A. INTRODUCTION

This chapter examines the potential impacts from the proposed Halletts Point Rezoning project on terrestrial and aquatic natural resources[1] and floodplains near the project site on the Halletts Point peninsula in Astoria, Queens, New York.

In accordance with the 2012 *City Environmental Quality Review* (*CEQR*) *Technical Manual* and the *National Environmental Policy Act* (*NEPA*), this chapter describes:

- The regulatory programs that protect groundwater, floodplains, wildlife, threatened or endangered species, aquatic resources, or other natural resources within the project site;
- The current condition of the groundwater, floodplains, and natural resources within the project site and study area, including water quality, aquatic and terrestrial biota, and threatened or endangered species and species of special concern;
- The groundwater, floodplains, water quality, and natural resources conditions in the future without the proposed project (the No Build condition);
- The potential impacts of the proposed project on the groundwater, floodplains, water quality, and natural resources (the Build condition); and

PRINCIPAL CONCLUSIONS

The proposed project would not result in significant adverse impacts to groundwater, floodplains, water quality, aquatic biota, wetlands, terrestrial natural resources, and threatened or endangered species within and near the project site. Project construction would include stabilization and rehabilitation of the presently armored shoreline of the East River which would not result in a net increase in fill below mean high water (MHW) and spring high water (SHW) or a change in the shoreline configuration that would result in loss of New York State Department of Environmental Conservation (NYSDEC) littoral zone tidal wetlands or aquatic habitat. New stormwater outfalls would be constructed above SHW and would not result in loss of tidal wetland or disturbance to the river bottom. Stormwater management measures implemented within the Waterfront (WF) Parcel would improve the quality of stormwater discharged to the East River. This would benefit NYSDEC littoral zone tidal wetlands and aquatic resources adjacent to the project site, as discharge of runoff from this parcel is currently untreated. Stormwater management measures implemented within the NYCHA and Eastern Parcel would regulate the rate at which runoff is discharged to the New York City Department of Environmental Protection (DEP) storm sewer, in accordance with the DEP allowable rate, and then to the East River through the existing outfalls. Discharge of stormwater runoff to the DEP

[1] The 2012 *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."

storm sewer at the rate allowed by DEP would not be expected to contribute to street flooding due to storm sewer capacity exceedances. Because runoff from the project site would not be discharged to a combined sewer, the proposed project would not have the potential to result in street or basement flooding due to combined sewer backups. The proposed esplanade would not extend beyond the SHW line, and as such, would not shade or otherwise affect areas of regulated tidal wetland.

Because floodplains within and adjacent to the project site are affected by coastal flooding rather than local or fluvial flooding, the proposed project would not result in increased flooding on or adjacent to the project site. The design and construction of the buildings within the project site would comply with current and any future changes to the New York City Building Code requirements for construction within the 100-year floodplain, and any future changes in the floodplain zones designated by the Federal Emergency Management Agency (FEMA). Flood insurance would be purchased and maintained for buildings in the special flood hazard area. Development of the proposed project would not result in significant adverse impacts to flood levels, flood risk, or the flow of flood waters within the project site or in other portions of the Halletts Point peninsula. Coastal floodplains are influenced by astronomic tide and meteorological forces (e.g., northeasters and hurricanes) and not by fluvial flooding, and as such are not affected by the placement of obstructions (e.g., buildings) within the floodplain.

Construction of the proposed project would require minimal tree removal and would not eliminate or degrade valuable wildlife habitat. No threatened or endangered terrestrial species are known to occur or have the potential to occur on or in the vicinity of the project site.

B. METHODOLOGY

STUDY AREA

The project site represents the study area for groundwater, floodplains, and terrestrial natural resources (see Figure 1-1). Threatened and endangered species were evaluated for a distance of ½ mile from the project site. The study area for water quality and aquatic biota includes the overall aquatic resources of the East River.

EXISTING CONDITIONS

Existing conditions for floodplains and natural resources within the study area were summarized using:

- Existing information obtained from the following governmental and nongovernmental sources: DEP Harbor Water Quality Surveys and City-Wide Long Term Combined Sewer Overflow (CSO) Control Planning Project Reports; New York/New Jersey Harbor Estuary Program (NY/NJHEP) Harbor-Wide Water Quality Reports; U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps and Information, Planning and Consultation system for federally threatened and endangered species (http://ecos.fws.gov/ipac); National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) designation areas; records of wetlands, significant natural communities, and threatened and endangered species identified by the New York Natural Heritage Program (NYNHP) Environmental Resource Mapper; New York State Breeding Bird Atlas results for Block 5851C; NYSDEC Herp Atlas Project results for the ‘Central Park’ quadrant, and FEMA flood insurance rate maps.

- Information identified in peer-reviewed literature pertaining to the natural resources of Queens County and the East River.
- Observations made during a September 25, 2012 natural resources reconnaissance survey within the study area.

POTENTIAL IMPACTS OF THE PROPOSED PROJECT

The potential impacts of the proposed project on groundwater, floodplains, wetlands, aquatic, and terrestrial resources were assessed for the 2022 analysis year by considering the following factors:

- The anticipated water quality and natural resources of the East River in the vicinity of the project site.
- The potential for the construction of the four new stormwater outfalls, repairs at the two existing DEP stormwater outfalls, and stabilization and repair of the existing shoreline armoring within the site to result in temporary impacts to water quality and aquatic biota of the East River.
- Potential impacts to groundwater resources, including the Brooklyn-Queens Aquifer System, due to construction of the proposed project.
- Temporary impacts on water quality and aquatic biota from the possible discharge of groundwater recovered during construction dewatering.
- Temporary impacts on water quality and aquatic biota from the discharge of stormwater during construction of the upland components of the proposed project.
- Potential direct impacts to vegetation, ecological communities, and terrestrial wildlife due to tree removal, and to wildlife due to removal of existing buildings, required during project construction.
- Potential indirect impacts to wildlife using the limited habitat areas within the project site that are not within the area of disturbance, such as avoidance of certain habitat areas due to increased human activity, noise, or construction equipment during land disturbing activities.
- Potential impacts to groundwater resources, including the Brooklyn-Queens Aquifer System (a sole source aquifer), due to operation of the proposed project.
- Potential impacts to aquatic resources from discharge of stormwater during operation of the proposed project. The analysis also considers beneficial effects of stormwater management measures that would result in improved quality of the runoff currently discharged from the project site and reduction in the peak stormwater discharge rate. The beneficial effects of a net increase in pervious surface coverage are also considered.
- Potential changes in daytime and nighttime bird strikes based on proposed building locations, heights, lighting, landscaping and lower story window reflections.
- Potential long-term beneficial effects on plants and wildlife from the proposed landscaping.
- Potential effects on the proposed project due to projected sea level rise due to climate change.

C. REGULATORY CONTEXT

The following sections identify the federal and state legislation and regulatory programs that pertain to coastal areas, surface waters, floodplains, wetlands, and protected species that would apply to the proposed project.

FEDERAL

NATIONAL FLOOD INSURANCE ACT OF 1968 (44 CFR § 59) AND FLOODPLAIN MANAGEMENT EXECUTIVE ORDER 11988 (42 FR 26951)

Development in floodplains defined by FEMA mapping is regulated at the federal level by the Floodplain Management Executive Order 11988 and National Flood Insurance Act of 1968 (44 CFR § 59). Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

EXECUTIVE ORDER 11990, PROTECTION OF WETLANDS

In accordance with Executive Order 11990, "Protection of Wetlands," federal agencies must avoid undertaking or providing assistance for new construction in wetlands unless there is no practical alternative to such construction and the proposed action includes all practicable measures to minimize harm to the wetland.

CLEAN WATER ACT (33 USC §§ 1251 - 1387)

The objective of the Clean Water Act, also known as the Federal Water Pollution Control Act, is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. It regulates point sources of water pollution, such as discharges of municipal sewage, industrial wastewater, and stormwater runoff; the discharge of dredged or fill material into navigable waters and other waters; and non-point source pollution (e.g., runoff from streets, construction sites, etc.) that enter water bodies from sources other than the end of a pipe. Applicants for discharges to navigable waters in New York must obtain a Water Quality Certificate from the NYSDEC.

SECTION 1424(E) OF THE SAFE DRINKING WATER ACT. SECTION 1424(E) OF THE SAFE DRINKING WATER ACT OF 1974 [P.L. 93-523]

This section of the Safe Drinking Water Act (Act) authorizes the Administrator of the US Environmental Protection Agency (EPA) to designate an aquifer for special protection if it is the sole or principal drinking water resource for an area (i.e., supplies 50 percent or more of the drinking water in a particular area), and if its contamination would create a significant hazard to public health. No commitment for federal financial assistance may be entered into for any project that the Administrator determines may contaminate such a designated aquifer so as to create a significant hazard to public health. The project site is within the Brooklyn-Queens Aquifer System, a sole source aquifer system identified by the EPA under the Act.

NATIONAL WILD AND SCENIC RIVERS ACT OF 1968 (16 USC §§ 1271-1287)

Under Section 7 of the National Wild and Scenic Rivers Act, federal agencies with "water resources" projects (defined as those that would affect the free-flowing nature of the river)—including projects that require permits from the U.S. Army Corps of Engineers (USACE)—must consult with the river-administering agency regarding effects to rivers that are part of the National Wild and Scenic Rivers System, designated as Study Rivers under Section 5(a) of the National Wild and Scenic Rivers Act, or listed on the Nationwide Rivers Inventory. However, no portion of the East River is classified as a National Wild and Scenic River.

ENDANGERED SPECIES ACT OF 1973 (16 USC §§ 1531 TO 1544)

The Endangered Species Act of 1973 recognizes that endangered species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people. The Act provides for the protection of critical habitats on which endangered or threatened species depend for survival. The Act also prohibits the importation, exportation, taking, possession, and other activities involving illegally taken species covered under the Act, and interstate or foreign commercial activities. Species protected under the Act have the potential to occur in the study area.

STATE

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) (N.Y. ECL ARTICLE 3, TITLE 3; ARTICLE 15; ARTICLE 17, TITLES 3, 5, 7, AND 8; ARTICLE 21; ARTICLE 70, TITLE 1; ARTICLE 71, TITLE 19; IMPLEMENTING REGULATIONS 6 NYCRR ARTICLES 2 AND 3)

Title 8 of Article 17, ECL, Water Pollution Control, authorized the creation of SPDES to regulate discharges to New York State's waters. Activities requiring a SPDES permit include point source discharges of wastewater into surface or groundwater of the state, including the intake and discharge of water for cooling purposes, constructing or operating a disposal system (sewage treatment plant), discharge of stormwater, and construction activities that disturb one or more acres. The proposed project would require the management of stormwater and would involved construction on a site over one acre in size. Soil disturbing activities resulting from the proposed project would be conducted in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001). To obtain coverage under this permit, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared and a Notice of Intent (NOI) would be submitted to NYSDEC. The SWPPP would comply with all of the requirements of GP-0-10-001, NYSDEC's technical standard for erosion and sediment control, presented in "New York Standards and Specifications for Erosion and Sediment Control," and NYSDEC's technical standard for post-construction stormwater control practices presented in the *New York State Stormwater Management Design Manual*.

TIDAL WETLANDS ACT, ARTICLE 25, ECL, IMPLEMENTING REGULATIONS 6 NYCRR PART 661.

Tidal wetlands regulations apply anywhere tidal inundation occurs on a daily, monthly, or intermittent basis. In New York, tidal wetlands occur along the tidal waters of the Hudson River up to the salt line and along the saltwater shore, bays, inlets, canals, and estuaries of Long Island, New York City, and Westchester County. NYSDEC administers the tidal wetlands regulatory program and the mapping of the state's tidal wetlands. A permit is required for almost any activity that would alter wetlands or the adjacent areas (up to 300 feet inland from wetland boundary or up to 150 feet inland within New York City). NYSDEC-regulated wetlands may exist along the East River shoreline within the project site.

ENDANGERED AND THREATENED SPECIES OF FISH AND WILDLIFE; SPECIES OF SPECIAL CONCERN (ECL, SECTIONS 11-0535[1]-[2], 11-0536[2], [4], IMPLEMENTING REGULATIONS 6 NYCRR PART 182)

The Endangered and Threatened Species of Fish and Wildlife, Species of Special Concern Regulations prohibit the taking, import, transport, possession, or selling of any endangered or threatened species of fish or wildlife, or any hide, or other part of these species as listed in 6

NYCRR §182.6. Under these regulations, adverse modification of occupied habitat of endangered or threatened species is prohibited without authorization from NYSDEC.

LOCAL REGULATIONS

NEW YORK CITY STREET TREE ZONING AMENDMENT AND LOCAL LAW 3 OF 2010

The City of New York passed a zoning text amendment[1] that requires trees to be planted along the curb of city streets following the construction of new buildings and certain types of alterations citywide. All applicants must apply to the New York City Department of Parks and Recreation (DPR) for street tree planting permits. The current zoning requires all new buildings and all enlargements exceeding 20 percent of the floor area to have 1 tree for every 25 feet of road frontage, including existing trees. Like other zoning rules, these requirements must be satisfied in order for the builder to obtain a Certificate of Occupancy. Species shall be selected from the list of approved Street Trees for New York City. The methodology used to determine the number and size of trees to be replanted (e.g., caliper replacement method) would be determined in consultation with DPR and would be in accordance with this zoning amendment and local law, and Chapter 5 Title 56 of the Rules of the City of New York. As noted in Chapter 1, "Project Description," the proposed project is seeking a mayoral override of zoning resolution street tree planting requirements for portions of the zoning lot not affected by the proposed development.

D. EXISTING CONDITIONS

GROUNDWATER

The project site is within the area designated for the Brooklyn-Queens Sole Source Aquifer. However, groundwater is not used as a potable water supply in Queens and non-potable use is limited. Potable water in Queens is provided primarily by New York City's public water supply, which comprises a system of upstate reservoirs.

As presented in Chapter 11, "Hazardous Materials," groundwater on the project site has been reported as occurring at approximately 6 to 24 feet below ground surface and is expected to flow radially from the project site toward the East River. Results of groundwater sampling conducted on the project site indicated some evidence of elevated volatile organic compounds (likely from a historical on- or off-site release), but generally only concentrations typical of urban fill materials.

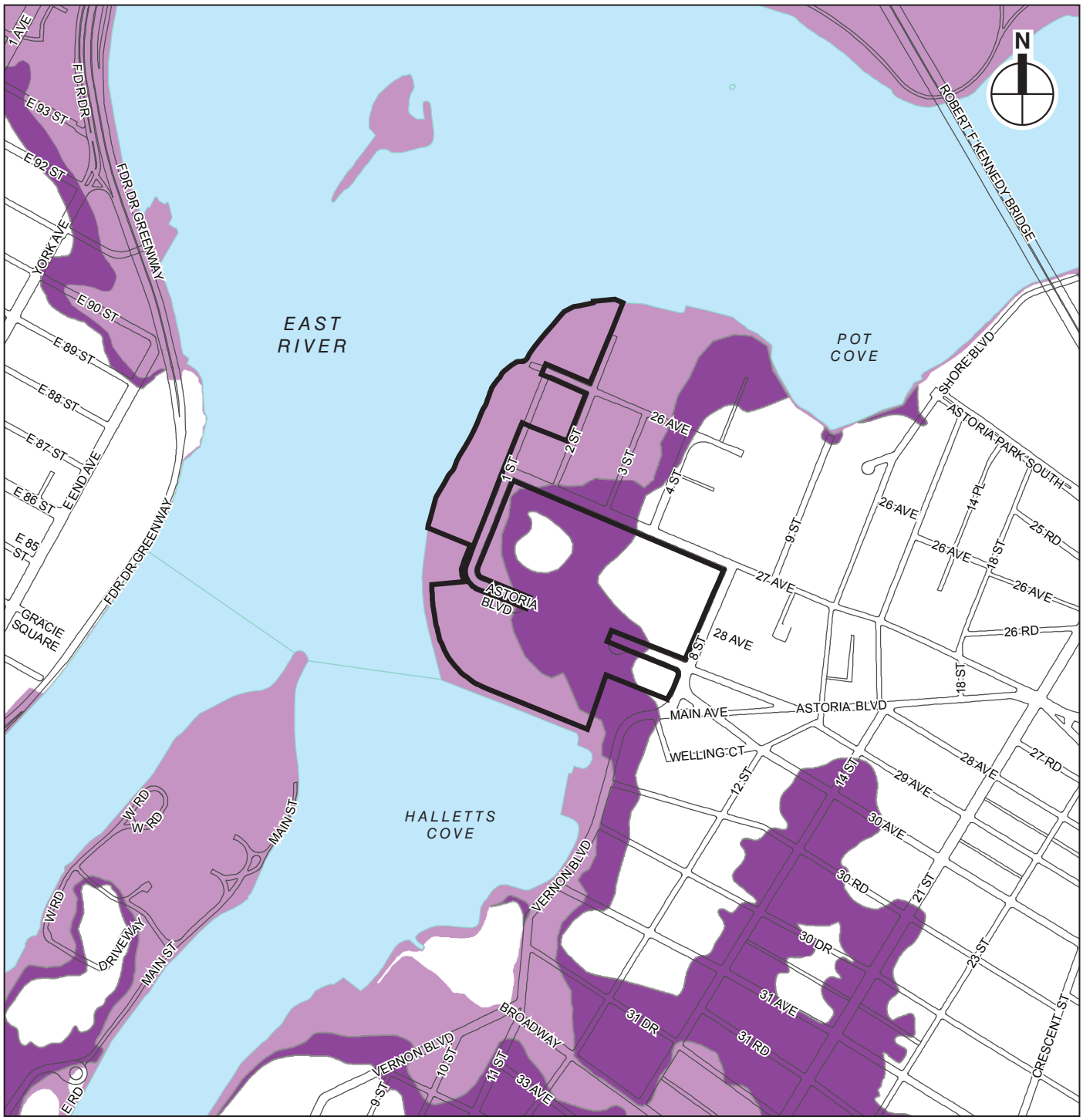
FLOODPLAINS

The majority of the project site is located in the existing100-year and 500-year floodplain zones (the areas with a 1 percent and 0.2 percent chance of flooding each year, respectively) (see **Figure 10-1**). The 100-year floodplain is defined as a high risk area (Zone AE) and has a flood elevation of 11 feet based on the National Geodetic Vertical Datum of 1929 (NGVD29), which approximates mean sea level, and a flood elevation of +8.28 feet based on the Queens Borough Highway Datum.

Specific areas of the project site that are within the 100-year floodplain include the WF Parcel, Eastern Parcel, and the western and southern extents of the NYCHA Parcel along the East River. The site of Building 8 is within the 100-year floodplain (Zone AE). The remainder of the

[1] http://www.nyc.gov/html/dcp/html/street_tree_planting/index.shtml

4.3.13



0 1000 FEET

SCALE

Project Site

100-Year Floodplain

500-Year Floodplain

Flood Hazard Areas Data Source:
United States Federal Emergency Management Agency. Publication date of New York State data: April 17, 2012. Online_Linkage: http://www.msc.fema.gov

Notes:
This map is for advisory purposes only. It uses the most current data available and is deemed accurate, but is not guaranteed.

U.S. Federal Emergency Management Agency
Flood Hazard Areas
Figure 10-1

HALLETTS POINT

NYCHA Parcel (roughly east of 2nd Street) is either within the 500-year floodplain (defined as a moderate risk area) (Zone X Shaded) or outside of either 100-year or 500-year floodplain zones (defined as a low risk area) (Zone X Unshaded). The sites of Buildings 6 and 7 are partly within the 500-year floodplain.

New York City is affected by local (e.g., flooding of inland portions of the city from short-term, high-intensity rain events in areas with poor drainage), fluvial (e.g., rivers and streams overflowing their banks), and coastal flooding (e.g., long and short wave surges that affect the shores of the Atlantic Ocean, bays such as Upper New York Bay, and tidally influenced rivers such as the Hudson River and East River, streams, and inlets [FEMA 2007]). The East River is a tidal strait connecting Long Island Sound to New York Bay, and the flood elevation is controlled by the tidal conditions within the New York Bay, Long Island Sound, and the Atlantic Ocean. Within New York City, tidal flooding is the primary cause of flood damage. The floodplain within and adjacent to the study area is affected by coastal flooding and would not be affected by construction or regrading/filling of the floodplain as would occur within a riverine floodplain[1]. Coastal floodplains are influenced by astronomic tide and meteorological forces (e.g., nor'easters and hurricanes [FEMA 2007]), and not by fluvial flooding.

WETLANDS

The East River is classified on NWI maps as "estuarine subtidal unconsolidated bottom wetland" (E1UBL1) (**Figure 10-2**). Subtidal areas are continuously submerged, and unconsolidated bottoms have at least 25 percent cover of particles smaller than 7 centimeters and less than 30 percent vegetative cover. The entire shoreline of the project site is bulkheaded and rip-rapped, and no vegetated tidal wetlands are present.

NYSDEC designates the East River as littoral zone tidal wetlands (shallow waters 6 feet or less in depth at mean low water [MLW] that are not included in other NYSDEC tidal wetland categories) (**Figure 10-3**). During the September 25, 2012 natural resources survey of the project site, near-shore water depths were observed to be less than 6 feet and therefore sufficiently shallow to be regulated as NYSDEC littoral zone tidal wetlands.

There are no NWI- or NYSDEC-mapped freshwater wetlands present within the project site.

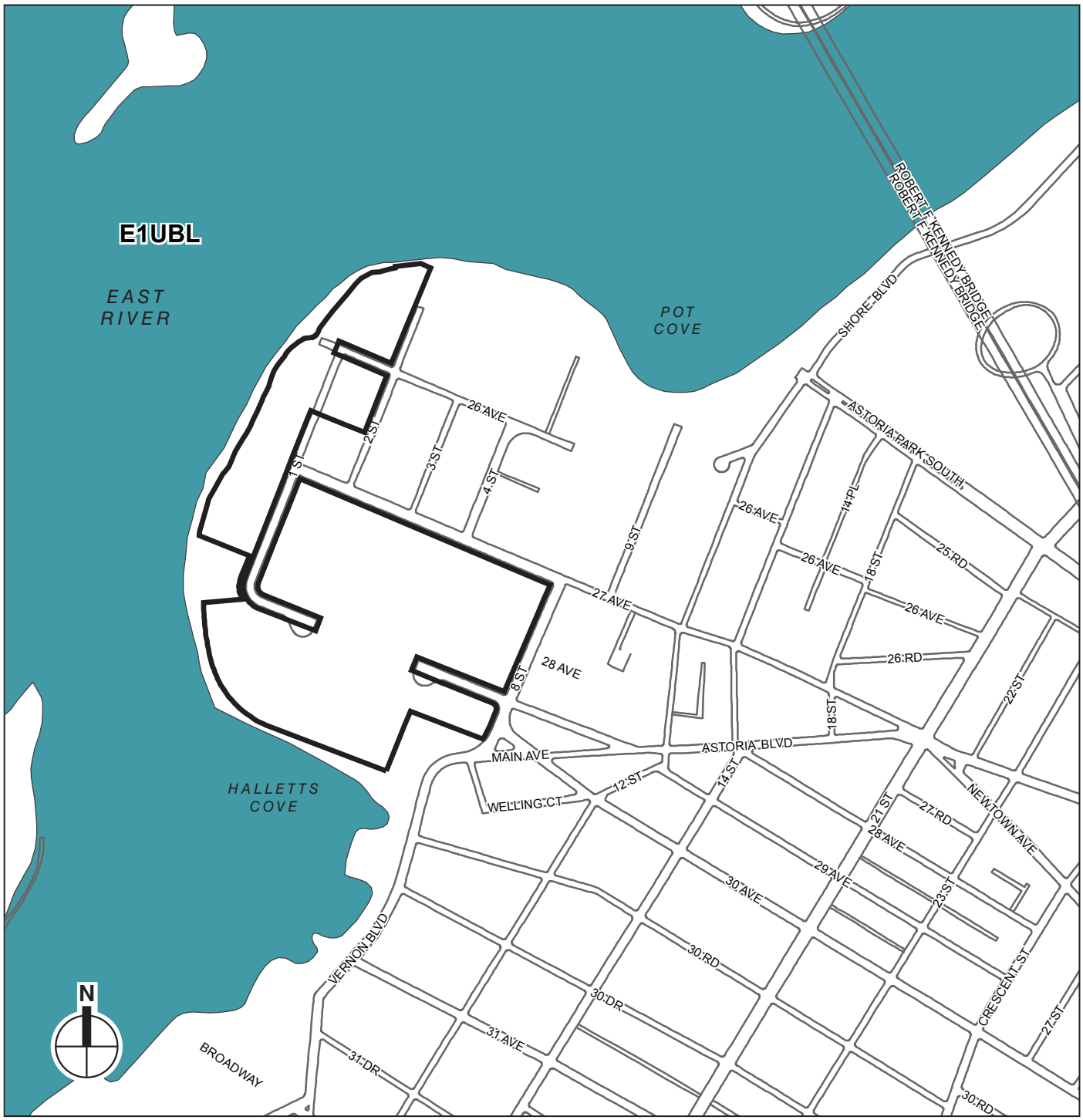
WATER QUALITY

The East River is a tidal strait connecting western Long Island Sound with upper New York Harbor. It is classified by NYSDEC as Use Classification I. Recommended uses for Class I waters are secondary contact recreation and fishing, and water quality should be suitable for fish propagation and survival.

DEP monitors water quality in New York Harbor, including the East River, through its annual Harbor Survey. The results of recent surveys (e.g., DEP 2006, 2010; NYNJHEP 2011) show that water quality has improved significantly as a result of measures undertaken by the City. These measures include infrastructure improvements, the elimination of raw dry-weather sewage discharges, the reduction of illegal discharges, the increased capture of wet-weather-related floatables, and the reduction of toxic metals loadings from industrial sources by 95 percent (DEP 2002). In 2009, the Inner Harbor survey region of the DEP Harbor Survey (which includes the East River) had met the fecal coliform standard (an indicator of untreated sewage discharge) for at

[1] Filling of a riverine floodplain obstructs flood flows, which can result in flooding upstream and on adjacent properties. It also reduces the ability of the floodplain to store excess water which results in more water being sent downstream and increases the elevation of the floodwater.

12.14.12



Project Site

Wetlands

Estuarine and Marine Deepwater

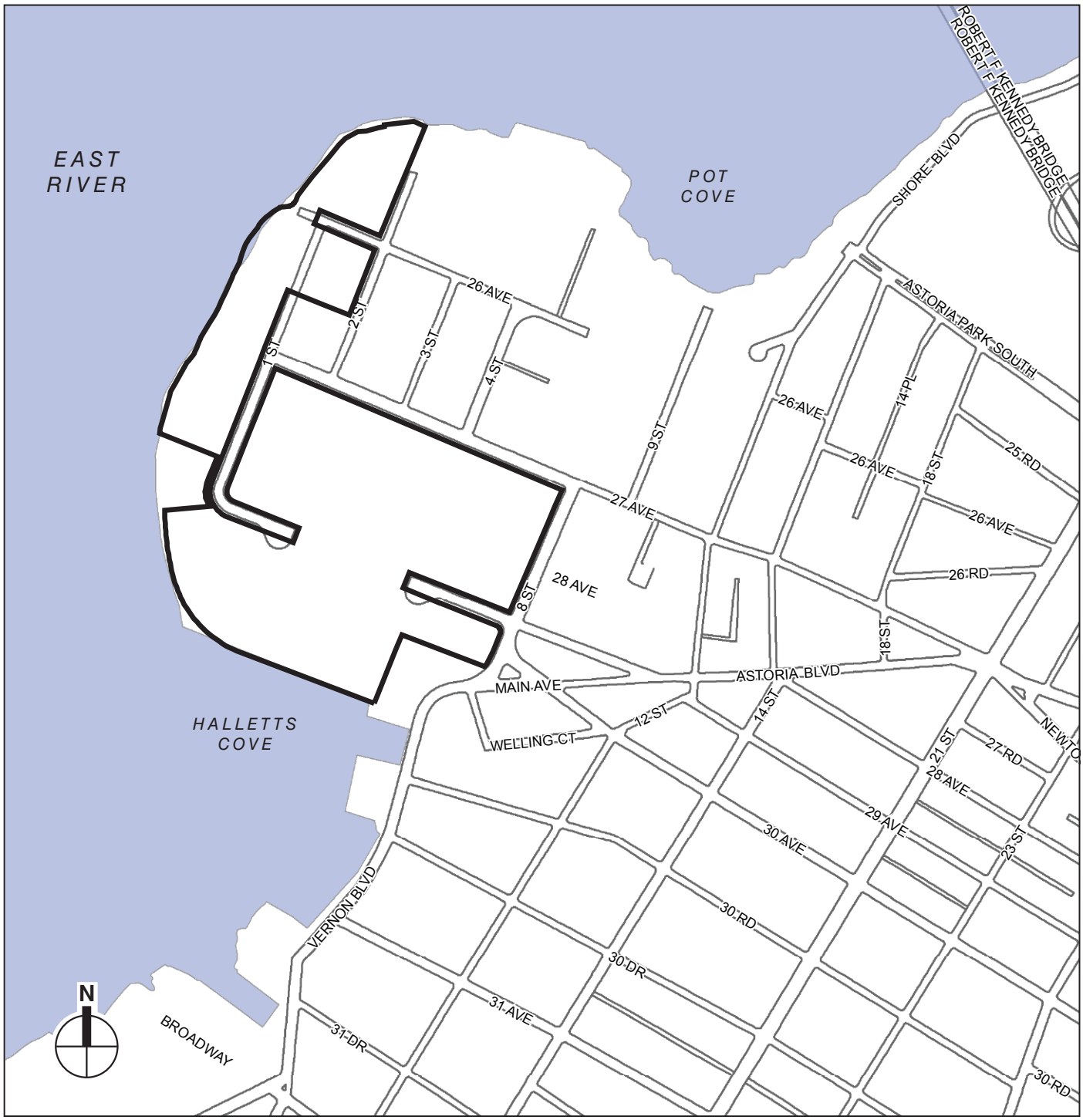
Wetlands Data Source:
U. S. Fish and Wildlife Service. Publication date April 1, 2012. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/wetlands/

Notes:
This map is for general reference only. It uses the most current data available and is deemed accurate, but is not guaranteed.

HALLETTS POINT

NWI-Mapped Wetlands
Figure 10-2

12.14.12



Project Site

0 1000 FEET

SCALE

Tidal Wetlands Type

Littoral Zone

Wetlands Data Source:
New York State Department of Environmental Conservation (NYSDEC).
Publication date 1999 Albany, NY
http://cugir.mannlib.cornell.edu/datatheme.jsp?id=111

Notes:
This map is for informational purposes only. It uses the most current data available and is deemed accurate, but is not guaranteed.

NYSDEC-Mapped Wetlands

HALLETTS POINT

Figure 10-3

least 5 years. Average dissolved oxygen (DO)[1] concentrations also met the Use Classification I standards during this same time period and chlorophyll-a concentrations[2] were not indicative of high nutrient concentrations. Secchi transparency[3] during this 5 year period was indicative of low water clarity, likely due to high suspended solid concentrations of surface waters (DEP 2010, 2011).

AQUATIC BIOTA

The Upper New York Harbor, which includes the East River, provides a variety of habitats that support a diverse and productive aquatic community. Aquatic organisms include phytoplankton, submerged aquatic vegetation, benthic macroalgae, zooplankton, benthic invertebrates (including shellfish), and fish, as well as occasional marine mammals and sea turtles.

Phytoplankton sampling in Upper New York Harbor over a ten year period between 1991 and 2000 documented 90 taxa, with *Nannochloris atomus, Skeletonema costatum, Prorccentrum redfieldii*, and *Rhizosolenia delicatula* being the most dominant (DEP 2007). Submerged aquatic vegetation (SAV), which consists of rooted aquatic plants that are often found in shallow areas of estuaries and provide nursery and refuge habitat for fish, is very limited in the East River due to limited light penetration, extensive shoreline development, and swift currents. Benthic macroalgae are primary producers that require light as their primary source of energy, and as such, only occur in the East River's most shallow waters where light penetration is sufficient. Common macro-algae that are known to occur within the Harbor Estuary include the Phaeophyte species *Fucus vesiculosus* (brown algae) and the Chlorophyte species *Ulva lactuca* (sea lettuce) (Perlmutter 1971).

Crustacean taxa dominate the zooplankton community within the New York Harbor (e.g., copepods *Acartia tonsa*, *Acartia hudsonica*, *Eurytemora affinis*, and *Temora longicornis)*, with the dominant species changing seasonally (Perlmutter 1971, Stepien et al. 1981, Hazen and Sawyer 1983, Lonsdale and Cosper 1994). Zooplankton sampling in the Upper New York Bay between 1991 and 2000 documented 19 taxa, with *Tintinnopsis spp*., nauplius of copepods, and *Eutreptia spp*. being most common (DEP 2007).

The major groups of benthic invertebrates that occur in the Harbor Estuary include aquatic earthworms (oligochaetes), segmented worms (polychaetes), snails (gastropods), bivalves, barnacles, cumaceans, amphipods, isopods, crabs, and shrimp. Dominant benthic species within the Upper New York Bay include *Streblospio beredicti*, *Mediomastus*, *Mulina lateralis*, *Sabellaria vulgaris*, and *Heteromastus filformis* (DEP 2007).

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[1] DO in the water column is necessary for respiration by aquatic biota. The bacterial breakdown of high organic loads can deplete DO and result in low DO levels. Persistently low DO can degrade habitat and affect aquatic biota. Consequently, DO is one of the most universal indicators of overall water quality in aquatic systems.

[2] High levels of nutrients can lead to excessive plant growth (a sign of eutrophication) and depletion of DO. Concentrations of the plant pigment chlorophyll-a in water can be used to estimate productivity and the abundance of phytoplankton. Chlorophyll-a concentrations greater than 20 micrograms per liter (µg/L) are considered suggestive of eutrophic conditions (DEP 2010).

[3] Secchi transparency is a measure of the clarity of surface waters. Transparency greater than 5 feet (1.5 meters) indicates relatively clear water. Decreased clarity can be caused by high suspended solid concentrations or blooms of plankton. Secchi transparencies less than 3 feet (0.9 meters) may be considered indicative of poor water quality conditions. Average Secchi readings in the Inner Harbor area have remained relatively consistent since measurement of this parameter began in 1986, ranging between approximately 3.5 and 5.5 feet (1.1 to 1.8 meters) (DEP 2010).

The finfish community in New York Harbor and East River is typical of large coastal estuaries and inshore waterways along the Mid-Atlantic Bight, supporting a variety of estuarine, marine, and anadromous fish species that use this area for spawning habitat, a migratory pathway, and as a nursery/foraging area. Hogchoker (*Tinectes maculates*), tomcod (*Microgadus tomcod*), winter flounder (*Pseadopeuronectes americanus*), white perch (*Morone americana*), bay anchovy (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*) and striped bass (*Morone saxatilis*) are examples of fish found within the Upper New York Harbor and lower East River (NOAA 2001). Atlantic silverside (*Menidia menidia*), mummichog (*Fundulus heteroclitus*), striped killifish (*Fundulus majalis*), and three-spined stickleback (*Gasterosteus aculeatus*) are common estuarine species that occur year round. Blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), American shad (*Alosa sapidissima*), hickory shad (*Alosa mediocris*), striped bass, tomcod, Atlantic sturgeon (*Acipenser oxyrhynchus*), and rainbow smelt (*Osmerus mordax*) are anadromous fish that pass through the harbor during migration to and from spawning areas in the upper Hudson River. Examples of marine species found from spring through fall include bluefish (*Pomatomus saltatrix*), scup (*Stenotomus chrysops*), black sea bass (*Centropristis striata*), tautog (*Tautoga onitis*), and weakfish (*Cynoscion regalis*) (NOAA 2001). Overall, the harbor's fish community is very spatially and seasonally dynamic. Transient shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus*) may occasionally be present in New York Harbor and East River (Bain 1997, NMFS 2001).

TERRESTRIAL ECOLOGICAL COMMUNITIES AND VEGETATION

The project site largely comprises man-made landscapes including the NYCHA Astoria Houses campus, DPR parkland, and both occupied and unoccupied commercial lots (see **Figures 10–4a through 10–4c and 10-5**). Following Edinger et al. (2002), these areas are best described as "terrestrial cultural" communities which are defined as "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."

Vegetated terrestrial cultural communities that are present within the project site include mowed lawn with trees[1], urban vacant lot[2], urban structure exterior, and riprap/artificial lake shore[3]. The mowed lawn with trees and urban vacant lot make up the majority of the project site, while the riprap/artificial lake shore represents a minor component of the project site.

The mowed lawn with trees community is found throughout the NYCHA Parcel (see **Figure 10-4c**). Pin oak (*Quercus palustris*), black locust (*Robinia pseudoacacia*), honey locust (*Gledistia triacanthos*), London plantree (*Platanus acerfolia*), and sweetgum (*Liquidambar styraciflua*) have been planted within the maintained lawns of the Astoria Houses Campus (on

[1] Edinger et al. (2002) define this community as "residential, 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."

[2] Edinger et al. (2002) define this community as "an open site in a developed, urban area, that has been cleared either for construction or following demolition of a building. Vegetation may be sparse, with large areas of exposed soil, and often with rubble or other debris."

[3] Edinger et al. (2002) define this community as "a lake shore or pond shore that is covered with course stones, cobbles, concrete slabs, etc. placed for erosion control. The vegetation is usually sparse."



View of urban vacant lot, facing southeast **1**

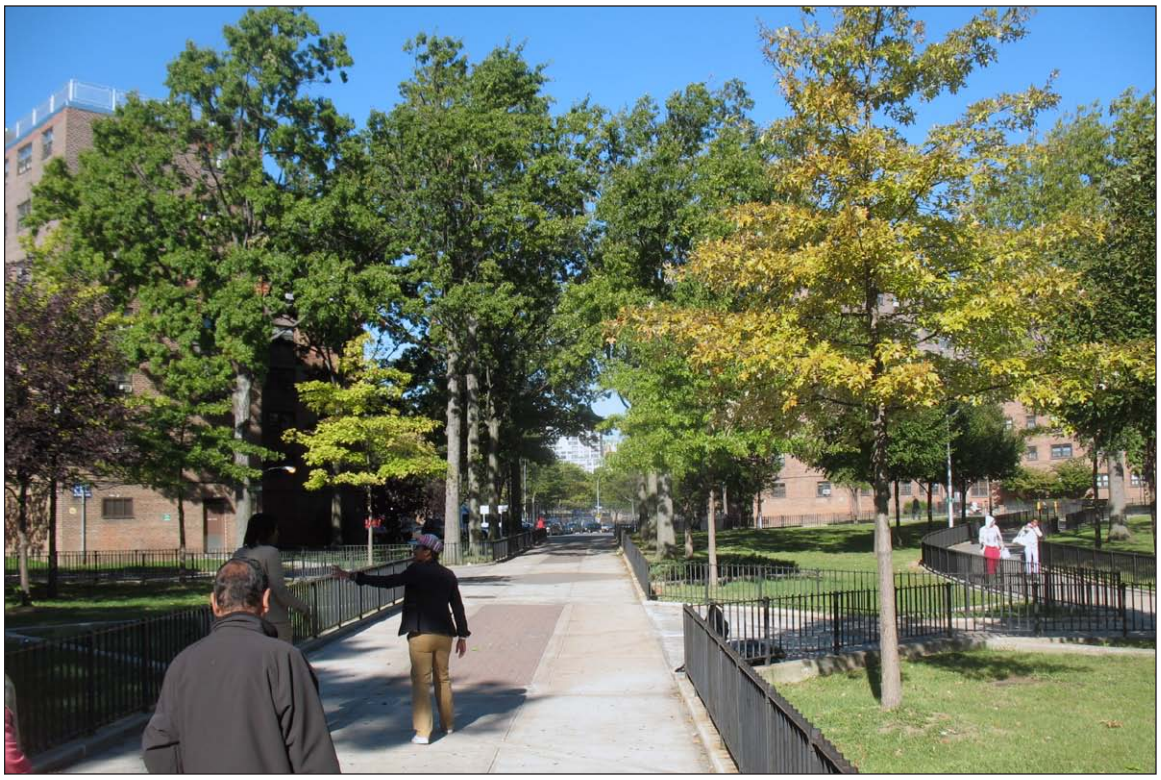


View of riprap on shoreline, facing south **2**

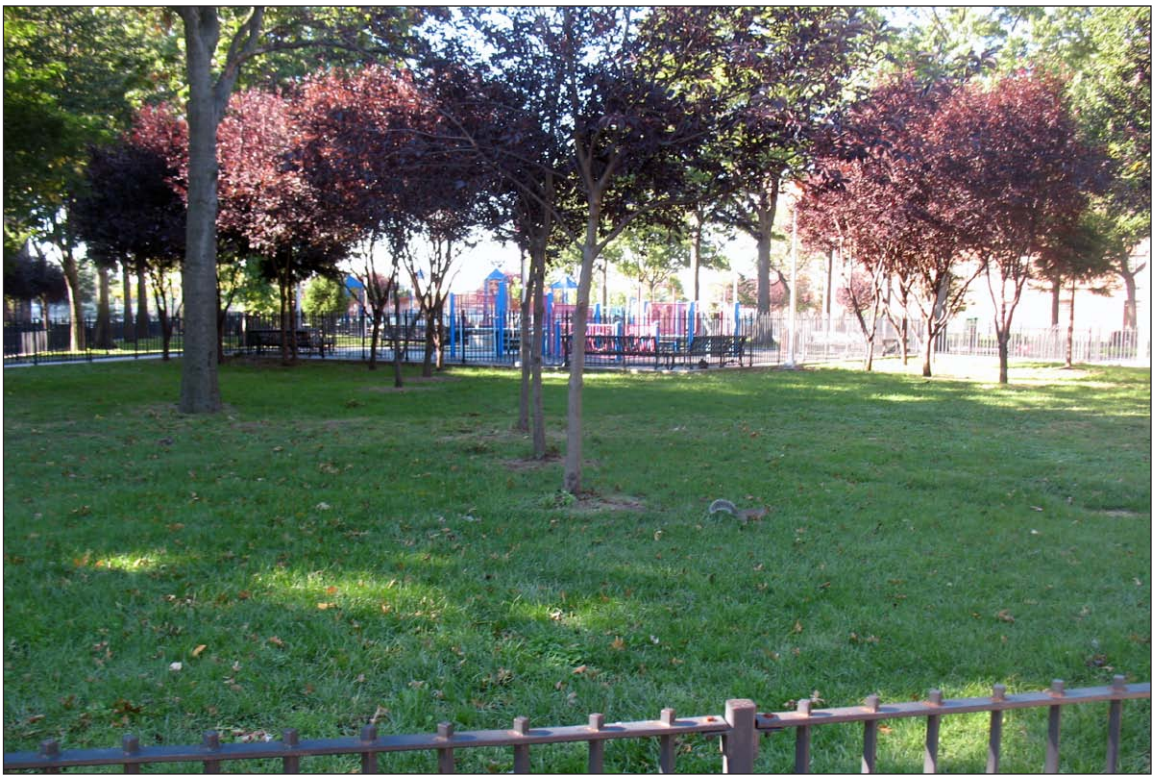
Natural Resources
Photographs
Figure 10-4a



View of parking lot where Building Number 7A&B are proposed, facing east **3**



View of the section of Astoria Boulevard to be re-opened to motor vehicle traffic, facing west **4**

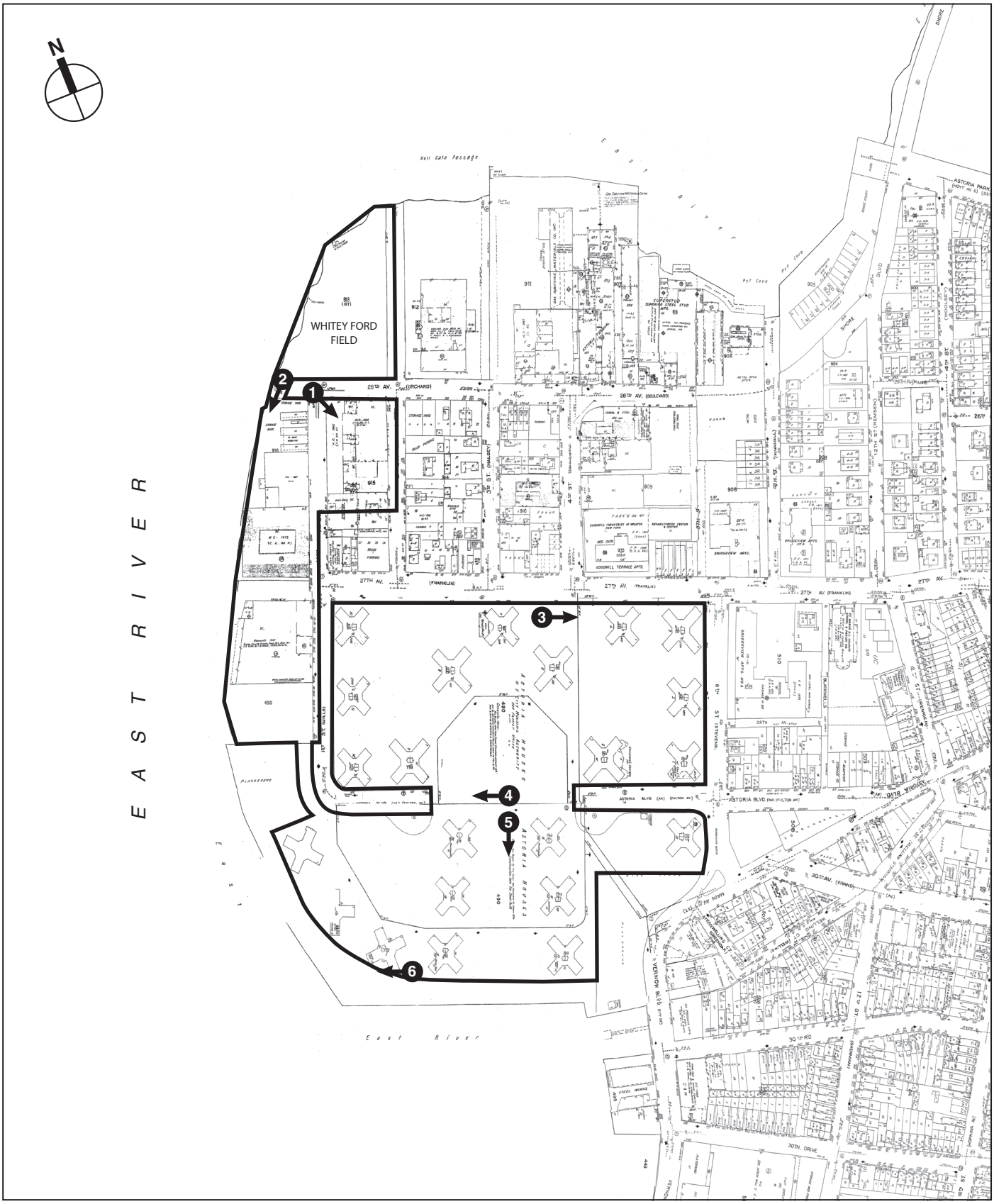


View of mowed lawn with trees, facing south **5**



View of mowed lawn with trees, facing west **6**

2.6.13



Project Site

Photograph Reference Number and View Direction

0 400 FEET

SCALE

HALLETTS POINT

Natural Resources
Photo Key Location
Figure 10-5

the NYCHA Parcel) and represent the dominate tree species of the mowed lawn with trees community. Planted crab apple (*Malus* sp.), ornamental cherry (*Prunus* sp.), purple leaf plum (*Prunus cerasifera*), and yew (*Taxus* sp.) comprise the minimal understory that exists on the project site. The lawns of the mowed lawn with trees community are predominantly crab grass (*Digitaria* sp.), bluegrass (*Poa* sp.), English plantain (*Plantago lanceolata*), white clover (*Trifolium repens*), and dandelion (*Taraxacum offinale*).

The ecological community within the Eastern and WF Parcels is best described as "urban vacant lot" and "urban structure exterior" (see **Figure 10-4b**). The northern portion of the WF Parcel has no active use, while the southern portion of the WF Parcel and the Eastern Parcel contain active commercial space. The vegetation found in these different parcels is similar; however, the northern portion of the WF Parcel is more vegetated due to its vacancy. The tree and shrub layers are dominated by tree-of-heaven (*Ailanthus altissima*), eastern cottonwood (*Populus deltoids*), princess-tree (*Paulownia tomentosa*), and elm (*Ulmus* sp.). The herbaceous layer is predominately Asiatic dayflower (*Commelina communis*), panic grass (*Panicum* sp.), pokeweed (*Phytolacca americana*), goldenrod (*Solidago* sp.), morning glory (*Ipomoea purpurea*), and foxtail grass (*Setaria* sp.).

The riprap/artificial lake shore community is located within the western portion of the WF Parcel adjacent to the East River. The dominant vegetation in this area is Japanese knotweed (*Polygonum cuspidatum*), common reed (*Phragmites australis*), and sweet goldenrod (*Solidago odora*).

A complete list of the plant species observed within the project site during the September 2012 reconnaissance investigation is provided in **Appendix C-1**.

WILDLIFE

The habitat available to terrestrial wildlife in the study area primarily consists of building exteriors, manicured lawn with mature shade trees, and some ornamental shrubbery. There is no woody understory beneath the mature trees, and herbaceous ground cover almost entirely consists of mowed grass. Most of the area is covered by buildings, roads, and other impervious surfaces. As such, wildlife occurring in the study area is largely limited to urban-adapted species that tolerate degraded environments and high levels of human activity.

BIRDS

The Breeding Bird Atlas is a periodic census of the distribution of breeding birds across New York State. The most recent census was conducted from 2000-2005 and documented 43 species as confirmed or probable/possible breeders in the survey block in which the study area is located (Block 5851C; http://www.dec.ny.gov/cfmx/extapps/bba/index.cfm?RequestTimeout=250). This survey block encompasses substantially larger and more diverse areas of habitat (e.g., Central Park) than what is present on Halletts Point; therefore, many bird species that appear in the atlas block are unlikely to breed in the study area. The following 10 of the 43 species listed in the atlas block are considered to have the potential to breed in the study area on the basis of their habitat requirements: Canada goose (*Branta canadensis*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), rock pigeon (*Columbia livia*), chimney swift (*Chaetura pelagica*), blue jay (*Cyanocitta cristata*), American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), and house sparrow (*Passer domesticus*). These are disturbance-tolerant, generalist species that have small area requirements and thrive in heavily developed, urban environments.

Many of the birds that likely occur in the study area during the breeding season are also year-round resident species that remain at northern latitudes during winter. Examples of species expected to occur in the terrestrial habitats of the study area during winter include urban-adapted species such as blue jay, downy woodpecker (*Picoides pubescens*), European starling, house sparrow, and mourning dove. Waterfowl and other waterbirds that are commonly found in the waters surrounding New York City (Fowle and Kerlinger 2001) and may occur on the East River during fall and winter include American black duck (*Anus rubripes*), bufflehead (*Bucephala albeola*), Canada goose (*Branta canadensis*), common merganser (*Mergus merganser*), greater black-backed gull (*Larus marinus*), herring gull (*Larus argentatus*), mallard (*Anas platyrhynchos*), and ring-billed gull (*Larus delawarensis*).

Although the terrestrial resources in the study area provide breeding and wintering habitat for only a very limited number of bird species, they may be occasionally used as a stopover site by additional species migrating through the region. Most bird species are more generalistic in their habitat preferences during migration than during the non-migratory periods, and thus, more species may occur in the study area during spring and fall than at other times of year. Migratory landbirds with the most potential to occur in the study area during spring and fall include those that forage in mature trees and can be found in small, degraded parks and other green spaces within New York City, such as northern parula (*Parula americana*), red-eyed vireo (*Vireo olivaceus*), and yellow-rumped warbler (*Dendroica coronata*). However, no migrants were observed within the study area during the September 25, 2012 field survey, which coincided with the peak period of fall migration through the area. The only birds observed in the study area during the field survey were European starling, rock dove, and house sparrow in terrestrial areas, and ring-billed gulls and a double-crested cormorant offshore.

MAMMALS

Similar to the bird community, the terrestrial resources available in the study area limit the mammal community to species associated with small and disturbed patches of green space within urban landscapes. Mammals expected to occur in the study area include raccoon (*Procyon lotor*), house mouse (*Mus musculus*), gray squirrel (*Sciurus carolinensis*), Norway rat (*Rattus norvegicus*), and domestic cat (*Felis catus*). Gray squirrel and domestic cat were the only mammals observed during the September 25, 2012 field survey.

REPTILES AND AMPHIBIANS

The NYSDEC Herp Atlas Project identified 10 species as occurring within the atlas block that covers the study area (*Central Park* USGS quadrangle): northern redback salamander (*Plethodon cinereus*), bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*), common snapping turtle (*Chelydra serpentina*), eastern box turtle (*Terrapene carolina*), red-eared slider (*Trachemys scripta*), painted turtle (*Chrysemys picta*), Italian wall lizard (*Podarcis sicula*), northern brown snake (*Storeria dekayi*), and common garter snake (*Thamnophis sirtalis*). However, the atlas block spans a large geographic area (most of Manhattan and south Bronx) that includes larger and more diverse areas of habitat than what is present on Halletts Point, and on the basis of their habitat requirements (Mitchell et al. 2006, Gibbs et al. 2007), none of these species is expected to occur in the study area. No reptiles or amphibians were observed during the September 25, 2012 field survey.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES AND SIGNIFICANT HABITAT AREAS

Federally listed species noted by the USFWS Information, Planning and Consultation system as occurring in Queens County include piping plover (*Charadrius melodus*; threatened), roseate tern (*Sterna dougalli*; endangered), and seabeach amaranth (*Amaranthus pumilus*; threatened) (USFWS 2013). The Queens County population of piping plovers is limited to the Rockaway Beach Colonial Seabird Site on Rockaway Peninsula (Boretti et al. 2007) and the study area lacks wide, open expanses of unvegetated beach that the piping plover uses for habitat. Therefore, piping plovers are not considered to have the potential to occur within the study area. The Rockaway Beach Colonial Seabird Site is the most substantial nesting habitat for beach-nesting birds remaining in Queens County and roseate terns are not among those that breed there (Fowle and Kerlinger 2001, Boretti et al. 2007). Further, roseate terns were not recorded in Queens County or any neighboring counties by the 1980-1985 or 2000-2005 Breeding Bird Atlases (Mitra 2008). The study area lacks suitable habitat for roseate terns and the species is not considered to have the potential to occur. Seabeach amaranth is found along sandy beaches of the Atlantic coast, where it grows on shifting sands between dunes and the high tide mark. As such, suitable habitat for seabeach amaranth is not present and the species is not considered to have the potential to occur in the study area.

Federally threatened or endangered aquatic species indicated by NMFS as occurring in the East River in the vicinity of Halletts Point include shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), loggerhead sea turtle (*Caretta caretta*), leatherback turtle, Kemp's ridley sea turtle (*Lepidochelys kempii*), and green sea turtle (Damon-Randall 2012). NMFS has designated the Atlantic Ocean waters within the greater Hudson River estuary, of which the East River is a part, as EFH (at the egg, larval, juvenile, and/or adult stage) for the following species: pollock (*Pollachius virens*), red hake (*Urophycis chuss*), winter flounder, windowpane flounder (*Scophthalmus aquosus*), Atlantic sea herring (*Clupea harengus*), bluefish (*Pomatomus saltatrix*), Atlantic butterfish, Atlantic mackerel (*Scomber scombrus*), summer flounder (*Paralichthys dentatus*), scup, black sea bass (*Centropristis striata*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), cobia (*Rachycentron canadum*), sand tiger shark (*Carcharias taurus*), dusky shark (*Carcharhinus obscurus*), sandbar shark (*Carcharhinus plumbeus*), clearnose skate (*Raja eglanteria*), little skate (*Leucoraja erinacea*), and winter skate (*Leucoraja ocellata*).

The NYNHP identified peregrine falcon (*Falco peregrinus*; New York State endangered) as the only threatened or endangered or special concern species for which it has records in the area. Peregrine falcon is also the only federally or state-listed bird species documented by the 2000-2005 Breeding Bird Atlas in the census block in which the project site is located. No federally or state-listed species were observed during the September 25, 2012 field survey.

E. THE FUTURE WITHOUT THE PROPOSED PROJECT

GROUNDWATER AND FLOODPLAIN

In the future without the proposed project (2022), it is anticipated that the project site will continue to be occupied by existing uses. Therefore, groundwater and floodplains would be unlikely to differ from their existing condition. True floodplain boundaries may exist further inland than currently mapped as a result of projected rises in sea level caused by global climate change, but overall, floodplains as well as groundwater within the project site are expected to remain largely unchanged.

WATER QUALITY AND AQUATIC BIOTA

In the future without the proposed project, water quality in the East River is expected to continue gradually improving as a result of several initiatives. Examples include the East River and Open Waters Waterbody/Watershed Facility Plan developed as part of the Citywide Long Term Control Plan (LTCP) to address CSO discharges, Vision 2020, the NYC Green Infrastructure Plan, and the City of New York's PlaNYC. The Vision 2020: New York City Comprehensive Waterfront Plan was developed by New York City Department of City Planning (DCP) to establish goals for the New York City waterfront, with the intention of promoting various ecological objectives and enhancing sustainability and climate resilience planning through the incorporation of climate change considerations, among other goals. The plan seeks to make improvements to water quality and aquatic resources through measures such as additional nitrogen reduction at the Bowery Bay, Tallman Island, Hunts Point, and Wards Island wastewater treatment plants (DCP 2011), additional reduction in CSOs with the increased capture of stormwater runoff through implementation of the NYC Green Infrastructure Plan (DEP 2011), improved flushing of constrained water bodies, and optimization of existing sewer systems through improvements to drainage, interceptors, and tide gates (DCP 2011). The City of New York's PlaNYC document is a planning agenda that targets a wide range of improvements to New York City in the coming decades (City of New York 2011). In addition to reducing nitrogen discharges from wastewater treatment plants, PlaNYC goals that would result in improvements to water quality and aquatic resources include construction of grey infrastructure projects to reduce the discharge of untreated water to the East River and other waterways, and reintroduction of oysters and eel grass.

The Verdant Power Roosevelt Island Tidal Energy (RITE) project is located in the East River off Roosevelt Island and will likely be underway in the near future under the terms of the Federal Energy Regulatory Commission (FERC) license issued to the pilot project on January 23, 2012 and valid for 10 years. The RITE project would provide renewable energy to the grid from tidal currents using an array of underwater, tidal turbines. The FERC license for the RITE project requires measures to protect and enhance fish, wildlife, cultural, and aesthetic resources, including several environmental monitoring programs such as hydroacoustic and sonar monitoring, species characterization and detection, monitoring for all rare, threatened, and endangered species and migration occurrences, bird monitoring, underwater noise monitoring, and monitoring of recreational use. All project equipment will have to be removed 60 days prior to the expiration of the certification, followed by site restoration, unless a FERC license is obtained (FERC 2012).

Improved water quality in the East River that is expected as a result of these and other initiatives should improve living conditions for aquatic biota and potentially allow more pollution-intolerant species to occur in the river. Overall, however, communities of aquatic biota within the East River in the future without the proposed project are expected to be largely composed of the same species as at present.

TERRESTRIAL ECOLOGICAL COMMUNITIES, VEGETATION, AND WILDLIFE

Terrestrial natural resources within the study area are not expected to change in the future without the proposed project. The project site would continue to be occupied by existing uses, and would continue to be used by the same suite of urban-adapted, disturbance-tolerant plant and wildlife species as under the existing conditions.

F. PROBABLE IMPACTS OF THE PROPOSED PROJECT

The proposed project is expected to be complete by 2022. It would result in waterfront redevelopment that would consist of multiple high-rise and low-rise buildings with residential and retail space, parking garages, publicly accessible open space, and infrastructure improvements, including rehabilitation and stabilization of failing shoreline revetments, installation of four new stormwater outfalls and rehabilitation of two existing DEP stormwater outfalls, and construction of an esplanade. The new stormwater outfalls would convey runoff from the WF Parcel to the East River following treatment for quality. Treatment methods would be designed to meet NYSDEC requirements for water quality (e.g., removal of at least 80 percent of total suspended solids) for discharge of stormwater to the East River. Examples of methods that would be considered include gravel infiltration beds beneath the boardwalk, hydrodynamic separators, and in-line filters. The locations of the proposed outfalls and the areas they would serve are discussed in further detail in Chapter 12, "Water and Sewer Infrastructure," and illustrated in Figure 12-4. Erosion and sediment control and stormwater management measures implemented post-construction would be in accordance with the SWPPP developed for the project. Green infrastructure practices, such as bioswales, rain gardens or rainwater collection and reuse, would be considered for inclusion as part of the SWPPP to the extent practical. Runoff from the Eastern and NYCHA Parcels would be detained to meet DEP site connection requirements. Construction would require some removal of trees and other vegetation within the project site. In the event that construction dewatering is necessary, the recovered groundwater would be treated in accordance with NYSDEC and/or DEP requirements prior to being discharged to the East River or the DEP storm sewer. A Long Island Well Permit would be requested as necessary, depending on the rate of groundwater withdrawal.

The proposed stabilization and repair of failing shoreline armoring would be limited to the replacement of existing rip-rap and debris in some areas with granite rip-rap for improved scour protection. These activities would not result in a net increase in fill below MHW and SHW or a change in the shoreline configuration that would result in loss of bottom habitat. The four new stormwater outfalls are anticipated to be 24 inches in diameter and constructed such that the invert elevation is located one foot above the SHW elevation within the riprap revetment. Maintenance and minor repair of two existing DEP outfalls would consist of clearing of debris and obstructive vegetation growth, and augmentation of deficient rip-rap. The proposed boardwalk esplanade would not extend over the MHW or SHW elevation.

GROUNDWATER

CONSTRUCTION AND OPERATION

Significant adverse impacts to groundwater would not occur as a result of construction or operation of the proposed project. Because groundwater is not used as a potable water supply in the area, there would be no potential impacts to drinking water supplies. The project would also receive local drainage and runoff approvals for use of municipal water and sewer.

As discussed in Chapter 11, "Hazardous Materials," volatile and semivolatile organic compounds and metals detected in the soil and groundwater samples collected within the project site are attributable to some combination of potential past historic on- or off-site releases as well as the presence of urban fill material. Concentrations of detected contaminants would not pose a significant adverse impact to human health or the environment and would not result in significant adverse impacts to groundwater. Any hazardous materials encountered during grading or other land-disturbing activities would be handled and removed in accordance with

DEP, NYSDEC, OSHA, and EPA requirements, and the Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) prepared for the proposed project and approved by DEP and the New York City Department of Housing Preservation and Development (HPD) (for Sites 6 to 8, subject to disposition by the City) or the New York City Mayor's Office of Environmental Remediation (MOER) (for Sites 1 to 5, under the Applicant's control). Remediation activities would be conducted in accordance with the MOER- or DEP -approved RAP. Implementation of the measures during construction activities would minimize the potential for significant adverse impacts to groundwater quality.

FLOODPLAINS

CONSTRUCTION AND OPERATION

As discussed in "Existing Conditions," the project site is located within three flood zones. The western and central portion of the project site (i.e., WF Parcel, Eastern Parcel, and Building 8 within the NYCHA Parcel) are located within the 100-year (Zone AE). Buildings 6 and 7 within the NYCHA Parcel are within the 500-year (Zone X Shaded) floodplain. A portion of the western NYCHA Parcel is located outside of the 500-year flood plain (Zone X Unshaded), defined as a low risk area. Because the floodplains within and adjacent to the project site are affected by coastal flooding rather than local or fluvial flooding, the construction and operation of the proposed project would not exacerbate flooding conditions on or near the project site. Development of the proposed project would not result in significant adverse impacts to flood levels, flood risk, or the flow of flood waters within the project site or in other portions of the Halletts Point peninsula. As noted above, coastal floodplains are influenced by astronomic tide and meteorological forces (e.g., northeasters and hurricanes) rather than fluvial flooding, and are therefore not affected by the placement of obstructions (e.g., buildings) within the floodplain.

As discussed in Chapter 12, "Water and Sewer Infrastructure," stormwater runoff generated within the WF Parcel would be discharged to the East River through new stormwater outfalls constructed as part of the proposed project, and runoff from the NYCHA and Eastern Parcel would discharge to the existing DEP storm sewer. Because runoff from the project site would not be discharged to the combined sewer, the proposed project would not have the potential to result in street or basement flooding due to combined sewer backups[1]. Post-construction stormwater management measures that would be integrated into the project as part of the SWPPP prepared for the WF Parcel would be designed to treat stormwater for quality. For the Eastern and NYCHA parcels, stormwater management Best Management Practices (BMPs) would be required as part of the DEP site approval process to control the rate at which stormwater is discharged to the storm sewers. These BMPs would include on-site detention facilities (e.g., rooftop detention, underground storage tanks or tanks within buildings) and potential green infrastructure (e.g., bioswales, rain gardens or rainwater collection and reuse), consistent with the waterway initiatives of PlaNYC (City of New York 2011). Discharge of stormwater at the DEP allowable rate for the Eastern and NYCHA parcels would not be expected to contribute to street flooding due to storm sewer capacity exceedances.

The design and construction of the buildings within the project site would comply with the current and any future changes in the New York City *Building Code* requirements for construction within the 100-year floodplain for the applicable building category, and any future changes in the floodplain zones designated by FEMA (including Advisory Base Flood

[1] http://www.nyc.gov/html/dep/html/stormwater/flooding_causes.shtml.

Elevations [ABFEs]). The finished floor elevations for the residential townhouse structures proposed for the WF Parcel along the East River and on the Eastern Parcel would be about 3 feet above the current 100-year flood elevation. The remaining residential units within the Eastern and WF Parcels would be within the towers above the low- to mid-rise bases that would be used for parking facilities on the interior and retail use on the exterior. These residential units would be well above the 100- and 500-year flood elevations.

The finished floor elevations for the ground floor retail use on the 27th Avenue plaza and 1st Street would be about 2 inches above the 100-year flood elevation. The slab of the below-grade parking level for the Eastern and WF Parcels and the mechanical-electrical-plumbing spaces for the five buildings that would be constructed within these parcels would be below the 100-year flood elevations, and the basement structures would be designed in accordance with Appendix G of the New York City *Building Code*. Therefore, the proposed project would minimize the potential for public and private losses due to flood damage, and reduce the exposure of public utilities to flood hazards.

As discussed in in Chapter 17, "Greenhouse Gas Emissions and Climate Change," the proposed project is taking a proactive approach to planning and design under future sea level rise scenarios. The New York City Panel on Climate Change (NPCC) has projected that by the end of the century, sea level will rise by 1.0 to 1.9 feet (with a higher level of up to 4.6 feet in the event of rapid ice-melt). This would raise the 100 year storm flood elevation in the project area to 9.1 to 12.7 feet Queens Borough Highway Datum (QBHD). In addition, if approved, the proposed project would account for elevating the proposed buildings above any future applicable flood elevations as designated by the FEMA.[1] The Applicant is also committed to elevating critical infrastructure above the 100-year flood elevation or, in cases where infrastructure is required to be at lower levels by building code, to be sealed. With the invert elevation of the outfalls at 1 foot above SHW, the current design of the four proposed outfalls would comply with current DEP outfall standard that requires the inside top of an outfall pipe be at least 6 inches above the SHW elevation, and would have some resilience with respect to increases in the SHW elevation due to sea level rise. The proposed outfall design could accommodate up to a 30 inch change in the SHW elevation and still meet the DEP standard.

The proposed project would not have the potential to result in direct or indirect adverse impacts to the floodplain and is appropriate for siting in the 100-year floodplain consistent with 24 CFR § 55.20(g) regulations of the U.S. Department of Housing and Urban Development (HUD) implementing Executive Order 11988 Floodplain Management concerning financial assistance for activities that are within and or affect a floodplain. **Appendix D** includes the 8-step floodplain analysis consistent with 24 CFR § 55.20(g) regulations of HUD.

WETLANDS AND AQUATIC RESCOURCES

CONSTRUCTION

Shoreline stabilization is the only activity that would occur within NYSDEC tidal wetlands (i.e., below MHW). NYSDEC has determined the extent of the NYSDEC tidal wetland adjacent area

[1] The FEMA ABFE for the portion of New York City including the project site was released for review on February 25, 2013. The ABFE for the WF Parcel would be 13 feet, an approximately 5 foot increase over the currently applicable 100 year flood elevation. Although the ABFE is subject to further review, if it is adopted as part of a future updated Flood Insurance Rate Map, the proposed project would comply these flood elevations as required by the New York City *Building Code*.

on the WF Parcel. Proposed activities that would be located within the tidal wetlands adjacent area include: maintenance of the two existing DEP outfalls, construction of the four new stormwater outfalls, and construction of the boardwalk esplanade and landscaped open space areas. Shoreline stabilization would entail replacement of existing riprap and debris in some areas with granite riprap for improved scour protection. These shoreline stabilization activities would not result in a net increase in fill below SHW or MHW, or a change in shoreline configuration that would result in loss of NYSDEC littoral zone tidal wetlands. Any resuspension of bottom sediment resulting from the shoreline stabilization and repair would be minimal and temporary, and would be confined to the immediate vicinity of the work, and would not result in significant or long-term adverse impacts to littoral zone tidal wetlands, water quality, or aquatic biota. The four new stormwater outfalls would be constructed above the SHW elevation and within the riprap revetment, and would not have the potential to adversely affect NYSDEC littoral zone tidal wetlands or aquatic resources. Maintenance and minor repair of two existing DEP outfalls would consist of clearing of debris and obstructive vegetation growth, and augmentation of deficient riprap. The proposed boardwalk esplanade would not extend over the MHW or SHW elevation, and would not require in any construction activity within NYSDEC littoral zone tidal wetlands. As such, there would be no significant adverse impacts to NYSDEC littoral zone tidal wetlands, water quality, or aquatic biota from construction of the esplanade.

The proposed project would be covered under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-10-001. To obtain coverage under this permit, a SWPPP would be prepared and a NOI would be submitted to NYSDEC. The SWPPP would comply with all of the requirements of GP-0-10-001, NYSDEC's technical standard for erosion and sediment control, presented in "New York Standards and Specifications for Erosion and Sediment Control", and NYSDEC's Stormwater Management Design Manual. Implementation of erosion and sediment control measures, and stormwater management measures identified in the SWPPP would minimize potential impacts on littoral zone tidal wetlands and aquatic resources along the edges of the project site associated with discharge of stormwater runoff during land-disturbing activities resulting from construction of the proposed project.

OPERATION

Operation of the proposed project is not expected to result in long-term significant adverse impacts to existing NYSDEC-designated littoral zone wetlands or aquatic resources within the East River. Implementation of the SWPPP developed for the project site would minimize potential impacts to existing NYSDEC-designated littoral zone tidal wetlands, water quality, and aquatic biota. The new stormwater outfalls would convey runoff from the WF Parcel to the East River following treatment for quality, reducing the potential impacts to NYSDEC littoral zone tidal wetlands and aquatic resources due to the discharge of runoff from the project site. Some runoff from the WF Parcel currently enters the East River untreated as undirected sheet flow off impervious surface, with the remainder going to an existing combined sewer and separate storm sewer. Stormwater management measures implemented within the Eastern and NYCHA Parcels would regulate the rate at which runoff is discharged to the DEP storm sewer and then to the East River through the existing outfalls. Green infrastructure practices, such as bioswales, rain gardens or rainwater collection and reuse, would be considered for inclusion as part of the SWPPP to the extent practical. Overall, discharge of runoff from the project site to the East River due to the proposed project would not result in significant adverse impacts to NYSDEC littoral zone tidal wetlands or aquatic resources, and project operation may slightly improve water quality and habitat conditions for aquatic biota by capturing some storm water that

presently enters the river from the project site untreated. The improved stabilization of the shoreline during operation of the proposed project may also slightly benefit littoral zone tidal wetlands, water quality, and aquatic biota in the near-shore areas by reducing scouring and erosion.

The esplanade would be elevated and inland so no part of the boardwalk or its supporting structure would extend over the SHW line or NYSDEC littoral zone tidal wetlands. Therefore, no shading of the river would occur. The esplanade would be constructed of planks that would be spaced apart such that rainwater can pass through and the structure would be a pervious surface. During operation of the proposed project, the esplanade would not result in significant adverse impacts to East River water quality, aquatic biota, or areas regulated as littoral zone tidal wetland.

TERRESTRIAL ECOLOGICAL COMMUNITIES AND VEGETATION

CONSTRUCTION

Terrestrial ecological communities present in the project sites are characteristic of an urbanized landscape and highly ubiquitous throughout New York City. The NYCHA Parcel is primarily mowed lawn with trees. The Eastern and WF Parcels are predominantly urban vacant lot and urban structure exterior. These ecological communities are not of high ecological value or uncommon in the surrounding area. Therefore, loss of some areas of these communities within the project site due to clearing activities would not result in a significant adverse impact to these or other ecological communities at a local or regional scale.

Construction of the proposed project would require tree removal, including several pin oaks that range in size from approximately 3 inches diameter at breast height (DBH), to greater than 20 inches DBH occurring along the section of Astoria Boulevard that would be reconnected. Tree replacement and protection would comply with DPR's applicable rules and regulations. Trees under the jurisdiction of DPR may not be removed without a permit pursuant to Title 18 of the Administrative Code of the City of New York. Chapter 5 of Title 56 of the Rules of the City of New York establishes rules for valuing trees that are approved for removal to determine the appropriate number of replacement trees. A method to calculate the number of replacement trees as 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 project sites. Measures to protect existing trees would include protection plans to minimize impacts to the critical root zones, trunks, and canopies. Most trees occurring within the study area would remain in place and would not be affected by project construction. As noted in Chapter 1, "Project Description," the proposed project is seeking a mayoral override of zoning resolution street tree planting requirements for portions of the zoning lot not affected by the proposed development.

OPERATION

Operation of the proposed project would not have any adverse impacts to terrestrial ecological communities or vegetation. In addition to tree replacement and protection, a landscaping plan developed for the proposed project would incorporate several native plant species that currently do not occur in the project sites. Native plants used in the landscaping plans could benefit some species of wildlife, including insects and songbirds. The proposed landscaping along the shoreline would increase ecological community and plant diversity at the project sites by adding coastal plants representative of an estuarine tidal system.

As noted in Chapter1, "Project Description," the proposed project intends to request a Mayoral Override to waive part of the street tree planting requirements applicable to the proposed project. Under the street tree planting requirements of the Zoning Resolution, street trees would need to be planted along all street frontages of the affected zoning lots. The proposed Mayoral Override would permit trees to be planted only along street frontages adjacent to areas affected by the proposed project. The Mayoral Override would eliminate the requirement to plant street trees along the portions of the zoning lot frontage not affected by the proposed project. The project site includes the entire 27-acre Astoria Houses Campus which, aside from the sites of Buildings 6, 7, and 8 and the expanded surface parking area, would not be affected by the proposed project. With the proposed override, the project would comply with the street tree planting requirements along the street frontage of each new building, but would not plant street trees along the entire frontage of the existing Astoria Houses Campus, much of which is already tree-lined.

WILDLIFE

CONSTRUCTION

Construction of the proposed project would not have significant adverse impacts to wildlife at either the individual or population level. Terrestrial wildlife habitat in the area is presently extremely limited, as the parcels primarily consist of buildings, roads and parking lots with areas of manicured lawn and shade trees. The proposed buildings and other structures would be constructed in existing paved lots or by redeveloping existing buildings, and as such, would not eliminate or degrade quality wildlife habitat. Some tree removal would be required to reconnect sections of Astoria Boulevard through the project site and redevelop the Waterfront Parcel, but the loss of these trees would not significantly degrade or reduce the amount of habitat available to the generalist species of wildlife present in the study area. Construction of Buildings 6 and 7 within the NYCHA Parcel would occur primarily within the footprint of existing asphalt lots and would therefore not require tree removal or otherwise affect habitat for wildlife. Construction within the Eastern Parcel would entail redevelopment of existing buildings and would not remove or impact wildlife habitat. Overall, construction of the proposed project would not have significant adverse impacts to wildlife or wildlife habitat within the project site or in the surrounding area.

OPERATION

Operation of the proposed project would not result in significant adverse impacts to wildlife resources. The proposed project would result in habitats for wildlife similar to the existing condition, and would thus support the same wildlife species. Examples include gray squirrel, American robin, house sparrow, and European starling. Establishment of emergent tidal vegetation along the shoreline would potentially provide foraging habitat for some disturbance-tolerant waterbirds such as black-crowned night heron and great egret. Increases in human activity that would occur as a result of the proposed project would not be expected to adversely affect wildlife because wildlife in the area is limited to disturbance-tolerant, urban-adapted species. The other proposed waterfront landscaping would have the potential to increase the abundance of the habitat available for urban tolerant wildlife species currently present within the study area, and on occasion, may attract some migrating songbirds in search of stopover habitat during spring and fall. Collisions of migrating birds with the proposed buildings would likely be uncommon as discussed below.

Bird Collisions

Birds are prone to collisions with windows and other glass surfaces of buildings. The risk of bird collisions with a given building is a function of building design (e.g., glass coverage and reflectivity), surrounding habitat, and the abundance and species of birds in the area (Hager et al. 2008, Gelb and Delecretaz 2009, Klem et al. 2009). Birds are known to collide with tall artificial structures at night, but the overwhelming majority of bird collisions with buildings occur during the daytime when lower story windows reflect images of nearby trees and other vegetation (Gelb and Delecretaz 2006, 2009, Klem et al. 2009).

Nighttime collisions of birds with artificial structures are often strongly related to structure height (Kerlinger 2000). For example, several studies have found bird mortality at communication towers taller than 984 feet to be significantly greater than mortality at towers that are less than 492 feet tall (Longcore et al. 2008). Most birds migrate at altitudes of 656 to 2,461 feet (Able 1970, Mabee et al. 2006) and rarely fly below 300 feet during clear weather (Mabee and Cooper 2004). The proposed project would include new buildings located amongst numerous existing buildings and ranging in height from approximately 40 to 310 feet. As such, none of the proposed buildings would extend into the air space commonly used by migrating birds. While relatively short structures may still represent collision hazards to birds during inclement weather when their lighting scheme attracts and/or disorients individuals, nighttime collisions of birds with the proposed project's buildings would likely be an extremely rare occurrence restricted to periods of very dense fog and low cloud cover. Any losses under these rare conditions would not be expected to result in significant adverse impacts to migratory bird populations.

Daytime collisions of birds with lower story reflective glass windows of buildings commonly occur throughout New York City (Gelb and Delecretaz 2006, 2009; Klem et al. 2009). The potential for daytime collisions with the proposed project's buildings would be dependent upon building architecture (e.g., percentage of building surface covered by glass, window size, glass type/reflectivity) and surrounding vegetation characteristics (Hager et al. 2008, Gelb and Delecretaz 2009, Klem et al. 2009). Detailed collision monitoring data from similar buildings elsewhere in New York City indicate a potential for losses of between 10 to 50 birds per building per year (Gelb and Delecretaz 2006, 2009; Klem et al. 2009). Actual losses would be highly dependent on the specific design features of the buildings and surrounding landscaping (Hager et al. 2008, Gelb and Delecretaz 2009, Klem et al. 2009) and the abundance of birds in the area. The landscaped habitat that would be available in the project site would be used mostly by common, resident bird species (e.g., European starling, house sparrow, rock dove) which seldom collide with windows relative to migrants (O'Connell 2001, Sloan 2007). The landscaped habitats resulting from the proposed project would not represent highly attractive stopover habitat that would concentrate migrants, and therefore, large numbers of migrants would not be expected to occur in proximity to the proposed buildings and be at risk of daytime collisions.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES AND SIGNIFICANT HABITAT AREAS

The federally or state-listed species with the potential to occur within the study area include shortnose sturgeon, Atlantic sturgeon, loggerhead sea turtle, leatherback turtle, Kemp's ridley sea turtle, green sea turtle, and peregrine falcon. Sea turtles neither nest in the East River, nor reside there year-round, and would be unlikely to occur in the study area except as occasional transients. Similarly, Atlantic and shortnose sturgeon would only occur as transients passing

through the East River en route to Hudson River breeding grounds or overwintering areas in the Atlantic. As discussed under "Wetlands and Aquatic Resources," neither construction nor operation of the proposed project would adversely affect water quality or habitat conditions in the East River, and would therefore have no direct or indirect effects on any individuals of these species potentially occurring in the East River. The USFWS concurred with this determination of no effect to federally listed species under its jurisdiction (**Appendix C-2**). The proposed project would likewise have no significant adverse impact to EFH within the East River.

Peregrine falcons have become increasingly common in urban areas since the 1980s and presently nest in several locations throughout the New York metropolitan area. Although the peregrine falcon was documented by the 2000-2005 Breeding Bird Atlas in the census block in which the project site is located, the nearest known recently-active peregrine falcon nest is on the Lower East Side of Manhattan (Loucks 2010). Occurrence of peregrine falcons in the study area would be limited to migrants passing through the region or individuals from nest sites elsewhere in the city. As such, the proposed project would not eliminate or degrade nesting habitat for the species. Hunting opportunities in the project area for migrant peregrine falcons or individuals from nests elsewhere in the city would remain the same in the future with the proposed project. Urban peregrine falcons primarily eat rock pigeons (DeMent et al. 1986, Rejt 2001), whose abundance would not change as a result of the proposed project. Therefore, the proposed project would not result in significant adverse impacts to the peregrine falcon.

Overall, the proposed project would not result in any significant adverse impact to threatened, endangered, and special concern species and significant habitat areas.

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