Chapter 6: Natural Resources

A. INTRODUCTION

This chapter documents the project site's existing ecological resources and describes the potential impacts on these resources that could result from construction of the proposed project. An ecological site assessment was conducted on the project site on September 24, 2010 for the purpose of performing vegetation and wildlife inventories and a habitat assessment. Methods presented in the 2010 *City Environmental Quality Review (CEQR) Technical Manual* were used to characterize existing conditions on the project site. Opportunistic observations were made of wildlife based on site, sound, or sign. A tree survey was conducted on July 14, 2009 to document size, species, and status (living/dead) of the trees located on the project site. Published information on existing ecological resources also was consulted, including United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, New York State Department of Environmental Conservation (DEC) freshwater wetland maps, the DEC Natural Heritage Program (NHP) database, and the USFWS's county list of threatened and endangered species.

Overall, this analysis concludes that the proposed project would not have any significant adverse impacts on natural resources. The proposed project would be located on a 6.08-acre parcel previously disturbed by residential and other development in the 19th century. The site does not provide a rare or unique habitat; however, the site does provide breeding habitat for local terrestrial and avian species as well as foraging habitat for migratory birds during their spring and fall migrations. This habitat would be lost as a result of the proposed project and would be replaced by several new buildings, a surface parking lot, and associated infrastructure. While the loss of the habitat on the project site does constitute an adverse effect, due to the nature of the species observed and expected, along with the lack of protected species and significant habitats on the parcel, this effect would not be considered significant.

B. EXISTING CONDITIONS

VEGETATION

The project site is a 6.08-acre parcel of land which was developed starting in the mid-19th century as part of the former Brooklyn Navy Yard complex. Buildings developed on the site from the mid-19th century to the mid-20th century include residences for naval officers, a building formerly used for the storage of timber for shipbuilding, detached garages, a shower room, and a public works maintenance building. During this time, the vegetative community of the project site was primarily that of landscaped yards and street trees. The former Brooklyn Navy Yard was closed in 1966, and in 1967 the majority of the complex was sold to the City of New York. The project site was not sold to the City of New York at that time, but instead has remained under the ownership and control of the United States Army-National Guard Bureau (NGB).

In the approximately 50 years since the project site was abandoned, natural succession of the vegetation within the project site has continued steadily. Pioneer species, including several species of invasive and non-native plants, have been established on the project site.

A list of plant species identified on the project site during the 2009 tree survey and 2010 ecological site assessment is provided in **Table 6-1**.

The project site is dominated by habitat types which fall under the Terrestrial Cultural community designation (Edinger et. al.).[1] The existing buildings on the project site are located primarily on the southern portion of the site. Several large canopy trees exist in the yards of the abandoned Officers' Quarters. The dominant canopy (tallest) trees on the project site include American elm (*Ulmus Americana*), red mulberry (*Morus rubra*), white mulberry (*Morus alba*), Norway maple (*Acer platanoides*), American sycamore (*Platanus occidentalis*), and scarlet oak (*Quercus coccinea*). The site's understory is structurally diverse, with tree saplings, woody shrubs, climbing vines, and herbs. Several horticultural shrubs, American holly (*Ilex opaca*), wisteria (*Wisteria sp.*), viburnum (*Viburnum sp*.), and saplings of the overstory trees are found in the understory. The herbaceous layer comprises a mix of several species of horticultural and non-native/invasive plant species along with native plants. English ivy (*Hedera helix*) is a dominant understory herbaceous plant that has overtaken many of the abandoned officers' quarters and most of what used to be the yard areas. The southern portion of the site includes the "paved road/path" community type, an advanced successional stage of "mowed lawn with trees," and "urban vacant lot" as described by Edinger et al.

The northern portion of the project site comprises abandoned tennis courts, a former parade ground, one vacant residential building (Building J), a primarily wooded area, and a former open area that has experienced natural succession. The vegetative communities in the non-impervious areas of this portion of the project site include many pioneer, invasive, and non-native species such as tree-of-heaven (*Ailanthus altissima*), a stand of staghorn sumac (*Rhus typhina*), porcelain berry (*Ampelopsis brevipedunculata*), and mugwort (*Artemisia vulgaris*) mixed with species found in other areas of the project site. The northern portion of the site resembles the "paved road/path," "urban vacant lot," and "successional southern hardwoods" ecological communities described in Edinger at al.

As the terrestrial habitats on the project site are isolated from other similar habitats by intense urban development, the environmental systems that support the natural resources on the project site are limited to those systems on the project site and the incident precipitation that falls on the property.

TREE SURVEY

As described above, a tree survey of the project site was conducted on July 14, 2009 by a certified forester of NGB. The findings resulting from this tree survey are documented in a memorandum dated July 21, 2009 which has been included in **Exhibit 1** of **Appendix B** of this ~~Draft~~ Final Environmental Impact Statement (~~DEIS~~FEIS). Data collected during the survey included genus, species, age, and status (damaged, diseased, living, or dead). Several tree species were identified on the project site (see **Table 6-1**). Many of the larger trees were in poor condition due to storm damage, improper pruning, and disease. All of the sycamore (*Platanus occidentalis*) trees exhibited

[1] Edinger, G.J., et al. 2002. *Ecological Communities of New York State*. New York Natural Heritage Program (DEC).

signs of sycamore anthracnose (a fungal pathogen that causes blight, defoliation, and dieback of major tree limbs). The survey identified one large American elm and recommended that this tree be measured for potential inclusion into the New York State Big Tree Register. Four trees identified during the tree survey, one scarlet oak and three American elms, were recommended for protection and possible preservation. According to the report, the remaining trees are strong candidates for removal. A variety of reasons were provided, including:

- Structural defects indicating "a risk of unpredictable tree failure" that could not be removed by pruning;
- The presence of trees undesirable on account of their susceptibility to blight and insect infestation that could lead to death, thereby introducing unpredictable tree failure; and
- Trees with extensive surface root systems that would likely be damaged during demolition of the existing buildings, leading to the inadvertent creation of "hazardous trees after the development or construction has been completed."

Table 6-1
Vegetation Identified on Project Site

Common Name	Scientific Name	Stratum
Trees		
Norway maple	*Acer platanoides*	Overstory
Tree-of-heaven	*Ailanthus altissima*	Overstory
American holly	*Ilex opaca*	Understory
Apple tree species	*Malus sp.*	Understory
White mulberry	*Morus alba*	Overstory
Red mulberry	*Morus rubra*	Overstory/Understory
Scarlet oak	*Quercus coccinea*	Overstory
Red oak	*Quercus rubra*	Overstory
Basswood	*Tilia Americana*	Understory
Princess tree/royal pauwlonia	*Pauwlonia tomentosa*	Understory
American sycamore	*Platanus occidentalis*	Overstory
Black cherry	*Prunus serotina*	Overstory/Understory
Eastern cottonwood	*Populus deltoids*	Overstory
Callery pear	*Pyrus calleryana*	Understory
Staghorn sumac	*Rhus typhina*	Understory
Black locust	*Robinia pseudoacacia*	Understory
American elm	*Ulmus Americana*	Overstory
Horsechestnut	*Aesculus hippocastanum*	Overstory
Wood Shrubs/Vines		
Juneberry species	*Amelanchier sp.*	Understory Shrub
Porcelain berry	*Ampelopsis brevipedunculata*	Understory Vine
Wild hydrangea	*Hydrangea arborescens*	Understory Shrub/Foundation Planting
Japanese/box-leaved holly	*Ilex crenata*	Understory Shrub/Foundation Planting
Common privet	*Ligustrum vulgare*	Understory shrub
Honeysuckle species	*Lonicera sp.*	Understory Vine
Japanese pachysandra	*Pachysandra terminalis*	Groundcover
Virginia creeper	*Parthenocissus quinquefolia*	Understory Vine
Poison ivy	*Rhus radicans*	Understory Shrub/Vine
Multiflora rose	*Rosa multiflora*	Understory Shrub
Common lilac	*Syringa vulgaris*	Understory Shrub
Yew species	*Taxus sp.*	Understory Shrub/Foundation Planting
Viburnum species	*Viburnum sp.*	Understory Shrub
Grape species	*Vitis aestivalis*	Understory Vine
Wisteria species	*Wisteria sp.*	Understory Vine

Table 6-1 (cont'd)
Vegetation Identified on Project Site

Common Name	Scientific Name	Stratum
Herbaceous Plants		
White snakeroot	*Ageratina altissima*	Groundcover
Garlic mustard	*Alliaria officinalis*	Groundcover
Wild onion	*Allium sp.*	Groundcover
Mugwort	*Artemisia vulgaris*	Groundcover
Common milkweed	*Asclepias syriaca*	Groundcover
Small white aster	*Aster vimineus*	Groundcover
Lamb's quarters	*Chenopodium album*	Groundcover
Mexican tea	*Chenopodium ambrosioides*	Groundcover
Asiatic dayflower	*Commelina communis*	Groundcover
Horseweed	*Conyza Canadensis*	Groundcover
Wild carrot/Queen Anne's lace	*Daucus carota*	Groundcover
Buckwheat species	*Fagopyrum sp.*	Groundcover
English ivy	*Hedera helix*	Groundcover
Climbing hempweed	*Mikania scandens*	Groundcover
Evening primrose	*Oenothera biennis*	Groundcover
Pokeweed	*Phytolacca Americana*	Groundcover
Common plantain	*Plantago majo*	Groundcover
Smartweed species	*Polygonum sp.*	Groundcover
Lady's thumb	*Polygonum persicaria*	Groundcover
Black nightshade	*Solanum nigrum*	Groundcover
Bittersweet nightshade	*Solanum dulcamara*	Groundcover
Goldenrod species	*Solidago sp.*	Groundcover
Common dandelion	*Taraxacum officinale*	Groundcover
Violet species	*Viola sp.*	Groundcover
Graminoids		
Rush species	*Juncus sp.*	Groundcover
Green foxtail	*Setaria viridis*	Groundcover

Sources: Field work conducted on September 24, 2010.

WILDLIFE

This section documents the wildlife species identified on, and those expected to use, the project site. Overall, the project site supports a wildlife population typical of an urban vacant lot.

BIRDS

The New York State Breeding Bird Atlas Project maintains lists of bird species identified within designated "census blocks" throughout New York State. The Breeding Bird Atlas (BBA) is a comprehensive, statewide survey undertaken to reveal the current geographic distribution of breeding birds in New York. **Exhibit 2** of **Appendix B** lists those species sighted during the latest survey effort, known as Atlas 2000, within census block 5850A which encompasses the project site. This table is not meant to be a comprehensive list of birds breeding on the project site. Some birds listed would not occur on-site, while additional species not listed by Atlas 2000 may occur as non-breeding transients or migrants. However, because the project site contains some of the primary habitat types found within this census block (developed urban environments and vacant/abandoned lots), it can be expected that some of the species list in the BBA are active breeders on the project site.

Ten breeding species were identified in the Atlas 2000: peregrine falcon (Falco peregrines), rock pigeon (*Columbia livia*), mourning dove (*Zenaida macroura*), chimney swift (*Chaetura pelagic*), downy woodpecker (*Picoides pubescens*), American robin *(Turdus migratorius),*

northern mockingbird *(mimus polyglottos)*, European starling *(Sturnus vulgaris*), northern cardinal (*Cardinalis cardinalis*), and house sparrow (*Passer domesticus*).

Among the bird species that may occur on the project site, the peregrine falcon is the only species identified that is a state-listed endangered species. The peregrine falcon is found in a variety of habitats in New York State and nests on ledges 50 to 200 feet above the ground. The peregrine falcon has been observed nesting on several New York City bridges and buildings in the vicinity of the project site; however, it is not expected to breed on the project site due to a lack of tall buildings or other appropriate habitat. The project site does contain habitat for the peregrine falcon's prey species, and therefore may be used for foraging.

During the 2010 site visit, several avian species were observed. These species include blue jay (*Cyanocitta cristata*), European starling, American goldfinch (*Spinus tristis*), American robin, a pair of downy woodpeckers, a pair of northern flickers (*Colaptes auratus*), northern parula (*Parula americana*), blackpoll warbler (*Dendroica striata*), and a species of flycatcher (*Empidonax sp.*).

The two pairs of woodpeckers observed during the site visit indicate that breeding habitat may exist on the project site. It is expected that the project site would provide temporary habitat for migratory species during their spring and summer migrations.

MAMMALS

The project site and the surrounding area provides breeding and foraging habitat for a minimal number of mammalian species. These include small rodents such as the house mouse (*Mus musculus*), house rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), and gray squirrel (*Sciurus carolensis*). Other mammalian species that thrive in the areas of urban development, such as the little brown myotis (*Myotis lucifugus*), may frequent the site. A gray squirrel was observed on the project site during the site assessment.

REPTILES AND AMPHIBIANS

Similar to the BBA, the New York State Amphibian and Reptile Atlas project has compiled information on the current geographic distribution of species based upon field data collected from 1990 through 1998. As compared to the BBA, the Amphibian and Reptile Atlas survey blocks are significantly larger, each encompassing an entire U.S. Geological Survey (USGS) 7.5 minute quadrangle. Therefore, the documented presence of a species within the USGS 7.5 Minute "Brooklyn" Quadrangle, which encompasses the project site, is not definitive evidence that the species is likely to be present on-site. Species found by the New York State Amphibian and Reptile Atlas project in the project site's census block are listed in **Table 6-2**.

Limited habitat exists on the project site, as it comprises several overgrown urban lots and the surrounding landscape is urban development. Of the species documented within the atlas block, only one may be expected on the project site based on habitat preference. The common gartersnake is found in both suburban and urban environments and may use the project site. No amphibians or reptiles were observed during the 2010 site visit.

INVERTEBRATES

During the 2010 site visit, few species of invertebrates were observed. These include small eastern milkweed bug (*Lygaeus kalmia*) along with dragonfly mosquito species.

Table 6-2
New York State Amphibian and Reptile Atlas Project

Common Name	Scientific Name	Protective Status (Federal/NYS)	Potential for Occurrence Onsite
Toad Species			
Eastern American Toad	*Anaxyrus americanus*	Not Listed	No
Frog Species			
American Bullfrog	*Lithobates catesbeiana*	Not Listed	No
Snake Species			
Common Gartersnake	*Thamnophis sirtalis*	Not Listed	Yes
Turtle Species			
Snapping Turtle	*Chelydra serpentina*	Not Listed	No
Painted Turtle	*Chrysemys picta*	Not Listed	No
Eastern Box Turtle	*Terrapene carolina*	Species of Special Concern	No
Diamond-backed Terrapin	*Malaclemys terrapin*	Not Listed	No
Red-eared slider	*Trachemys scripta elegans*	Not Listed	No

THREATENED AND ENDANGERED SPECIES

In a letter dated September 17, 2010, the New York Natural Heritage Program (NYNHP) did not identify any records of known occurrences for rare or state-listed plant or animal species or significant natural communities and habitats on or adjacent to the project site. NYNHP correspondence can be found in **Exhibit 3** of **Appendix B**. A search of the USFWS's Environmental Conservation Online System for federally listed species in Kings County was conducted on October 13, 2010. Four species were identified within the County: Arctic peregrine falcon (*Falco peregrines tundrius*), hawksbill sea turtle (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), green sea turtle (*Chelonia myda*), and the loggerhead sea turtle (*Caretta caretta)*.

The Arctic peregrine falcon, known to occur statewide in New York, was federally delisted in 1994 based on a successful recovery; however, as noted previously, the peregrine falcon (*Falco peregrines*) is a state-endangered bird of prey in New York. The Arctic peregrine falcon breeds on the Arctic tundra during the summer months and migrates south to wintering habitats located on the United States and South American coastlines and mountains. The Arctic peregrine falcon experienced substantial population declines due to pesticide poisoning in the mid to late 1900s. The ban on some pesticide application, such as DDT (dichlorodiphenyltrichloroethane), has allowed the Arctic peregrine falcon population to recover to sustainable levels. The Arctic peregrine falcon was not listed in the project site's census block of the BBA and is not expected to inhabit the project site.

The loggerhead and green sea turtles are both federally and state-threatened. The hawksbill and leatherback sea turtles are both federally and state-endangered. All four species of sea turtle inhabit saltwater and do not breed or nest in New York State. Due to the habitat requirements of the sea turtles, they would not inhabit the project site.

C. THE FUTURE WITHOUT THE PROPOSED PROJECT

In the future without the proposed project, vegetative composition and wildlife population density and diversity are expected to remain relatively unchanged from existing conditions. The natural succession of the vegetative community would continue at the existing rate. Without the land use changes proposed, the project site would be expected to accommodate the current

variety of wildlife at similar densities. Outside of natural succession, little change would be expected to occur to the ecological communities present on the project site.

D. PROBABLE IMPACTS OF THE PROPOSED PROJECT

VEGETATION

The majority of the project site would be cleared for the proposed project. The existing habitats would be replaced by built surfaces (buildings, roads, and pavers), resulting in loss of vegetative cover. Based on the results of the 2009 tree survey, the vegetation to remain upon completion of project development (to the extent practicable) would be four large trees: one scarlet oak and three American elms located in the southern portion of the project site along Nassau Street. These trees may benefit from the clearing of competing vegetation in the surrounding area. The measures recommended for the protection of these trees provided in the attached tree survey report would be followed during demolition and construction activities to limit the potential effects of the proposed project on these trees to the maximum extent practicable. As described above, the remaining trees on the site were identified in the 2009 tree survey as strong candidates for removal.

New plantings would include street trees along Nassau Street and Navy Street to beautify the proposed development and keep the "wooded" look of the site. Native plantings proposed throughout the project site could include both flowering and fruiting species chosen to provide habitat and food resources for wildlife such as birds and butterflies. The ~~Brooklyn Navy Yard Development Corporation (BNYDC) and the~~ developer to be designated by the Brooklyn Navy Yard Development Corporation (BNYDC) pursuant to a Request for Proposals (RFP) would consult with the New York City Department of Parks and Recreation (DPR) to establish a list of desirable trees to be used on the project site and along the bordering streets.

As no endangered, threatened, or rare vegetation was identified on the project site, none would be disturbed in conjunction with the proposed project.

As documented during the natural resources surveys of the project site, invasive and non-native plant species have already taken root on the property and are dominant over much of the site. A few examples of such species include porcelain berry, wisteria, mugwort, tree-of-heaven, garlic mustard, princess tree and multiflora rose. While the potential for invasive and non-native species to spread would always exist, the opportunity to do so on this site would be limited. Areas not covered with impervious surfaces would be planted with native perennials, shrubs, and trees and maintained, thereby minimizing the spread of invasive and non-native species.

The proposed project would alter the on-site natural resources as noted previously, as well as the environmental systems that support these resources. As both of these components—the ecological communities and their supporting systems—are confined to the area of the project site, alteration to all would be at a similar level. Impacts on the identified natural resources to remain post-construction are not expected to be exacerbated by the removal of other resources.

WILDLIFE

The proposed project and the resultant replacement of habitat with development would not be expected to result in significant adverse impacts on wildlife. The existing and proposed conditions on the project site do not offer unique, critical, or significantly valuable breeding, foraging, or over-wintering habitat for terrestrial wildlife. At present, wildlife on the project site

is largely limited to relatively common species adept at using human-altered environments. The existing land uses on the project site and surrounding area would continue to act as a deterrent for use by species intolerant of humans, and impacts on this type of wildlife would not be expected to result from the proposed project.

Due to the substantial development in the vicinity of and the vegetative habitats on the project site, the site provides a "green island" for local wildlife and for migratory birds, such as warblers, during their spring and fall migrations. The existing, on-site terrestrial habitat resources would yield to a more developed land use with less vegetation and more impervious surface. This change would reduce the on-site habitat value for those species currently using of the property. While the loss of the habitat on the project site does constitute an adverse effect, due to the nature of the species observed and expected along with the lack of protected species and significant habitats on the parcel, this effect would not be considered significant.

THREATENED AND ENDANGERED SPECIES

No threatened, endangered, or rare species of plants or animals were identified within the area of disturbance nor are any expected to use the project site as critical habitat. Therefore, the development of the proposed project would not result in significant adverse impacts with regard to species protected by the state or federal governments.

E. OFF-SETTING MEASURES

As with all development on vegetated land, the vegetation within the limit of disturbance would be removed for the proposed project. While this would not result in a significant impact to the habitats present in the area, the vegetation and associated on-site habitat would be lost. Therefore, ~~BNYDC and~~ the developer to be designated pursuant to an RFP will create a planting plan to offset some of the vegetation and habitat disturbed during construction. The selection of plant species will take into consideration habitat value for wildlife such as birds and butterflies.

As described in Chapter 8, "Water and Sewer Infrastructure," Building C would have a green roof, which would decrease stormwater runoff, reduce the heat-island effect, and contribute increased insulation to the building. By using local plant species, the project's landscaped areas would require minimal water for irrigation. The planting of trees on the site would also contribute to the City's goals of adding one million new trees citywide. As discussed in Chapter 8, "Water and Sewer Infrastructure," these best management practices would reduce runoff from roof and paved surfaces to limit the proposed project's potential contribution to combined sewer overflow events. In addition, BNYDC ~~and the developer to be designated will~~ is consider<u>ing</u> a variety of sustainable design features for the proposed project. These could include high-performance building materials, water conservation measures such as gray water reuse, high-efficiency lighting design and HVAC (heating, ventilating, and air conditioning) systems, and the use of Energy Star appliances.

For the reasons noted above and with the incorporation of the off-setting measures described, the loss of the on-site habitat to the proposed development would not constitute a significant adverse impact to natural resources on or in the area surrounding the project site. ✷