COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Jamaica Bay**

Designated: **September 15, 1992**

County(ies): **Queens, Kings; Nassau**

Town(s): **New York City (Queens, Brooklyn); Hempstead**

7½' Quadrangle(s): **Brooklyn, NY; Coney Island, NY; Far Rockaway, NY; Jamaica, NY**

Score	Criterion
40	Ecosystem Rarity (ER) One of the largest coastal wetland ecosystems in New York State. Extensively disturbed through dredging, filling, and commercial activities. Geometric mean: $(64 \times 25)^{1/2} = 40$.
58	Species Vulnerability (SV) Piping plover (E), common tern (T), northern harrier (T), diamondback terrapin (SC), upland sandpiper (SC), barn owl (SC), short-eared owl (SC), grasshopper sparrow (SC) nesting and feeding. Additive division: 36 + 25/2 + 25/4 + 16/8 + 16/16 = 58.
14	Human Use (HU) Regionally important for recreational fishing and birdwatching. Additive division: 9 + 9/2 = 14.
24	Population Level (PL) Wintering waterfowl concentrations of statewide importance. Only population of laughing gulls in New York state. Additive division: 16 + 16/2 = 24.
1.2	Replaceability (R) Irreplaceable.

SIGNIFICANCE VALUE = [(ER + SV + HU + PL) X R]

= **163**

DESIGNATED HABITAT: JAMAICA BAY

HABITAT DESCRIPTION:

Jamaica Bay is located along the south shore of the New York City portion of Long Island between the shorelines of Brooklyn and Queens to the north and the Rockaway barrier beach to the south. The bay is situated in the boroughs of Brooklyn and Queens, New York City (King and Queens counties) and in the Town of Hempstead (Nassau county) (7.5' Quadrangles: Brooklyn, NY; Coney Island, NY; Far Rockaway, NY; and Jamaica, NY). This approximate 10,000 acre area is defined by the mean high water elevation along the shorelines of the bay and also includes fringing tidal marsh and adjacent upland areas which are important for nesting birds. The habitat does not include the deepwater portions of Beach Channel to the south. The fish and wildlife habitat is the entire bay which includes extensive areas of salt marsh (9,000 acres), tidal flats, dredge spoil islands, dredged channels and dredged basins. Some of the islands in the bay have upland communities including open field, shrub thicket, developing woodlands, and beach grass dune. Water depths in the bay average 16 feet with depths up to 40 feet in the deepest portions of the dredged channels and basins. The tidal range averages about 5 feet and the flushing rate for the entire bay is about 33 days. The only remaining significant natural inflow of surface water into Jamaica Bay is Hook Creek which drains into the head of the bay area at the northeastern end of the habitat. Additional freshwater inputs are limited to runoff (40%) and sewage effluent (60%). The salinity of the bay ranges from 24 to 30 parts per thousand.

The main, central portion of the bay is within the federally-owned Jamaica Bay Wildlife Refuge, part of the Gateway National Recreation Area. All lands and waters within the wildlife refuge are federally excluded from the coastal area and federal consistency applies only to activities affecting coastal resources. The federally excluded portions of the habitat are indicated on the original coastal area map. Additional areas outside the refuge which are important as fish and wildlife habitat are included in the habitat, while buffer areas which are important for protecting habitat values but are not used directly by fish and wildlife species are not included.

The bay and its shorelines have been extensively disturbed through dredging, filling, and development. The building of Floyd Bennett Field and John F. Kennedy Airport resulted in extensive dredging and filling. There are four sewage treatment plants along the shorelines of the bay and three sanitary landfills. The bay continues to receive pollutants from runoff, sewage effluent, landfill leachate, and oil, grease and de-icing chemicals from airports and commercial facilities. Virtually all the original marshland on the outer shoreline has been destroyed. Lands outside the refuge have a combination of public and private ownership.

FISH AND WILDLIFE VALUES:

Jamaica Bay is one of the largest coastal wetland ecosystems in New York State. Despite extensive disturbances, much of the wetland ecosystem remains intact and the bay provides important habitat to a variety of fish and wildlife throughout the year. Common terns (T) nest at several salt marsh and dredge spoil islands throughout the bay, including East High Meadow, Duck Creek Marsh, Jo Co Marsh and Silver Hole Marsh. An estimated 869 breeding pairs were observed in 1987, 1075 breeding pairs were observed in 1988, and 342 breeding pairs were observed in 1989 when East High Meadow was not surveyed. Piping plover (E) nested on a sandy beach adjacent to the runways of John F. Kennedy Airport in 1983 and 1984, but have not nested here in recent years.

Many of the islands in Jamaica Bay are important heronries for a variety of heron species including black-crowned night heron, green-backed heron, yellow-crowned night heron, great egret, snowy egret and glossy

ibis. Canarsie Pol contained one of the largest New York State nesting populations of great egret in 1985 with an estimated 45 breeding pairs and also one of the largest New York State nesting populations of glossy ibis in 1988 with an estimated 70 breeding pairs. Jamaica Bay contains several important gull colonies with nesting populations of great black-backed gull and herring gull on Canarsie Pol, Ruffle Bar, Subway Island, and Little Egg Marsh. Jamaica Bay also contains the only laughing gull colonies in New York State. An estimated 3353 pairs nested in three colonies (Jo Co Marsh, Silver Hole Marsh, and East High Meadow) in 1987 and an estimated 7000 pairs nested in 1990. Other nesting waterbirds found in Jamaica Bay include black skimmer and American oystercatcher.

Jamaica Bay is one of the most important waterfowl wintering areas (November-March) in the Long Island region. Mid-winter surveys for the ten year period 1978-1987 indicate average concentrations of almost 12,000 birds in the bay each year (36,000 in peak year). Average winter populations include 366 Canada geese (1033 in peak year), 844 brant (1991 in peak year), 384 mallard (747 in peak year), 3058 American black duck (4308 in peak year), 1030 canvasback (2700 in peak year), 5741 greater scaup (27,300 in peak year), 493 bufflehead (1247 in peak year) and lesser numbers of horned grebe, gadwall, American widgeon, northern shoveler, common goldeneye, ruddy duck, and red-breasted merganser. Jamaica Bay supports some of the largest wintering populations of greater scaup and American black duck in New York State. Concentrations of waterfowl also occur in the area during spring and fall migrations (March-April and October-November, respectively). Waterfowl species which are known to nest in Jamaica Bay include Canada goose, mallard, American black duck, gadwall, and ruddy duck. Jamaica Bay is not open for waterfowl hunting.

The raptor banding station at Breezy Point has banded an average of 240 birds a year during the 10 year period 1978-1987 and has sighted an average of 1570 birds a year during fall migration (mid-September - mid-October). Raptors most frequently seen include sharp-shinned hawk, Coopers hawk (SC), northern harrier (T), osprey (T), merlin, and kestrel. Barn owls (SC) nest on the islands in the bay including Canarsie Pol, Ruffle Bar, Ruler's Bar Hassock, and on the adjacent shoreline of Floyd Bennett Field. Short-eared owl (SC) and northern harrier (T) have nested at Floyd Bennett Field and Kennedy Airport. In 1988 a pair of osprey (T) had nested, though unsuccessfully, at Rulers Bar Hassock. Other upland nesting birds found at one or both airports include the upland sandpiper (SC) and the grasshopper sparrow (SC).

Other wildlife found on the islands and shorelines of Jamaica Bay include a variety of reptiles, amphibians, and small mammals. The diamondback terrapin (SC) feeds in the marshes and nests on the beaches or sandy uplands. Two nesting sites on Ruler's Bar Hassock have been studied over the past few years. Other fauna include Fowler's toad and eastern garter snake. Spring peepers, northern brown snakes and eastern box turtles are being introduced into the refuge. Small mammals inhabiting the islands include house mouse, Norway rat, and meadow vole.

In addition to having significant wildlife concentrations, Jamaica Bay is a productive area for marine finfish and shellfish. Finfish surveys were conducted in 1974 (Texas Instruments), 1983 (New York Aquarium), and 1985 (National Park Service and New York Aquarium). The bay serves as a nursery and feeding area for winter flounder, summer flounder, windowpane flounder, weakfish, bluefish, scup, blueback herring, Atlantic cod, black sea bass, northern kingfish, tautog, and forage species including Atlantic silversides, mumichog, striped killifish, Atlantic menhaden, bay anchovy, and northern pipefish. As a result of the abundant fisheries resources in the bay, and its location in the New York metropolitan area, Jamaica Bay receives heavy recreational fishing pressure of regional significance. Historically (early in the century), Jamaica Bay was a very important shellfishing area, but the area has been closed since the 1920s due to pollutant loads. The bay still supports shellfish populations including hard clams, soft clams, mussels, and rock crabs. A recent survey found 121 species of benthic fauna.

IMPACT ASSESSMENT:

A **habitat impairment test** must be met for 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** that must be met 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:
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> - destroy the habitat; or,
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> - 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 below to assist in applying the habitat impairment test to a proposed activity.

Any activity that would further degrade the water quality in Jamaica Bay would adversely affect the biological productivity of this area. Many species of fish and wildlife are adversely affected by water pollution, such as chemical contamination (including food chain effects), oil spills, excessive turbidity, and waste disposal. Efforts should be made to improve water quality in the bay including upgrading and control of sewage discharges from upland sources and recreational boats. Alteration of tidal patterns in Jamaica Bay would have major impacts on the fish and wildlife communities present. Improving circulation and tidal flushing in the bay would improve habitat for fish and shellfish (particularly if hydrological connections were improved in areas blocked by Kennedy Airport's runways). No new navigation channels should be excavated within the area. Maintenance dredging for existing navigation channels should be scheduled between September 1 and December 15 to minimize impacts on aquatic organisms, and to allow for spoil disposal to occur when wildlife are least sensitive to disturbance. Elimination of salt marsh and shallow areas, through excavation or filling, would result in a direct loss of valuable habitat. Unregulated dredge spoil disposal in this area would be detrimental, but such activities may be designed to maintain or improve habitat for certain species. Nesting birds inhabiting the islands and shorelines of Jamaica Bay are highly vulnerable to disturbance by humans from mid-April through July. Recreational use (e.g., boat landing, picnicking) of those islands or shorelines which contain concentrations of nesting birds should be minimized during this period, through the use of annual posting or fencing. Construction of shoreline structures, such as docks, piers, bulkheads, or revetments, in areas not previously disturbed by development (i.e., natural salt marsh, tidal flats, or shallows), would result in the loss of productive areas which support fish and wildlife resources of Jamaica Bay.