RIVER RING
Chapter 9: Natural Resources

A. INTRODUCTION

This chapter examines potential impacts of the Proposed Development on terrestrial and aquatic natural resources and floodplains.[1] The *CEQR Technical Manual* defines a natural resource 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." Such resources include groundwater, soils, and geologic features; numerous types of natural and human-created aquatic and terrestrial habitats (including wetlands, dunes, beaches, grasslands, woodlands, landscaped areas, gardens, parks, and built structures); as well as any areas used by wildlife. In accordance with the *CEQR Technical Manual*, this chapter describes:

- Regulatory programs that encompass groundwater, floodplains, wildlife, threatened or endangered species, aquatic resources and/or other natural resources within the Proposed Development Site;
- Existing groundwater, floodplains, and natural resources within the Proposed Development Site, as well as water quality, aquatic and terrestrial biota, and threatened or endangered species and species of special concern;
- Conditions of the groundwater, floodplains, water quality, and natural resources expected to occur in the No-Action Condition; and
- Potential effects of the Proposed Development on the groundwater, floodplains, water quality, and natural resources in the With-Action Condition.

B. PRINCIPAL CONCLUSIONS

A detailed analysis was conducted based on the methodology set forth in the *CEQR Technical Manual*, and determined that the Proposed Actions would not result in a significant adverse impact related to natural resources. The Proposed Development would not result in significant adverse impacts on terrestrial resources, wetlands, or threatened and endangered species. The upland portions of the Proposed Development Site are in a highly urbanized area where vegetation and wildlife are limited and the biodiversity is low. The Proposed Development, in conjunction with upland residential development, would create a total of 264,777 square feet (sf) of waterfront public space, which would include a

[1] Although the reasonable worst-case development scenario (RWCDS) for the Proposed Actions includes a non-Applicant-owned Projected Development Site, that site is located upland and does not front the East River, nor does it contain any natural resources. As such, the natural resources assessment in this chapter focuses exclusively on the Applicant's Proposed Development.

protected cove for water-dependent recreation and the creation of new or enhanced habitats (approximately 106,804 sf).

At the waterfront, the Proposed Development would expand public access along the East River north of Domino Park and Grand Ferry Park. The project would include a new shore public walkway between Grand Ferry Park and North 3rd Street, about 900 linear feet, and would include two new access points from River Street to the new shore public walkway (at North 1st Street and Metropolitan Avenue). The redevelopment of the property would create a new waterfront public space on former industrial properties. In addition to the newly created public space, the Proposed Development would provide a stable and resilient waterfront, and would create aquatic, upland, and wetland vegetative communities that would promote fish and wildlife habitat development.

Waterward, the Proposed Development would redevelop and reshape the existing shoreline to provide a protected cove for in-water secondary contact recreation and creation of new habitat. All existing in-water structures except for three of the existing caissons would be demolished. Proposed in-water and shoreline improvements would reshape the shoreline to create a protected cove (via in-water excavation and backfill) and new shoreline protection measures (e.g., bulkhead, revetment) including breakwaters in consideration of navigational interests. These improvements would protect the cove and the habitats created inside the breakwaters, including upland vegetative habitats (e.g., reefs, salt marsh, coastal scrub shrubs, tide pools, and tidal shallows). The improvements also include new walkways above open water that would connect the breakwaters.

The proposed breakwaters and groin would shape the cove and provide additional shoreline protection while creating new habitats for native plant and animal species. The breakwaters consist of pile-supported platforms backfilled with clean soil to create berms on top. Groins are thin soil berms jutting out from the shoreline (i.e., a small peninsula). The berms on the breakwaters and berms would be protected from erosion with ecological armoring (mixtures of ECOncrete panels, block, and tidepools with riprap stone) that dissipates wave energy from passing vessels and from wind-driven waves during storms. These breakwaters and groin would result in disturbance within open water and littoral zones of the East River; however, the Proposed Development would create new water habitats consisting of littoral zone and manmade reefs. The proposed habitat creation in the littoral zone would be approximately four times the area of disturbance in this area, and would offset the effects of the proposed in-water disturbance and result in an overall enhancement to the aquatic habitat and shoreline conditions.

During construction, the East River would be protected by using best management practices consistent with New York State Department of Environmental Conservation's (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity. Best management practices may include turbidity curtains, air curtains, use of environmental buckets, and/or long reach excavators to keep equipment out of the water. Excavated soils would be stockpiled in containment areas lined with plastic; decanted water would be collected and either disposed offsite, or treated (if needed) and discharged to the East River. The project would be subject to the requirements of the NYSDEC and/or the United States Army Corps of Engineers (USACE) permitting processes. The purpose of the permit process (including issuance of specific conditions) is to ensure the no significant adverse impacts are imposed by the project on natural resources, including, the East River. Therefore, no further assessment is required.

C. METHODOLOGY

An assessment may be appropriate if a natural resource is present on or near the project site and the project would directly or indirectly disturb that resource. The Proposed Development Site is along the East River, a natural resource as defined in Chapter 11, Section 100 of the *CEQR Technical Manual*.

This natural resources assessment was conducted in accordance with *CEQR Technical Manual* guidelines and is based on the latest data and guidance provided by city agencies, including the New York City Department of Environmental Protection (DEP) and the New York City Department of City Planning (DCP).

Existing information was identified in literature and obtained from governmental and nongovernmental sources, such as: the NYCDEP Harbor Water Quality Survey data; Environmental Resource Mapper (ERM) published by the NYSDEC; NYSDEC Water Quality Classifications Data; NYSDEC New York State Regulatory Freshwater Wetlands Data; U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps; Information, Planning, and Conservation System (IPaC) list of federal threatened and endangered species for New York and Kings counties; Federal Emergency Management Agency (FEMA) Preliminary and Effective Flood Insurance Rate Maps (pFIRMs and FIRMs); consultation with the National Marine Fisheries Service (NMFS) and New York Natural Heritage Program (NYNHP) for information on rare, threatened, or endangered species in the Proposed Development Site; and observations made during field visits conducted by eDesign Dynamics on November 20, 2019 and March 3, 2020 on the Proposed Development Site as part of the habitat evaluation.

This assessment also relies on the information presented in the following project-specific resources that are provided in **Appendix E**:

- Draft Joint Permit Application (JPA) submitted to NYSDEC and USACE in March 2020;
- Habitat Evaluation dated April 2020 prepared by eDesign Dynamics;
- Essential Fish Habitat Assessment prepared by Langan in March 2020; and
- Correspondence with the NYSDEC, DEP, NMFS, and USFW.

D. REGULATORY CONTEXT

Federal

The East River is a navigable waterway, meaning that it is subject to the ebb and flow of the tide shoreward to the mean high water (MHW) mark, and that it is used or has been used for the transport of interstate or foreign commerce.[2] This designation means that the East River is subject to several of the following federal regulations:

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

[2] Federal Transit Administration. Navigable Waterways and Coastal Zones. Navigable Waterways Compliance Process. Accessed via https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/navigable-waterways-and-coastal-zones.

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 or construction sites) that enter water bodies from sources other than the end of a pipe. Applicants for discharges to navigable waters in New York State must obtain a Water Quality Certificate from NYSDEC pursuant to Section 401. The act also requires a Water Quality Certificate to be issued for discharge projects. In addition, any project within the coastal area that receives a federal permit must also obtain a Coastal Zone Consistency Determination. The Proposed Development would require an individual Section 404 permit from USACE for the excavation and fill placement within the East River.

Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for the construction of any structure in or over any navigable water of the United States, the excavation from or deposition of material in these waters or any obstruction or alteration in navigable waters of the United States. The purpose of this Act is to protect navigation and navigable channels. Any structures placed in or over navigable waters, such as pilings, piers, or bridge abutments up to the MHW line, are regulated pursuant to this Act. The Proposed Development would involve excavation and fill placement within the East River, along with the placement of structures in-water such as breakwaters and groin, and the Rivers and Harbors Act of 1899 would therefore apply.

Magnuson-Stevens Act (16 USC §§ 1801 To 1883)

Section 305(b)(2)-(4) of the Magnuson-Stevens Act outlines the process for the National Marine Fisheries Service (NMFS) and the Regional Fishery Management Councils (in this case, the Mid-Atlantic Fishery Management Council) to comment on activities proposed by federal agencies (issuing permits or funding projects) that may adversely impact areas designated as Essential Fish Habitats (EFH). EFH is defined as those waters necessary to fish for spawning, breeding, feeding, or growth to maturity. Adverse impacts on EFHs, as defined in 50 CFR 600.910(A), include any impact that reduces EFH quality and/or quantity. Adverse impacts may include:

- Direct impacts, such as physical disruption or the release of contaminants;
- Indirect impacts, such as the loss of prey or reduction in the fecundity (number of offspring produced) of a managed species; and
- Site-specific or habitat-wide impacts that may include individual, cumulative, or synergetic consequences of a federal action.

According to the NMFS EFH Mapper, there are several fish species with EFHs proximate to the Proposed Development Site. Therefore, the Magnuson-Stevens Act would be applicable to the Proposed Development.

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 Proposed Development Site. The

Proposed Development would result in disturbance within aquatic habitat, and therefore the Endangered Species Act of 1973 would apply.

State

Tidal Wetlands Act (Environmental Conservation Law, Article 25)

Tidal wetlands regulations apply anywhere tidal inundation occurs on a daily, monthly, or intermittent basis. In New York State, tidal wetlands occur along the tidal waters of the East River extending seaward from MHW line to a water depth of six feet at mean low water, 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 mapping the state's tidal wetlands. A permit is required for activities within NYSDEC tidal wetlands or tidal wetland adjacent areas. The Proposed Development Site contains areas of littoral tidal wetlands and the Tidal Wetlands Act would therefore apply to the Proposed Development.

Freshwater Wetlands Act (Environmental Conservation Law, Article 24)

Freshwater wetlands regulations apply to NYSDEC mapped freshwater wetlands greater than 12.4 acres. Each mapped wetland has a 100 foot adjacent buffer to protect the wetlands. Wetlands are broken down into 4 classes (I through IV). Permits are required if proposed activities conducted within the regulated wetland or adjacent area. There are no freshwater wetlands on or adjacent to the Proposed Development Site.

Water Resources Law (Environmental Conservation Law Article 1; Title 5, Protection of Waters)

NYSDEC administers the Protection of Waters Act and regulations to govern activities on surface waters (i.e., rivers, streams, lakes, and ponds). The Protection of Waters Permit Program regulates five activity categories: (i) disturbance of stream beds or banks of a protected stream or other watercourse; (ii) construction, reconstruction, or repair of dams and other impoundment structures; (iii) construction, reconstruction, or expansion of docking and mooring facilities; (iv) excavation or placement of fill in navigable waters and their adjacent and contiguous wetlands; and (v) Water Quality Certification for placing fill or other activities that result in a discharge to waters of the United States in accordance with Section 401 of the Clean Water Act. The Proposed Development would involve excavation and fill placement within the East River, and the Water Resources Law would therefore apply.

State Pollution Discharge Elimination System (SPDES) (Environmental Conservation Law, Articles 3, 15, 17, 21, 70, 71)

The NYSDEC regulates discharge to state waters. SPDES permits are required for the following activities: point source discharge of wastewater to surface or ground water, construction of a disposal system, discharge of stormwater, and the construction activities that disturb one acre or more. The Proposed Development would require a SPDES permit because construction activities would disturb more than one acre.

Waterfront Revitalization of Coastal Areas and Inland Waterways Act (Environmental Conservation Law, Articles 3, 15, 17, 21, 70, 71)

The Waterfront Revitalization of Coastal Areas and Inland Waterways Act implements the Coastal Management Program (CMP) and authorizes the state to encourage local governments to adopt local

waterfront revitalization programs. The Proposed Development would redevelop and reshape the existing shoreline and would be consistent with New York City's adopted Waterfront Revitalization Program.

Flood Hazard Areas (Environmental Conservation Law Article 36)

Work within any federally designated flood hazard area requires a permit from the NYSDEC. The majority of the Proposed Development Site is within an area identified by FEMA as a one percent chance flood hazard area. The Proposed Development would develop structures within the one percent chance flood hazard area and therefore requires a permit from NYSDEC.

Local

New York City Waterfront Revitalization Program (WRP)

The WRP is the City's coastal zone management tool to make land use decision and was approved by the New York State Secretary of State to be included in the New York State CMP. The WRP was updated in 2016 to prioritize climate resilience planning, promote ecological objectives and strategies, and allow for interagency review of permitting (See Chapter 2, "Land Use, Zoning and Public Policy" and **Appendix B – WRP Consistency Assessment Form**).

Flood Resilience Zoning Text Amendment

The Flood Resilience Zoning Amendment was adopted by the New York City Council in 2013, and has since been superseded by updates to the Zoning Resolution to encourage flood resilient building construction within designated flood zones. New buildings must comply with higher flood elevations issued by FEMA and to requirements in the New York City Building Code. The resiliency requirements are intended to lower flood vulnerability and potentially reduce flood insurance premiums. The majority of the Proposed Development Site is within the one percent chance flood hazard area and would be required to comply with the New York City Building Code to reduce flood risk and potential for flood damage. Furthermore, the proposed project reduces damage from flooding by constructing the breakwaters and groin to protect the proposed cove, and by the shape and soft shoreline edge treatment (e.g., salt marsh and beach).

E. ASSESSMENT

Existing Conditions

For this natural resources assessment, the Study Area is defined as the Proposed Development Site. The Proposed Development Site is bounded to the North by North 3rd Street, to the east by River Street and property owned by New York Power Authority (NYPA), to the south partially by North 1st Street and partially by Grand Ferry Park, and to the west by the US Pierhead Line in the East River. The waterbody separates Manhattan from Queens and Brooklyn and connects north to the Harlem River and south to the Upper Bay. The Proposed Development Site has been occupied by industrial uses since the 1830's and has been used in the past as a sugar refinery, a lumber yard, and fuel storage. Most recently the Proposed Development Site was a No. 6 fuel storage complex for the Con Edison North 1st Street Terminal. Refer to **Figure 1-1b** in Chapter 1, "Project Description," for existing conditions in the Proposed Development Site.

The Proposed Development Site comprises portions of three waterfront blocks with a total lot area of approximately 395,890 sf. The seaward lot portion comprises 235,573 sf. The upland lot portion of the Proposed Development Site has 137,201 sf of lot area, plus an approximately 23,116 sf area of

Metropolitan Avenue proposed to be demapped. The upland portion of the site is vacant with most of the site covered in compacted sand and gravel. The existing shoreline consists of a wharf, riprap revetment, bulkhead, and a cobble slope. Additionally, there is a pile-supported apron walkway in the waterway parallel to the bulkhead, the North 1st Street Pier, a fuel platform and pier, four cellular caissons, and a remaining platform and piles of the former North 3rd Street Pier (see **Figure 9-1, "Existing Waterfront Structures**").

Vegetation/Wildlife

The upland portion of the Proposed Development Site (upland zone) is vacant, urban land. Vegetation and wildlife are limited. There are no freshwater wetlands, freshwater vegetation, or tidal wetland vegetation within the Proposed Development Site.

Because the Proposed Development Site is in a highly urbanized area, it is assumed that any wildlife species that may be present onsite can adapt to urbanized environments with fragmented habitats, small vegetative communities, and limited resources. The upland zone is characterized by soil and gravel fill with little to no herbaceous or animal life, featuring flat lots with limited plant growth. A habitat evaluation conducted by eDesign Dynamics (March 2020, provided in **Appendix E**) found observable plant life within the upland zone to be typical of urban lots with fill material such as concrete and brick. Observed plant species included mugwort (*Artemisia vulgaris*), Japanese honeysuckle (*Lonicera japonica*), common reed (*Phragmites australis*), cool season grass, Queen Anne's Lace (*Daucus carota*), sweet clover, multiflora rose (*Rosa multiflora*), wormwood (*Artemisia absinthium*), early goldenrod (*Solidago juncea*), groundsel bush (*Baccharis halmifolia*), switchgrass (*Panicum virgatum*), white snakeroot (*Ageratina altissima*), foxtail (*Alopecurus*), and common milkweed (*Asclepias syriaca*). Trees within the upland zone included black cherry (*Prunus serotina*), Callery Pear (*Pyrus calleryana*), cottonwood (*Populus deltoides*), Red cedar (*Juniperus virginiana*), and pin oak (Quercus palustris), which are clustered along fence lines.[3] None of these plant/tree species are identified as rare, threatened, or endangered.

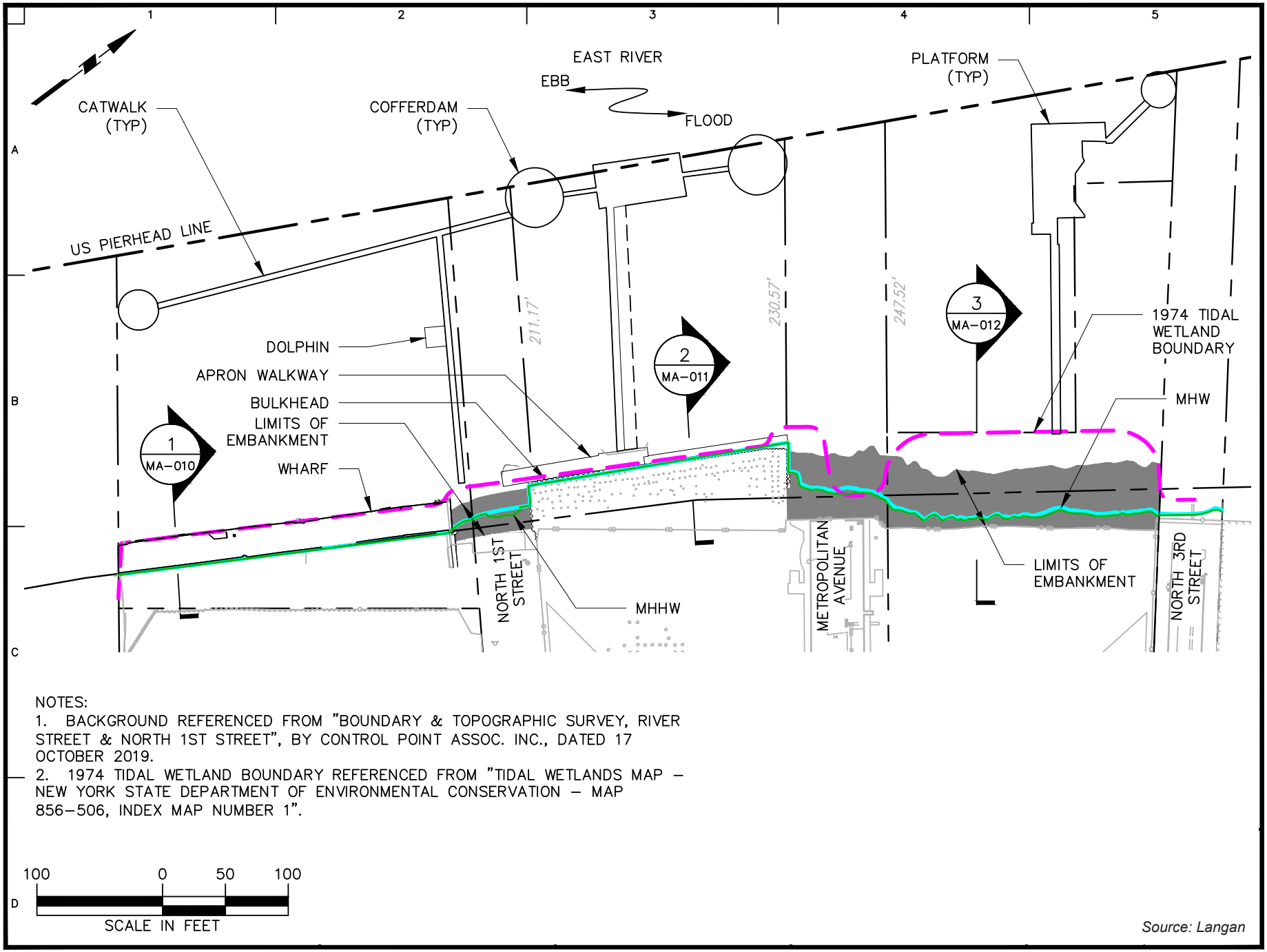
The inter-tidal zone consists of man-made structures such as pile-supported platforms, bulkheads and revetments that provide habitat for organisms including algae, cyanobacteria, and barnacles. The piles and bulkheads can be colonized by complex and durable green, red, and brown algae including rockweed (*Ascophyllum nodosum*). Habitat evaluations of the East River in the past have identified up to 107 taxa including the green algae *Nannochloris* and the diatom *Skeletonema costatum*.[4] Encrusting organisms found on the shoreline structures included hydroids, tunicates, and barnacles. The rocky beach within the inter-tidal zone provides a habitat for insects beneath rocks and attachment sites for algae where scuds and midges were observed.[5]

The sub-tidal zone features a deep, dredged river bottom with swift currents. These swift currents prevent the establishment of diverse habitats within this seaward portion of the Proposed Development Site. The East River has largely served as a conduit between more productive habitats such as Upper Bay and Long Island Sound. Submerged aquatic vegetation (SAV) is unlikely to be found in the Proposed Development Site due to the turbidity and lack of light penetration on the East River. However, macro-algae such as the Phaeophyte species *Fucus vesiculosus*, and the Chlorophyte species *Ulva lactuca* and *Enteromorpha intestinalis* are common in the East River. Additionally, over 100 benthic invertebrate taxa (mostly

[3] Draft River Street Existing and Proposed Habitat Evaluation prepared by eDesign Dynamics, April 1, 2020.

[4] Domino Sugar Rezoning Final Environmental Impact Statement (CEQR No: 07DCP094K).

[5] River Street Existing and Proposed Habitat Evaluation prepared by eDesign Dynamics, April 2020.



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River Ring

Figure 9-1
Existing Waterfront Structures

crustaceans or polychaete worms) are found in the East River along with common macroinvertebrates such as oligochaete worms, polychaetes, gastropods, bivalve mollusks, barnacles, cumaceans, amphipods, isopods, crabs, and shrimp.[6] Observed vegetation and benthos are in Attachment F Habitat Evaluation 2.0 Existing Conditions.

Birds

TABLE 9-1 lists the breeding bird species as presented in the most recent New York State Breeding Bird Atlas from 2000 to 2005. The Breeding Bird Atlas documented 10 species as confirmed or possible breeders in the Proposed Development Site based on survey block 5850A (each survey block is approximately 3 x 3 miles). Additionally, the U.S. Fish and Wildlife Service (USFWS) Information Planning and Consultation System (IPaC) identified 33 migratory birds each with a different probability of presence within the Proposed Development Site.

The River Street Habitat Evaluation prepared by eDesign Dynamics (provided in **Appendix E**) identified several bird species within the Proposed Development Site, none of which are rare, threatened or endangered. Two bird species were observed in the upland zone, a killdeer (*Charadrius vociferous*) and a dark-eyed junco (*Junco hyemalis*). A bufflehead *(Bucephala albeola)*, a typical winter transient "bay duck," was the only bird species observed in the inter-tidal zone. It is expected that more bird species would occupy these zones within the Proposed Development Site at other times of the year, especially in the spring or summer when there are greater foraging opportunities. However, the lack of structural diversity and finite habitat continue to be a limiting factors on species diversity.

TABLE 9-1
Birds Documented in the 2000-2005 New York State Breeding Bird Atlas on Block 5850A

Common Name	Scientific Name
Peregrine Falcon	Falco peregrinus
Rock Pigeon	Columba livia
Mourning Dove	Zenaida macroura
Chimney Swift	Chaetura pelagica
Downy Woodpecker	Picoides pubescens
American Robin	Turdus migratorius
Northern Mockingbird	Mimus polyglottos
European Starling	Sturnus vulgaris
Northern Cardinal	Cardinalis cardinalis
House Sparrow	Passer domesticus
Source: 2000-2005 New York State Breeding Bird Atlas Blocks 5850A.	

Geology and Soils

The bedrock found within the surrounding area is composed of granite gneiss and is reported to be 50 to 90 feet below the ground surface. Based on the U.S. Geological Survey (USGS) topography map, Brooklyn quadrangle, the topography ranges from an elevation of 30 feet above mean sea level (MSL) to about 10 feet above MSL at the East River. Bedrock depth varies along the Williamsburg waterfront due to

[6] Domino Sugar Rezoning Final Environmental Impact Statement (CEQR No: 07DCP094K).

differences in surface elevation and erosion, whereas overflying bedrock are unconsolidated deposits of stratified layers of clay and fine-to-course sands and gravel of the Upper Glacial Formation.[7]

The Kings County Soil Survey maps show urban land soil types within the Proposed Development Site.[8] The soil types found are the following:

- Urban land, till substratum, 0 to 3 percent slopes (UtA), which is a soil type on Block 2355, Lot 1 and Block 2361, Lots 1 and 21; and
- Urban land, till substratum, 3 to 8 percent slopes (UtB), which is a soil type Block 2361, Lots 1 and 21 and Block 2376, Lot 50.

Groundwater

Groundwater systems are referred to as aquifers, which provide a number of benefits including (i) as a source of potable drinking water; (ii) a source of water re-charge for freshwater streams and rivers, sustaining the hydrology of many wetlands; (iii) to serve critical geotechnical functions related to structural load bearing capacity (lowering the water table may cause subsidence); and (iv) as a barrier to salt water intrusion.

Groundwater is water contained beneath the surface in various types of soils, fill, and rock. All five boroughs contain groundwater; however, groundwater resources primarily lie beneath Brooklyn, Queens and Staten Island. Major aquifers include the Raritan formation beneath Staten Island, southeastern Brooklyn, and the eastern half of Queens; the Lloyd and Magothy aquifers beneath southern and central Brooklyn, eastern Queens, and Staten Island; and the Jameco aquifer beneath limited areas of Brooklyn and southern Queens.

According to the USGS Kings County Soil Survey, groundwater in the vicinity of the Proposed Development Site would generally be expected to occur greater than 200 centimeters (6.6 feet) below ground surface. Groundwater in Brooklyn is not used as a source of potable water (the municipal water supply relies on upstate reservoirs).

Surface Water

The Proposed Development Site is adjacent to the East River, the nearest open waterbody. The East River is a tidal strait 16 miles in length, with a 4.22 foot mean range of tide based on data collected at the Williamsburg Bridge (Station ID: 8518699).

Water Quality

NYSDEC classifies the Lower East River (segment of the river from the Battery to Hells Gate) as a Class I saline surface water. The best usages of Class I waters are secondary contact recreation and fishing. These waters are suitable for fish, shellfish, and wildlife propagation and survival. The water quality in Class I waters are typically suitable for primary contact recreation, although other factors may limit the use for this purpose. In the past, recreational uses could be impaired due to floatable debris and other aesthetic

[7] Domino Sugar Rezoning Final Environmental Impact Statement (CEQR No: 07DCP094K)

[8] National Resources Conservation Service (NRCS) Web Soil Survey, United States Department of Agriculture (USDA), Kings County, New York, Survey Area: Version 9 September 16, 2019. Accessed via https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

concerns. Industrial uses and marine traffic within and along the East River may occasionally result in oil and pollutant spills.[9]

To address these concerns, the Proposed Development has been participating in the Citizen's Water Quality Testing Program to understand existing conditions at the proposed public shoreline and beach area in the Proposed Development's open space plan. The results of the Citizen's Water Quality Testing Program demonstrate that the percentage of testing days resulting in water that is "unacceptable" for swimming per DOH standards was lower than other East River beaches to the north and south of the Proposed Development Site, including the Hunter's Beach 2nd Street kayak launch and the Dumbo Cover Beach.

Water quality evaluations are typically conducted through the DEP City-Wide Long-Term CSO Control Planning Program and the DEP Harbor Survey Sampling Program. The results of Harbor Surveys conducted by DEP show that the water quality of the Inner Harbor, which includes the Lower East River, has continued to improve.[10] Fecal coliform (FC) levels in the Inner Harbor have continued to decline over the last three decades and in 2018, thirteen historical/open-water monitoring sites were in compliance with their monthly FC Fishing Standard of 2000 cells/mL. Dissolved oxygen (DO) values in the Inner Harbor remained above the state bathing standards except for three summer samples, one of which was captured at an open water station along the East River (E2- East 23rd Street, more than one mile away from the Proposed Development Site). The constant flow of water into the region provided from the Hudson River kept 2018 summer chlorophyll "a" levels consistent with the past seven years' average, while nitrogen levels in the inner harbor were the highest of the four regions. Measures undertaken by the City, including infrastructure improvements to wastewater treatment plants (WWTPs) and increased capture of stormwater runoff, has helped maintain a higher level of water quality than in previous years. The 2018 New York Harbor Water Quality Report shows that the metrics used to assess water quality have steadily improved over the long term in the Inner Harbor across the last five decades.

An existing 24-inch diameter combined sewer outfall runs beneath Metropolitan Avenue and discharges into the East River. The regulating chamber is within the River Street right-of-way. The combined sewer system was reportedly constructed circa 1962.

Sediment Quality[11]

Upper New York Bay has a complex distribution of sediments in the area because of variable currents and a high degree of sediment input from natural and human actions. Sediments in the Upper Bay vary from coarse sands and gravels in high-energy areas to fine-grained silts and clays in low-energy areas (USACE 1999). The lower East River primarily has a hard, rock bottom consisting of gravel, cobble, rocks, and boulders covered with a shallow layer of sediment. The shallow sediment cover is affected by strong tidal currents in the river.

Typical of an urban watershed, New York Harbor Estuary sediments, including the East River, are contaminated due to a history of industrial uses in the area. Contaminants found throughout the New

[9] Hudson/East River Watershed (0203010104), East River, Lower (1702-0011), NYSDEC, Revised: 01/23/2017 https://www.dec.ny.gov/docs/water_pdf/wiatllishrer.pdf

[10] NYC DEP. 2018 New York Harbor Water Quality Report. Accessed via https://www1.nyc.gov/assets/dep/downloads/pdf/water/nyc-waterways/harbor-water-quality-report/2018-new-york-harbor-water-quality-report.pdf

[11] Domino Sugar Rezoning Final Environmental Impact Statement (CEQR No: 07DCP094K).

York Harbor Estuary include pesticides such as chlordane and DDT, metals such as mercury and copper, and various polycyclic aromatic hydrocarbons. Adams et al. (1998) found the mean sediment contaminant concentration for 50 of 59 chemicals measured to be statistically higher in the Harbor Estuary than other coastal areas on the East Coast. Within the New York Harbor Estuary, Adams et al. (1998) ranked Newark Bay as the most degraded area on the basis of sediment chemistry, toxicity, and benthic community, followed by the Upper Harbor, Jamaica Bay, Lower Harbor, western Long Island Sound, and the New York Bight Apex. Biological effects, identified based on the benthic invertebrate community, were found to be associated with the chemical contamination. While the sediments of the New York Harbor Estuary are contaminated, the levels of most sediment contaminants (e.g., dioxin, DDT, and mercury) have decreased on average by an order of magnitude over the past 30 years (Steinberg et al. 2002). Between 1993 and 1998, the percentage of sediment sampling locations with benthic macroinvertebrate communities considered impacted, or of degraded quality, decreased throughout the New York/New Jersey Harbor Estuary. Within the Upper Harbor, the percentage of benthic communities considered impacted decreased from 75 percent in 1993 to 48 percent in 1998 (Steinberg et al. 2004).

Litten (2003) reported the following concentrations of pesticides in sediment samples collected from the East River as part of CARP—dieldrin 0.0019 mg/kg, hexachlorobenzene 0.00085 mg/kg, heptachlor 0.000018 mg/kg, hexachlorocyclohexane (HCH), 0.00047 mg/kg, chlordane 0.017 mg/kg, and DDT 0.046 mg/kg. NYSDEC has established sediment quality threshold values for dredging activities, or riparian or in-water placement of dredged material for three of these pesticides (NYSDEC 2004): dieldrin, chlordane, and DDT. The dieldrin concentration falls into the classification of no appreciable contamination (no toxicity to aquatic life). The chlordane concentration falls into the classification of moderate contamination (chronic toxicity to aquatic life), and the DDT concentration falls into the classification of high contamination (acute toxicity to aquatic life).

Aquatic Resources

FISH

New York City, including the East River, is at the convergence of the Long Island Sound and the Hudson River (Upper Bay). As the connection to these water bodies, the East River is an important migratory route for marine fish, estuarine fish, anadromous fish (species that migrate up rivers from the sea to breed in freshwater), and catadromous fish (species that live in freshwater but migrate to marine waters to breed).[12] However, due to the lack of protected habitat and the swift currents of the East River, the population of fish is relatively small compared to neighboring water bodies.

ESSENTIAL FISH HABITAT

Essential fish habitats (EFHs) are waters and substrates necessary to fish species for spawning, breeding, feeding or growing to maturity. Based on data provided from the NMFS EFH Mapper, there are several fish species with EFHs proximate to the Proposed Development Site.[13] **TABLE 9-2** lists the species and life stages of fish identified as having EFHs in the portion of East River near the Proposed Development Site (see **Appendix E** for Essential Fish Habitat Assessment).

[12] Draft River Street Existing and Proposed Habitat Evaluation, eDesign Dynamics, April 1, 2020.

[13] NOAA National Marine Fisheries Service. EFH Mapper. Accessed via https://www.habitat.noaa.gov/protection/efh/efhmapper/index.html#.

TABLE 9-2
Essential Fish Habitat in the East River

Species	Eggs	Larvae	Juveniles	Adults
Winter Flounder	X	X	X	X
Little Skate			X	X
Atlantic Herring		X	X	X
Red Hake	X	X	X	X
Windowpane Flounder	X	X	X	X
Winter Skate			X	X
Clearnose Skate			X	X
Longfin Inshore Squid	X			
Bluefish			X	X
Atlantic Butterfish		X		
Summer Flounder		X	X	X

Coastal Resources

The New York State Department of State (DOS) Division of Coastal Resources delineates the State's coastal zone boundary and identifies Significant Coastal Fish and Wildlife Habitats, Scenic Areas of Statewide Significance, Federally-owned lands and Native American-owned lands. New York State's Coastal Area has been divided into four geographic regions: Long Island, New York City, Hudson Valley and Great Lakes.

Because the Proposed Development Site is within New York City's designated Coastal Zone, it is subject to a consistency review with the New York City Waterfront Revitalization Program (WRP) (see Chapter 2, "Land Use, Zoning and Public Policy" and **Appendix B – WRP Consistency Assessment Form**). The portion of East River within the Proposed Development Site is not designated as a Significant Coastal Fish and Wildlife Habitat.

Floodplains

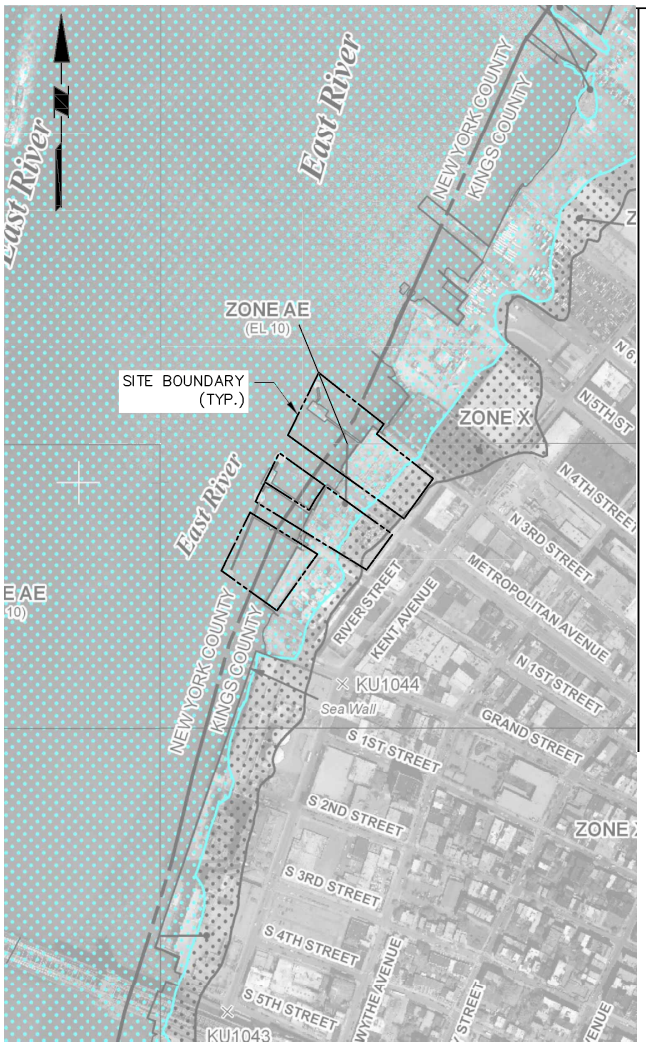
Floodplains occur along streams, rivers, and coastal zones. Officially-designated floodplains and floodways, established and delineated by FEMA, are areas where substantial flooding may result in property damage and/or threaten public safety. A FEMA-designated floodplain is an area that would be inundated by a 100-year flood (a flood that has the probability of occurring once every 100 years); this is referred to as Zone A. Zone X is the area that would be inundated by a flood that has the probability of occurring once every 500 years.

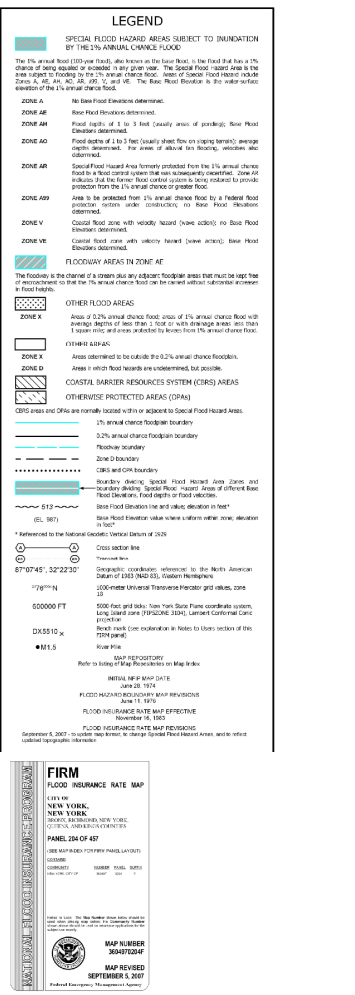
The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 designate coastal high hazard areas and floodways, and make federal flood insurance available to buildings and structures constructed within these areas so as to minimize danger to human lives. FEMA only regulates the 100-year floodplain for channels that have a watershed (area that drains to them) greater than one square mile. Properties in smaller watersheds are not part of the FEMA mapping program.

The FEMA Preliminary Flood Insurance Rate Map for Kings County indicates that majority of the Proposed Development Site is within the 100-year floodplain (Zone AE), and portions of the Proposed Development Site are within the 500-year floodplain (Zone X). The pFIRM is provided as **Figure 9-2**.

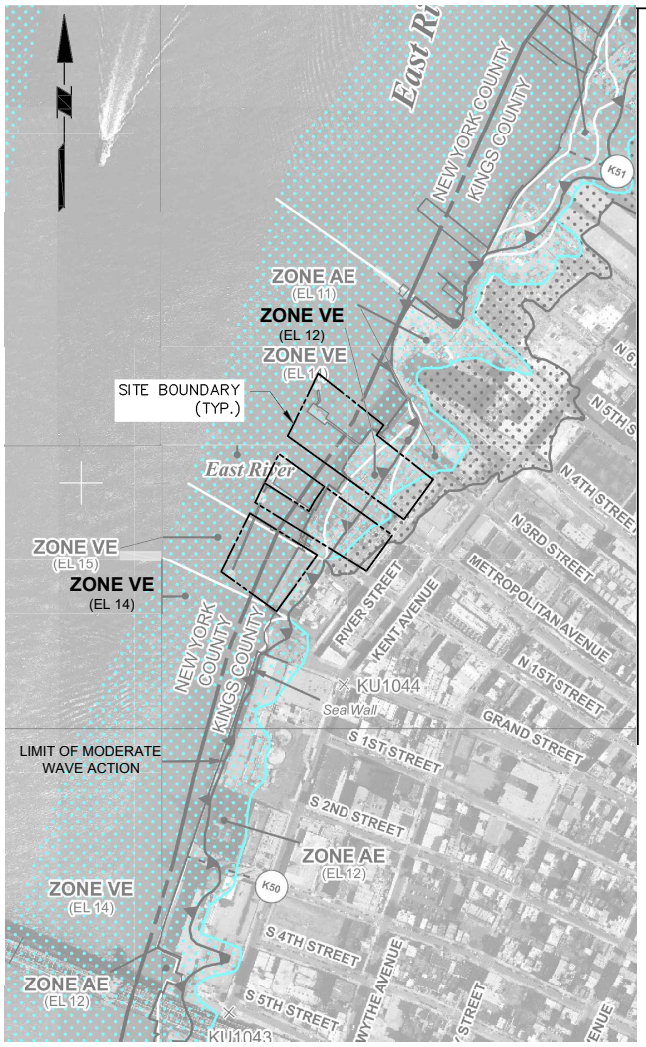
Wetlands

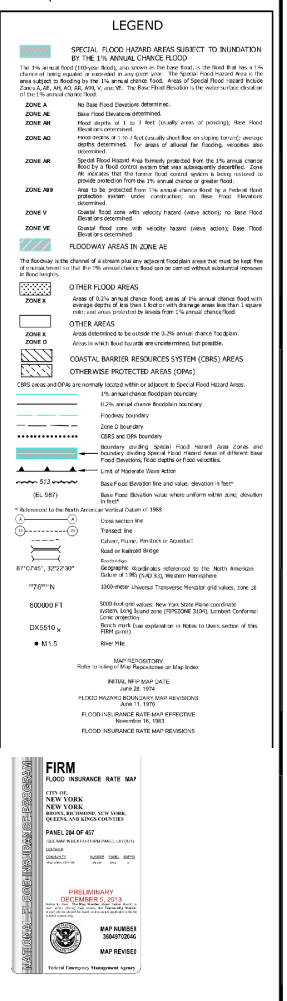
The USFWS National Wetlands Inventory (NWI) mapping indicates that the East River is an estuarine subtidal unconsolidated bottom subtidal (E1UBL) wetland or estuarine and marine deepwater. **Figure 9-3**





NOTE: FIRM FLOOD RATE INSURANCE MAP FOR THE CITY OF NEW YORK, NEW YORK PANEL NO. 3604970204F, DATED SEPTEMBER 5, 2007.





NOTE: PRELIMINARY FIRM FLOOD RATE INSURANCE MAP FOR THE CITY OF NEW YORK, NEW YORK PANEL NO. 3604970204G, DATED DECEMBER 5, 2013.

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River Ring

Figure 9-2
Effective and Preliminary FEMA FIRM Map

shows that seaward areas within the Proposed Development Site are classified estuarine and marine deepwater. According to the ERM, there are no freshwater wetlands in the Proposed Development Site.

NYSDEC Tidal Wetland Mapping shows littoral zone within the Proposed Development Site (see **Figure 9-4**). According to NYSDEC, the littoral zone is the tidal wetland zone that includes all land under tidal water that is not included in any other tidal wetland category. It extends from the shore to a depth of six feet at mean low water. **Figure 9-5** shows there is 7,171 sf of existing cover over the littoral zone within the Proposed Development Site.

Rare, Threatened, and Endangered Species

FEDERALLY LISTED SPECIES

The Endangered Species Act of 1973 attempts to protect certain plants, animals, and habitat from extinction. To determine the presence/absence of these species within the Proposed Development Site, relevant federal agencies are contacted to obtain information including NOAA National Marine Fisheries Service (NMFS) records, New York State Natural Heritage Program (NHP) records, and USFWS Information Planning and Consultation System (IPaC).

The IPaC records indicated there are four threatened or endangered species (three bird species and one flowering plant) in the Proposed Development Site. Of the three bird species, only one is listed as endangered, the Roseate Tern (*Sterna dougallii* dougallii) while the Piping Plover (*Charadrius melodus*) and the Red Knot (*Calidris canutus rufa*) are listed as threatened bird species. The Seabeach Amaranth (*Amaranthus* pumilus) is listed as a threatened flowering plant within the Proposed Development Site. There are no National Wildlife Refuge Lands, critical habitats, or fish hatcheries within the Proposed Development Site. The NYSDEC Nature Explorer does not list any federally-listed species within the Proposed Development Site.

STATE-LISTED SPECIES

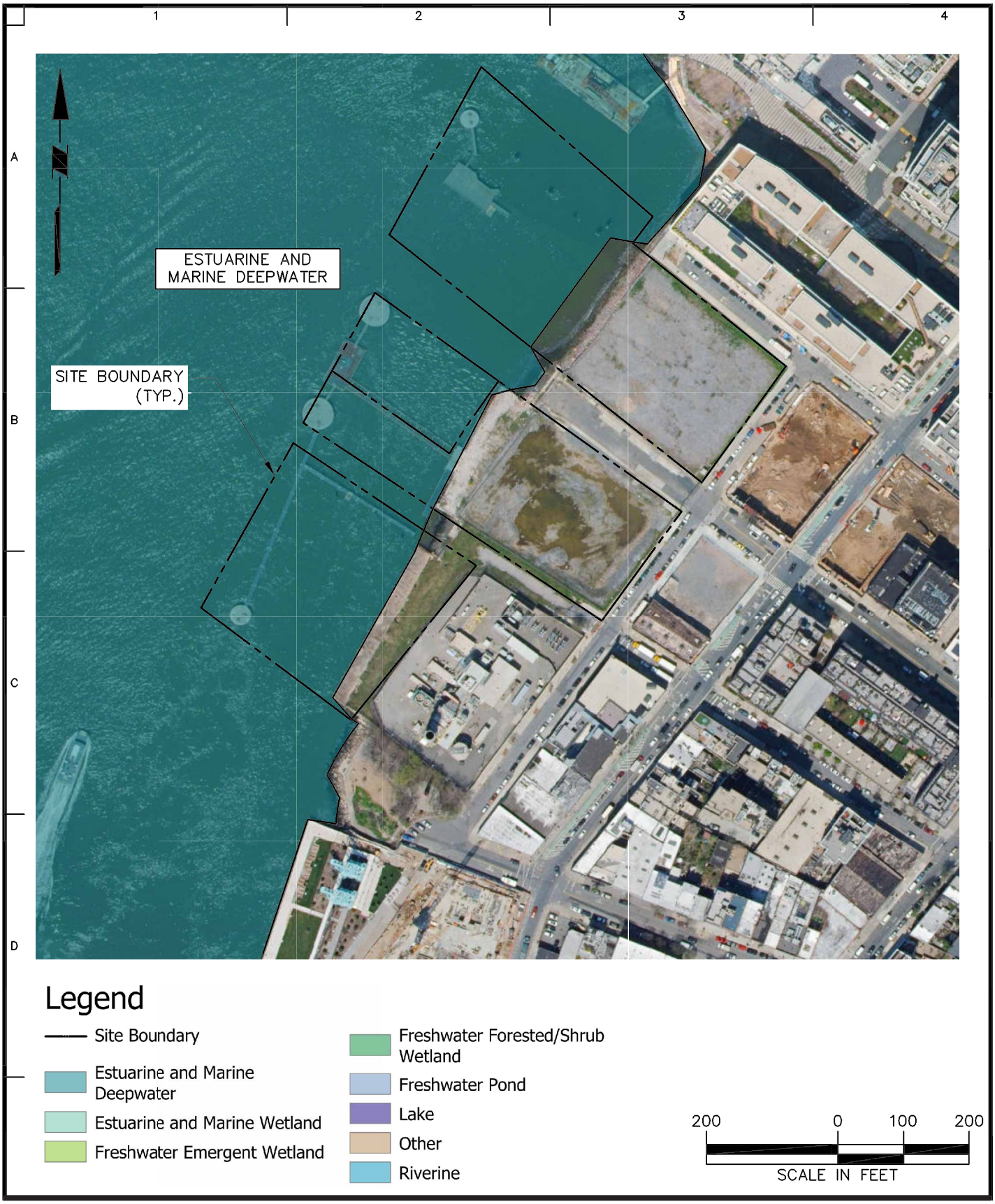
No rare, threatened, or endangered species were identified by the NYSDEC Nature Explorer within the Proposed Development Site. Additionally, correspondence with the NHP from April 22, 2020 indicated no records of rare or state-listed animals or plants, or significant communities in the Proposed Development Site or in its immediate vicinity.

F. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

In the No-Action Condition, existing conditions would remain along the waterfront and in the waterward portions of the Proposed Development Site (see **Figure 9-1, "Existing Waterfront Structures"**). The upland portion of the Proposed Development Site would be developed as-of-right with manufacturing and commercial uses. Two buildings (approximately 621,500 gsf) would be constructed on the Proposed Development Site and consist of commercial office, destination and local retail, light manufacturing maker space, warehouse uses, accessory parking, and a last-mile distribution facility for shipping entities.

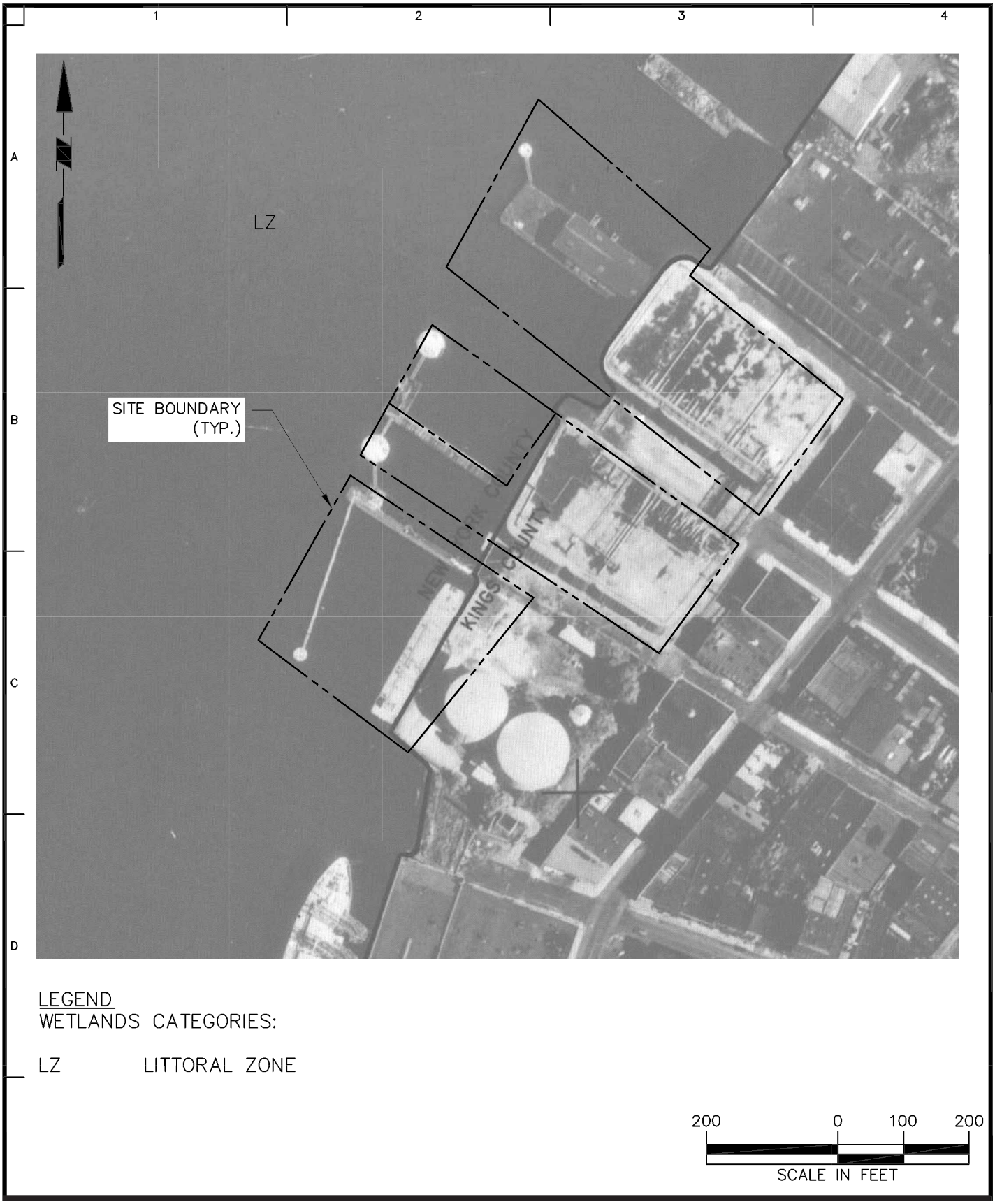
The Proposed Development Site would be exempt from waterfront public access area and visual corridor requirements in the No-Action Condition. Tidal wetland habitat would not be disturbed, enhanced, or created. A shore public walkway would not be developed and existing waterfront and in-water structures would continue to deteriorate and eventually collapse in the water. The waterfront area on the Proposed Development Site would continue to be inaccessible to the public. The shoreline would continue to erode due to sedimentation of the East River and sinkholes would expand behind the wharf. No significant

Figure 9-3
NWI Wetland Map

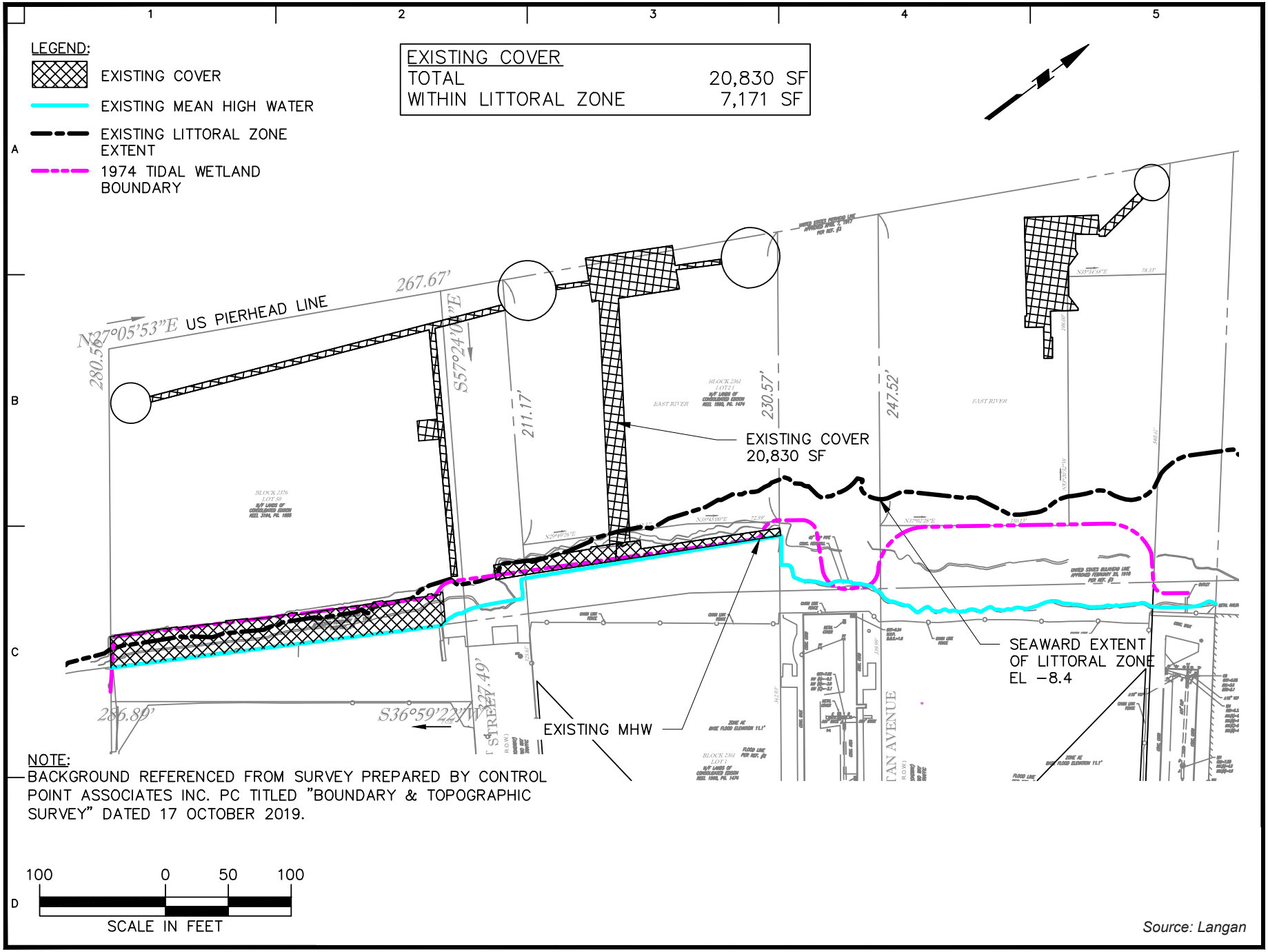


Source: Langan

Figure 9-4
NYSDEC Tidal Wetlands Map



Source: Langan



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River Ring

Figure 9-5
Existing Cover

changes to natural resources conditions would occur within the Proposed Development Site as part of the No-Action Condition.

G. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

In the With-Action Condition, the Proposed Development Site, a vacant, former industrial waterfront site, would be developed with a mixed-use program including mixed-income residential, community facility, accessory ground floor neighborhood retail, and commercial uses on the upland portion. All existing in-water structures would be demolished except for three caissons, which would be incorporated into the Proposed Development.

Approximately 264,777 sf (6.08 acres) of new waterfront public space (including 2.9 acres of upland open space, 0.86 acres of inter-tidal area, and 2.32 acres of secondary contact accessible in-river space) would be created in and along the East River's edge. The Proposed Development would expand publicly accessible waterfront access along the East River by creating a shore public walkway across the Proposed Development Site that would provide an uninterrupted public walkway between Grand Ferry Park (and Domino Park beyond) in the south to Bushwick Inlet Park and other existing waterfront open spaces in the north. As shown in **Figure 1-6** of Chapter 1, "Project Description," the proposed public space on the Proposed Development Site would include a waterfront ecological park consisting of a protected cove (protected by breakwaters and groins) that would allow for water-dependent recreation (e.g., kayaks and paddle boards) and create new water habitats (e.g., salt marsh, coastal scrub, manmade reef, and tide pools) that will support aquatic life and vegetation. The entire shoreline would be reshaped to create a protected cove (via in-water excavation and backfill). New shoreline protection measures (e.g., bulkhead, revetment) and breakwaters would be constructed in consideration of navigational interests and to protect the cove and the habitats that would be created inside the breakwaters.

The mixed-use development would cover 28 percent of the upland portion, with the remainder of the Proposed Development Site to be developed with publicly accessible areas and open space. The combined sewer outfall that runs beneath Metropolitan Avenue would be relocated to North 3rd Street, outside of the protected cove.

Groundwater

Construction activities would cause short-term below-grade disturbance during excavation and installation of building foundations. This impact would be temporary, and typical of new construction. Exposed soils would be stabilized in accordance with the New York Guidelines for Urban Erosion and Sediment Control. Since groundwater is not used as a potable water supply in Brooklyn, the Proposed Development would not affect drinking water supplies. The Proposed Development does not propose to directly discharge into groundwater sources or use geothermal systems for heating and cooling. Stormwater runoff would be collected and conveyed in accordance with NYCDEC and NYCDEP stormwater management requirements precluding the potential for significant adverse impacts to groundwater. Accordingly, the Proposed Development would not result in a significant adverse groundwater impact.

Water Quality

The Proposed Development would temporarily affect water quality due to temporary erosion and sedimentation as a consequence of disturbing soil during construction. The Proposed Development would

comply with the New York Guidelines for Urban Erosion and Sediment Control. The East River's water quality would be protected from construction activities by protection measures that follow an approved Stormwater Pollution Protection Plan (SWPPP). The SWPPP would address erosion control measures during construction, as well as post-development water quality treatment in accordance with NYSDEC regulations. Anticipated erosion control measures include stabilized construction entrances, a silt fence, inlet protection, and turbidity curtains. Post-development water quality treatment is expected to consist of a combination of DEP-approved best management practices (BMPs) and/or stormwater infiltration practices(see Chapter 11, "Water and Sewer Infrastructure" for more information). These treatment practices would be designed to remove or reduce suspended solids and nitrogen from the stormwater runoff prior to being discharged to the East River. Stormwater would be treated in accordance with the NYSDEC SPDES General Permit Regulations.

The construction related to the waterfront public space would be performed from both upland using large equipment upland from the MHW and waterside using equipment mounted on construction barges. These barges would temporarily be stationed in deep water areas during in-water and waterfront construction activities. Activities related to pile-supported structures would be done via construction barges, while the excavation of beach and tide pools and assemblage of materials and cut-fill work would largely be completed on land. Equipment would move throughout the Proposed Development Site during the construction area as necessary, and any effects from their presence would be temporary.

The Proposed Development would enhance and create habitat that would permanently improve the water quality within the Proposed Development Site and of the East River.

Although principles of island biogeography and landscape ecology indicate that larger, rounder habitat patches have greater ecological integrity, resilience, and robustness, these disciplines also provide that smaller patches placed closely together ameliorate the ecological constraints of fragmentation and spatial isolation. This is the paradigm changing assumption that is driving the ecological restoration movement – at least as far as habitat improvements are concerned. In many contexts where opportunities for large wetland restoration projects are limited it is endeavored to maximize restoration of the sites available, small as they may be, understanding that each increment will contribute to a cumulative improvement in habitat and ecological function. The intent of the proposed habitat and other functional improvements proposed as part of the Proposed Development reside in the cumulative added value relative to past and future East River improvements including Brooklyn Bridge Park, Bushwick Inlet, East River State Park, Randalls Island, Domino Park, Hunters Point Park, among others.

The Proposed Development would create new habitat areas including areas of salt marsh, tide pools, coastal scrub shrub, shoreline shallows, and new littoral zone.

The Proposed Development includes a robust program of habitat enhancements and restoration that would serve the community and the City as an ecological and experiential amenity that is integral to the overall design. All of the elements of the proposed habitat mosaic work in unison to transform and restore the shoreline of the Proposed Development Site. In an otherwise homogenous hard shoreline of linear reaches of rip rap, bulkhead, and sheet pile, hard bottom substrate, and unremitting current; it is expected that more varied, involuted shoreline, a sand, gravel, and cobble bottom substrate, more complex hard vertical structure for epibenthic encrusting organisms and a quiescent water column would result in a much more varied and complex trophic structure ultimately benefitting fin fish possibly including sturgeon and likely striped bass. The existing combined sewer outfall along Metropolitan Avenue would be relocated to North 3rd Street, outside of the protected cove, and would continue to discharge into the East

River in a manner similar to existing conditions. Stormwater treated by hydrodynamic separators would be directed into the freshwater wetland, and eventually filtered into the East River.

Wetland restoration in New York City has been an ongoing activity for the past three decades and the chief proponents, including NYC DEP, NYC Parks, NYS DEC, US Army Corps of Engineers, NOAA, and the US National Parks Service have been explicit about the water quality benefits of existing and restored salt marshes. The proposed salt marsh within the inter-tidal zone would provide a habitat and food source for ribbed mussels within decomposed salt marsh codgrass. As filter feeders, ribbed mussels would improve both water quality and nutrient cycling in the local estuarine habitats. The improvements to water quality would improve biodiversity within the Proposed Development Site and support sub-tidal restoration efforts through the implementation of oyster cages. A pilot program would also be implemented for eel grass plantings within the protected cove. If eel grass is not sustainable at this location, the Proposed Development would still result in the net benefit provided by the new shoreline shallows habitat. The greater context for the restoration zone is the US Army Corps Comprehensive Restoration Program Target Ecosystem Characteristic (TEC) Shoreline Shallows.

Because construction activities would be subject to an approved DEC permit and SWPPP and the Proposed Development would significantly improve the water quality of the East River in the Proposed Development Site, the Proposed Development would not result in significant adverse water quality impacts.

Coastal Resources

The Proposed Development Site is in the New York City Coastal Zone and is subject to a New York City WRP consistency assessment. The Proposed Development is not within a designated Special Natural Waterfront Area, Priority Marine Activity Zone or Significant Maritime and Industrial Area. As discussed in the WRP Assessment in Chapter 2, “Land Use, Zoning. And Public Policy,” the Proposed Development is consistent with the policies of the WRP.

The Proposed Development involves construction in the waters of the East River, however, project implementation is not expected to adversely affect the water quality of the East River. Because of the conditions, it is assumed there is no existing vegetation on the riverbed in the Proposed Development Site. The proposed in-water and shoreline improvements would include demolition of deteriorating in-water structures. Three existing caissons would remain and be incorporated into the Proposed Development. The shoreline would be reshaped by excavating historic fill to create habitat-enhancing cove and intertidal shallows. Portions of the cove would be used to create a beach, an unpowered boat launch, and new habitat (salt marsh and tide pools). The shoreline at these areas would be partially protected by a pebble and cobble river rock sill along the shoreline. Other shoreline protection would consist of ecological armoring on the breakwaters, riprap armoring on the groin, and pebble/cobble river rock armoring on the sills.

To protect the cove from waves and wakes, and for commercial maritime activity to continue without disruption, two pile-supported breakwaters would be constructed at the south and west sides of the seaward portion of the Proposed Development Site. A soil and rock-filled groin would be constructed at the north side of the site. The breakwaters would be constructed of precast concrete tubs supported on 30-inch diameter piles and built around the three existing caissons to remain (encased with a Fiber Reinforced Polymer jacket to protect from corrosion). The precast concrete tubs would incorporate ECOncrete® precast panels to promote biological growth on the surface of the concrete. The concrete tubs would be filled with clean soil to create a berms that would promote a new shallow water habitat capable of supporting fish and other aquatic biota. Pile supported walkways between the two breakwaters

would allow pedestrian circulation to the upland shore public walkway. The breakwaters and groin would reduce wave and wake energies to acceptable survivability levels in the proposed new habitat. These breakwaters and groin would form a protected area that would minimize sediment transport from the beach and improve conditions for in-water recreation.

The Proposed Development Site is outside of any Special Natural Waterfront Areas, and the Proposed Development would replace deteriorating in-water structures and disturb an area with no recorded in-water vegetation. Because shoreline activities would be consistent with the policies of the WRP and the Proposed Development would protect the cove and upland areas through breakwaters and other protective measures towards a reduction in wave energy, the Proposed Development would substantially improve the coastal resources conditions in the Proposed Development Site and would not result in significant adverse coastal resources impacts.

Wetlands

The Proposed Development Site is partially within the East River's littoral zone, an area over which NYSDEC and USACE have jurisdiction. A JPA would be submitted to NYSDEC and USACE and approved in advance of construction activities on the Proposed Development Site (see JPA in **Appendix E**). Protection of wetlands would be accomplished through NYSDEC and/or USACE permitting requirements, as well as the SWPPP that would be designed to limit the potential for adverse effects to water quality during and after the construction period. The SWPPP would developed for both construction and post-construction activities.

The Proposed Development would involve a cut-fill strategy along the East River resulting in a net cut of 152-cubic-yard (CY) and would create approximately 21,045 sf of open water area below MHW. The existing shoreline would be reshaped by excavating historic fill. All existing in-water structures would be demolished except for three existing caissons. The new breakwaters, walkways, and groin would be designed and constructed to modern standards and would increase the cover of open water by about 39,761 sf (7,269 sf within the littoral zone). The breakwaters would create 22,892 sf of new Littoral Zone habitat and 13,080 sf of new coastal scrub shrubs habitat that otherwise could not be created. In total, 51,857 sf of littoral zone would be created, which is more than four times the area of disturbed littoral zone (12,000 sf).

The construction activities related to the waterfront open space would be completed from both the waterside and upland area. Waterfront and in-water construction activities would feature construction barges and involve pile-supported structures (breakwaters), while excavation, filling activity, and debris removal would be completed on land as part of the cut-fill work. The SWPPP would address erosion control measures and water quality treatment in accordance with NYSDEC regulations during both the construction and post-construction phases. Erosion control measures would include stabilized construction entrances, a silt fence, inlet protection, and turbidity curtains. Additionally, a silt boom would be installed within the waterway during construction. The proposed shoreline improvements would enhance open space safety and would provide stabilization strategies such pebble/cobble river rock sill and ecological armoring on pile-supported platforms.

The Proposed Development would create and enhance habitat along the East River, including salt marsh, tide pools, upland coastal scrub shrub areas, and shoreline swallows. Within the protected cove, man-made reefs would be created primarily consisting of oyster cages and manufactured reef balls. Furthermore, eel grass would be planted as a pilot program within the shoreline shallows and evaluated over time. As stated previously, in the event that the eel grass pilot is unsuccessful, this area would revert

to a shoreline and shallows habitat, which is still a priority target under the USACE Comprehensive Restoration Plan. In total, about 106,804sf (2.45 acres) of new or enhanced habitats would be created as part of the Proposed Development. **Figure 9-6** illustrates the proposed habitat mosaic.

Overall, the requirements of the SWPPP and JPA would collectively protect the wetland resources within the Proposed Development Site. The proposed habitat creation, including new wetlands, would result in significant improvements to wetland conditions within the Proposed Development Site and would not result in a significant adverse wetlands impact.

Floodplains

The majority of the Proposed Development Site is within the one percent annual chance flood hazard area. The Proposed Development Site's base flood elevation (BFE) is at an elevation of 14 feet and no critical features or buildings would be below the MHW under any sea level rise projection scenario (see Chapter 2, "Land Use, Zoning and Public Policy"). The Proposed Development would develop new structures, including in-water structures, within areas of one percent annual chance flood hazard, however, the Proposed Development would significantly improve flood resiliency with two breakwaters and groin that would be developed in the one percent annual flood chance hazard area. The breakwaters and groin would reduce the energy of crashing waves on the shoreline, making flood waves break away from the shoreline. Wave heights inside the protected area reduced to one foot or less along the shoreline and reduce the potential for shoreline erosion while also providing a partially enclosed, protected aquatic habitat. These proposed features would further protect the public waterfront open space and upland residential buildings, including beyond the Proposed Development Site. Additionally, the Proposed Development would comply with applicable New York City Building Codes and FEMA requirements and would incorporate resiliency measures accounting for projected future sea level rise. The Proposed Development would not impede flood waters or raise the BFE. Accordingly, the Proposed Development would not result in significant adverse floodplain impacts.

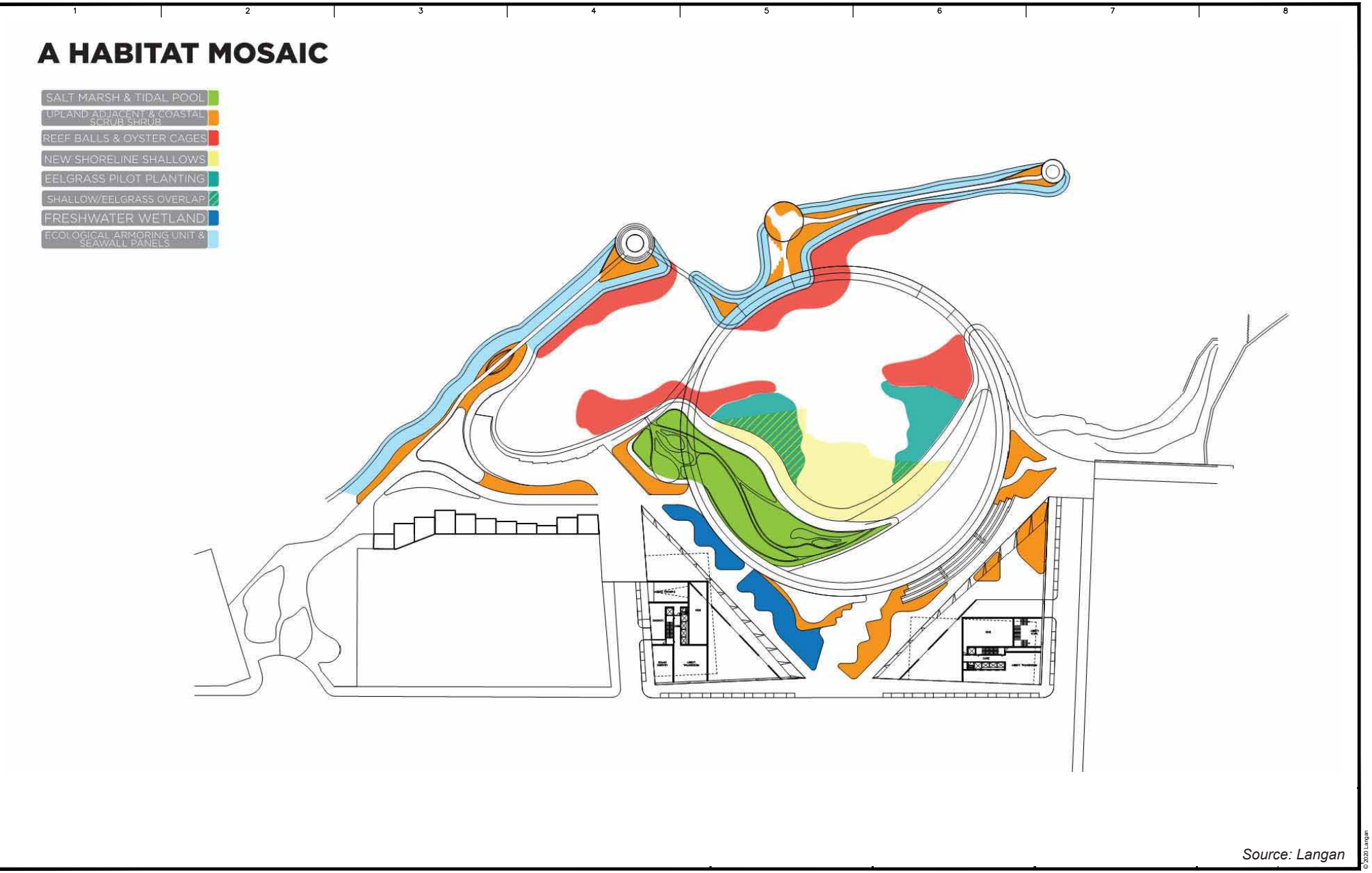
Geology and Soils

The Proposed Development would involve some excavation to construct building foundations and basements. Significant natural resources are not contained within the geology underlying the Proposed Development Site, and excavation would not result in significant adverse impacts to geological resources. Any contaminated soils encountered would be handled in compliance with applicable laws and regulations.[14]

Vegetation/Wildlife

Proximity to people creates an obvious constraint when performing ecological restoration in urban spaces, but also an opportunity for education, inspiration, stewardship, and environmental justice via access to nature experiences. On the one hand it is assumed that decreased wildlife visits will be offset by increased visitor experience and social good. On the other hand, the more than 170 species of birds

[14] Specifically: 6 NYCRR Part 371 (Identification and Listing of Hazardous Waste); 6 NYCRR Part 375 (Environmental Remediation); 6 NYCRR Part 364 (Waste Transporter Permits); 6 NYCRR Part 360 (Solid Waste Management Facilities); and 6 NYCRR Part 613 (Petroleum Bulk Storage Regulations).



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documented by Heather Wolf in Brooklyn Bridge Park underscores how in densely populated urban areas wildlife, especially birds, acclimate to throngs of visitors.

As observed, only highly urban-adapted, synanthropic wildlife species (i.e., those that benefit from an association with humans) are found within the upland portions of the Proposed Development Site. The increased human activity that would result from future development associated with the Proposed Actions would not adversely affect these disturbance-tolerant species. For some species, populations would be expected increase due to the introduction of new, protected habitat. The Proposed Development would employ appropriate soil and hydrologic conditions to give a competitive advantage to native species by using low pH, loamy sand planting soil. The proposed grading of the upland areas would provide a range of elevations to promote diversity. The Proposed Development has been designed to support native species such as pasture rose (*Rosa Carolina*), coral honeysuckle (*Lonicera sempervirens*), eastern red cedar (*Juniperus virginiana*), mixed milkweeds, and native warm season grasses. Late flowering native plants, particularly nectar-rich goldenrods, asters, and thoroughworts among other native coastal herbaceous plants would be planted. Additionally, the shoreline will be redeveloped with a soft edge serving as a transitional habitat into the coastal habitat of the East River, and new recreational opportunities would encourage a sense of stewardship of the river.

The shore public walkway would enhance a degraded, vacant, waterfront site in a highly urbanized area and include new vegetation in targeted areas. Wetland creation and habitat enhancements would be undertaken with the creation of salt marsh and tide pools, and man-made reefs with oyster cages. Salt marshes are native to the northeast and are expected to attract foraging birds while providing an anchor for benthic communities such as ribbed mussels (*Geukensia demissa*).

The salt marsh will consist of two sub-zones (1) low marsh planted with smooth cordgrass (*Spartina alterniflora*) and (2) high marsh comprised of salt meadow cordgrass (*Spartina patens*), black grass (*Juncus gerardii*), and spike grass (*Distichlis spicata*). The salt marsh will be placed within the upper third of the tide cycle (+0.41 ft NAVD88 to +2.142 ft NAVD88). The marsh will be protected from wave energy by a rip-rap breakwater structure.

Tidal pools will be integrated within the salt marsh zone. The pools will be varied in size, depth, and elevation between Mean High Water level, (MHW, +1.817 NAVD88) and Mean Low Water level, (MLW, -2.405 NAVD88).

The salt marsh represents 17% of the proposed restoration. Shoreline shallows (including eel grass pilot) represents 64% and hard structure including reef balls, oyster gabions, ecological armoring, and seawall panels represent 39% of habitat enhancements. (Some areas fall into more than one category.) Acknowledging that comparative ecological benefit is not a one-to-one arithmetic relationship of square footage, it is expected that the new coves with relatively calm water that is sheltered from energetic East River ambient currents will comprise a substantial benefit on its own and the more varied mosaic will result in a whole greater than the sum of its parts.

The various habitat enhancements would promote biodiversity along this section of the East River waterfront and would transform the vacant, former industrial site into a significantly enhanced ecological community. The habitat enhancements provided by the Proposed Development would strengthen the native ecosystems found in the upland, inter-tidal, and sub-tidal zones through the implementation of soft edges and key ecosystem services in an effort to showcase an ecologically-minded waterfront development. Therefore, the Proposed Actions would not result in significant adverse wildlife or

vegetation impacts (see Habitat Evaluation prepared by eDesign Dynamics in **Appendix E** for additional details on the proposed structure, flora, and fauna).

Aquatic Resources

Based on conditions, it is assumed there is vegetation on the riverbed within the Proposed Development Site. As stated above, the Proposed Development would have the potential to temporarily affect water quality due to construction activities and would introduce new in-water structures. The temporary effects during construction are typical of in-water construction and would be required to comply with the New York Guidelines for Urban Erosion and Sediment Control. An approved SWPPP would protect the East River from atypical effects to aquatic resources during construction activities. Overall, the habitat enhancements would improve the biodiversity upland and within the East River, and would provide new, enhanced habitats designed to improve water quality and promote biodiversity. Because the Proposed Development would improve water quality, introduce new habitat, and promote biodiversity, the Proposed Development would result in a substantial improvement to aquatic resources, and would not result in significant adverse aquatic resources impacts.

The Proposed Actions would result in incremental shadows cast on the East River during the morning hours (see Chapter 6, "Shadows" for detailed shadows analysis results and mapping of incremental shadows on the East River). It is assumed that any new shadows cast as a result of the Proposed Actions on the East River would be diffuse. Diffuse shadows are not considered a significant change to habitat conditions, as they are temporary and unlikely to change the habitat condition. Because the angle of the sun continuously changes throughout the day, no area of the East River would be permanently in shade or shaded to a degree that would impact aquatic biota as a result new shadows cast due to the Proposed Actions. Thus, it is expected that action-generated shadows on the East River would not create adverse impacts to fish and wildlife species within the river and would not constitute a significant adverse impact on natural resources.

In addition, the *River Street Site Shade Analysis* completed by eDesign Dynamics (included as part of the draft permit application in **Appendix E**) evaluated the likely shadows conditions of the Proposed Development Site and compared to the shadows conditions at John Street Park, where salt water marsh restoration was successful. The evaluation concluded that proposed salt marsh would receive more sunlight throughout the growing season than the salt water marsh restoration at John Street Park, and that shadows will not be a limiting factor for successful marsh restoration at the Project Site.

Rare, Threatened, and Endangered Species

As discussed above, IPaC records indicate there are four federally-listed species in the Proposed Development Site. Three bird species (Roseate Tern, Piping Plover, and Red Knot) are listed as endangered or threatened, and one flowering plant species (Seabeach Amaranth) is listed as threatened. The Proposed Development Site, a vacant, urban site, lacks the suitable habitat for these bird and plant species; however, the Proposed Development would redevelop the industrial shoreline and create approximately 106,804 sf (2.45 acres) of new habitat that would feature a variety of habitat improvements such as salt marshes, and tide pools. The planned habitat enhancements would promote biodiversity in efforts to attract animal and plant species back to the Williamsburg waterfront and form a rich ecological community. Therefore, the Proposed Development would result in significant improvements, and would not result in a significant adverse rare, threatened, and endangered species impact.