

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Fresh Kills**

Designated: **September 15, 1992**

County: **Richmond**

Town(s): **New York City (Staten Island)**

7½' Quadrangle(s): **Arthur Kill, NY-NJ**

<u>Score</u>	<u>Criterion</u>
20	Ecosystem Rarity (ER) The largest tidal wetland ecosystem in the Manhattan Hills ecological region, but severely degraded by human disturbances. Geometric mean: $(16 \times 25)^{\frac{1}{2}} = 20$.
37	Species Vulnerability (SV) Northern harrier (T) and long eared owl wintering area, and common barn owl (SC) nesting. Additive division: $25 + 16/2 = 37$.
4	Human Use (HU) Human use of most of the area is limited. The William T. Davis Wildlife Refuge offers opportunities for educational uses within the refuge. Important at the county level.
4	Population Level (PL) Concentrations of various fish and wildlife species are unusual in Richmond County.
1.2	Replaceability (R) Irreplaceable.

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

= **78**

DESIGNATED HABITAT: FRESH KILLS

HABITAT DESCRIPTION:

Fresh Kills is located on the Arthur Kill, in west-central Staten Island, Richmond County (7.5' Quadrangle: Arthur Kill, NY-NJ). The fish and wildlife habitat is an approximate 1,000 acre tidal wetland complex associated with three tributary streams (Main Creek, Springville Creek, and Richmond Creek) that converge to form the Fresh Kills channel. Plant communities in the area include fresh or slightly brackish marsh, forested wetlands, salt marsh, and mudflats. Historically, this wetland complex was more than double its present size, but extensive loss of habitat occurred as a result of water pollution, mosquito control activities, and refuse disposal. Only two isolated areas of the wetland (Island of Meadows, and the William T. Davis Wildlife Refuge, north of Travis Avenue) remain in a relatively natural condition. The entire wetland area is owned by the City of New York.

FISH AND WILDLIFE VALUES:

Fresh Kills is the largest tidal wetland ecosystem in the Manhattan Hills ecological region, and at one time was one of the largest coastal wetland areas in New York State. The remaining natural communities in the area, i.e., tidal marshes and mudflats, are among the most valuable potential fish and wildlife habitats in Richmond County. However, Fresh Kills has been subjected to severe disturbance and degradation by human activities, significantly reducing its use by fish and wildlife.

Despite its present condition, portions of Fresh Kills provide suitable habitats for a variety of fish and wildlife species. The marsh serves as one of the few possible or confirmed nesting areas in Richmond County for a number of bird species, including Canada goose, mallard, black duck, blue-winged teal, wood duck, Virginia rail, common moorhen, spotted sandpiper, fish crow, marsh wren, and swamp sparrow. The Isle of Meadows area of Fresh Kills supported 507 nesting pairs of colonial waterbirds in 1989, including 62 pairs of cattle egret, 90 pairs of snowy egret, 258 pairs of black-crowned night heron and 78 pairs of glossy ibis. Little blue herons, great egrets, yellow-crowned night herons, and green-backed heron are also known to nest at Isle of Meadows. This area also supports colonies of herring gull and black-backed gull with 1989 nests totaling 220 and 15 respectively.

Concentrations of other herons, waterfowl, shorebirds, raptors, and passerines may occur in Fresh Kills (especially during spring and fall migrations), but the extent of use by migrant birds has not been documented. Several common barn owls use a dense stand of conifers at the northwest corner of the habitat for nesting and roosting. During winter, the Davis Refuge usually has a good population of raptors, especially red-tailed hawk, northern harrier (T), and long-eared owl. As many as 18-20 short-eared owls (SC) wintered in the area until the mid-1980's, when landfilling drastically altered a portion of the habitat. Relatively little information is available on use of the area by other wildlife, but muskrat, raccoon, and opossum are known to occur there. Box turtles and diamondback terrapin (SC) were observed in Fresh Kills in 1967, but have not been confirmed since.

The extensive network of tidal creeks and freshwater inflows provide potential spawning and nursery habitats for a variety of anadromous and resident freshwater fishes. Estuarine areas such as this are typically valuable habitats for commercially and recreationally important invertebrates and fishes. However, pollution problems in Fresh Kills and throughout the Arthur Kill (including industrial wastes, thermal inputs, oil spills, and sewage discharges) limit the productivity of the marshes, and preclude human use of the fish and wildlife resources that occur there.

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:

- 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 below to assist in applying the habitat impairment test to a proposed activity.

Any activity that would substantially degrade water quality, reduce freshwater inflows, or alter tidal fluctuations in Fresh Kills could adversely affect fish and wildlife populations in the area. Fresh Kills (and the Arthur Kill) do not have the benefit of vigorous tidal flushing action, so that residence time of pollutants tends to be longer than elsewhere around New York Harbor. Consequently, it is important to maintain freshwater inputs to the area from the principal tributary streams. Elimination of any wetlands or intertidal areas through dredging or filling would result in a direct loss of valuable habitat area. Application of insecticides to the area may result in adverse impacts on various fish and wildlife species, and should be avoided. An assessment of the entire Fresh Kills area is needed to better document use of the area by fish and wildlife, and identify threats to the resource created by adjacent land uses. A management plan should be developed to provide for the protection and enhancement of all remaining natural areas. Habitat management activities, including alteration of wetland hydrology or plant communities, may be designed to restore degraded portions of the marsh. Remedial actions to restrict movement of chemical pollutants from surrounding areas would also be beneficial, but may require considerable habitat disturbance. Any such disturbances should be conducted in late summer or fall to minimize potential impacts on most fish and wildlife populations. Physical modification of creek channels in Fresh Kills may adversely affect fisheries use of the area by creating barriers to migration of aquatic species, or by increasing turbidity, which can disrupt spawning and nursery activities. Upland areas bordering Fresh Kills should be restored to natural plant communities to provide cover for wildlife, erosion control, and buffer zones from human disturbance.