significant hazard to public health.

The overall goal is to ensure that each project/activity receiving Federal financial assistance in a SSA project review area is designed and constructed in a manner that will prevent the introduction of contaminants into the SSA in quantities that may create a significant hazard to public health.

GEOGRAPHIC AREAS AFFECTED

This MOU applies to HUD federal financially assisted projects/activities in the project review area of all current and future designated SSAs in Region II.

Attachment 1, Designated SSAs in Region II, lists the designated SSA areas within the states of New York and New Jersey in EPA, Region II; the date of designation; and the Federal Register Notice citation. Attachment 1 also provides a map of the SSA project review area boundary for each of the designated aquifers. When any other SSAs are designated in Region II, EPA will notify HUD in writing.

DEFINITIONS

Significant Hazard to Public Health:

A level of contaminant which causes or may cause the aquifer to:

(a) Exceed any (1) maximum contaminant level set forth in any promulgated National Primary Drinking Water Standard; (2) state standard where more stringent than the Federal standard; (3) public health advisory level for currently unregulated contaminants; at any point where the water may be used for drinking purposes, or

(b) May otherwise adversely affect the health of persons, or

(c) May require a public water system to install additional treatment to prevent such adverse effect.

Federal Financial Assistance:

Financial benefits provided directly as aid to a project by a department, agency, or instrumentality of the federal government in any form including contracts, grants and loan guarantees. Actions or projects carried out by the federal government itself do not involve federal financial assistance.

Actions performed for the federal government by contractors should be distinguished from contracts entered into specifically for the purpose of providing financial assistance, and will not be considered programs or actions receiving Federal financial assistance.

Federal financial assistance is limited to benefits earmarked for a specific project or action and directly awarded to the project or action. Indirect assistance, e.g., in the form of a loan to a developer by a lending institution which in turn receives federal assistance not specifically related to the project in question is not federal financial assistance under Section 1424(e).

SSA Project Review Area:

The area within which federal financially assisted projects/activities will be reviewed, which includes the designated area and may include all or a portion of the streamflow source area(s). The designated area can include the area above the aquifer, the area which recharges the aquifer (possibly including all or a portion of the streamflow source area) and the area where the population served by the aquifer resides. Streamflow source zone is defined as the upstream headwaters area of losing streams (streams contributing to recharge to Ground Water) that drain into the recharge area. The extent of the SSA project review area is outlined in the Federal Register designation notice for that SSA. Attachment 1 lists the Federal Register Notice citation and provides a map of the SSA project review area.

MOU ATTACHMENTS

Attachment 1:	Designated SSAs in Region II
Attachment 2:	A. Non-Housing Initial Screen Criteria B. Housing Initial Screen Criteria
Attachment 3:	SSA Preliminary Review Information Requirements
Attachment 4:	Hazardous Constituents

ENVIRONMENTAL REVIEW RESPONSIBILITY

Pursuant to Section 1424(e) of the SDWA, EPA is responsible for designating SSAs and reviewing federal financially assisted projects/activities within SSA project review areas.

Pursuant to the National Environmental Policy Act (NEPA) and other provisions of law, HUD is responsible for environmental review and decision making except in those cases delegated by law such as with Community Development Block Grant Program (CPD). Environmental responsibility includes compliance with Section 1424(e) of the SDWA.

EIS EARLY NOTIFICATION/SCOPING

If an Environmental Impact Statement (EIS) is prepared for a project/activity in a SSA project review area, HUD or its grant recipients that assume by law environmental responsibilities and EPA shall coordinate at the earliest possible time so that the draft EIS contains EPA's SSA review determination. This is to ensure that any possible groundwater contamination has been considered.

This early notification will serve to initiate consultations with the developer to determine the scope of study that may be necessary if any formal groundwater quality assessment is required.

REVIEW PROCESS:
COMMUNITY PLANNING AND DEVELOPMENT (CPD) and HOUSING PROGRAM

The general procedures to be followed by HUD, its delegated agencies and EPA in reviewing HUD federal financially assisted activities and determining their potential impact on the SSA are outlined below. The overall goal is to ensure that each project/activity receiving federal financial assistance is designed and constructed in a manner that will prevent the introduction of contaminants into the SSA in quantities that may create a significant hazard to public health. Two levels of potential review are: (1) Initial Screen/Preliminary Review, and (2) Formal Section 1424(e) Review.

I. **Excluded Projects/Activities**

EPA and HUD mutually agree that the following list of project/activity categories would not create a significant hazard to public health:

-Construction of individual new residential structures containing from one to four units

-Funding of planning grants

-Rehabilitation of residential units

-Funding of all other grants for non-construction projects/activities

-Projects identifed as exempt in 24 CFR 58.34

These categories of projects/activities are therefore excluded from the Initial Screen/Preliminary Review requirements as outlined in Sections II and III below. Potential CPD recipients; states; other delegated agencies and HUD are responsible for making this determination for their respective programs. EPA may request information on these projects/activities and conduct a review if EPA determines it to be necessary.

II. **CPD Applications/Final Statements**

A. Initial Screen/Preliminary Review

HUD shall notify all potential CPD recipients, including states that are administering HUD programs (Non-Entitlement Small Cities Program, etc.) and other delegated agencies with jurisdiction in SSA project review areas of the SSA review requirements under Section 1424(e) and of their responsibility as outlined in this MOU.

Potential CPD recipients shall conduct an initial screen of CPD projects/activities proposed for HUD federal financial assistance prior to submission of an application or final statement to HUD. Attachment 2.A, Non-Housing Initial Screen Criteria, shall be used for CPD projects/activities that do not involve housing; and Attachment 2.B, Housing Initial Screen Criteria, for CPD projects/activities involving housing only.

EPA shall be notified of any projects/activities which result in a positive response to one of the criteria questions in Attachment 2. Where a project/activity meets one of the criteria in Attachment 2, the information in Attachment 3, SSA Preliminary Review Information Requirements, shall also be completed and forwarded to EPA along with applicable project/final statement information.

Upon receipt of the above, EPA will conduct it's Preliminary Review. If additional information is required, EPA will inform the potential CPD recipient and HUD. The potential CPD recipient shall be responsible for submitting to EPA any additional information requested in a timely manner.

Based on the information provided, EPA will make its determination on whether to complete its review at this stage and provide SSA review clearance, or proceed to a Formal Section 1424(e) Review. The project/activity may be cleared as is, or with modifications.

B. Timeframe for **Preliminary Review** and Notification

Within fifteen calendar days of EPA's receipt of the project's final statement, Attachment 2 and Attachment 3, EPA will notify the potential CPD recipient and HUD of one or more of the following:

- the project/activity has received SSA review clearance
- the project/activity requires modifications to receive SSA review clearance
- additional environmental information is required
- additional time to review the project, is required
- the project/activity raises major environmental concerns requiring interagency consultation
- a Formal Section 1424(e) Review is required

If EPA does not notify HUD within 15 days of receipt of the project, HUD should proceed with its project review.

HUD shall not authorize a release of funds until all outstanding issues with regard to the subject project/activity have been resolved.

C. Formal Section 1424(e) Review

Should a Formal Section 1424(e) Review be required, EPA shall formally notify the potential CPD recipient and HUD of this decision. If additional information is required, the potential CPD recipient shall be responsible for submitting the requested information to EPA in a timely manner. EPA may also schedule a public hearing to gather additional information.

Based on the information provided, EPA shall make a determination to either approve the project/activity, request more information, suggest modifications or disapprove the project/activity.

III. **Housing Program Applications**

A. Initial Screen/Preliminary Review

HUD shall notify all of its field offices of the SSA review requirements under Section 1424(e) and of their responsibilities as outlined in this MOU.

HUD shall conduct an initial screen of housing projects proposed for HUD Federal financial assistance. Attachment 2.B, Housing Initial Screen Criteria, shall be used for this review. EPA shall be notified of any projects which result in a positive response to one of the criteria questions in Attachment 2.B. Where a project meets one of the criteria in Attachment 2.B, the information in Attachment 3, SSA Preliminary Review Information Requirements, shall also be completed and forwarded to EPA along with the applicable project information.

Upon receipt of the above, EPA will conduct its Preliminary Review. If additional information is required, EPA will inform the HUD field office who shall than be responsible for submitting to EPA the requested information in a timely manner.

Based on the information provided, EPA will make its determination on whether to complete its review at this stage and provide SSA review clearance or proceed to a Formal Section 1424(e) Review. The project may be cleared in its existing form, or with modifications.

B. Timeframe for Preliminary Review and Notification

Within fifteen calendar days of EPA's receipt of the pertinent environmental information from the housing application, Attachment 2 and Attachment 3, EPA will notify HUD of one or more of the following:

- the project has received SSA review clearance
- the project requires modifications to receive SSA review clearance
- additional environmental information is required
- additional time to review the project is required
- the project raises major environmental concerns requiring interagency consultation
- a Formal Section 1424(e) Detailed Review is required

The project environmental clearance needed for project approval shall not be considered complete (appropriate sign-offs) until outstanding SSA issues with regard to the subject project have been satisfactorily resolved.

If EPA does not notify HUD within 15 days of receipt of the project, HUD should proceed with its project review.

C. Formal Section 1424(e) Review

Should a Formal Section 1424(e) Review be required, EPA shall formally notify HUD of this decision. If additional information is required, HUD shall be responsible for submitting the requested information to EPA in a timely manner. A public hearing may be held to gather additional information.

Based on the information provided, EPA shall make a determination to either approve the project, request more information, suggest modifications or disapprove the project.

D. Local Area Certification For Housing Environmental Review

If the community is wholly or partially within a SSA project review area boundary, the local certified agency shall have the same responsibility as HUD in meeting the SSA review requirements as outlined in Section 1424(e) and this MOU.

GENERAL PROCEDURAL MATTERS

Materials submitted to EPA by HUD or the applicant will be addressed to the attention of:

Chief, Environmental Impacts Branch
U.S. EPA Region II
26 Federal Plaza, Room 500
New York, New York 10278

The following representatives will serve as liaisons for HUD and EPA respectively. The liaisons will maintain communication as needed regarding projects/activities affecting the SSAs and this MOU.

HUD: Regional Office Environmental Officer
(212) 264-0793

EPA: Chief, Environmental Impacts Branch
(212) 264-1840

This MOU is subject to revision upon agreement by both parties.

U.S. Department of Housing and Urban Development

A. M. Villane, Jr., DDS
Regional Administrator/
Regional Housing Commissioner

Date: AUG 24 1990

U.S. Environmental Protection Agency

Constantine Sidamon-Eristoff
Regional Administrator

Date: 8/10/90

ATTACHMENT 1

DESIGNATED SOLE SOURCE AQUIFERS IN REGION II

Name	State	Citation	Publication Date
Brooklyn/Queens Aquifer System (AS)	NY	49 FR 2950	01/24/84
Buried Valley AS	NJ	45 FR 30537	05/08/80
Cattaraugus Creek AS	NY	52 FR 36100	09/25/87
Clinton Street-Ballpark AS	NY	50 FR 2025	01/14/85
Cortland-Homer-Preble AS	NY	53 FR 22045	06/13/88
Highlands AS	NJ/NY	52 FR 37213	10/05/87
Nassau/Suffolk	NY	43 FR 26611	06/21/78
New Jersey Coastal Plain AS	NJ	53 FR 23791	06/24/88
Northwest New Jersey Fifteen Basin AS	NJ	53 FR 23685	06/23/88
Ridgewood Area	NJ	49 FR 2943	01/24/84
Schenectady/Niskayuna AS	NY	50 FR 2022	01/14/85
Upper Rockaway River Basin AS	NJ	49 FR 2946	01/24/84

ATTACHMENT 2.A

NON-HOUSING PROJECT/ACTIVITY INITIAL SCREEN CRITERIA
(For projects in a designated Sole Source Aquifer area)

The following list of criteria questions are to be used as an initial screen to determine which **non-housing** projects/activities should be forwarded to the Environmental Protection Agency (EPA) for Preliminary Sole Source Aquifer (SSA) Review. (For housing projects/activities see Attachment 2.B) If any of the questions are answered affirmatively, Attachment 3, SSA Preliminary Review Requirements, should also be completed. The application/final statement, this Attachment, Attachment 3, and any other pertinent information should than be forwarded to EPA at the address below.

Any project/activity not meeting the criteria in this Attachment, but suspected of having a potential adverse effect on the Sole Source Aquifer should also be forwarded. Contact EPA if you have any questions.

Chief, Environmental Impacts Branch
USEPA Region II
26 Federal Plaza, Room 500
New York, New York 10278
(212) 264-1840

CRITERIA QUESTIONS

	YES	NO	N/A
1. Is the project/activity located within a currently designated or proposed groundwater sensitive area such as a special Ground Water Protection Area, Critical Supply Area, Wellhead Protection Area etc.? [This information can be obtained from the County or Regional planning board, the local health department, the State health department or the State environmental agency.]		X	
2. Is the project/activity located within a one half mile radius (2640 feet) of a current or proposed public water supply well or wellfield? [This information can be obtained from the local health department, the State health department or the State environmental agency.]		X	

3. Will the project/activity include or directly cause: (check appropriate items)

- construction or expansion of solid waste disposal, recycling or conversion facilities		X	
- construction or expansion or closure of landfills		X	
- construction or expansion of water supply facilities (i.e., treatment plant, pump house, etc.)		X	
- construction or expansion of on-site wastewater treatment plants or sewage trunk lines, greater than 1/4 mile		X	
- construction or expansion of gas or petroleum trunk lines, greater than 1200 feet		X	
- construction or expansion of railroad spurs or similar extensions		X	
- construction or expansion of municipal sewage treatment plants		X	

4. Will the project/activity include storage or handling of any hazardous constituents as listed in Attachment 4, Hazardous Constituents? ___ X ___

If these constituents are used during the construction phase of the project, than an assurance statement must be provided indicating that chemicals will be used in a safe and proper manner, and that they will be promptly removed after construction is completed.

5. Will the project/activity include bulk storage of petroleum in underground or above ground tanks in excess of 1100 gallons? ___ X ___

6. Will the project/activity require a federal or state discharge elimination permit or modification of an existing permit? ___ X ___

This attachment was completed by:

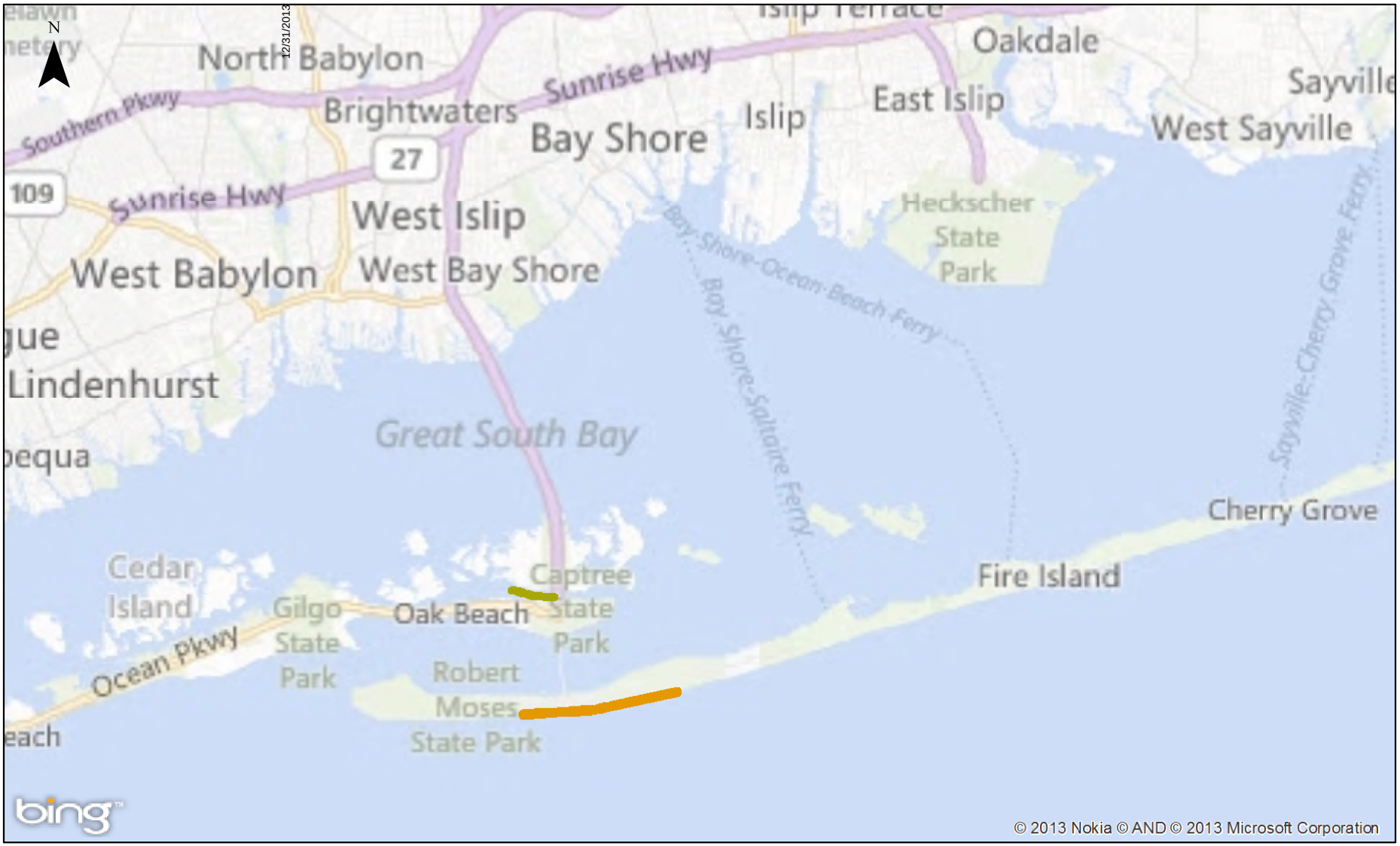
Name: Dina Rybak

Title: Senior Planner, AKRF Environmental Planning and Engineering Consultants

Address: 440 Park Avenue South, 7th Floor, NY NY 10016

Telephone number: 646.388.9601

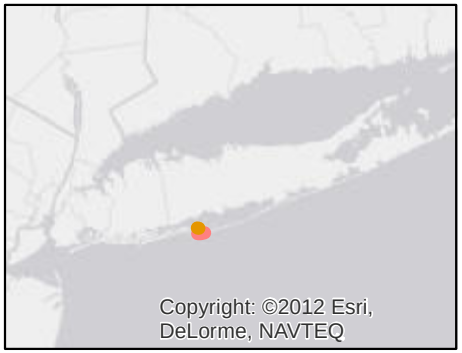
Date: 1/6/2014



0 0.5 1 2 Miles

Beach Restoration Area

Dredging Area



Project Location

Robert Moses State Park State Boat Channel Dredging and Beach Stabilization Project

ATTACHMENT 3

SSA PRELIMINARY REVIEW INFORMATION REQUIREMENTS

Where currently available, the information in this Attachment should be provided to the Environmental Protection Agency (see address below) along with the application/final statement; Attachment 2.A, Non-Housing Initial Screen Criteria or Attachment 2.B, Housing Initial Screen Criteria; and any other information which may be pertinent to a Sole Source Aquifer review. Where applicable, indicate the source of your information.

Chief, Environmental Impacts Branch
USEPA Region II
26 Federal Plaza, Room 500
New York, New York 10278
(212) 264-1840

	ENCLOSED YES	ENCLOSED NO
I. Project/Activity Location		
1. Provide the geographic location and total acreage of the project/activity site. Include a site location map which identifies the site in relation to the surrounding area. [Examples of maps which can be used include: 1:24,000 or 1:25,000 U.S. Geological Survey quadrangle sheet, Hagstroms Street Map.]	X	
2. If applicable, identify which groundwater sensitive areas (Special Ground Water Protection Area, Critical Supply Area, Wellhead Protection Area etc.) the project/activity is located within or adjacent to. [This information may be obtained from the County or Regional planning board, the local health department, the State health department or the State environmental agency.]		n/a
II. Nature of Project/Activity		
3. Provide a general narrative describing the project/activity including but not limited to: type of facility; type of activities to be conducted; number and type of units; number of residents etc. Provide the general layout of the project/activity site and a site-plan if available.	X	

III. Public Water Supply

4. Provide a description of plans to provide water supply. ___ n/a

5. Provide the location of nearby existing or proposed public water supply wells or wellfields within a one half mile radius (2640 feet) of the project/activity. Provide the name of the supplier(s) of those wells or wellfields. This information should be available from the local health department, State health department or the State environmental agency. If private wells are to be used, then information necessary to obtain a well drilling permit should be provided. ___ n/a

V. Wastewater and Sewage Disposal

6. Provide a description of plans to handle wastewater and sewage disposal. If the project/activity is to be served by existing public sanitary sewers provide the name of the sewer district. ___ n/a

7. Provide a description of plans to handle storm water runoff. ___ n/a

8. Identify the location, design, size of any on-site recharge basins, dry wells, leaching fields, retention ponds etc. ___ n/a

VI. Use, Storage, Transport of Hazardous or Toxic Materials **(Applies only to non-housing projects/activities)**

9. Identify any products listed in Attachment 3, Hazardous Constituents, of the Housing and Urban Development-Environmental Protection Agency Memorandum of Understanding which may be used, stored, transported, or released as a result of the construction activity. ___ n/a

10. Identify the number and capacity of underground storage tanks at the project/activity site. Identify the products and volume to be stored, and the location on the site. ___ n/a

11. Identify the number and capacity of above ground storage tanks at the project/activity site. Identify the products and volume to be stored, and the location on the site. ___ n/a

This form was completed by:

Name: Dina Rybak

Title: Senior Planner, AKRF Environmental Planning and Engineering Consultants

Address: 440 Park Avenue South, 7th Floor, NY NY 10016

Telephone number: 646.388.9601

Date: 1/6/2014