

COASTAL FISH AND WILDLIFE RATING FORM

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Name of area: **South Bay Creek and Marsh**

Designated: **August 15, 2012**

County: **Columbia**

Town(s): **Greenport, Hudson**

7.5' Quadrangles: **Hudson South, NY**

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<u>Assessment Criteria</u>	<u>Score</u>
<b>Ecosystem Rarity (ER) -- the uniqueness of the plant and animal community in the area and the physical, structural and chemical features supporting this community.</b>	
<b>ER Assessment</b> – This area contains freshwater tidal wetland, a freshwater tidal creek, intertidal and supratidal swamp. The latter two communities are rare in New York. Geometric mean: $\sqrt{64 * 25} = 40$	<b>40</b>
<b>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.</b>	
<b>SV Assessment</b> – No endangered, threatened or special concern species reside in the area.	<b>0</b>
<b>Human Use (HU) -- the conduct of significant, demonstrable commercial, recreational, or educational wildlife-related human use, either consumptive or non-consumptive, in the area or directly dependent upon the area.</b>	
<b>HU Assessment</b> – No significant human use.	<b>0</b>
<b>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.</b>	
<b>PL Assessment</b> – No unusual concentrations of species have been documented here.	<b>0</b>
<b>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.</b>	
<b>R Assessment</b> – Irreplaceable	<b>1.2</b>
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<b>Habitat Index (ER+SV+HU+PL)= 40</b>	<b>Significance(HI x R)= 48</b>

## LOCATION AND DESCRIPTION OF HABITAT

South Bay Creek and Marsh is a 121-acre basin of tidal wetlands and uplands located on the east side of the Hudson River, south of the city of Hudson, in the Town of Hudson in Columbia County, NY. (7.5' Quadrangle: Hudson South, NY). The South Bay Creek and Marsh habitat contains ecological communities ranked as rare in New York State: freshwater tidal creek, freshwater tidal marsh (broadleaf and graminoid vegetation), intertidal swamp, supratidal swamp, and submerged aquatic vegetation beds. Upland forests (cotton wood-black cherry) are also present.

The area south of the causeway is a functional tidal freshwater wetland complex that supports considerable plant diversity including heartleaf plantain (*Plantago cordata*)(T), golden club(*Orontium aquaticum*) (T), Long's bittercress (*Cardamine longii*) (T), Rough hedge-nettle (*Stachys hyssopifolia*) (T), smooth bur marigold (*Bidens laevis*) (T), spongy arrowhead (*Sagittaria montevidensis var spongiosa*), and kidney leaf mud plantain (*Heteranthera reniformis*)(R). Aquatic invasive species also occur in this habitat including water chestnut (*Trapa natans*), as well as upland invasive species. The area north of the causeway has lower plant diversity than the area south of the causeway.

This property is owned by Holcim Ltd. Disturbance and impacts in this habitat are the result of past filling of a previously open embayment, construction of an earthen causeway that bisects Hudson South Bay Marsh, and upland runoff. Impacts associated with past industrial and transportation development have resulted in reduced tidal influence throughout the habitat, and in particular north of the causeway where an invasive strain of the common reed (*Phragmites australis*) is dominant.

## FISH AND WILDLIFE VALUES

South Bay Creek was once a spawning site for anadromous fishes. Herring and other coastal migratory fish, including blueback herring (*Alosa aestivalis*) still have access to the creek. Resident fish species including white suckers (*Catostomus commersoni*), banded killifish (*Fundulus diaphanous*), central mudminnow (*Umbra limi*), fathead minnow (*Pimephales promelas*), pumpkinseed (*Lepomis gibbosus*), brown bullhead (*Ameiurus nebulosus*), common carp (*Cyprinus carpio*), and shiners (*Cyprinella* sp.) also spawn in this habitat, and American eel (*Anguilla rostrata*) is also present. Colonies of alewife floaters (*Anodonta implicata*) and tidewater mucklets (*Leptodea ochracea*) were observed in South Bay Creek and Marsh; however additional information on the importance of the ecosystem to these species is needed. Submerged aquatic vegetation provides food and refuge for fishes and invertebrates. The freshwater tidal marsh is a source of biological productivity and helps to maintain the water quality of the Hudson River.

The diversity of habitat cover types provide favorable nesting areas for a variety of waterfowl and songbirds including Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), great-blue heron (*Ardea herodias*), green heron (*Butorides virescens*), belted kingfisher (*Ceryle alcyon*), fish crow (*Corvus ossifragus*), alder flycatcher (*Empidonax alnorum*), least flycatcher (*Empidonax minimus*), great crested flycatcher (*Myiarchus crinitus*), marsh wren (*Cistothorus palustris*), yellow throated vireo (*Vireo flavifrons*), warbling vireo (*Vireo olivaceus*), veery (*Catharus fuscenscens*), northern rough-winged swallow (*Stelgidopteryx serripennis*), swamp sparrow (*Melospiza georgiana*), and red-winged blackbird (*Agelaius phoeniceus*). Probable nesting birds include Virginia rail (*Rallus limicola*), and spotted sandpiper (*Actitis macularia*).

Osprey (*Pandion haliaetus*) and red-shouldered hawk (*Buteo lineatus*) have also been observed in the habitat area; however, additional information on the importance of the ecosystem to the species is needed, prior to inclusion in the Species Vulnerability ranking.

Common map turtle (*Graptemys geographica*) habitat is found along its shores. Yellow spotted turtle (*Clemmys guttata*) was observed in the habitat area; however, additional information on the importance of the ecosystem to the species is needed. In addition, this area provides habitat for water snake (*Nerodia s. sipedon*), spotted salamander (*Ambystoma maculatum*), red-spotted newt (*Notophthalmus v. viridescens*), redback salamander (*Plethodon cinereus*), mudpuppy (*Necturus maculosus*), American toad (*Bufo americanus*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*), wood frog (*Rana sylvatica*) and Northern leopard frog (*Rana pipiens*). The smoky shrew (*Sorex fumeus*) may also have been observed within the habitat area.

## **IMPACT ASSESSMENT**

Any activity that would substantially degrade water quality, increase turbidity or sedimentation, alter flows, temperature or water depths at South Bay habitat could result in significant impairment of the habitat. All species may be affected by water pollution, such as chemical contamination (including food chain effects resulting from bioaccumulation), oil spills, excessive turbidity or sediment loading, nonpoint source runoff, and waste disposal. Discharges of sewage or stormwater runoff containing sediments or chemical pollutants (including fertilizers, herbicides and/or insecticides) may result in adverse impacts on the habitat area. Spills of oil or other hazardous substances are an especially significant threat to this area, because the biological activity of tidal flats is concentrated at the soil surface, much of which may be directly exposed to these pollutants.

Elimination of productive wetland and littoral areas through dredging, filling, or bulkheading could result in significant impairment of the habitat. Any activity that alters tidal flows in the bay and wetlands could significantly alter habitats for the fish and wildlife. Barriers to fish migration, whether physical or chemical would have significant impacts on fish populations in the creeks as well as in the Hudson River. Plans to reduce or eliminate the impacts of existing hydrological modifications should be developed, including improvements to fish passage, and/or the removal of obstructions or barriers. Alteration to existing causeways and bridges in the bay or where the bay meets the Hudson River could affect the hydrology and quantity and quality of habitats in the area. Any construction related to these structures should utilize the best available science and technology to reduce and avoid negative impacts to the habitat. Habitat disturbances would be most detrimental during fish spawning and incubation periods, which generally extend from March through August for most species.

The presence of invasive species and the expansion of their range within the habitat may result in changes in native plant, vertebrate and invertebrate species composition and abundance. In particular, expansion of common reed (*Phragmites australis*) has been correlated with reductions in populations of several marsh-breeding birds and declines in avian biodiversity. Effective control of invasive plant species, through a variety of means, may improve fish and wildlife species use of the area. Control methods, including biological controls and regulated use of herbicides must only be implemented, if other methods of control have been explored, and then only under permit with strict adherence to all precautionary measures to avoid impacts to non-target species. The primary goals of such efforts must be recovery and maintenance of habitat for native fish and wildlife species.

## **HABITAT IMPAIRMENT TEST**

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:

1. destroy the habitat; or,
2. 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, and 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 includes but is 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).

## **KNOWLEDGABLE CONTACTS**

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