
COASTAL FISH & WILDLIFE HABITAT ASSESSMENT FORM

Name of Area: **Mill Neck Creek, Beaver Brook, and Frost Creek**
County: **Nassau**
Town(s): **Oyster Bay**
7½' Quadrangle(s): **Bayville, NY-CT**
Originally Designated: **March 15, 1987**
Modified: **October 15, 2005**

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 undeveloped wetland ecosystems on the north shore of Long Island; rare in ecological subregion. 16

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: Least tern (T) foraging. Bald eagle (T) and osprey (SC) nesting, but extent of use is not adequately documented. 25

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: Area contributes biologically to commercial oyster production in Oyster Bay, of statewide significance; birdwatching area of county-level significance.
Additive Division: $16 + 4/2 = 18$ 18

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 the top 10 waterfowl wintering areas on the north shore of Long Island, significant between county and regional level. Geometric Mean: $\sqrt{(9 \times 4)} = 6$ 6

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] = 65

Significance = HI x R = 78

NEW YORK STATE
SIGNIFICANT COASTAL FISH AND WILDLIFE HABITAT
NARRATIVE

MILL NECK CREEK, BEAVER BROOK, & FROST CREEK

LOCATION AND DESCRIPTION OF HABITAT:

Mill Neck Creek is a narrow coastal bay which empties into the western side of Oyster Bay Harbor, between Oak Neck and Mill Neck, in the Town of Oyster Bay, Nassau County (7.5' Quadrangle: Bayville, NY-CT). The fish and wildlife habitat consists of Mill Neck Creek west of the Bayville Bridge, Oak Neck Creek, Beaver Lake, and the Shu Swamp portion of Beaver Brook downstream, as well as the disjunct area of Frost Creek, and all of the wetlands associated with these areas. The entire habitat covers approximately 707 acres of open tidal waters, tidal marsh and creeks, mud flats, and wooded freshwater swamp. The entire habitat area is bordered by residential development of varying densities, a golf course, undeveloped woodlands, parking fields, water-dependent commercial operations, and light commercial uses. The lands within the habitat are both privately and publicly owned. Mill Neck Preserve County Park on the northwestern edge of the Mill Neck-Beaver Brook portion of the habitat is owned as undeveloped county parkland. The open waters of Mill Neck Creek, as well as portions of Frost Creek and associated wetlands, are part of the Oyster Bay National Wildlife Refuge. All lands and waters within the Oyster Bay National Wildlife Refuge are federally excluded from the coastal area.

The Shu Swamp Nature Preserve is dominated by a red maple - black gum swamp and includes interpretive nature trails. American strawberry bush (*Euonymus americanus*), and sweetbay magnolia (*Magnolia virginiana*), both state-endangered plants, have been documented here.

FISH AND WILDLIFE VALUES:

The Mill Neck Creek, Beaver Brook, and Frost Creek complex and associated wetlands are an integral part of the Oyster Bay Harbor ecosystem, which is one of several major embayments on Long Island Sound. Oak Neck Creek is one of the largest undeveloped salt marshes remaining on the north shore of Long Island.

Oak Neck Creek and Beaver Lake are important feeding areas for Oyster Bay Harbor's wintering waterfowl populations. The Mill Neck Creek area supports regionally significant wintering waterfowl concentrations (November - March). Mid-winter aerial surveys of waterfowl abundance for the period 1986 to 1999 (excluding 1997) indicate average concentrations of approximately 576 birds in the area each year (1270 in peak year), including approximately 257 American black duck (535 in peak year), and 155 Canada geese (700 in peak year), along with lesser numbers of mallard, scaup (greater and/or lesser), canvasback, bufflehead, common goldeneye, American wigeon, merganser (common, red-breasted, and/or hooded), and long-tailed duck. Waterfowl use of these creeks and Beaver Lake during winter is influenced in part by the extent of ice cover each year. Concentrations of waterfowl are also documented in these areas during spring and fall migrations

(October-November, and March-April, respectively).

In addition to waterfowl use, many other fish and wildlife species inhabit the Mill Neck Creek Wetlands area. Wintering bald eagles(E) have been reported using these wetlands on several occasions in recent years. This is one of the few areas on Long Island where eagles have been frequently sighted during mid-winter. Two pairs of piping plover (E, T-fed) nested successfully (2 fledglings) in Frost Creek in 2003, but consistent use of the area by this species has not been documented. These wetlands provide suitable nesting habitat for yellow-crowned and black-crowned night herons, green-backed heron, Canada goose, mallard, American black duck, gadwall, fish crow, red-winged blackbird, sharp-tailed sparrow, and possibly least bittern (SC). The area is also used for feeding by osprey (SC), least tern (T), herons, egrets, shorebirds, and songbirds.

Oak Neck Creek and Mill Neck Creek serve as nursery and feeding habitat (from April 1 - November 30, generally) for various marine fish species, such as scup, bluefish, Atlantic silversides, Atlantic menhaden, winter flounder, and blackfish. This wetland area contributes organic matter and nutrients to New York State's most significant commercial oyster beds, located in Oyster Bay Harbor. Currently, Mill Neck Creek is uncertified for commercial shellfishing. A fish ladder has been built at the downstream end of Beaver Lake to allow the upstream passage of alewives, herring, and sea run trout. The use by diamondback terrapins of Mill Neck Creek wetlands has been documented.

IMPACT ASSESSMENT:

Any activity that would degrade the water quality; increase turbidity, sedimentation, or temperature; or alter depths or flows in the Mill Neck Creek, Beaver Brook, and Frost Creek habitat would adversely affect the biological productivity of this area. Any disturbance of the adjacent wetlands may degrade the water quality of the creek. All species of fish and wildlife would be affected by water pollution, such as chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity, and waste disposal (including vessel wastes). Discharges or runoff of sewage effluent, pesticides, or other hazardous materials into the creeks would be detrimental to many of the resident aquatic species and also to the potential human uses of those resources. Eutrophication caused by runoff from fertilizers, septic tanks, roads, and lawns is of considerable concern, as such over-enrichment of waters could lead to invasions and dominance by exotic, nutrient-loving, weedy plants and concurrent displacement of the native flora. Efforts should be made to improve water quality, including reduction or elimination of discharges from vessels and upland sources. Vegetated upland buffer zones should be protected or established to reduce non-point source pollution and sedimentation from upland sources.

Alteration of tidal patterns in the Mill Neck Creek, Beaver Brook, & Frost Creek area could have negative impacts on the fish and wildlife communities present. No new navigation channels should be excavated within the area. Dredging to maintain existing boat channels should be scheduled between September 15 and December 15 to minimize potential impacts on aquatic organisms, and to allow for upland placement when wildlife populations are least sensitive to disturbance. Dredged material placement in this area would be detrimental, 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, may result in the loss of productive areas which support the fish and wildlife resources of Mill Neck Creek area. Elimination of salt marsh and intertidal areas, through loss of tidal connection, ditching, excavation, or filling, would result in a direct loss of valuable habitat area. Alternative strategies for the protection of shoreline property should be examined, including innovative, vegetation-based approaches. Control of invasive nuisance plant species, through a variety of means, may improve fish and wildlife species use of the area and enhance overall wetland values.

Unrestricted use of motorized vessels including personal watercraft in the protected, shallow waters of bays, harbors, and tidal creeks can have adverse effects on aquatic vegetation and 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 vegetated wetlands.

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.

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:

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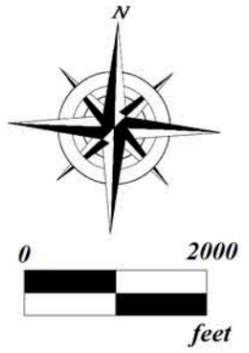
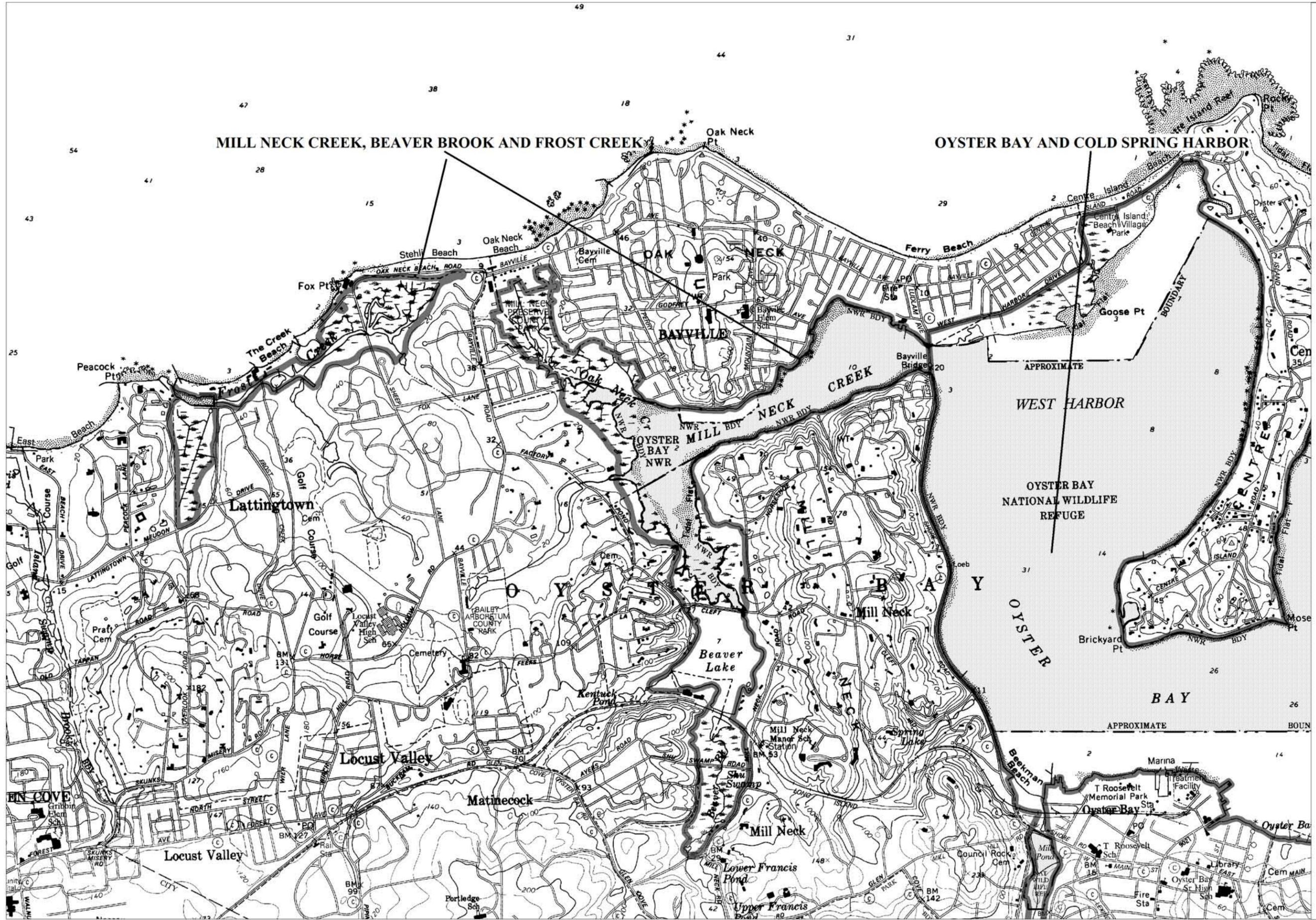
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Significant Coastal Fish and Wildlife Habitats
 [] Oyster Bay National Wildlife Refuge
 Mill Neck Creek, Beaver Brook
 and Frost Creek
 Oyster Bay and Cold Spring Harbor (In Part)