Chapter 9: Natural Resources

A. INTRODUCTION

The 2010 *City Environmental Quality Review (CEQR) Technical Manual* defines natural resources as: "(1) the City's biodiversity (plants, wildlife and other organisms); (2) any aquatic or terrestrial areas capable of providing suitable habitat to sustain the life processes of plants, wildlife, and other organisms; and (3) any areas capable of functioning in support of the ecological systems that maintain the City's environmental stability." The purpose of this chapter is to evaluate the potential impacts of the Proposed Actions on natural resources in New York City.

This natural resources evaluation focuses on the Proposed Development Area within the project site due to the fact that portions of the Proposed Development Area would be substantially altered with the Proposed Actions, and due to the highly developed nature of other project site areas; the Commercial Overlay Area is completely built out and has no open or natural areas, and the Mercer Plaza Area offers only limited landscaping.

As detailed in Chapter 1, "Project Description," the Proposed Development Area is comprised of the following three adjacent areas:

- The Proposed Development Area[1], located on the two superblocks (South Block and North Block) bounded by West 3rd Street to the north, Houston Street to the south, Mercer Street to the east, and LaGuardia Place to the west. A number of buildings, walkways, lawns, and maintained gardens are present within the Proposed Development Area.
- The Commercial Overlay Area[2], bounded by the northern boundary of the existing R7-2 zoning district near East 8th Street to the north, West 4th Street to the south, Mercer Street to the east, and LaGuardia Place and Washington Square East to the west.
- The Mercer Plaza Area,[3] bounded by West 4th Street to the north, West 3rd Street to the south, the western sidewalk of Mercer Street to the east, and the existing NYU property line east of Weaver Hall to the west.

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[1] The Proposed Development Area includes: Block 524, Lots 1, 9, and 66; Block 533, Lots 1 and 10; and the portions of Mercer Street and LaGuardia Place that are currently not improved as streets and that are proposed to be demapped, either entirely or below a defined limiting plane. The unimproved portions of Mercer Street and LaGuardia Place owned by the City are under the jurisdiction of the New York City Department of Transportation (NYCDOT), and are referred to in this DEIS, respectively, as the "Mercer Street Strip" and the "LaGuardia Place Strip." The City-owned portion of Bleecker Street adjacent to the South Block (none of which is proposed to be demapped) is under the jurisdiction of the New York City Department of Parks and Recreation (NYCDPR), and is referred to herein as the "Bleecker Street Strip."

[2] The Commercial Overlay Area includes: Block 546, Lots 1, 5, 8, 10, 11, 15, 20, 21, 26, 30; Block 547, Lots 1, 4, 5, 8, 14, 15, 18, 19, 20, and 25; and Block 548, Lots 1, 4, 21, 24, 40, and 45.

[3] The Mercer Plaza Area contains a portion of Mercer Street between West 3rd and 4th Streets.

B. PRINCIPAL CONCLUSIONS

A natural resource assessment was conducted because the proposed project site and its surroundings contain natural resources as defined by CEQR. The natural resources assessment concludes that there would be no significant adverse impacts to ecological communities, vegetation, and wildlife as a result of the Proposed Actions. No threatened, endangered or special concern wildlife species are documented for the vicinity of the Proposed Development Area and no state-listed wildlife would be impacted as a result of the Proposed Actions.

The proposed project's incremental shadows could place stress on six state-listed endangered willow oak (*Quercus phellos*) trees (including two which are already in critically poor condition). In order to maintain the viability of the four willow oaks that are not in critically poor condition, NYU would commit to a tree maintenance plan as outlined in Chapter 6, "Shadows." With the implementation of a tree maintenance plan, the health of the four willow oaks is not expected to decline as a result of project-generated shadows. With respect to the landscape design plan, several large trees would remain in place, would be protected, and would be incorporated into the landscape design. Plantings used in the landscaping design would be chosen in accordance with NYU's planting guidelines, which emphasize the use of plants that are native to New York City's bioregion.

Construction and operation of the proposed project would not result in any significant adverse impacts on groundwater. Rather, as described in detail in Chapter 10, "Hazardous Materials," construction for the proposed project would remove on-site sources of groundwater contamination if encountered, thus providing a benefit with respect to local groundwater quality. In addition, groundwater is not used as a source of drinking water in Manhattan. Thus, the Proposed Actions would not result in any significant adverse impacts to natural resources.

C. METHODOLOGY

STUDY AREA

The methodology outlined in the *CEQR Technical Manual* was used to determine the study area. Due to the highly developed nature of the surrounding land uses, the study area for the natural resources assessment is limited to the Proposed Development Area. An exception is made for the establishment of the study area for the rare, threatened, and endangered species or special habitats assessment, which is a ½-mile radius surrounding the Proposed Development Area.

ASSESSMENT OF EXISTING AND NO ACTION CONDITIONS

In order to characterize existing conditions and assess potential impacts to natural resources within the study area, a reconnaissance-level field investigation was conducted on May 5, 2011 per the methodology outlined in the *CEQR Technical Manual*. The field investigation involved walking the Proposed Development Area to record general descriptions and conditions of ecological communities including species of flora and fauna. In addition to the field investigation, existing conditions within the Proposed Development Area were summarized from information identified in literature sources, including the following reports and maps:

- Ecological Communities of New York State (Reschke [1990], Edinger et al. [2002]);
- United States Geological Survey (USGS)—topographic quadrangle map for the Brooklyn quadrangle;

- Federal Emergency Management Agency (FEMA)—Flood Insurance Rate Maps (2007);
- New York State Department of Environmental Conservation (NYSDEC): Breeding Bird Atlas, Herp Atlas Project, and tidal and freshwater wetlands maps;
- United States Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI) map for the USGS Brooklyn quadrangle and species listed under Section 7(a)(2) of the Endangered Species Act (ESA) for New York County, NY; and
- Response to a request for information on rare, threatened and endangered species or special habitats within the vicinity of the study area by the New York Natural Heritage Program (NYNHP).

Conditions within the Proposed Development Area in the future without the Proposed Actions (the "No Action" condition) for the 2021 (Phase 1) and 2031 (Phase 2) analysis years were assessed by considering existing natural resources within the Proposed Development Area and assessing potential effects on these resources by 2021 and 2031.

ASSESSMENT OF IMPACTS ON NATURAL RESOURCES

Based on review of NYSDEC and NWI wetlands maps, no wetlands are present on or near the Proposed Development Area. In addition, the Proposed Development Area does not occur in a FEMA-mapped floodplain, nor are aquatic resources associated with surface water bodies present within or near the Proposed Development Area. Minetta Creek, which in the 1800's was filled and diverted to the City's sewer system (Duncan 2011), previously flowed west of the Proposed Development Area, but is no longer present as a surface water body.[1] Thus, potential impacts on natural resources due to the Proposed Actions within the Proposed Development Area were assessed by evaluating:

- Groundwater;
- Terrestrial ecological communities within and in the vicinity of the Proposed Development Area; and
- Wildlife, particularly bird populations.

D. EXISTING CONDITIONS

As described in Chapter 1 "Project Description," the Proposed Development Area consists of two superblocks with buildings ranging from small 1-story (23 feet [ft] in height) commercial and gymnasium buildings to 30-story residential buildings (275 ft in height). Open spaces within the Proposed Development Area include lawns, public and private landscaped areas and gardens, a dog run, and playgrounds that are interspersed between buildings and walkways and along sidewalks at the perimeter of the superblocks.

The area surrounding the Proposed Development Area, including the remainder of the project site, is characterized by a mix of institutional, commercial, and medium- to high-density residential uses. Ecological communities are limited to landscaped areas, the largest of which is Washington Square Park, an approximately 9.75-acre public open space located northwest of the Proposed Development Area.

[1] The potential effects of the proposed project's construction on Minetta Creek are described in Chapter 20, "Construction Impacts."

GROUNDWATER

Groundwater in the Proposed Development Area may be influenced by many factors including past filling activities, underground utilities, other subsurface openings or obstructions such as basements, underground parking garages, nearby subway tunnels, and other factors. Groundwater in Manhattan is not used as a source of potable water. The Proposed Development Area lies at an elevation of approximately 30 to 40 feet above mean sea level, sloping down to the west. Past geotechnical investigations encountered groundwater approximately 23.5 to 34 ft below grade in the southern portion of the Proposed Development Area. Based on surface topography, groundwater would be expected to flow in a westerly or northwesterly direction toward the Hudson River, approximately 4,000 feet away. However, a spill investigation within the Proposed Development Area (Spill No. 0910543, discussed below) indicated that groundwater flow was in a west-southwesterly direction, and that groundwater is present at an elevation of approximately 3 feet above mean sea level.

Spill No. 0910543 was reported to the NYSDEC in December 2009. The spill occurred on the northern superblock of the Proposed Development Area. The subsurface investigations indicated that contamination was generally limited to soil above the water table, with limited impacts to groundwater. Remediation began in January 2011. For more information on this spill, please refer to Chapter 11, "Hazardous Materials."

ECOLOGICAL COMMUNITIES

As stated above, the Proposed Development Area consists of buildings with pockets of maintained landscapes (i.e., gardens and lawns). These landscapes would be described by Edinger et al. (2002) as "terrestrial cultural" communities. Terrestrial cultural communities are defined as subsystem "communities that are either created and maintained by human activities, or are modified by human influence to such a degree that the physical conformation of the substrate, or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence (Edinger et al. 2002)." Vegetated terrestrial cultural communities that are present within the Proposed Development Area include flower/herb garden,[1] mowed lawn,[2] and mowed lawn with trees.[3] As shown in **Figure 9-1**, the majority of these terrestrial ecological communities are situated in strips or blocks that are surrounded by walkways, buildings, and streets. Within these areas, there are several variations of the three terrestrial ecological community descriptions given that the landscaping of each vegetated strip or block is slightly different. However, the understory of all of these communities consists of lawn, lawn with small to large trees, or areas with ornamental herbaceous, shrub, and groundcover species. In addition to these vegetated spaces, street trees are present along Mercer Street, West

[1] Edinger et al. (2002) defines this community as "[r]esidential, commercial, or horticultural land cultivated for the production of ornamental herbs and shrubs. This community includes gardens cultivated for the production of culinary herbs."

[2] Edinger et al. (2002) defines this community as "[r]esidential, recreational, or commercial land, or unpaved airport runways in which the groundcover is dominated by clipped grasses and there is less than 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing."

[3] Edinger et al. (2002) defines this community as "[r]esidential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and forbs, and it is shaded by at least 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing."

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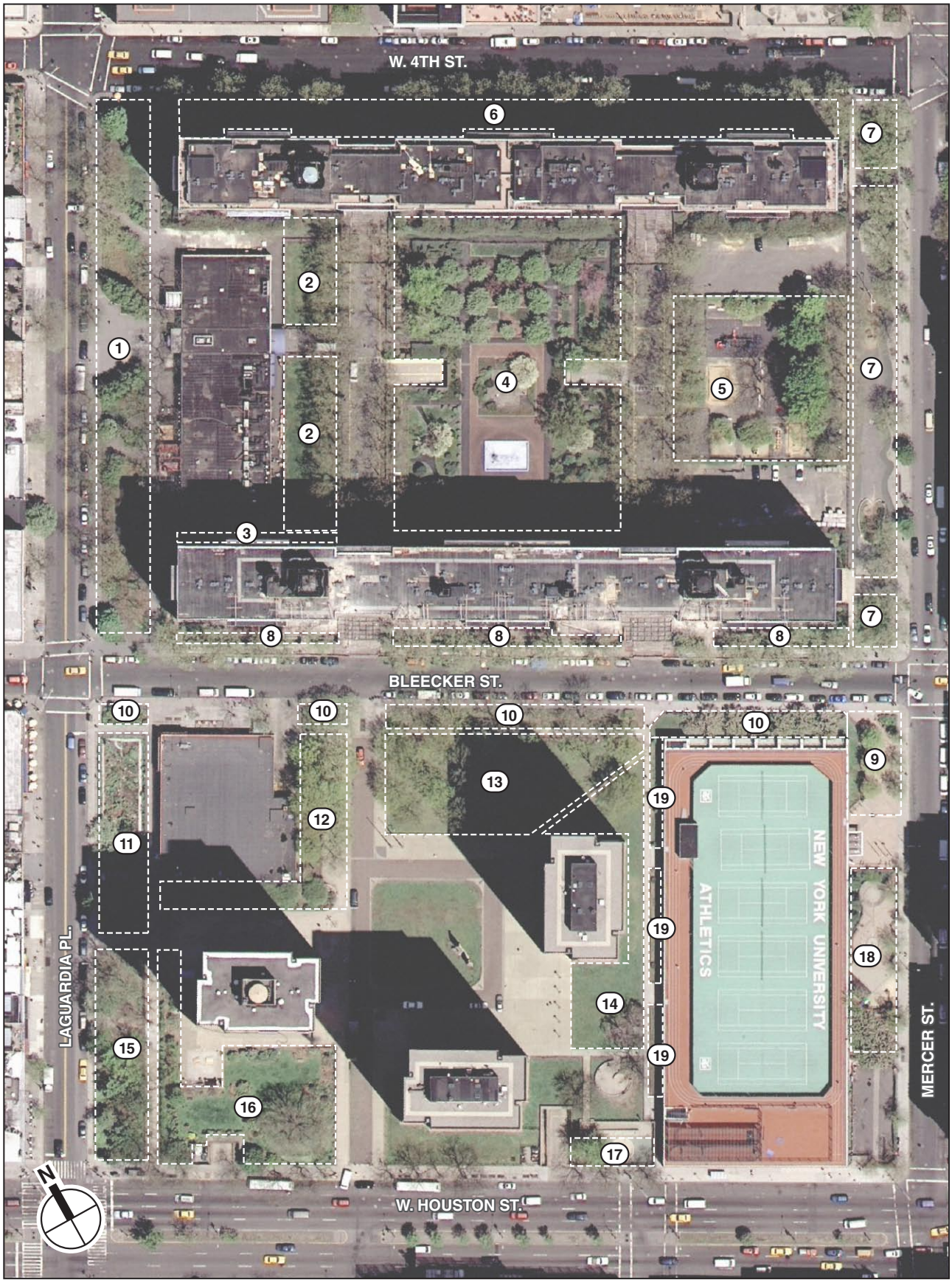

(1) Ecological Community

Ecological Communities in the Proposed Development Area

Figure 9-1

Houston Street, Laguardia Place, and West 3rd Street. Dominant street tree species include the following: honey locust (*Gleditsia triacanthos*), which is prominent along West Houston Street and Laguardia place between West Houston and Bleecker; London planetree (*Platanus* x *aceriolia*), which occurs in along portions of Bleecker Street between the two superblocks and West 3rd Street; and Bradford callery pear (*Pyrus calleryana*) along Mercer Street. Less dominant street tree species include linden (*Tilia* sp.) and ginko tree (*Ginko biloba*).

One of the more native landscapes of the Proposed Development Area is known as the "Time Landscape," designated as area "15" in **Figure 9-1**. This area was planted in 1978 to portray three states of forest growth including grassland, successional community, and developed forest (NYCDPR 2011). The southern portion of the Time Landscape is occupied by herbaceous species and grasses that transition to a successional pocket woodland consisting of eastern red cedar (*Juniperus virginiana*), witchazel (*Hamamelis virginiana*), and black cherry (*Prunus serotina*). Oaks (*Quercus* spp.), ash (*Fraxinus* sp.), sweetgum (*Liquidambar styraciflua*), beech (*Fagus* sp.), elm (*Ulmus* sp.), with dogwood (*Cornus* sp.), catbrier (*Smilex* sp.), and violets (*Viola* spp.) in the understory were observed within the northern portions of the Time Landscape.

The ecological communities in **Table 9-1** correspond with **Figure 9-1** "Ecological Communities in the Proposed Development Area." In addition, **Table C-1**, in **Appendix C** provides a list of trees that occur within the Proposed Development Area. These maintained terrestrial ecological communities are expected to provide limited habitat to wildlife, as described below.

WILDLIFE

BIRDS

The New York State Breeding Bird Atlas is an ongoing project to document the distribution of birds breeding throughout the state. The Proposed Development Area is located in Atlas Block 5750B, which encompasses the area roughly bound by streets just west of Broadway (eastern boundary) and Horatio Street (north of West 12th Street [northern boundary]) in Manhattan, the area north of Joralemon Street in Brooklyn (southern boundary), the East River just north of Governors Island (southern boundary), to approximately the middle of Liberty State Park in Jersey City, NJ (western boundary). Within this block, vegetated areas are limited to street trees, small landscaped areas, and urban parks such as Washington Square Park. The only birds documented breeding in Block 5750B during the 2000-2005 Atlas survey were the American kestrel (*Falco sparverius*) and the state-endangered peregrine falcon (*Falco peregrines*), both of which nest on city buildings. However, as of Spring 2011 a pair of red-tailed hawks (*Buteo jamaicensis*) and hatchling have nested on a 12th floor windowsill a block north (also within Block 5750B) of the Proposed Development Area (Livestream 2011). Red tail hawks are thought to be the most common hawk in North America (Preston 1993). In addition, European starling (*Sturnus vulgaris*), rock pigeon (*Columba livia*), and house sparrow (*Passer domesticus*) are non-native species that nest ubiquitously throughout the city and most likely nest within the Proposed Development Area.

Table 9-1
Ecological Communities of the Proposed Development Area

Area	Ecological Community	Dominant Tree Species and Understory Ornamental Species (Canopy / Understory)	Estimated Tree Sizes (DBH* in inches)
1	Landscaped with trees	Honey locust, Bradford callery pear, Japanese pagoda tree (*Sophora japonica*) / English ivy (*Hedera helix*)	~4 to 24+
2	Mowed lawn with trees	London planetree / privet, Japanese barberry border	~12 to 23
3	Landscaped with trees	Hawthorne; arrowwood (*Viburnum* sp.) dogwood, tulips (*Tulipa* spp.)	~8 to 12
4	Mixture of lawn, landscaped vegetated strips, container plantings	London planetree, crabapple (*Malus* sp.), silver maple (*Acer saccharinum*), willow (*Salix* sp.), cherry (*Prunus* spp.), white pine (*Pinus strobus*) / yew (*Taxus* sp.), English ivy, azalea (*Rhododendron* spp.), dogwood (*Cornus* spp.), hemlock (*Tsuga canadensis*)	~3 to 24+
5	Playground	London planetree border, Norway maple (Acer *platanoides*) / privet (*Ligustrum* sp.) border	~4 to 24
6	Landscaped with trees	London planetree / English ivy, pachysandra (*Pachysandra terminalis*)	~4 to 24
7	Paved lot/playground	London planetree, Bradford callery pear, crabapple, holly (*Ilex* sp.)	~4 to 24
8	Landscaped with trees	London planetree / yew, rhododendron, red cedar	~8 to 24
9	Landscaped with trees	Pin oak (*Quercus palustris*)	~8 to 16
10	Landscaped with trees	Cherry (*Prunus avium*), ash (*Fraxinus*) / foam flower (*Tiarella* sp.), columbine (*Aquilegia* sp.), bleeding hearts (*Dicentra* sp.), forget-me-not (*Myosotis* sp.), daffodil (*Narcissus* spp.)	~8 to 16
11	Community flower/herb garden	Austrian pine (*Pinus* sp.), cherry / iris (*Iris* spp.), clematis (*Clematis* spp.), roses (*Rosa* spp.), lilies (*Lilium* spp.), hostas (*Hosta* spp.), violets, bleeding hearts, tulips, aster (*Symphyotrichum* spp.); Japanese honeysuckle (*Lonicera japonica*); geranium (*Geranium* spp.), columbine, beebalm (*Monarda* spp.), forsythia (*Forsythia* sp.)	<6
12	Mowed lawn with trees	Pin oak / flowering apple (*Malus* sp.)	~10 to 36
13	Mowed lawn with trees	Oaks (pin oak, willow oak [*Quercus phellos*)**, and red oak [*Quercus rubra*]) / lawn	~10 to 36
14	Mowed lawn	Chinese scholar tree (Sephora japonica) Weeping beech (*Fagus* sp.)	~16
15	Landscaped with trees "Time Landscape"	Red cedar, black birch (*Betula* sp.), sweetgum (*Liquidambar styraciflua*), elm (*Ulmus* sp.), ash, cherry, white oak (*Quercus alba*), beech / witchhazel, dogwood, catbriar, beebalm, echinacea (*Echinacea* sp.), violet	~6 to 8
16	Mowed lawn with trees; flower garden	Norway maple, horse chestnut (*Aesculus hippocastanum*) / forsythia, cherry, Chinese scholar tree	~6 to 36
17	Sand pit with turf	Silver maple	~24+
18	Landscaped with trees	Honey locust, flowering cherry, pin oak	~8 to 12
19	Landscaped with shrubs	Serviceberry (*Amelanchier* sp.), flowering cherry	~8 to 12

Notes: (*) DBH = diameter at breast height, which is a standard method of expressing the diameter of the trunk or bole of a standing tree; (**) state-listed endangered.

Although small, urban green spaces such as those within the Proposed Development Area provide extremely limited nesting and overwintering habitat for native birds, they can potentially offer suitable stopover habitat for migratory songbirds passing through New York City on their way to northern breeding grounds or southern wintering grounds (Seewagen 2008a, Seewagen and Slayton 2008, Seewagen et al. 2011). New York City is crossed by the primary migration routes of many Nearctic-Neotropical migratory songbirds (i.e., birds which breed in the northern US and Canada, and overwinter in the Caribbean, and Central and South America). Migrants in need of a stopover site in which to rest and refuel along the way commonly occur during spring and fall in the city's large parks, such as Central Park and Prospect Park, but also utilize green

spaces as small as courtyards, pocket parks, community gardens, and ornamental landscaped areas surrounding buildings (e.g., Seewagen 2008a, Gelb and Delecretaz 2009). Spring migrants observed during the field investigation included Northern parula (*Parula americana*), American robin (*Turdus migratorius*), gray catbird (*Dumetella carolinensis*), and white-throated sparrow (*Zonotrichia albicollis*). However, more than 50 species of migratory birds would be expected to occur within the Proposed Development Area during spring and fall since bird migration occurs in pulses, and the abundance of migrants in the city is highly variable from day to day. On other days, it is likely that many more species of migrants occur in the Proposed Development Area than the few observed during the field investigation. Some of the migratory bird species most commonly observed in New York City and considered most likely to occur in the Proposed Development Area include the ovenbird (*Seiurus aurocapillus*), yellow-rumped warbler (*Dendroica coronata*), American redstart (*Setophaga ruticilla*), common yellowthroat (*Geothlypis trichas*), hermit thrush (*Catharus guttatus*), Swainson's thrush (*Catharus ustulatus*), golden-crowned kinglet (*Regulus satrapa)*, ruby-crowned kinglet (*Regulus calendula*), black and white warbler (*Mniotilta varia*), Northern waterthrush (*Parkesia noveboracensis*), and dark-eyed junco (*Junco hyemalis*), among others (Seewagen and Slayton 2008, Seewagen et al. 2011, Gelb and Delecretaz 2009, Klem et al. 2009).

Non-migratory bird species observed during the field investigation were the common and urban-adapted Northern mockingbird (*Mimus polyglottos*) and red-bellied woodpecker (*Melanerpes carolinus*).

MAMMALS

Mammals with the potential to occur within the Proposed Development Area are expected to be typical urban species with a high tolerance to human disturbance and none would be dependent upon habitats specific to the site. Natural areas of the Proposed Development Area are limited in size and would not be likely to support mammals other than small rodents (i.e., house mouse [*Mus musculus*], Norway rat [*Rattus norvegicus*], and eastern gray squirrel [*Sciurus carolinensis*]). Eastern gray squirrels were observed during the field investigation.

REPTILES AND AMPHIBIANS

The NYSDEC Amphibian and Reptile Atlas Project conducted a survey between 1990 and 1999 documenting the geographic distribution of New York's reptiles (i.e., turtles, snakes, lizards) and amphibians (i.e., frogs, toads, and salamanders). However, based on the urban and disturbed character of the ecological communities described above and the lack of breeding habitat (i.e., freshwater depressions and freshwater waterbodies), no reptiles or amphibians are expected to occur in the Proposed Development Area.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

A request for information on rare, threatened, or endangered species within a 0.5 mile radius of the Proposed Development Area was submitted to NYNHP on May 4, 2011. NYNHP indicated, in correspondence dated May 13, 2011, that no vegetation or wildlife, including birds and insects, listed by NYNHP have been recorded for the study area (Pietrusiak 2011). According to USFWS's list of threatened or endangered species for New York, reviewed on April 29, 2011, only one aquatic species, the shortnose sturgeon (*Acipenser brevirostrum*), has the potential to occur within the waters of New York County. The Proposed Development Area is not within the vicinity of waters of New York County. Therefore, this species would not have the potential to

occur within the Proposed Development Area. However, as stated above, the endangered peregrine falcon, a state-listed endangered species, has been listed as a breeding bird for Block 5750B and has also been documented by the New York City Department of Environmental Protection (NYCDEP) as occurring within the city year-round (NYCDEP 2011). In addition, during the field investigation, willow oak, a state-endangered tree, was noted in area "13," as shown on **Figure 9-1**. Brief descriptions of these species are provided below.

PEREGRINE FALCON

The peregrine falcon is ranked as "S3B" by NYNHP, indicating that there are typically 21 to 100 breeding occurrences or limited breeding acreage in the state. Currently, New York City is expected to have the largest urban population of peregrine falcons within the state (NYSDEC 2011). Peregrine falcons often nest on ledges or holes on the faces of rocky cliffs, but will nest on human-made structures such as bridges and tall buildings, especially near or in urban areas. In the New York City area, wintering birds frequent buildings and open areas containing plentiful prey in more natural settings. Peregrine falcon diets primarily consist of birds, ranging from songbirds to small geese, and also bats and other small mammals (White 2002). Although the peregrine falcon is known to occur within New York City, there are no NYNHP records of this species within a 0.5 mile radius of the Proposed Development Area. In addition, no peregrine falcons were observed during the field investigation.

WILLOW OAK

The willow oak is ranked as "S1" by NYNHP, indicating that it is critically imperiled in the state because of extreme rarity (i.e., five or fewer sites or very few remaining individuals) (NYNHP 2010). However, the willow oak is a common street tree in New York City, and the willow oaks in the South Block's Oak Grove do not constitute one of the 'five or fewer sites or very few remaining individuals' of this species in New York State. The range of the willow oak in New York State is limited to the New York City area and portions of Long Island, as this species is more commonly known to occur south of New York State (USDA 2011). Although endangered in New York because New York State represents the extreme north end of its habitat, the willow oak is a common tree in the southeastern United States and is not a federally endangered species. This species occurs mostly on the coastal plain in moist soils or swamps (Gleason and Cronquist 1963). Six willow oak (< 36 in dbh) trees are present in area "13" within the Proposed Development Area and occur in a linear arrangement, thus indicating that these trees were planted. Otherwise, due to the urbanized nature and absence of moist soils, this species would not be likely to occur within the Proposed Development Area.

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS

2021 ANALYSIS YEAR

With the exception of the construction of a new playground and minor landscaping that would occur in the area designated as "1" in **Figure 9-1**, as well as the rehabilitation of Coles Playground (area "18" in **Figure 9-1**), the future condition without the Proposed Actions in 2021 assumes no new development within the Proposed Development Area. Therefore, natural resources would be expected to remain the same.

2031 ANALYSIS YEAR

The future condition without the Proposed Actions in 2031 assumes that the site of the existing Morton Williams supermarket (located at the northwest corner of the southern superblock between areas "11" and "12" as shown in **Figure 9-1**) would be redeveloped as-of-right, at some point after the 2021 expiration of the property's Housing Preservation and Development (HPD) deed restrictions. The approximately 175,000-sf, 9-story building that would be built on the site would contain an approximately 25,000-square-foot supermarket and NYU academic space. The redevelopment of the Morton Williams site is the only change expected to occur within the Proposed Development Area in the future without the Proposed Actions. Since the Morton Williams supermarket site is already developed, no change would be expected to natural resources as a result of this as-of-right development.

F. PROBABLE IMPACTS OF THE PROPOSED ACTIONS

GROUNDWATER

Significant adverse impacts on groundwater are not expected to occur as a result of construction or operation of the proposed project. Groundwater potentially affected by the project is not used as a potable water supply in Manhattan. Consequently, the proposed project would not affect drinking water supplies.

As detailed in Chapter 20, "Construction Impacts," construction activities associated with the proposed project would involve both the demolition or disturbance of existing structures and a variety of earthmoving or excavating activities with the potential of encountering subsurface soil contamination. Groundwater has been encountered by previous investigations approximately 23.5 to 34 feet below grade in the Proposed Development Area, and therefore may be encountered during earthmoving or excavation activities. Groundwater recovered during dewatering would be tested and pre-treated, if necessary, to ensure compliance with applicable DEP discharge requirements prior to discharge to the combined sewer.

As detailed in Chapter 11, "Hazardous Materials," contamination associated with Spill #0910543 was generally limited to soil above the water table, with limited impacts to groundwater. The March 2011 Phase I Environmental Site assessment identified past and present uses within and surrounding the Proposed Development Area with the potential to affect groundwater beneath the Proposed Development Area. A subsurface (Phase II) investigation would be conducted to characterize groundwater beneath the Proposed Development Area prior to subsurface disturbance in accordance with a NYCDEP-approved work plan, and a NYCDEP-approved Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) would be prepared based on the Phase II findings. The RAP and CHASP would be implemented during construction to ensure that subsurface disturbance is performed in a manner protective of workers, the community, and the environment. The proposed project would not have the potential to result in adverse environmental impacts to groundwater beneath the project site; rather, the project would result in the removal of potential sources of groundwater contamination (ex. abandoned petroleum storage tanks) if encountered.

Groundwater encountered or pumped during soil excavation and dewatering activities associated with the proposed project's construction would not have an impact on vegetation within the vicinity of the Proposed Development Area. Many of the existing trees within the vicinity of the Proposed Development Area are in planters, tree pits, or are in landscaped areas above parking

garages or other uses. These species receive water from surface runoff, precipitation, or watering systems. Where trees are rooted in the ground (i.e., street trees in pits), roots are expected to be near the surface of the soil since trees have relatively shallow root systems (Dobson and Moffat 1993 and Dobson 1995 as cited in Crow 2005). Studies show that 80 to 90 percent of all tree root systems are found within the top 2 feet of the soil profile and typically between 90 to 99 percent of a tree's total root length occurs in the upper 3 feet of the soil profile (Crow 2005). As stated above, groundwater is approximately 23.5 to 34 feet below the surface of the Proposed Development Area, which is 20 to 30 feet deeper than the expected depths of tree roots in the area. Thus, dewatering of soils and potential pumping of groundwater that may occur during earthmoving or excavation activities would not be expected to have an impact on the quality or quantity of the water supply for trees and other plants in the vicinity of the Proposed Development Area.

ECOLOGICAL COMMUNITIES

Due to the highly urban nature of the terrestrial ecological communities present on the site, the loss of some of these communities as a result of the Proposed Actions would not result in a significant adverse impact on ecological communities of the region. For instance, on the northern superblock, the proposed Mercer and LaGuardia buildings would be constructed in areas 2 and 5, as shown in **Figure 9-1**, which are currently occupied by "playground with trees" and "mowed lawn with trees" communities, respectively. Within the southern superblock, the proposed Zipper Building would impact the "landscaped with trees" communities associated with areas 9 and 18, as shown in **Figure 9-1**.

As stated in Chapter 5 "Open Space," the Proposed Development Area would include approximately 3.8 acres of City parkland and publicly accessible open space in the future with the Proposed Actions. This open space acreage would include a new landscape design that would incorporate and enhance the landscaped and paved areas that are currently present within the Proposed Development Area. The landscape design associated with these buildings would include re-design and enhancement of the "landscaped with trees" and "mixed landscaped communities" as shown in **Figure 9-1** areas 1, 4, and 6 on the North Block. In the South Block, areas 14 and 17, currently "mowed lawn with trees" and "a sandpit with a tree" communities would be converted into a toddler playground and a dog run, respectively. Within portions of both blocks, the landscaping plan would consist of various gardens and lawn areas. This is particularly true for the North Block where existing gardens and planters would be replaced by specialty gardens. These gardens would include a light garden, philosophy garden, rain garden, tricycle garden, play gardens, and public lawns. On the South Block, the planting plan would focus on the enhancement of existing landscaped spaces. The landscaping plan would include infill and understory plantings in area 13 (as shown in **Figure 9-1**) and the conversion of some lawn areas to gardens.

Although some existing trees would be removed, the Proposed Actions would result in an increase in the number of trees as compared to the future without the Proposed Actions (Kim 2009). During the design and permitting phases for the Proposed Actions, New York City Department of Parks and Recreation (NYCDPR) would be consulted with respect to tree evaluation for the street trees that would be removed in the vicinity of the Proposed Development Area. A method to calculate the number of replacement trees per the New York City tree replacement code, such as the caliper replacement method, would most likely be used to quantify the size and number of trees that would be required to replace those removed from the Proposed Development Area.

Based on preliminary landscaping plans performed by the project's landscape architects, in the future with the Proposed Actions there would be a total of 675 trees in the Proposed Development Area, which represents an increase of 190 trees from the current condition (i.e., 485 existing trees based on 2009 tree survey conducted by Michael Van Valkenburgh Associates, Inc., Landscape Architects, PC). Many of the existing trees would remain in place, would be protected during construction, and would be incorporated into the landscaping design. In particular, this would include several of large specimen trees (some of which measure 24+ inches dbh). For instance, on the North Block the London planetrees (measuring between 18 and 24 inches dbh) in areas 6 and 8 as shown in **Figure 9-1** would remain. On the South Block, most of the trees along Bleecker Street (area 10 as shown in **Figure 9-1**), along West Houston Street, and areas 10 and 13 as shown in **Figure 9-1** would also be incorporated into the landscape design.

The proposed landscape design is expected to increase floral diversity of the blocks. Plantings used in the landscaping design would be chosen in accordance with NYU's planting guidelines, which emphasize the use of plants that are native to New York City's bioregion.

As stated in Chapter 6, "Shadows," LaGuardia Corner Gardens, a community garden located along LaGuardia Place near the corner of Bleecker Street on the South Block, would by 2021 experience significant adverse shadow impacts in the spring, summer, and fall as a result of the Proposed Actions. While the project would affect the viability of sunlight-dependent plant species that have the potential to attract migratory birds and beneficial insects at this location, the planting palate proposed in these spaces on both the South and North Blocks would include a wide range of native and ornamental trees, shrubs, herbaceous plants, vines, and ferns. Some plants (e.g., common milkweed [*Asclepias syrica*], cardinal flower [*Lobelia cardinalis*], cockspur hawthorne [*Crataegus crus-galli*]), proposed for the landscaping design could attract migratory birds and beneficial insects, including bees (*Apis* spp., *Bomus* spp., etc.) and monarch butterflies (*Danaus plexippus*). Therefore, the landscape design associated with the Proposed Actions would not result in a significant adverse impact on the ecological communities of the Proposed Development Area.

WILDLIFE

BIRDS

As discussed above, a number of migratory birds have the potential to occur within the Proposed Development Area during the spring and fall. Night-time collisions of migratory birds with illuminated city skyscrapers have been well publicized, but the reality is that collisions seldom occur at night (DeCandido and Allen 2006; Gelb and Delecretaz 2006, 2009) and few birds collide with the tops of tall buildings (DeCandido and Allen 2006). Instead, nearly all bird collisions in New York City occur during the day, when migrants on stopovers fly into ground-level and lower-floor windows that reflect nearby trees and other vegetation or sky (Gelb and Delecretaz 2006, 2009; Klem et al. 2009). More than 100 species of birds are known to be killed by such window collisions in New York City. Therefore, sheet glass windows of city buildings that are in close proximity to green spaces are considered a potential hazard to both migratory and non-migratory birds (Gelb and Delecretaz 2006, 2009; Klem et al. 2009).

The Proposed Development Area contains buildings with windows facing vegetated areas which could be used as stopover habitat by various migratory songbird species. Consequently, the potential for bird collisions already exists. However, bird collision risk is expected to be

increased by the Proposed Development Area because the proposed buildings would increase the total amount of glass in the area.

Collectively, the proposed buildings are expected to increase the amount of reflective glass in the area, and in turn, increase the risk for bird mortality. The number of birds killed from collisions with these buildings would be a direct function of the number of birds occurring in the surrounding area. Based on detailed collision monitoring data from similar buildings elsewhere in Manhattan, it can be roughly estimated that 10 to 50 birds would be killed per new building per year (Gelb and Delecretaz 2006, 2009; Klem et al. 2009). The number of birds killed from collisions would in part depend on the specific design features of the buildings and surrounding landscaping (Hager et al. 2008, Gelb and Delecretaz 2009, Klem et al. 2009). Although specific design features and surrounding landscaping are not known at this time, it is expected that bird mortality associated with the Proposed Actions is projected to be relatively low (i.e., 10 to 50 birds per building per year). Thus, the Proposed Actions would not be expected to have a significant adverse impact on bird populations.

MAMMALS

As discussed above, mammals that would occur in the vicinity of the Proposed Development Area would be limited to common urban-adapted rodents such as the Norway rat and the eastern gray squirrel. Thus, the Proposed Actions would not have a significant adverse impact on mammal populations within the region.

REPTILES AND AMPHIBIANS

As stated above, no reptile or amphibian species are expected to occur within the Proposed Development Area. Therefore, the Proposed Actions would not result in a significant adverse impact on mammal populations within the region.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

PEREGRINE FALCON

As stated above, no federal- or state-listed rare, special concern, threatened or endangered species are listed by NYNHP (Pietrusiak 2011) as occurring within the vicinity of the Proposed Development Area. Although peregrine falcons, as described above, have been documented in Breeding Bird Atlas Block 5750B and are known to breed and forage on several buildings in Manhattan (i.e., 55 Water Street in Lower Manhattan), no peregrine falcons are known to breed in the vicinity of the Proposed Development Area. Thus, no significant adverse impacts to peregrine falcon would occur as a result of the Proposed Actions.

WILLOW OAK

As stated above, six state-endangered willow oak trees are present in the southern block in the area designated as "13" in **Figure 9-1**. Two of these trees are in critically poor condition and should be removed irrespective of the proposed project. The four viable trees would remain within area "13" of the Proposed Development Area and would be incorporated into an "Oak Grove and Shade Garden" with additional plantings used as infill beneath the canopy of the trees. Although the willow oaks will be incorporated into an "Oak Grove and Shade Garden" there is the potential for shadows cast by the proposed buildings to have an impact on the amount of sunlight that the trees receive on a daily basis. As discussed in Chapter 6, "Shadows,"

by 2021 the willow oaks would experience between one and three-and-a-half hours of incremental shadow from the proposed project on the March 21/September 21 analysis day, and would experience incremental shadows on the May 6/August 6 and June 21 analysis days as a result of the proposed project, but the durations would be less as compared to the March 21/September 21 analysis day. Although the trees would continue to receive adequate sunlight during the peak of their growing season, during the early and late portions of their growing season the trees would receive less than the four-to-six-hour minimum threshold of daily sun that is recommended in the *CEQR Technical Manual*. Thus, the proposed project's incremental shadows could place stress on the six willow oak trees (including the two which are already in critically poor condition). In order to maintain the viability of the four willow oaks that are not in critically poor condition, NYU would commit to a tree maintenance plan as outlined in Chapter 6, "Shadows." With the implementation of a tree maintenance plan, the health of the four willow oaks is not expected to decline as a result of project-generated shadows.

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