

APPENDIX D

- **NYSDOS Coastal Consistency Certification**
- **Coastal Fish & Wildlife Habitat Assessment Forms**



NELSON, POPE & VOORHIS, LLC
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572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

March 6, 2017

Ms. Denise Caldwell, Consistency Coordinator
New York Department of State
Consistency Review Unit
Office of Planning and Development
One Commerce Plaza – Suite 1010
99 Washington Avenue
Albany, NY 12231

Re: Confirmation of Coastal Consistency
Concurrence under NWP #27
Gardiner County Park Marsh
Restoration
NPV# 16154

Dear Denise:

Nelson, Pope & Voorhis (NP&V)/Nelson & Pope (N&P) has been retained by Suffolk County Department of Public Works, Division of Vector Control (c/o Tom Iwanejko) to obtain the necessary permits for the improvements proposed at the above referenced site. The applicant is requesting confirmation of Coastal Consistency Concurrence as the proposed project is seeking coverage under US Army Corps of Engineers Nationwide Permit #27. The proposed project involves the restoration of marsh habitat and associated reduction of mosquito breeding areas through the use of integrated marsh management techniques.

The project site is bisected by an access road that extends from the parking lot located on the north side of the property south to the Great South Bay. As the access road bisects the marsh, the project site is effectively divided into two separate and unique marsh systems; Gardiner County Park East (Gardiner East) and Gardiner County Park West (Gardiner West).

Gardiner West and Gardiner East are both the sites of historic grid ditching which has contributed to the long-term degradation of the marsh system. When originally constructed, the linear ditches were arbitrarily placed and consideration was not given to the typical scour and sediment deposition processes that occurs along a naturally flowing channel. The linear ditches run perpendicular or parallel to each other and create small panels between the grid-like ditches. As a result, a significant loss in marsh habitat has occurred at this site. In addition to the marsh loss, berms have formed along the edges of the ditches contributing to the change in the tidal flow through the marsh system, and ultimately creating ideal mosquito breeding habitat. The proposed project seeks to return the marsh to a more natural system to ameliorate the impacts the marsh has experienced over time.

The project consists of five main components; removal of material from the existing berms and utilization of that material in the filling of historic grid ditching, the creation of runnels, naturalization of channels and the creation of micro-pools. The project proposes filling of approximately $\pm 6,770$ feet (FT) of existing linear mosquito ditches within Gardiner West and $\pm 3,994$ FT within Gardiner East. To fill these ditches, material from the berms located along the banks of the ditches will be utilized. Capturing material from the berms will help create a more level marsh surface that more closely resembles natural conditions. Revegetation across the filled ditches and in the disturbed area associated with berm removal will occur naturally from existing seed stock present in the soil and through encroachment from the vegetation along the edges of the disturbance. Coir logs will be utilized to help fill the mosquito ditches, as sufficient volume to fill the ditches is not available within the berms. Coir logs are biodegradable coconut fiber rolls that can be placed in the existing mosquito ditches, secured and covered with material captured from the berms. It is expected that the coir logs will slowly degrade and be replaced by sediment over time through natural sediment deposition processes that occur within the marsh system.

Narrow, shallow channels (called runnels) are proposed to connect existing pannes to the naturalized channels. This will allow the standing water to drain from pannes and prevent future standing water from occurring in the existing depressions. Once standing water is no longer present, it is anticipated that natural sediment deposition and associated revegetation of the pannes will occur in subsequent growing seasons.

The majority of the remaining ditches will be naturalized in order to achieve a function that more closely mimics natural marsh conditions. Naturalized channels will utilize the same general layout of the remaining mosquito ditches, however, they will be altered to create more meandering channels to aid in slowing the water velocity within the ditches during tide inflow and outflow. As illustrated on the Proposed Marsh Restoration Details, ditch berm soil will be moved from the berm to the inner bank of the existing ditch in select locations. This will create small curves throughout the existing ditch that mimics natural channel conditions. It is expected that scour will occur on the outside of the curve created within the ditch and sediment deposition will occur on the inside of the created curve. This will prevent sediment from gathering on top of the banks of the channel and creating new berms, which currently exacerbates marsh loss. Approximately $\pm 2,920$ LF of naturalized channel will be created through the re-alignment of ± 793 FT of existing mosquito ditches within Gardiner East. Approximately $\pm 6,671$ LF of naturalized channel will be created through the re-alignment of $\pm 2,045$ FT of existing mosquito ditches within Gardiner West.

Finally, 10 micropools are proposed within Gardiner East and 22 micropools are proposed within Gardiner West. At a maximum, micropools will be 10' x 5 x 2'. Micropools are designed to create fish habitat within the marsh and will be located in areas where Suffolk County Department of Public Works, Division of Vector Control, has detected mosquito larvae. The proposed micropools will be connected to tidal flow through runnels. Fish are natural predators of mosquitos and the creation of fish habitat in these areas is expected to reduce the overall mosquito population. Furthermore, as these areas are dominated by the invasive reed *Phragmites australis*, the creation of micropools will have limited disturbance to desirable marsh vegetation.

Low ground pressure (<2 psi) machinery will be utilized during construction in order to minimize the impact to the existing healthy marsh areas. Construction access will be from the

existing adjacent golf course, and all staging and equipment storage will occur in the upland area.

I have enclosed the following required materials for your review:

1. Joint Application Form
2. Project Narrative
3. Army Corps Environmental Questionnaire
4. Copy of the Federal Consistency Assessment Form (FCAF) sent to NYSDOS and attachment for discussion of applicable State Coastal Management Policies
5. Essential Fish Habitat Assessment Worksheet
6. Location Map
7. Photographs showing existing conditions of the wetland and waterway
8. Aerial photograph with picture index
9. Proposed Marsh Restoration Plan (Gardiner East)
10. Proposed Marsh Restoration Plan (Gardiner West)

Please let me know if you will need any additional information for your review. Thank you.

Sincerely,

NELSON, POPE & VOORHIS



Hannah Emouna
Environmental Scientist

cc: Tom Iwanjenko (Digital)
File

STATE OF NEW YORK
DEPARTMENT OF STATE

ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001
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ANDREW M. CUOMO
GOVERNOR

ROSSANA ROSADO
SECRETARY OF STATE

June 12, 2017

RECEIVED

JUN 16 2017

NELSON A. ROSE

Mr. Hannah Emouna
Environmental Scientist
572 Walt Whitman Road
Melville, New York 11747

Re: F-2017-0259
U.S. Army Corps of Engineers/ New York District Permit
Application – Suffolk County DPW - Gardiner County
Park Marsh Restoration
DEC Permit Application
Gardiner Park - East, Islip, Suffolk County
Marsh restoration to repair the marsh after long-term
degradation caused historic mosquito ditching and allow
for biological control of mosquito breeding within the
marsh complex.
General Concurrence

Dear Mr. Emouna,

The Department of State received your Federal Consistency Assessment Form and consistency certification and supporting information for this proposal on March 8, 2017.

The Department of State has determined that this proposal meets the Department's general consistency concurrence criteria. Therefore, further review of the proposed activity by the Department of State, and the Department's concurrence with an individual consistency certification for the proposed activity, are not required.

Please note that your project is located within the Significant Coastal Fish and Wildlife Habitat for Great South Bay-West, as designated on December 15, 2008. The Coastal Fish and Wildlife Assessment form states that "Nesting birds inhabiting the islands, marshes and barrier beaches of Great South Bay -West are highly vulnerable to disturbance by humans from March 15 through August 15." As such, disturbance should be minimized during this period.

This General concurrence is without prejudice to and does not obviate the need to obtain all other applicable license, permits, other forms of authorizations or approvals that may be required pursuant to existing New York State statutes. Specifically, it appears that you may require authorization from the New York State Department of Environmental Conservation (DEC) Region 1. Please contact the DEC Region 1 office to determine if their authorization is required.



Department
of State

When communicating with us regarding this matter, please contact us at (518) 474-6000 and refer to our file # F-2017-0259.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jeff Zappieri', with a stylized flourish at the end.

Jeffrey Zappieri
Supervisor, Consistency Review Unit
Office of Development and Planning

JZ/ks

cc: COE/ New York District – Steve Ryba
DEC Region 1 – Roger Evans



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March 6, 2017

Ms. Denise Caldwell, Consistency Coordinator
New York Department of State
Consistency Review Unit
Office of Planning and Development
One Commerce Plaza – Suite 1010
99 Washington Avenue
Albany, NY 12231

Re: Confirmation of Coastal Consistency
Concurrence under NWP #27
Timber Point Marsh Restoration
NPV# 16154

Dear Denise:

Nelson, Pope & Voorhis (NP&V)/Nelson & Pope (N&P) has been retained by Suffolk County Department of Public Works, Division of Vector Control (c/o Tom Iwanejko) to obtain the necessary permits for the improvements proposed at the above referenced site. The applicant is requesting confirmation of Coastal Consistency Concurrence as the proposed project is seeking coverage under US Army Corps of Engineers Nationwide Permit #27. The proposed project involves the restoration of marsh habitat and associated reduction of mosquito breeding areas through the use of integrated marsh management techniques.

Timber Point is the site of historic grid ditching which has contributed to the long-term degradation of the marsh system. When originally constructed, the linear ditches were arbitrarily placed and consideration was not given to the typical scour and sediment deposition processes that occurs along a naturally flowing channel. The linear ditches run perpendicular or parallel to each other and create small panels between the grid-like ditches. As a result, a significant loss in marsh habitat has occurred at this site. In addition to the marsh loss, berms have formed along the edges of the ditches contributing to the change in the tidal flow through the marsh system, and ultimately creating ideal mosquito breeding habitat. The proposed project seeks to return the marsh to a more natural system to ameliorate the impacts the marsh has experienced over time.

The project consists of five main components; removal of material from the existing berms and utilization of that material in the filling of historic grid ditching, the creation of runnels, naturalization of channels and the creation of micro-pools. The project proposes filling of approximately 9,031 linear feet (FT) of existing mosquito ditches. To fill these ditches, material from the berms located along the banks of the ditches will be utilized. Capturing material from

the berms will help create a more level marsh surface that more closely resembles natural conditions. Revegetation across the filled ditches and in the disturbed area associated with berm removal will occur naturally from existing seed stock present in the soil and through encroachment from the vegetation along the edges of the disturbance. Coir logs will be utilized to help fill the mosquito ditches, as sufficient volume to fill the ditches is not available within the berms. Coir logs are biodegradable coconut fiber rolls that can be placed in the existing mosquito ditches, secured and covered with material captured from the berms. It is expected that the coir logs will slowly degrade and be replaced by sediment over time through natural sediment deposition processes that occur within the marsh system.

Narrow, shallow channels (called runnels) are proposed to connect existing pannes to the naturalized channels. This will allow the standing water to drain from pannes and prevent future standing water from occurring in the existing depressions. Once standing water is no longer present, it is anticipated that natural sediment deposition and associated revegetation of the pannes will occur in subsequent growing seasons.

The majority of the remaining ditches will be naturalized in order to achieve a function that more closely mimics natural marsh conditions. Naturalized channels will utilize the same general layout of the remaining mosquito ditches, however, they will be altered to create more meandering channels to aid in slowing the water velocity within the ditches during tide inflow and outflow. As illustrated on the Proposed Marsh Restoration Details, ditch berm soil will be moved from the berm to the inner bank of the existing ditch in select locations. This will create small curves throughout the existing ditch that mimics natural channel conditions. It is expected that scour will occur on the outside of the curve created within the ditch and sediment deposition will occur on the inside of the created curve. This will prevent sediment from gathering on top of the banks of the channel and creating new berms, which currently exacerbates marsh loss. Approximately $\pm 4,088$ LF of naturalized channel will be created through the re-alignment of $\pm 2,200$ FT of existing mosquito ditches.

Finally, 9 micropools will be created in the marsh. At a maximum, micropools will be 10' x 5 x 2'. Micropools are designed to create fish habitat within the marsh and will be located in areas where Suffolk County Department of Public Works, Division of Vector Control, has detected mosquito larvae. The proposed micropools will be connected to tidal flow through runnels. Fish are natural predators of mosquitos and the creation of fish habitat in these areas is expected to reduce the overall mosquito population. Furthermore, as these areas are dominated by the invasive reed *Phragmites australis*, the creation of micropools will have limited disturbance to desirable marsh vegetation.

Low ground pressure (<2 psi) machinery will be utilized during construction in order to minimize the impact to the existing healthy marsh areas. Construction access will be from the existing adjacent golf course, and all staging and equipment storage will occur in the upland area.

The proposed action is not expected to result in any negative ecological impacts. I have enclosed the following required materials for your review:

1. Joint Application Form
2. Project Narrative
3. Army Corps Environmental Questionnaire
4. Copy of the Federal Consistency Assessment Form (FCAF) sent to NYSDOS and attachment for discussion of applicable State Coastal Management Policies
5. Essential Fish Habitat Assessment Worksheet
6. Location Map
7. Photographs showing existing conditions of the wetland and waterway
8. Aerial photograph with picture index
9. Proposed Project Plan

Please let me know if you will need any additional information for your review. Thank you.

Sincerely,

NELSON, POPE & VOORHIS



Hannah Emouna
Environmental Scientist

cc: Tom Iwanjenko (Digital)
File

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RECEIVED
ANDREW M. CUOMO
GOVERNOR
ROSSANA ROSADO
SECRETARY OF STATE

June 12, 2017

JUN 19 2017

NELSON & POPE

Mr. Hannah Emouna
Environmental Scientist
572 Walt Whitman Road
Melville, New York 11747

Re: F-2017-0257
U.S. Army Corps of Engineers/ New York District Permit
Application – Suffolk County DPW - Timber Point Marsh
Restoration
DEC Permit Application
Timber Point, Islip, Suffolk County
Restoration of marsh habitat and associated reduction of
mosquito breeding areas through the use of integrated
marsh management techniques.
General Concurrence

Dear Mr. Emouna,

The Department of State received your Federal Consistency Assessment Form and consistency certification and supporting information for this proposal on March 8, 2017.

The Department of State has determined that this proposal meets the Department's general consistency concurrence criteria. Therefore, further review of the proposed activity by the Department of State, and the Department's concurrence with an individual consistency certification for the proposed activity, are not required.

Please note that your project is located within the Significant Coastal Fish and Wildlife Habitat for Great South Bay-West and Great South Bay - East, as designated on December 15, 2008. The Coastal Fish and Wildlife Assessment form states that "Nesting birds inhabiting the islands, marshes and barrier beaches of Great South Bay –West [and Great South Bay- East] are highly vulnerable to disturbance by humans from March 15 through August 15." As such, disturbance should be minimized during this period.

This General concurrence is without prejudice to and does not obviate the need to obtain all other applicable license, permits, other forms of authorizations or approvals that may be required pursuant to existing New York State statutes. Specifically, it appears that you may require authorization from the New York State Department of Environmental Conservation (DEC) Region 1. Please contact the DEC Region 1 office to determine if their authorization is required.



**Department
of State**

When communicating with us regarding this matter, please contact us at (518) 474-6000 and refer to our file # F-2017-0257.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jeff Zappieri', with a stylized flourish at the end.

Jeffrey Zappieri
Supervisor, Consistency Review Unit
Office of Development and Planning

JZ/ks

cc: COE/ New York District – Steve Ryba
DEC Region 1 – Roger Evans



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572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
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npv@nelsonpope.com

July 17, 2017

Ms. Denise Caldwell, Consistency Coordinator
New York Department of State
Consistency Review Unit
Office of Planning and Development
One Commerce Plaza – Suite 1010
99 Washington Avenue
Albany, NY 12231

Re: Confirmation of Coastal Consistency
Concurrence under NWP #27
West Sayville Marsh Restoration
NPV# 16154

Dear Denise:

Nelson, Pope & Voorhis (NP&V)/Nelson & Pope (N&P) has been retained by Suffolk County Department of Public Works, Division of Vector Control (c/o Tom Iwanejko) to obtain the necessary permits for the improvements proposed at the above referenced site. The proposed project involves the restoration of marsh habitat and associated reduction of mosquito breeding areas through the use of integrated marsh management techniques.

West Sayville is the site of historic grid ditching which has contributed to the long-term degradation of the marsh system. When originally constructed, the linear ditches were arbitrarily placed and consideration was not given to the typical scour and sediment deposition processes that occurs along a naturally flowing channel. The linear ditches run perpendicular or parallel to each other and create small panels between the grid-like ditches. As a result, a significant loss in marsh habitat has occurred at this site. In addition to the marsh loss, berms have formed along the edges of the ditches contributing to the change in the tidal flow through the marsh system, and ultimately creating ideal mosquito breeding habitat. The proposed project seeks to return the marsh to a more natural system to ameliorate the impacts the marsh has experienced over time.

The project consists of five main components; removal of material from the existing berms and utilization of that material in the filling of historic grid ditching, the creation of runnels, naturalization of channels and the creation of micro-pools. The project proposes filling of approximately ± 760 linear feet (FT) of existing mosquito ditches. To fill these ditches, material from the berms located along the banks of the ditches will be utilized. Capturing material from the berms will help create a more level marsh surface that more closely resembles natural conditions. Revegetation across the filled ditches and in the disturbed area associated with berm removal will occur naturally from existing seed stock present in the soil and through encroachment from the vegetation along the edges of the disturbance. Coir logs will be utilized to help fill the mosquito ditches, as sufficient volume to fill the ditches is not available within the berms. coir logs are biodegradable coconut fiber rolls that can be placed in the existing mosquito

ditches, secured and covered with material captured from the berms. It is expected that the coir logs will slowly degrade and be replaced by sediment over time through natural sediment deposition processes that occur within the marsh system.

Narrow, shallow channels (called runnels) are proposed to connect existing pannes to the naturalized channels. This will allow the standing water to drain from pannes and prevent future standing water from occurring in the existing depressions. Once standing water is no longer present, it is anticipated that natural sediment deposition and associated revegetation of the pannes will occur in subsequent growing seasons.

A portion of the remaining ditches will be naturalized in order to achieve a function that more closely mimics natural marsh conditions. Naturalized channels will utilize the same general layout of the remaining mosquito ditches, however, they will be altered to create more meandering channels to aid in slowing the water velocity within the ditches during tide inflow and outflow. As illustrated on the Proposed Marsh Restoration Details, ditch berm soil will be moved from the berm to the inner bank of the existing ditch in select locations. This will create small curves throughout the existing ditch that mimics natural channel conditions. It is expected that scour will occur on the outside of the curve created within the ditch and sediment deposition will occur on the inside of the created curve. This will prevent sediment from gathering on top of the banks of the channel and creating new berms, which currently exacerbates marsh loss. Approximately $\pm 1,760$ LF of naturalized channel will be created through the re-alignment of $\pm 1,190$ FT of existing mosquito ditches.

Finally, 11 micropools will be created in the marsh. At a maximum, micropools will be 10' x 5 x 2'. Micropools are designed to create fish habitat within the marsh and will be located in areas where Suffolk County Department of Public Works, Division of Vector Control, has detected mosquito larvae. The proposed micropools will be connected to tidal flow through runnels. Fish are natural predators of mosquitos and the creation of fish habitat in these areas is expected to reduce the overall mosquito population. Furthermore, as these areas are dominated by the invasive reed *Phragmites australis*, the creation of micropools will have limited disturbance to desirable marsh vegetation.

Low ground pressure (<2 psi) machinery will be utilized during construction in order to minimize the impact to the existing healthy marsh areas. Construction access will be from the existing adjacent golf course, and all staging and equipment storage will occur in the upland area.

I have enclosed all of the required application materials for your review:

1. Joint Application Form
2. Project Narrative
3. Army Corps Environmental Questionnaire
4. Copy of the Federal Consistency Assessment Form (FCAF) sent to NYSDOS and attachment for discussion of applicable State Coastal Management Policies
5. Essential Fish Habitat Assessment Worksheet
6. Location Map
7. Photographs showing existing conditions of the wetland and waterway
8. Aerial photograph with picture index
9. Proposed Project Plan

Please let me know if you will need any additional information for your review. Thank you.

Sincerely,

NELSON, POPE & VOORHIS



Hannah Emouna
Environmental Scientist

cc: Tom Iwanjenko (Digital)
File

STATE OF NEW YORK
DEPARTMENT OF STATE

ONE COMMERCE PLAZA
99 WASHINGTON AVENUE
ALBANY, NY 12231-0001
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ANDREW M. CUOMO
GOVERNOR

ROSSANA ROSADO
SECRETARY OF STATE

October 30, 2017

Ms. Hannah Emouna
Nelson Pope and Voorhis
572 Walt Whiman Road
Melville, NY 11747

Re: F-2017-0682
U.S. Army Corps of Engineers/New York District Permit
Application - West Sayville Wetland Restoration
NYSDEC Region 1 Application
Restoration of marsh habitat and associated reduction of
mosquito breeding areas. Fill approximately ± 760 linear
feet of existing mosquito ditches with coir logs. Improve
wetland hydrology through targeted modifications of ± 132
CY of fill and ± 169 CY of cut material.
Great South Bay, Town of Islip, Suffolk County
**General Concurrence - Proposal Modified To Be
Consistent**

Dear Ms. Emouna:

The Department of State received your modified proposal for the above referenced project. The proposal was modified to include a time-of-year restriction such that work within the marsh will not be conducted from March 15 through August 15 to avoid potential impacts to nesting birds.

The Department of State has determined that this proposal meets the Department's general consistency concurrence criteria. Therefore, further review of the proposed activity by the Department of State, 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 license, permits, other forms of authorizations or approvals that may be required pursuant to existing New York State statutes.

When communicating with us regarding this matter, please contact us at (518) 474-6000 and refer to our file #F-2017-0682.

Sincerely,



Jeffrey Zappieri
Supervisor, Consistency Review Unit
Office of Planning, Development and



**Department
of State**

JZ/lm

cc: COE/ NY District – Stephan Ryba
DEC Region 1 – Roger Evans

Attachment B:**COASTAL FISH & WILDLIFE HABITAT ASSESSMENT FORM**

Name of Area:	Great South Bay-West
Designated:	March 15, 1987
Date Revised:	December 15, 2008
County:	Suffolk
Town(s):	Babylon, Islip
7½' Quadrangle(s):	Amityville, NY; Bay Shore West, NY; Bay Shore East, NY; West Gilgo Beach, NY

Assessment Criteria**Score**

Ecosystem Rarity (ER)—the uniqueness of the plant and animal community in the area and the physical, structural, and chemical features supporting this community.

ER assessment: One of the largest shallow coastal wetland ecosystems in New York State.

64

Species Vulnerability (SV) – the degree of vulnerability throughout its range in New York State of a species residing in the ecosystem or utilizing the ecosystem for its survival. (E= Endangered, T= Threatened, SC= Special concern)

SV assessment: Roseate tern (E), common tern (T), northern harrier (T), osprey (SC) and black skimmer (SC). Black rail (E) nest in area, but not well documented. Additive division: $36 + 25/2 + 25/4 + 16/8 + 16/16 = 57.75$

57.75

Human Use (HU) – the conduct of significant, demonstrable, commercial, recreational, or educational wildlife-related human uses, either consumptive or non-consumptive, in the area or directly dependent upon the area.

HU assessment: Sportfishing of statewide significance, waterfowl hunting of regional significance and shellfish hatcheries of local significance. Additive division: $16 + 9/2 + 4/2 = 22.5$

22.5

Population Level (PL) – the concentration of a species in the area during its normal, recurring period of occurrence, regardless of the length of that period of occurrence.

PL assessment: This area supports some of the largest concentrations of wintering waterfowl, nesting northern harriers (T), estuarine fish, and the only population of black rails (E) in New York State.

16

Replaceability (R) – ability to replace the area, either on or off site, with an equivalent replacement for the same fish and wildlife and uses of those same fish and wildlife, for the same users of those fish and wildlife.

R assessment: Irreplaceable.

1.2

Habitat Index: (ER + SV + HU + PL) = 160.25

Significance: (HI x R) = 192.3

NEW YORK STATE
SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT
NARRATIVE

GREAT SOUTH BAY-WEST

LOCATION AND DESCRIPTION OF HABITAT:

Great South Bay-West is located along the south shore of Long Island, east of South Oyster Bay, in the Towns of Babylon and Islip, Suffolk County (7.5' Quadrangles: Amityville, N.Y.; West Gilgo Beach, N.Y.; Bay Shore West, N.Y.; and Bay Shore East, N.Y.). This area is approximately 34,170 acres and is generally defined by the mean high water elevation on the north and south sides, by the Amityville Cut boat channel on the west, and by the Islip-Brookhaven town line on the east. The fish and wildlife habitat is the entire western half of Great South Bay. The bay is bordered on the north by dense residential and commercial development, including extensive marina and harbor facilities. The remainder of the area is bordered by State parklands, open water, and low density residential development on Fire Island.

A number of benthic habitats make up the bay bottom; the dominant eelgrass (*Zostera marina*) community has been studied extensively. Benthic habitat in Great South Bay can be classified as muddy sandflat and sandflat habitats. Much of the bay is shallow open water habitat, but as the bay narrows on the western end open water merges into an extensive series of tidal salt marshes, salt marsh islands, and intertidal mudflats. Extensive salt marshes also line the bay where tidal creeks and rivers feed into the bay from the mainland. Cordgrasses (*Spartina alterniflora* and *S. patens*) dominate the low and high salt marsh, respectively. Dwarf glasswort (T) (*Salicornia bigelovii*) which is associated with smooth cordgrass, is one of the main species within a salt panne community on the Gilgo Beach Backbarrier Marsh portion of Great South Bay-West. Common reed (*Phragmites australis*) borders portions of the high marsh, grading to dense thickets of bayberry (*Myrica pensylvanica*), poison ivy (*Toxicodendron radicans*), groundsel-bush (*Baccharis halimifolia*), and marsh elder (*Iva frutescens*) in drier areas. On the barrier beaches bordering the Atlantic Ocean and in swales behind primary dunes, plants characteristic of stabilized older dune and coastal shrub communities are found.

Water depths in this area are generally less than 6 feet below mean low water, except in Fire Island Inlet and in some dredged navigation channels. Tidal range in the bay averages approximately 2.61 feet at the inlet and approximately 0.7 feet at the mouth of the Connetquot River. Great South Bay is the only bay on Long Island's south shore that has major riverine input (from the Carmans Rivers in the east and Connetquot River in the west). In addition, the bay receives as much as 11% of its freshwater input directly from groundwater flows through its floor. Fire Island Inlet is the only direct connection to the sea, with indirect connections through South Oyster Bay.

FISH AND WILDLIFE VALUES:

Great South Bay-West comprises approximately one-half of the largest protected, shallow, coastal saltwater bay in New York State. A tremendous diversity of fish and wildlife species occur in this vast wetland area. Many species of migratory birds nest among the salt marshes and dredged material islands

in Great South Bay-West. The Captree Island vicinity is recognized as an Important Bird Area by the National Audubon Society of New York State, and serves as foraging habitat for peregrine falcon (E) and other migrating raptors. According to data from 1993-2005, Great South Bay-West is home to an average of 12 nesting pairs of roseate terns (E) per year (28 in peak year). In New York, this species breeds only on Long Island. In recent years, common terns (T) have been confirmed nesting on Elder Island, Dock Island, Goose Flat, Thatch Island, The Grouts, and Captree Island. From 1993 to 2005, an average of 1,046 breeding pairs of common tern (T) per year were reported in Great South Bay-West (2,333 in peak year). Recent data for least tern (T) is only available for 1992 and 2002, with 10 breeding pairs and 86 breeding pairs, respectively, in Great South Bay-West. Terns typically nest in simple scrapes built above the high tide mark in sand or gravel, and may be sparsely lined with shells and other debris (e.g. seaweed). Tern breeding colonies may contain several hundred to several thousand birds, including roseate (E), least (T), common (T), and gull-billed terns, along with black skimmer. Productivity of the surrounding waters is of vital importance to common terns (T) because they feed on small fish, shrimp, and aquatic insects.

Several rookeries have been located on islands within Great South Bay-West, including Gilgo Island, Sexton Island, Seganus Thatch, Ox Island, Pipe Island, Nazeras Island, the Cedar Island Group, and an unnamed dredged material island southwest of Nazeras Island. These birds use a network of islands in the bays, with shifts in island use from year to year. Species nesting in these areas include great egret, snowy egret, yellow-crowned night heron, black-crowned night heron, green-backed heron, little blue heron, tri-colored heron, and glossy ibis. Although the numbers of black-crowned night heron appear to be declining, records for the years 1993, 1995, 1998, 2001, and 2004 (the years in between were not surveyed) indicate an annual average of approximately 58 breeding pairs (195 in peak year) in Great South Bay-West. Other bird species which nest in Great South Bay-West include Canada goose, herring gull, great black-backed gull, American oystercatcher, black skimmer (SC), American black duck, mallard, gadwall, willet, Virginia rail, clapper rail, marsh wren, sharp-tailed sparrow, and seaside sparrow (SC). The vast salt marshes, intertidal flats, and shallows in this area provide valuable feeding areas for birds throughout the year, including species nesting in the area and large concentrations of shorebirds during migration, including whimbrel, yellowlegs, and black-bellied plover.

Great South Bay-West is also home to several raptor species. In Great South Bay-West, an estimated annual average of 12 breeding pairs of osprey (SC) were observed from 1998 to 2003 on the salt marsh islands. One pair of peregrine falcon (E) was observed in Great South Bay-West on Captree Island in 2004, but nesting was not confirmed. Peregrine falcons generally return to the same nesting location annually and mate for life. At least 2 to 3 northern harrier (T) nests have been observed in stands of common reed and poison ivy in the Gilgo Beach backbarrier marsh by the New York State Breeding Bird Atlas Project, but additional surveys are needed to better establish how many breeding pairs are regularly using the area. Northern harriers (T) here may reach their highest breeding densities in the state and, possibly, the region. It is the only area in New York State where black rails (E) have been found, and is the only historically documented breeding location for soras on Long Island. The first nesting record for black rails (E) was recorded in 1937, and since 1968 they have been present along the backbarrier marshes of Gilgo State Park during approximately half of the breeding seasons. Northern harriers (T) and short-eared owls (SC) are common winter residents of the marshes in Great South Bay-West. An observer for the New York State Breeding Bird Atlas Project recorded probable breeding for short-eared owl (SC) in June of 2001. All of the salt marsh and dune areas north of the Ocean State Parkway on Jones Beach Island represent suitable short-eared owl (SC) habitat and any breeding owls present could be expected to forage over the majority of this area.

In addition, Great South Bay-West is one of the most important waterfowl wintering areas (November - March) on Long Island, especially for brant and scaup. Mid-winter aerial surveys of waterfowl abundance from 1986 to 1998 (excluding 1997) for all of Great South Bay indicate average concentrations of over 7,000 birds in the bay each year (18,008 in peak year), including 4,085 greater and/or lesser scaup (15,405 in peak year), 583 American black duck (1,255 in peak year), 417 (common, hooded, and/or red-breasted) merganser (1,025 in peak year), 648 brant (2,260 in peak year), 691 Canada goose (1,285 in peak year), and 314 common goldeneye (990 in peak year), along with lesser numbers of bufflehead, mallard, canvasback, long-tail duck, and American coot. Waterfowl abundance in the waters surrounding East and West Fire Island (located in Great South Bay-West) were surveyed separately for the years from 1986 through 1998. The records from this survey indicate average concentrations of 1,299 birds in the bay each year, including 496 greater and/or lesser scaup (4,900 in peak year), 209 (common, hooded, and/or red-breasted) merganser (1,800 in peak year), and 113 American black duck (387 in peak year). Based on these surveys, Great South Bay-West supports one of the largest concentrations of wintering waterfowl in New York State although flocks of waterfowl are not evenly distributed throughout the bay. Dabbling ducks, including American black duck and mallard, are concentrated in the shallow water and marsh areas behind the barrier islands and the Connetquot River Estuary. Generally, brant and geese feed in open water areas through midwinter, while later in spring (prior to migration), the birds feed extensively in the salt marshes. Waterfowl use of the bay during winter is influenced in part by the extent of ice cover each year. Concentrations of waterfowl also occur in the area during spring and fall migrations (March - April and October - November, respectively). Nearly all of Great South Bay-West is open to the public for waterfowl hunting, and the area supports regionally significant hunting pressure.

In addition to having significant bird concentrations, Great South Bay-West is an extremely productive area for marine finfish, shellfish, and other wildlife. Much of this productivity is directly attributable to the extensive salt marshes and tidal flats that line the mainland and barrier islands, the estuarine habitats around stream and river outlets on the mainland, and the sandy shoals and extensive eelgrass beds that characterize the open water areas of the bay. During eight years of surveys by the New York Department of Environmental Conservation, 85 species of fish have been identified, 40 of which occur regularly in the bay. Silversides, Atlantic menhaden, killifishes, and bay anchovy account for over 90% of all the fish caught and are the most abundant fish species in the bay. Atlantic silversides are found virtually everywhere throughout the bay. Bay anchovy is a main inhabitant of the mid-bay water column during its spawning time in late June and July. The killifishes include mummichog in the salt marshes, striped killifish over sandy habitats, and sheepshead minnow which occupy both the salt marsh and sandy habitats. Sticklebacks spawn in association with the submerged aquatic vegetation (SAV) in the spring and summer.

The abundance of forage species in Great South Bay-West contributes to its importance as a major nursery and feeding area (April - November, generally) for a number of estuarine-dependent, commercially and recreationally important species, including summer flounder, winter flounder, bluefish, striped bass, weakfish, tomcod and tuatog. The bay is particularly significant as a nursery area for the young-of-the-year and juvenile Hudson River striped bass and juvenile bluefish, as well as older striped bass during the summer months. The bay area also serves as an important nursery area for reef species, including tuatog, cunner, and black sea bass due to the cover and prey species provided by areas of vegetation. Fire Island Inlet is an especially significant component of the habitat; as a corridor for fish migrations, as a source for the exchange and circulation of bay waters, and as an area where feeding by many fish and wildlife species is concentrated (including adult striped bass and bluefish). The most abundant winter species in the bay, the plankton-eating American sandlance, is important as a forage

base for both predatory fish and roseate terns (E). As a result, the inlet is the most important foraging area for roseate terns (E) on western Long Island. As a result of the abundant fisheries resources in the bay (summer flounder especially), Great South Bay-West receives heavy recreational fishing pressure, of statewide significance. Commercial baitfisheries have been established in shoal areas near Fire Island Inlet.

Other common aquatic species occurring in Great South Bay-West include blue mussel, bay scallop, horseshoe crab, American eel, Atlantic croaker, northern kingfish, and northern puffer. Historically, the bay supported an economically significant shellfishery for northern quahog and the bay still remains a major spawning, nursery, and foraging area for blue crab. The entire bay area is inhabited by hard clams and the islands along the south shore support soft clams and ribbed mussels. Most of the bay waters are certified for shellfishing, resulting in a commercial and recreational harvest of local significance. Hard clam densities within the Babylon waters of Great South Bay averaged 3.35 clams per square meter from 2001 to 2002, with an average of 2.85 hard clams per square meter in certified waters. Landings data reported by the New York State Department of Environmental Conservation indicate an annual average of 2,371 total bushes of hard clams harvested within the Town of Babylon's waters within Great South Bay from 1993 to 2003. Clam Pond, on the north shore of Fire Island, also contains a population of bay scallops which have been reintroduced to the area. There are a number of shellfish aquaculture sites along the south shore of Long Island. Within Great South Bay-West, there are three small-scale shellfish hatcheries (grow-out rafts or floating upweller systems) and one significant hatchery.

Other wildlife species within the habitat include harbor seals that frequently use both sides of the Fire Island Inlet as haulout sites and are frequently sighted in the bay during the winter months. In recent years, sightings of grey seal have increased in this area as well. Sea turtles, including juvenile Atlantic ridley (E), juvenile loggerhead (T), and juvenile and adult green sea turtles (T), regularly use the Great South Bay. Diamondback terrapin reside among the salt marsh islands in the bay, and utilize sandy areas along the south shore for egg-laying.

Great South Bay-West has over 10,818 acres of submerged rooted aquatic vegetation beds, accounting for approximately 33% of the entire habitat area. These beds are dominated primarily by eelgrass with some wigeon grass (*Ruppia maritima*). Submerged aquatic vegetation beds provide spawning and foraging habitat for an array of mollusks, crustaceans, juvenile fish, as well as diving ducks. The distribution and abundance of benthic species in the bay's eelgrass community are likely controlled by a number of factors that include eelgrass stem density, water temperature and salinity, sediment type, predation, food supply, and human harvest.

IMPACT ASSESSMENT:

Any activities that would degrade water quality, increase turbidity, increase sedimentation, or alter flows, temperature, or water depths would affect the biological productivity of this area. All species would be adversely affected by water pollution, such as chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, non-point source runoff, waste disposal (including vessel wastes), and stormwater runoff. Efforts should be made to improve water quality in the bay, including the reduction or elimination of discharges from vessels and upland sources, effective oil and toxic chemical spill prevention and control programs, upgrading of wastewater treatment plants, enactment of pet waste ordinances to reduce coliform contributions to the bay, and the implementation of erosion control and stormwater pollution prevention best management practices. Vegetated upland buffer zones (e.g. wetlands, dunes, and forested areas) should be protected or

established to reduce non-point source pollution and sedimentation from upland sources.

Alteration of tidal patterns in Great South Bay-West, by modification of inlet configurations or other means (e.g., sediment removal by dredging, channelization, bulkheading), would have negative impacts on the biotic communities present. No new navigation channels should be excavated within the area. Dredging to maintain existing boat channels in the bay should be scheduled in between September 15 and December 15 to minimize adverse effects on aquatic organisms. Unregulated dredged material placement in this area would be detrimental to the habitat, but such activities may be designed to maintain or improve the habitat for certain species of wildlife.

Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously disturbed by development (e.g., natural salt marsh, tidal flats, or shallows), would result in the loss of productive areas which support the fish and wildlife resources of Great South Bay -West. Elimination of salt marsh and intertidal areas, through loss of intertidal connection, ditching, excavation, or filling, would result in a direct loss of a valuable habitat. Restoration of previously connected portions of the habitat, including the removal of structures (e.g. bulkheads, groins, jetties) which disrupt natural sedimentation and deposition patterns and physically alter the habitat may be beneficial. Construction of new and maintenance of existing erosion control structures which interfere with natural coastal processes should be carefully evaluated for need and where possible, non-structural solutions should be utilized.

Unrestricted use of motorized vessels, including personal watercraft, in shallow waters can have adverse effects on the benthic community, and on fish and wildlife populations through resuspension of seafloor sediments and through shoreline erosion which may reduce water clarity and increase sedimentation. Use of motorized vessels should be controlled (e.g., no wake zone, speed zones, zones of exclusion) in and adjacent to shallow waters and adjacent wetlands. Docks, piers, catwalks, or other structures may be detrimental to submerged aquatic vegetation (SAV) beds through direct or indirect effects from shading, mooring chain scarring, and other associated human uses. Where environmental parameters are appropriate, opportunities for restoration of SAV beds may exist. Any restoration of SAV beds should utilize the best available science and implement proper monitoring protocols.

Thermal discharges, depending on time of year, may have variable effects on use of the area by marine species, such as sea turtles and overwintering waterfowl. Installation and operation of water intakes could have significant impact on juvenile (and adult, in some cases) fish concentrations, through impairment or entrainment. Activities that would enhance migratory, spawning, or nursery fish habitat, particularly where an area is essential to a species' life cycle or helps to restore a historic species population would be beneficial. Where appropriate, hydrological modifications (e.g. dams, dikes, channelization, bulkheading, sedimentation, etc.) should be mitigated or removed, including the rejoining of formerly connected tributaries, and the removal of obstructions or improvements to fish passage.

Nesting birds inhabiting the islands, marshes and barrier beaches of Great South Bay -West are highly vulnerable to disturbance by humans from March 15 through August 15. Significant pedestrian traffic or recreational use (e.g., boat and personal watercraft landing, off-road vehicle use, picnicking) of the marsh islands could easily eliminate the use of this site as a breeding area and should be minimized during this period. Predation of chicks and destruction of eggs or nests by unleashed pets (e.g., dogs, cats) and natural predators may also occur, and predator control should be implemented where feasible. Fencing and/or annual posting of the bird nesting area should be provided to help protect the nesting bird species.

Activities to protect or restore wetland habitat in Great South Bay -West, consistent with best

management practices, (including the restoration of historic tidal regime, planting of native vegetation, control of invasive species, etc.) may enhance habitat values for fish and wildlife species.

HABITAT IMPAIRMENT TEST:

A **habitat impairment test** must be applied to any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** is as follows.

In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
- significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

The range of parameters which should be considered in applying the habitat impairment test include but are not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity,

predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,

3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed in the Impact Assessment section to assist in applying the habitat impairment test to a proposed activity.

KNOWLEDGEABLE CONTACTS:

New York State Department of State
Division of Coastal Resources
Habitat Unit
99 Washington Avenue
Albany, NY 12231
Phone: (518) 474-6000

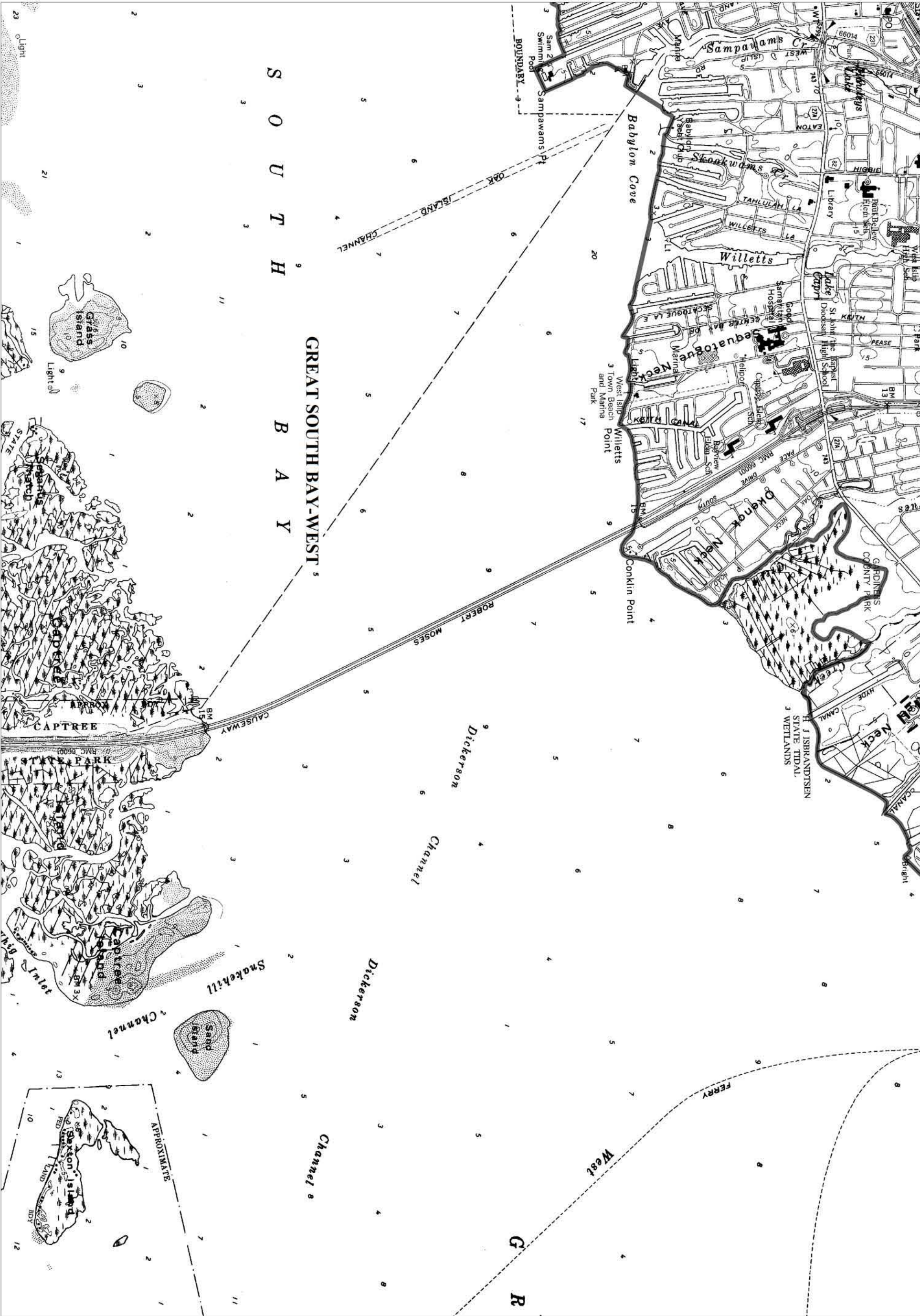
NYSDEC - Region 1
State University of New York, Building 40
Stony Brook, NY 11790
Phone: (631) 444-0204

NYSDEC
Bureau of Marine Resources
205 N. Belle Meade Road, Suite # 1
East Setauket, NY 11733
Phone: (631) 444-0430

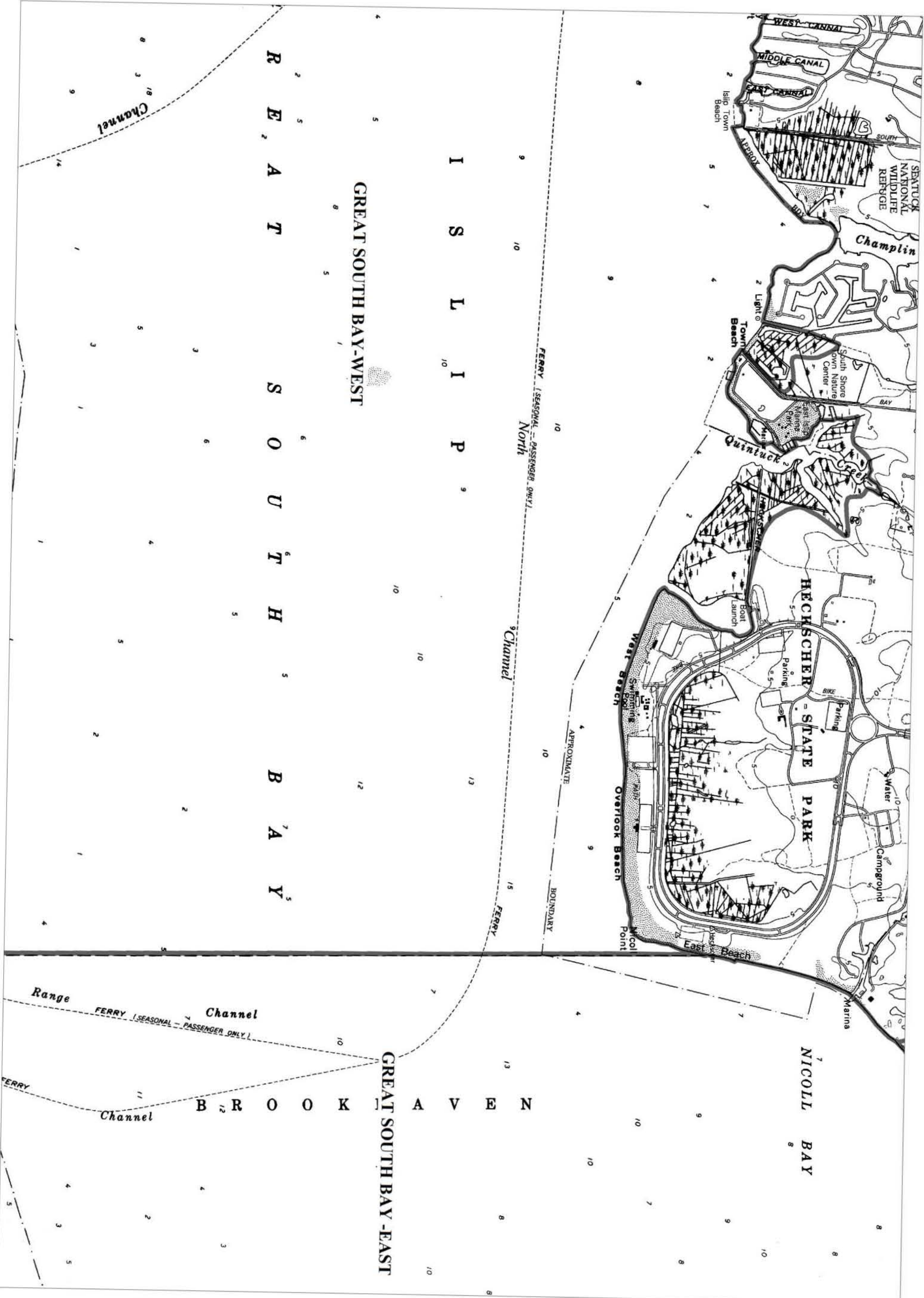
New York Natural Heritage Program
625 Broadway, 5th floor
Albany, NY 12233
Phone: (518) 402-8935

Town of Babylon
Department of Environmental Control
281 Phelps Lane
N. Babylon, NY 11703
(631) 422-7640

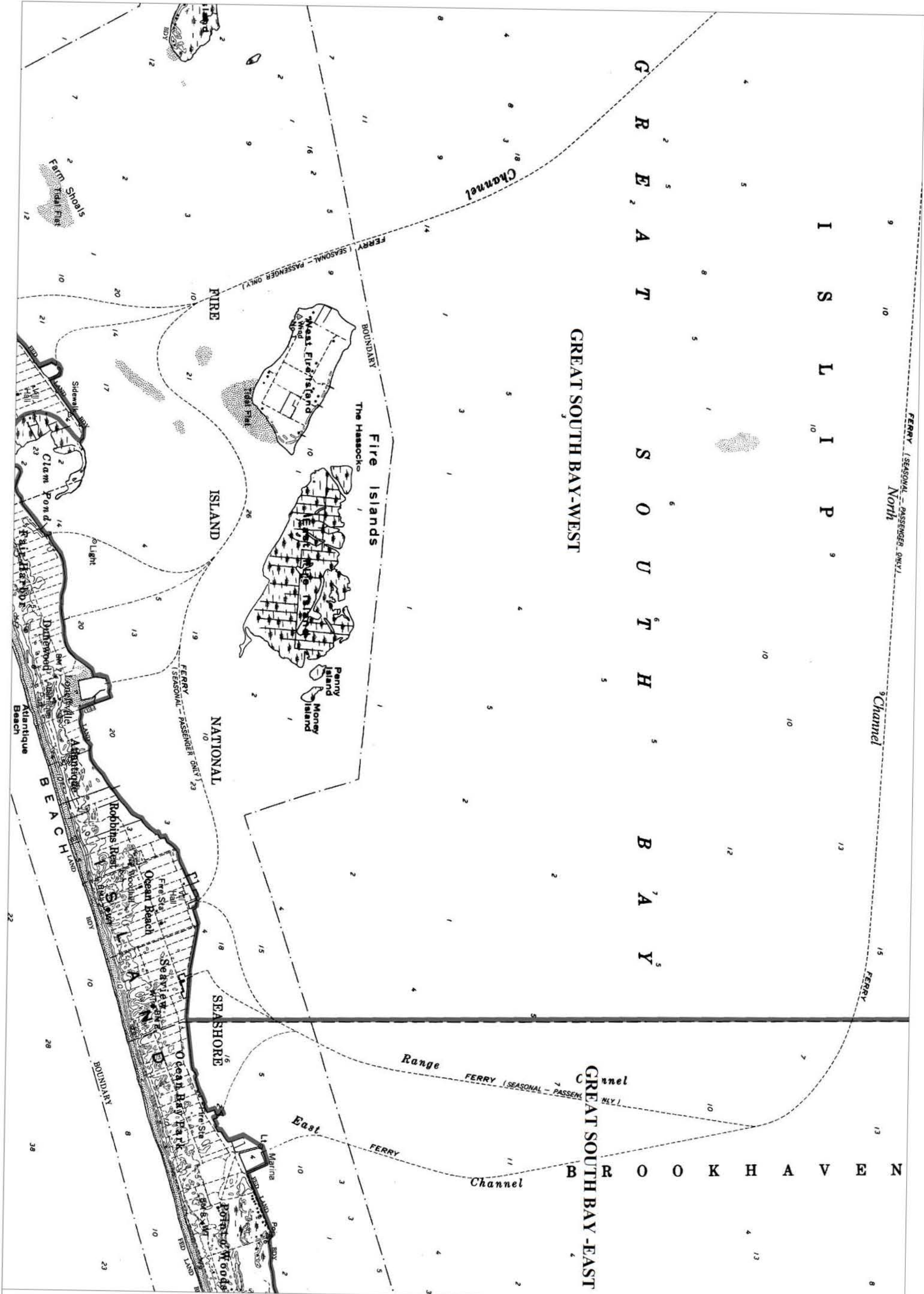
Town of Islip
Planning Department
655 Main Street
Islip, NY 11751
Phone: (631) 224-5450



Significant Coastal Fish and Wildlife Habitats



Significant Coastal Fish and Wildlife Habitats
Great South Bay - West (In Part)
part 5 of 7
Great South Bay - East (In Part)



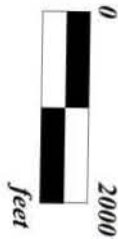
Significant Coastal Fish and Wildlife Habitats



New York State
Department of State

Division of
Coastal Resources

Great South Bay - West(In Part)
part 6 of 7
Great South Bay East (In Part)



Attachment B:**COASTAL FISH & WILDLIFE HABITAT ASSESSMENT FORM**

Name of Area:	Great South Bay-East
Designated:	March 15, 1987
Updated:	December 15, 2008
County:	Suffolk
Town(s):	Brookhaven
7½' Quadrangle(s):	Bay Shore East, NY; Bellport, NY; Howells Point, NY; Sayville, NY

Assessment Criteria**Score**

Ecosystem Rarity (ER)–the uniqueness of the plant and animal community in the area and the physical, structural, and chemical feature supporting this community.

ER assessment: The largest protected, shallow, coastal bay in New York State. **64**

Species Vulnerability (SV) – the degree of vulnerability throughout its range in New York State of a species residing in the ecosystem or utilizing the ecosystem for its survival. (E = Endangered, T = Threatened, SC = Special concern)

SV assessment: Piping plover (E, T-Fed), least tern (T), and common tern (T) nesting and feeding areas. Additive division: $36 + 25/2 + 25/4 = 54.75$ **54.75**

Human Use (HU) – the conduct of significant, demonstrable, commercial, recreational, or educational wildlife-related human uses, either consumptive or non-consumptive, in the area or directly dependent upon the area.

HU assessment: Commercial hard clam industry of statewide significance; sportfishing of statewide significance; waterfowl hunting of county-wide significance. Additive division: $16 + 16/2 = 24$. **24**

Population Level (PL) – the concentration of a species in the area during its normal, recurring period of occurrence, regardless of the length of that period of occurrence.

PL assessment: This area supports one of the largest concentrations of wintering waterfowl in New York State, and population levels of diving ducks are unusual in the northeastern U.S. **25**

Replaceability (R) – ability to replace the area, either on or off site, with an equivalent replacement for the same fish and wildlife and uses of those same fish and wildlife, for the same users of those fish and wildlife.

R assessment: Irreplaceable. **1.2**

Habitat Index: (ER + SV + HU + PL) = 167.75

Significance: (HI x R) = 201.3

NEW YORK STATE
SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT
NARRATIVE

GREAT SOUTH BAY - EAST

LOCATION AND DESCRIPTION OF HABITAT:

Great South Bay-East is located along the south shore of Long Island, north of Fire Island, in the Town of Brookhaven, Suffolk County (7.5' Quadrangles: Bay Shore East, N.Y.; Sayville, N.Y.; Howells Point, N.Y.; and Bellport, N.Y.). The fish and wildlife habitat is approximately 33,580 acres, and is generally defined by the mean high water elevation on the north and south sides, by the Brookhaven town line to the west, and by the Smith Point Bridge over Narrow Bay to the east. Great South Bay-East includes many locally recognized bay areas, including Nicoll Bay, Patchogue Bay, and Bellport Bay. The Great South Bay-East significant habitat includes the wetlands along Fire Island National Seashore, including along Long Cove, Robinson Cove, Whalehouse Point, Molasses Point, and Goose Point. The bay is bordered on the north and east by dense residential and commercial development, including extensive marina and harbor facilities. Many of the remaining wetland areas along the north shore of Great South Bay-East are owned by the NYSDEC to protect their natural values. Elsewhere, the bay is bordered by federally owned wetlands (Wertheim National Wildlife Refuge), open water, and low density residential development on Fire Island.

A number of benthic habitats make up the bay bottom. Benthic habitat in Great South Bay can be classified as muddy sandflat and sandflat habitats. Much of the bay is shallow open water habitat with salt marshes lining the bay where tidal creeks and rivers feed into the bay from the mainland. Cordgrasses (*Spartina alterniflora* and *S. patens*) dominate the low and high salt marsh, respectively. The bottom substrate of Great South Bay-East is comprised primarily of sand with interspersed estuarine mud patches. These patches extend on the north side of Great South Bay-East from east of Nicoll Bay to Patchogue Bay and are also prominent in Bellport Bay. Submerged aquatic vegetation beds are also present in Great South Bay-East, and are most prevalent along the south shore of the bay along Fire Island and along the north shore in Bellport Bay. The nature of the habitat is highly influenced by three fundamental conditions: freshwater input from ground water, salt water input from the ocean through the Great South Bay inlets, and protection provided by the barrier island.

The bay encompasses a vast area of relatively shallow open water less than 12 feet deep at mean low water. Tidal fluctuations in the bay average approximately 0.7 feet. Great South Bay-East is connected to the ocean by Fire Island Inlet and Narrow Bay. Great South Bay is the only bay on Long Island's south shore that has major riverine input (from the Carmans and Connetquot Rivers). In addition, the bay is unique because it receives possibly as much as 11% of freshwater input directly through its floor.

FISH AND WILDLIFE VALUES:

Great South Bay-East comprises approximately one-half of the largest protected, shallow, coastal bay area in New York State. Two-hundred and ten species, including 43 fish species, and 101 bird species were identified during an intensive survey of Great South Bay in 1997. This broad expanse of open

water is highly productive, and supports a tremendous diversity of fish and wildlife species. Shorebird survey results of Great South Bay-East indicate that an average of 6 breeding pairs (14 in peak year) of piping plover (E, T-Fed) nesting along the bay shores annually from 1993 to 2005. During the same period, least tern (T) and common tern (T) have averaged 23 and 90 breeding pairs, respectively, each year (110 and 540 in respective peak years). Common (T) and least tern (T) nest in large colonies located in sand, gravel, shells, and seaweed above the high tide mark. Piping plovers nest well above the high tide mark in generally grassless sand beaches. The salt marshes, intertidal flats, and shallows in this area provide valuable feeding areas for birds throughout the year, including species nesting in the area and large concentrations of shorebirds during migration. These include green-backed heron, black-crowned night heron, snowy egret, American bittern, Canada goose, mallard, American black duck, gadwall, northern harrier (T), osprey (SC), piping plover (E, T-Fed), least tern (T), common tern (T), herring gull, willet, horned lark, fish crow, marsh wren, red-winged blackbird, sharp-tailed sparrow, and seaside sparrow.

Great South Bay-East is also one of the most important waterfowl wintering areas (November - March) on Long Island, especially for diving ducks, which feed on eelgrass, invertebrates, and small fish. The ten-year period from 1975-1984 indicate average concentrations of over 10,700 birds in the bay each year. Mid-winter aerial surveys of waterfowl abundance from 1986 to 1998 (excluding 1997) for all of Great South Bay indicate average concentrations of over 7,000 birds in the bay each year (18,008 in peak year), including 4,085 greater and/or lesser scaup (15,405 in peak year), 583 American black duck (1,255 in peak year), 417 (common, hooded, and/or red-breasted) merganser (1,025 in peak year), 648 brant (2,260 in peak year), 691 Canada goose (1,285 in peak year), and 314 common goldeneye (990 in peak year), along with lesser numbers of bufflehead, mallard, canvasback, long-tail duck, and American coot. Ground surveys conducted along the shores of Great South Bay-East from 2000-2004 reported an average of 123 hooded merganser (213 in peak year) in the bay, with lesser numbers of red-throated loon, horned grebe, bald pate, green-winged teal, northern shoveller, northern pintail, red-breasted merganser, redhead, canvasback, common goldeneye, Eurasian wigeon, bufflehead, long-tailed duck, ring-necked duck, ruddy shelduck, scoter, Canada goose, and American coot. Dominant concentrations of waterfowl for the aforementioned period included scaup, red-breasted merganser, American black duck, brant, common goldeneye, and Canada goose. Based on these surveys, it appears that Great South Bay-East supports the largest wintering waterfowl concentrations in New York State, and is probably one of the most important areas for diving ducks in the northeastern United States. Waterfowl use of the bay during winter is influenced in part by the extent of ice cover each year. Concentrations of waterfowl also occur in the area during spring and fall migrations (March - April and October - November, respectively). Nearly all of Great South Bay-East is open to the public for waterfowl hunting, but due to the limited amount of emergent wetlands within the bay, hunting pressure is of county-wide significance.

In addition to having significant bird concentrations, Great South Bay-East is an extremely productive area for marine finfish, shellfish, and other wildlife. Much of this productivity is directly attributable to the salt marshes and tidal flats found throughout Great South Bay. Great South Bay-East and its connected freshwater tributaries serve as a major spawning, nursery, migratory, and foraging area (April - November, generally) for winter flounder, northern kingfish, bluefish, blue crab, and forage fish species, such as Atlantic silverside (abundant throughout the bay), striped killifish, mummichog, northern pipefish, weakfish, striped bass, sticklebacks, American eel, and other diadromous fishes. Harbor and grey seals frequently use the bay in the winter. Additionally, 2 loggerhead sea turtles (T, T-Fed) were found stranded in Great South Bay East in 1991.

As a result of the abundant fisheries resources in this area, Great South Bay-East receives heavy recreational fishing pressure, of statewide significance. Winter flounder historically predominated the

sportfishery catch in Great South Bay-East, but in recent years the dominant sportfishery in the bay has been for summer flounder. Portions of the habitat are regarded as "hot spots" for weakfish, scup, and summer flounder. A commercial fishery for Atlantic silverside, killifish, and white perch has been established in the Bellport Bay area. The entire Great South Bay-East area is inhabited by concentrations of hard clams along with local concentrations of American oyster.

In the early and late seventies Great South Bay accounted for approximately 50% of the nation's total hard clam production. After 1979 harvests began to fall and by 1984 it is estimated hard clam landings amounted to 50% of historical peak values. Today, most of the bay waters are certified for shellfishing, with approximately 2,130 acres of permanently closed and 2,300 acres of seasonally closed waters, resulting in a commercial and recreational harvest of statewide significance. Shellfishing in Great South Bay-East is only open to Brookhaven residents. Landings data from the New York State Department of Environmental Conservation for the 11 year period from 1993-2003 indicate an average harvest of 26,960 bushels of hard clams, 33 bushels of soft clams, and 286 bushels of oysters from the bay each year. Landings of mussels, conchs, and razor clams were also reported, but in minimal numbers. An approximately 13,000 acre portion of the bay extending from Nicoll Point to Blue Point and across to Fire Island is privately owned by The Nature Conservancy. Spawning sanctuaries have been established in the bay waters under the ownership of The Nature Conservancy in an effort to restore the once prolific hard clam to the area.

Great South Bay-East encompasses 3,713 acres of submerged rooted aquatic vegetation beds. These beds account for approximately 11% of the entire habitat area. These beds are dominated primarily by eelgrass (*Zostera marina*) with some widgeon grass (*Ruppia maritima*). Submerged aquatic vegetation beds provide spawning and foraging habitat for an array of mollusks, crustaceans, and juvenile fish, as well as diving ducks. The distribution and abundance of benthic species in the bay's eelgrass community is likely controlled by a number of factors that include eelgrass stem density, water temperature and salinity, sediment type, predation, food supply, and human harvest.

IMPACT ASSESSMENT:

Any activities that would degrade water quality, increase turbidity, increase sedimentation, or alter flows, temperature, or water depths would affect the biological productivity of this area. All species would be adversely affected by water pollution, such as chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, non-point source runoff, waste disposal (including vessel wastes), and stormwater runoff. Efforts should be made to improve water quality in the bay, including the reduction or elimination of discharges from vessels and upland sources, effective oil and toxic chemical spill prevention and control programs, upgrading of wastewater treatment plants, enactment of pet waste ordinances to reduce coliform contributions to the bay, and the implementation of erosion control and stormwater pollution prevention best management practices. Vegetated upland buffer zones (e.g. wetlands, dunes, and forested areas) should be protected or established to reduce non-point source pollution and sedimentation from upland sources.

Alteration of tidal patterns in Great South Bay-East (e.g., sediment removal by dredging, channelization, bulkheading) would have negative impacts on the biotic communities present. No new navigation channels should be excavated within the area. Dredging to maintain existing boat channels in the bay should be scheduled in between September 15 and December 15 to minimize adverse effects on aquatic organisms. Unregulated dredged material placement in this area would be detrimental to the habitat, but such activities may be designed to maintain or improve the habitat for certain species of wildlife.

Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously disturbed by development (e.g., natural salt marsh, tidal flats, or shallows), would result in the loss of productive areas which support the fish and wildlife resources of Great South Bay-East. Elimination of salt marsh and intertidal areas, through loss of intertidal connection, ditching, excavation, or filling, would result in a direct loss of a valuable habitat. Restoration of previously connected portions of the habitat, including the removal of structures (e.g. bulkheads, groins, jetties) which disrupt natural sedimentation and deposition patterns and physically alter the habitat may be beneficial. Construction of new and maintenance of existing erosion control structures which interfere with natural coastal process should be carefully evaluated for need and where possible, non-structural solutions should be utilized.

Unrestricted use of motorized vessels, including personal watercraft, in shallow waters can have adverse effects on the benthic community, and on fish and wildlife populations through resuspension of seafloor sediments and through shoreline erosion which may reduce water clarity and increase sedimentation. Use of motorized vessels should be controlled (e.g., no wake zone, speed zones, zones of exclusion) in and adjacent to shallow waters and adjacent wetlands. Docks, piers, catwalks, or other structures may be detrimental to submerged aquatic vegetation (SAV) beds through direct or indirect effects from shading, mooring chain scarring, and other associated human uses. Where environmental parameters are appropriate, opportunities for restoration of SAV beds may exist. Any restoration of SAV beds should utilize the best available science and implement proper monitoring protocols.

Thermal discharges, depending on time of year, may have variable effects on use of the area by marine species, such as sea turtles and overwintering waterfowl. Installation and operation of water intakes could have significant impact on juvenile (and adult, in some cases) fish concentrations, through impairment or entrainment. Activities that would enhance migratory, spawning, or nursery fish habitat, particularly where an area is essential to a species' life cycle or helps to restore a historic species population would be beneficial. Where appropriate, hydrological modifications (e.g. dams, dikes, channelization, bulkheading, sedimentation, etc.) should be mitigated or removed, including the rejoining of formerly connected tributaries, and the removal of obstructions or improvements to fish passage.

Nesting birds inhabiting the islands, marshes and barrier beaches of Great South Bay -East are highly vulnerable to disturbance by humans from March 15 through August 15. Significant pedestrian traffic or recreational use (e.g., boat and personal watercraft landing, off-road vehicle use, picnicking) of those areas which contain concentrations of nesting birds could easily eliminate the use of this site as a breeding area and should be minimized during this period. Predation of chicks and destruction of eggs or nests by unleashed pets (e.g., dogs, cats) and natural predators may also occur, and predator control should be implemented where feasible. Fencing and/or annual posting of the bird nesting area should be provided to help protect the nesting bird species.

Activities to protect or restore wetland habitat in Great South Bay -East, consistent with best management practices, (including the restoration of historic tidal regime, planting of native vegetation, control of invasive species, etc.) may enhance habitat values for fish and wildlife species.

HABITAT IMPAIRMENT TEST:

A **habitat impairment test** must be applied to any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** is as follows.

In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
- significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

The range of parameters which should be considered in applying the habitat impairment test include but are not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;
2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed in the Impact Assessment section to assist in applying the habitat impairment test to a proposed activity.

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Director, Division of Environmental Protection
Town of Brookhaven
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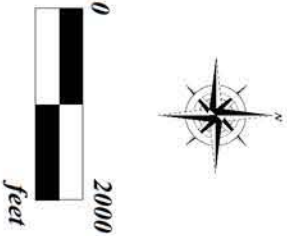
Significant Coastal Fish and Wildlife Habitats

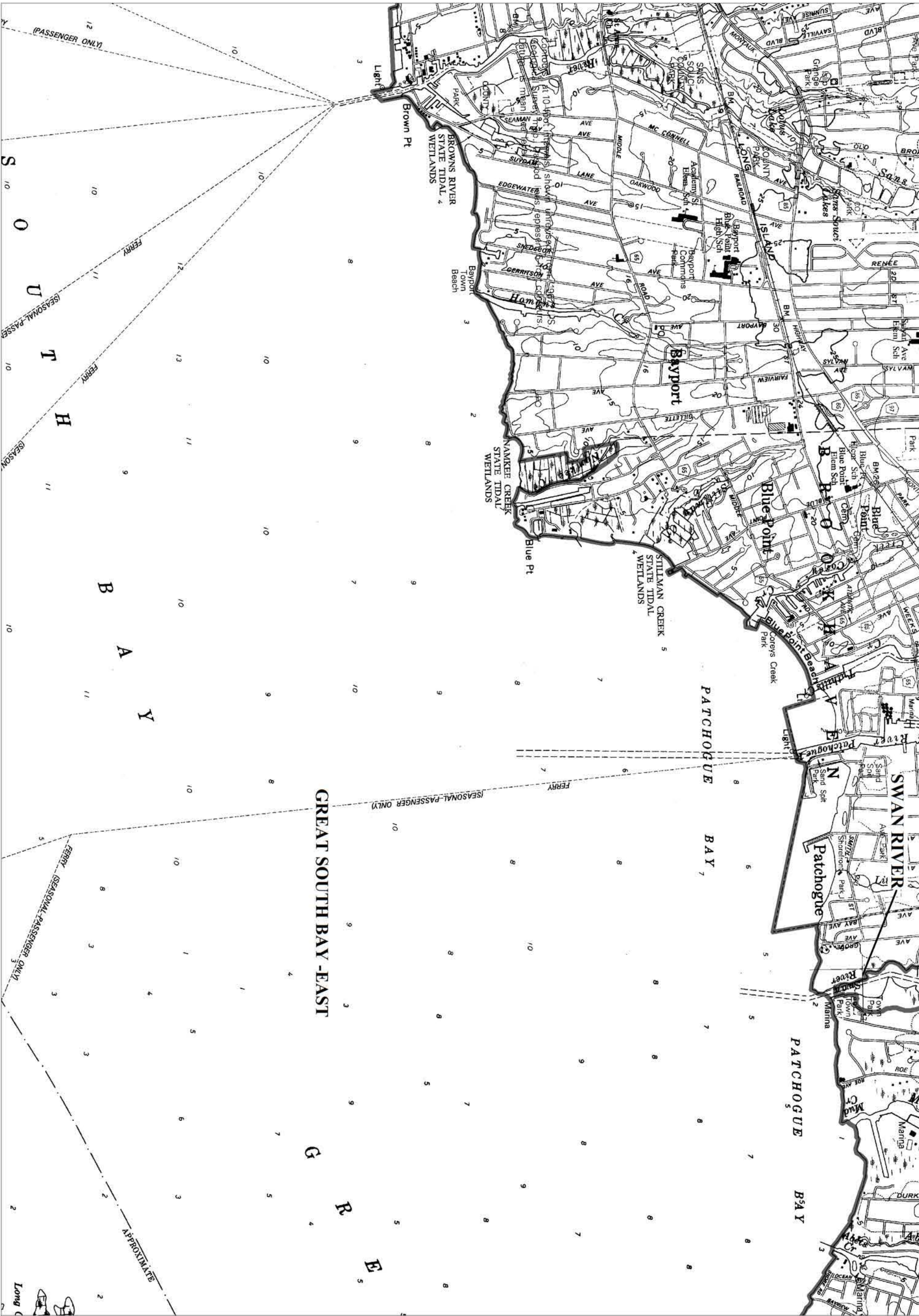


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Great South Bay - East (In Part)
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Connetquot River (In Part)
Great South Bay-West (In Part)





Significant Coastal Fish and Wildlife Habitats



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Great South Bay - East (In Part)
part 2 of 7
Swan River (In Part)

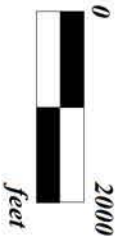


Significant Coastal Fish and Wildlife Habitats



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Great South Bay - East (In Part)
part 3 of 7
Beaverdam Creek (In Part)
Carmans River (In Part)



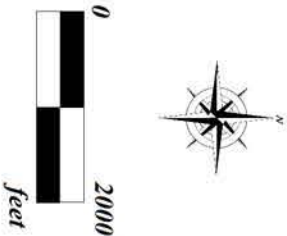


Significant Coastal Fish and Wildlife Habitats



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Great South Bay - East (In Part)
part 3 of 7
Beaverdam Creek (In Part)
Carmans River (In Part)





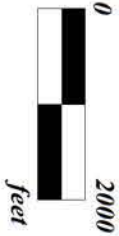
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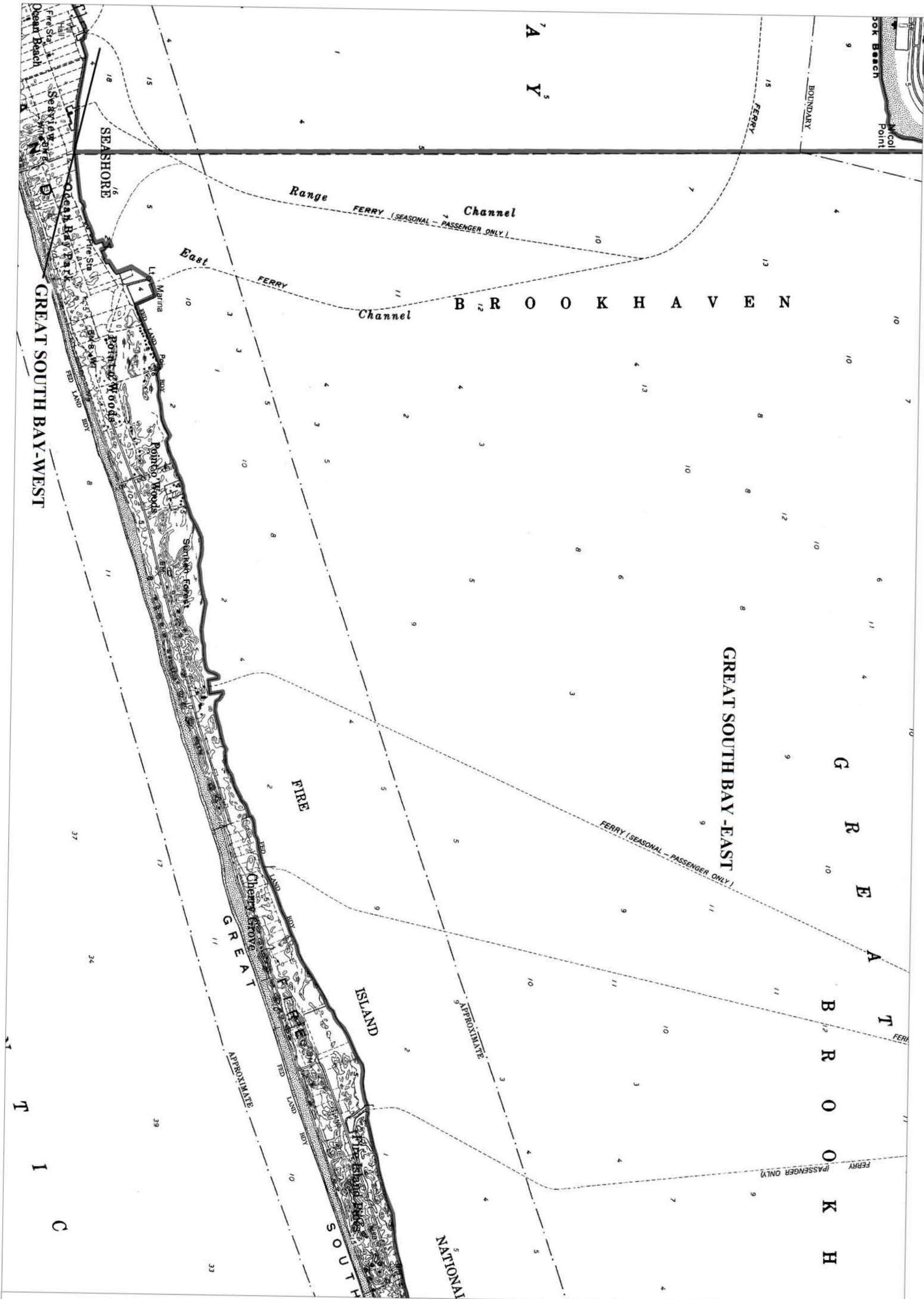


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Great South Bay - East (In Part)
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Beaverdam Creek (In Part)
Carmans River (In Part)
Moriches Bay (In Part)



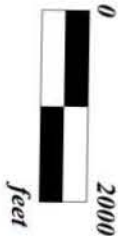


Significant Coastal Fish and Wildlife Habitats



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Great South Bay - East (In Part)
part 7 of 7
Great South Bay - West (In Part)



Attachment B:**COASTAL FISH & WILDLIFE HABITAT ASSESSMENT FORM**

Name of Area:	Connetquot River
Designated:	March 15, 1987
Date Revised:	December 15, 2008
County:	Suffolk
Town(s):	Islip
7½' Quadrangle(s):	Bay Shore East, NY; Central Islip, NY; Patchogue, NY

<u>Assessment Criteria</u>	Score
Ecosystem Rarity (ER)—the uniqueness of the plant and animal community in the area and the physical, structural, and chemical feature supporting this community.	
ER assessment: Undeveloped coastal river watersheds are rare in New York State.	64
Species Vulnerability (SV) – the degree of vulnerability throughout its range in New York State of a species residing in the ecosystem or utilizing the ecosystem for its survival. (E = Endangered, T = Threatened, SC = Special concern)	
SV assessment: Common tern (T) and least tern (T) and osprey (SC) nesting. Additive division: $25 + 25/2 + 16/4 = 41.5$	41.5
Human Use (HU) – the conduct of significant, demonstrable, commercial, recreational, or educational wildlife-related human uses, either consumptive or non-consumptive, in the area or directly dependent upon the area.	
HU assessment: Extensive recreational use of area by residents of Long Island and New York City.	9
Population Level (PL) – the concentration of a species in the area during its normal, recurring period of occurrence, regardless of the length of that period of occurrence.	
PL assessment: One of few known locations on Long Island with naturally reproducing brook trout populations; rare in ecological region. One of only two regions with pirate perch in New York State. Additive division: $16 + 9/2 = 20.5$	20.5
Replaceability (R) – ability to replace the area, either on or off site, with an equivalent replacement for the same fish and wildlife and uses of those same fish and wildlife, for the same users of those fish and wildlife.	
R assessment: Irreplaceable.	1.2
Habitat Index: (ER + SV + HU + PL) =135	Significance: HI x R = 162

NEW YORK STATE
SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT
NARRATIVE

CONNETQUOT RIVER

LOCATION AND DESCRIPTION OF HABITAT:

The Connetquot River habitat is located on the south shore of Long Island in the Town of Islip in Suffolk County, N.Y. (7.5' Quadrangles: Bay Shore East, N.Y., Central Islip, N.Y., and Patchogue, N.Y.). The habitat encompasses an approximately 4,500 acre area which includes all of the Connetquot River from the headwaters north of the Long Island Railroad down to the mouth at Nicoll Bay, all lands within the Connetquot River State Park, and adjoining tidal wetlands and undeveloped uplands outside of the park (including State owned areas). The river is fed by several natural cold water streams originating from groundwater sources. The park includes Connetquot Brook, several small streams and ponds, freshwater wetlands, and extensive forested areas. Pitch pine-oak forest is the most predominant forest community type within the Connetquot River significant habitat. Within this forest type, the rare community type of pitch pine-oak-heath woodland occurs. Pitch-pine-oak forests transition to red-maple hardwood swamp which is the most prevalent community type along the river. Red maple-black gum swamp, a community type rare to New York State, also occurs within this significant habitat. Red maple (*Acer rubrum*) and pitch pine (*Pinus rigida*) occur in all of these communities, although the percentage of cover varies with each community type.

The Connetquot River significant habitat is home to a variety of rare plants. Pixies (E) (*Pyxidanthera barbulata*) are found in relatively burned, damp pine barrens within the park, in areas that are now dominated by shrubs. They are also associated with pitch pine and red maple. Southern twayblade (E) (*Listera australis*), occurs in a red maple swamp in Connetquot River State Park and is associated with black gum (*Nyssa sylvatica*), pitch pine, and Collin's sedge (*Carex collinsii*). Approximately 2,000 plants occur in the area, and this is one of only fifteen sites with southern twayblade (E) in all of New York State. The Connetquot River significant habitat is home to several other species of rare plants.

FISH AND WILDLIFE VALUES:

The Connetquot River habitat is the largest contiguous area of undeveloped land in Suffolk County that encompasses an entire river watershed. This is especially rare in New York State since it is located within a highly urbanized area. The river itself is also significant due to its designation as a Wild, Scenic and Recreational River under Article 15, Title 27 of the New York State Environmental Conservation Law.

This large habitat area provides suitable habitat for a tremendous diversity of fish and wildlife species. Over 100 species of birds have been reported as possibly breeding in the area, more than for any other location on Long Island. According to data from 1998 to 2003, the Connetquot River supports an estimated annual average of 18 pairs (24 peak) of breeding osprey (SC). In 1996 and 1997, 41 pairs and 35 pairs of breeding common terns (T), respectively, were present at Timber Point. During the same two years, 5 pairs and 9 pairs of breeding least terns (T) were present. The Connetquot River estuary is also a

major wintering area and stopover point during waterfowl migration. The most abundant waterfowl include American black duck, mallard, scaup, redhead, canvasback, and Canada goose. Common goldeneye, ring-necked duck, hooded merganser, and bufflehead can also be found here in lesser numbers.

A sizeable herd of white-tailed deer and a wild turkey population inhabits the area, although the wild turkey population has declined in recent years due to an increasing fox population. Overgrazing of vegetation by white-tailed deer, and grazing of rare plant species in particular, is of concern within the habitat.

The Connetquot River is fed by many natural coldwater springs and supports a significant sea-run fishery for non-native brown and rainbow trout. Within the State Park, the Connetquot River supports a large population of heritage strain native brook trout, and non-native brown and rainbow trout all the way up to the railroad tracks north of Route 454. Connetquot Brook, along with its tributaries, is one of the few remaining wild brook trout streams on Long Island; however, the fishery is supported by a State Park hatchery, using the river and its many tributaries as its water and brood stock source. The estuary's importance as a nursery for yearling striped bass and bluefish that concentrate to feed in the tidewater areas before commencing coastal migration is also of significance. The rivers and tributaries of Long Island are one of only two known regions with pirate perch (*Aphredoderus sayanus*) in New York State with the first population of these fish reported in the Connetquot River. Anadromous fish such as alewife and white perch may also spawn here and provide opportunities for recreational fisheries.

Human use of this area is extensive, as the park attracts over 280,000 visitors per year. The Connetquot River is one of the best trout streams on Long Island, and is utilized by a very large portion of Long Island and New York City anglers for trout fishing (fly fishing primarily). The park issues approximately 12,000 angler permits annually. Many locations in the park provide fishing access for handicapped individuals and senior citizens. In addition to trout fishing, the State Park also provides an extremely large area for nature walks, hiking, and birdwatching with approximately 17 miles of trails and 25 miles of bridle paths.

IMPACT ASSESSMENT:

Any activity that would degrade water quality; increase turbidity, sedimentation, or temperature; or alter flows or depths in the Connetquot River or its tributaries would impact on the fish and wildlife species using the area. Degradation of water quality in the River or its tributaries from chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, non-point source run-off, waste disposal (including vessel wastes), and stormwater runoff would adversely affect fish and wildlife species and the potential human uses of those resources. Efforts should be made to improve water quality, including reduction or elimination of discharges from vessels and upland sources, effective oil and toxic chemical spill prevention and control programs, upgrading of wastewater treatment plants, enactment of pet waste ordinances to reduce coliform contributions, and the implementation of erosion control and stormwater pollution prevention best management practices. Vegetated upland buffer zones (e.g. wetlands, dunes, and forested areas) should be protected or established to reduce non-point source pollution and sedimentation from upland sources.

Alteration of tidal patterns in the Connetquot River (e.g., sediment removal by dredging, channelization, bulkheading), would have negative impacts on the biotic communities present. No new navigation channels should be excavated within the area. Activities within the stream itself should be scheduled in late summer, winter, or early spring to avoid disruption of the fall (September to December) spawning

run of brown trout. Unregulated dredged material placement in this area would be detrimental to the habitat, but such activities may be designed to maintain or improve the habitat for certain species of wildlife.

Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously disturbed by development (e.g., natural salt marsh, tidal flats, or shallows), would result in the loss of productive areas which support the fish and wildlife resources of the Connetquot River significant habitat. Elimination of salt marsh and intertidal areas, through loss of intertidal connection, ditching, excavation, or filling, would result in a direct loss of a valuable habitat.

Substantial alteration of the stream channel, such as impoundment or creation of barriers to fish passage should be prohibited. Impediments to movement and migration of aquatic species, whether physical or chemical (e.g. dams, dikes, channelization, bulkheading, sedimentation, etc.), should be prohibited. Activities within the stream itself should be scheduled to avoid disruption of the fall (September to December) spawning run of brown trout. Plans to mitigate the impacts of existing hydrological modifications should be developed, including the rejoining of formerly connected tributaries, and the removal of obstructions or barriers to fish passage. Enhancement efforts should be monitored, and the associated habitat effects should be reported and evaluated (e.g. the amount of upstream passage opened through upstream passage projects and the passability of blockages for different species of anadromous fish). Activities within the stream itself should be scheduled to avoid disruption of the fall (September to December) spawning run of brown trout and native brook trout.

Elimination or disturbance of adjacent wetland and forested habitats would adversely affect the habitat and should be avoided. Such areas should be protected, and where possible restored in order to maintain and/or improve water quality and suitability as brook trout habitat. The wild brook trout population would be especially sensitive during spawning, which occurs between September and December, and during incubation, which extends through April. Land disturbances within the park may significantly affect the populations of many fish and wildlife that are enjoyed by visitors to the area. Control of invasive plant species, through a variety of means, may improve fish and wildlife species use of the area.

Unrestricted use of motorized vessels including personal watercraft in shallow waters can have adverse effects on the benthic community, and on fish and wildlife populations. Use of motorized vessels should be controlled (e.g., no wake zones, speed zones, zones of exclusion) in and adjacent to shallow waters and adjacent wetlands.

Activities designed to enhance human access to the area for fish and wildlife related recreation may be compatible with protection of existing resources. The addition of trails through sensitive areas, however, may promote the invasion of invasive and exotic species, and should be conducted in a manner to avoid and minimize impacts.

HABITAT IMPAIRMENT TEST:

A **habitat impairment test** must be applied to any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** is as follows.

In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
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Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

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The range of parameters which should be considered in applying the habitat impairment test include but are not limited to the following:

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Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed in the Impact Assessment section to assist in applying the habitat impairment test to a proposed activity.

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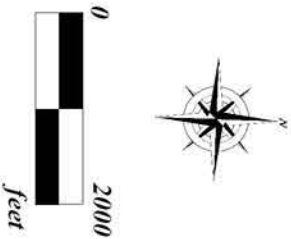
Significant Coastal Fish and Wildlife Habitats

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