A. INTRODUCTION

The proposed action would not result in significant adverse impacts to natural resources.

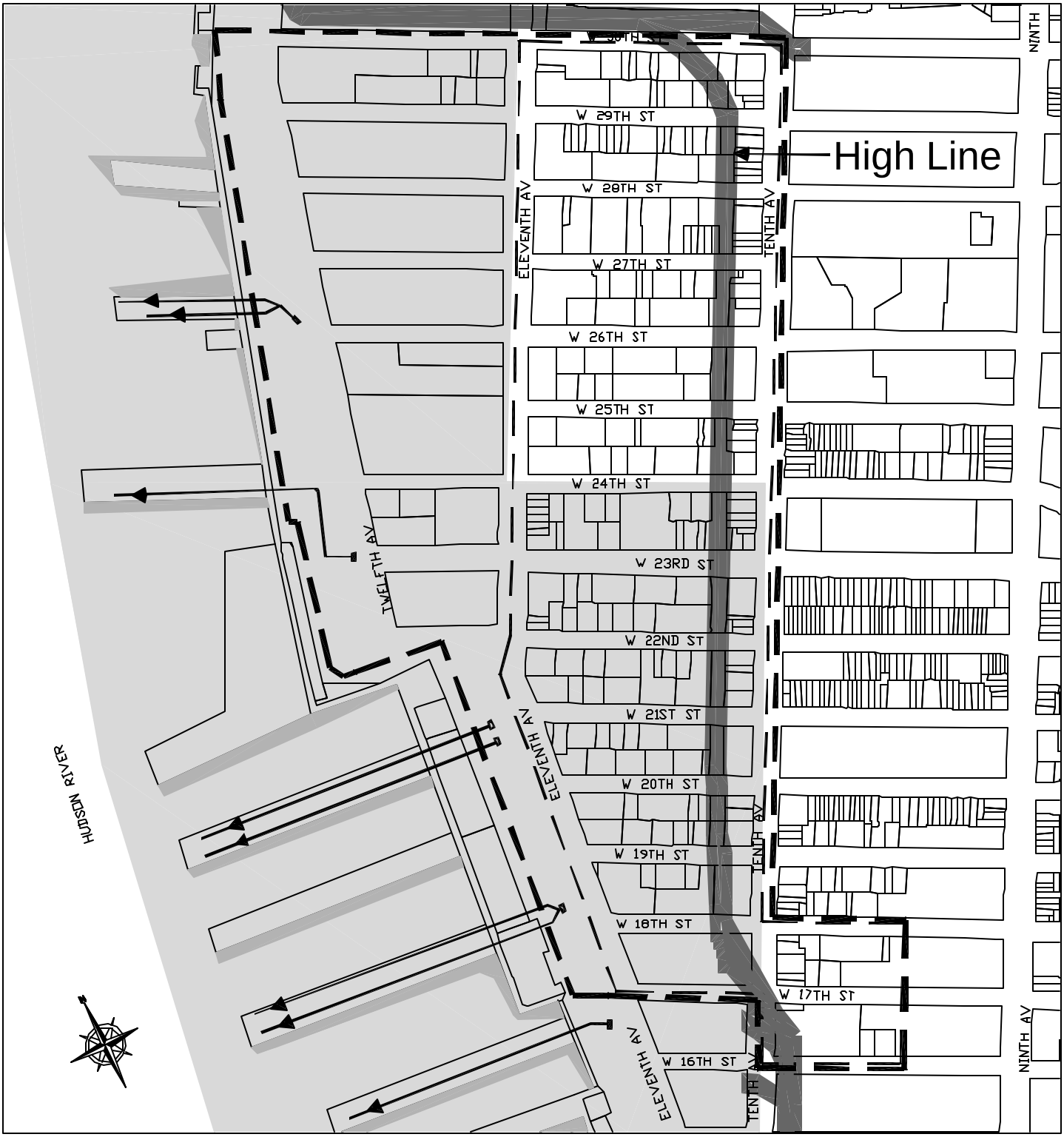
As defined in the *CEQR Technical Manual*, a natural resource is plant and animal species and any area capable of providing habitat for plant and animal species or capable of functioning to support environmental systems and maintain the City's environmental balance. Such resources include surface and groundwater, wetlands, dunes and beaches, grasslands, woodlands, landscaped areas, gardens, and built structures used by wildlife. An assessment of natural resources is appropriate if a natural resource exists on or near the site of the proposed action, or if an action involves disturbance of that resource.

The West Chelsea natural resources study area consists of: (1) the proposed action area as described in Chapter 1, "Project Description;" (2) the area west of the proposed action area to the Hudson River; and (3) the Hudson River directly west of the proposed action area, within New York State waters. The study area is shown in Figure 11-1. While not included in the study area, this chapter also includes a discussion on effluent flows from the North River Water Pollution Control Plant (WPCP).

The study area is urbanized and densely developed, does not contain natural features of significance, nor is it located immediately adjacent to any natural resources. Plant communities within the study area consist of cultivated gardens, yards, and street trees and vegetation on the High Line, and are not significant natural resources. No habitat for rare or endangered species exists within the study area. The study area does not include any of the following ecological resources: surface waterbodies, wetlands, beaches, dunes, bluffs, thickets, significant grasslands, meadows, woodlands, or forests. The *CEQR Technical Manual* lists a number of areas that contain natural resources designated by a governmental agency as significant, sensitive, or worthy of protection. The study area is not located within or immediately adjacent to any of these natural resources areas, except that a portion of the study area is within the City's designated coastal zone.

The study area could potentially contain subsurface contaminants. Prior to construction activities, further investigation would be performed on those development sites with the potential to contain hazardous materials to determine the presence and nature of contaminants of concern and the proper remedial and/or health and safety measures that would be employed during redevelopment. Mechanisms to ensure that these actions occur include the placement of an (E) designation on the zoning map for lots that are neither City-owned nor intended for future City ownership. As discussed in Chapter 10, "Hazardous Materials," the (E) designation would require that any surface and subsurface contamination on an identified development site be fully characterized and

Figure 11-1
Natural Resources Study Area



Scale: 1 inch = 500 feet

0 250 500 1000

Legend:

- **Natural Resources Study Area**
- **Rezoning Area Boundary**
- **Combined Sewer Outfall**
- **WRP Boundary**
- **Estuarine Wetlands**

remediated prior to construction activities, and would include a New York City Department of Environmental Protection (NYCDEP)-approved sampling plan, and if necessary, a remediation plan and a health and safety plan, also approved by the NYCDEP. The (E) designation would preclude the potential for significant adverse hazardous materials impacts associated with the proposed zoning change. If areas are found to be contaminated, remediation would be performed in accordance with all City, state, and federal regulations and protocols.

In addition, as part of the proposed action, the City would continue to coordinate with NYCDEP in the completion of investigation of environmental conditions on the High Line, including potential surface and sub-surface contamination in the vicinity of proposed High Line access points and any potential contamination on the elevated High Line structure, and in the development of a remediation plan, if required. No work on contaminated portions of the High Line, or potentially contaminated areas beneath it, would be allowed until it is certain that public health is not compromised. Since NYCDEP acceptance of the testing plan and remediation work is required, significant adverse impacts to the environment would not occur.

The federal Coastal Zone Management Act (CZMA) of 1972 was established to support and protect the distinctive character of the waterfront. The CZMA outlines standard policies to assist the states in implementing coastal management programs and in reviewing proposed development projects along coastlines. The New York State Department of State (NYSDOS) administers the Coastal Zone Management Act at the State level, which also provides for local implementation when a municipality adopts a local revitalization program. New York City Department of City Planning (DCP) administers the Local Waterfront Revitalization Program (WRP) in New York City. Consistency review of the 10 coastal policies of the NYC Local WRP is presented in Chapter 12, "Waterfront Revitalization Program."

B. EXISTING CONDITIONS

This section describes the existing conditions of the natural resources of the West Chelsea study area which is comprised of the three component areas described above. Potential areas of concern include surface water, ground water, floodplains, coastal resources, wildlife, wetlands, upland resources, built resources, and significant, sensitive, or designated resources.

Surface Water

The only surface water within the vicinity of the study area is the Hudson River, also called the North River. The proposed action area is separated from the river by Eleventh Avenue (Route 9A) and Hudson River Park from W. 17th Street to W. 22nd Street. From W. 22nd Street to W. 30th Street, the blocks between Eleventh and Twelfth Avenues, which become wider going northward as Manhattan widens, also lie between the river and the proposed action area.

The portion of the Hudson River located west of the study area is part of the Lower Hudson Reach, a tidal estuary where sea water and fresh water mix. Given the mixtures of water types, estuaries are

among the most ecologically productive ecosystems. NYSDOS has designated it as a Significant Coastal Fish and Wildlife Habitat, stretching from Battery Park at the tip of Lower Manhattan to the northern extent of Haverstraw Bay at Stony Point in Rockland County. The estuary also includes all adjoining riverine and estuarine habitats, including open water and tidal wetlands. The Hudson River Estuary extends approximately 153 miles from New York Harbor to Troy, New York. Refer to Figure 11-2, Hudson River Estuary in New York City.

The portion of the river in the study area also forms part of the Inner Harbor of New York Harbor, which extends from the New York City/Westchester County border through the Battery to the Verrazano Narrows. Water quality in the Harbor has shown consistent gradual improvement over the past 30 years (NYCDEP, 2003). Over the past 10 years, water quality improvements have leveled, with the last significant improvement occurring in 1992 after the 1991 upgrade of the North River Water Pollution Control Plant (WPCP) to secondary treatment (NYCDEP, 2003).

Under typical dry weather conditions, sanitary sewage from the West Chelsea area is conveyed to the North River WPCP at W. 135th Street and the Hudson River and treated prior to discharge into the Hudson River. It is a secondary treatment facility that has discharge standards set by an NYSDEC State Pollutant Discharge Elimination System (SPDES) Permit limiting the organic content of sewage. The organic content of the sewage impairs water quality by utilizing oxygen in the receiving water body. The limitations identified in the SPDES Permit are established based on achieving acceptable water quality standards in the Hudson River set by the NYSDEC.

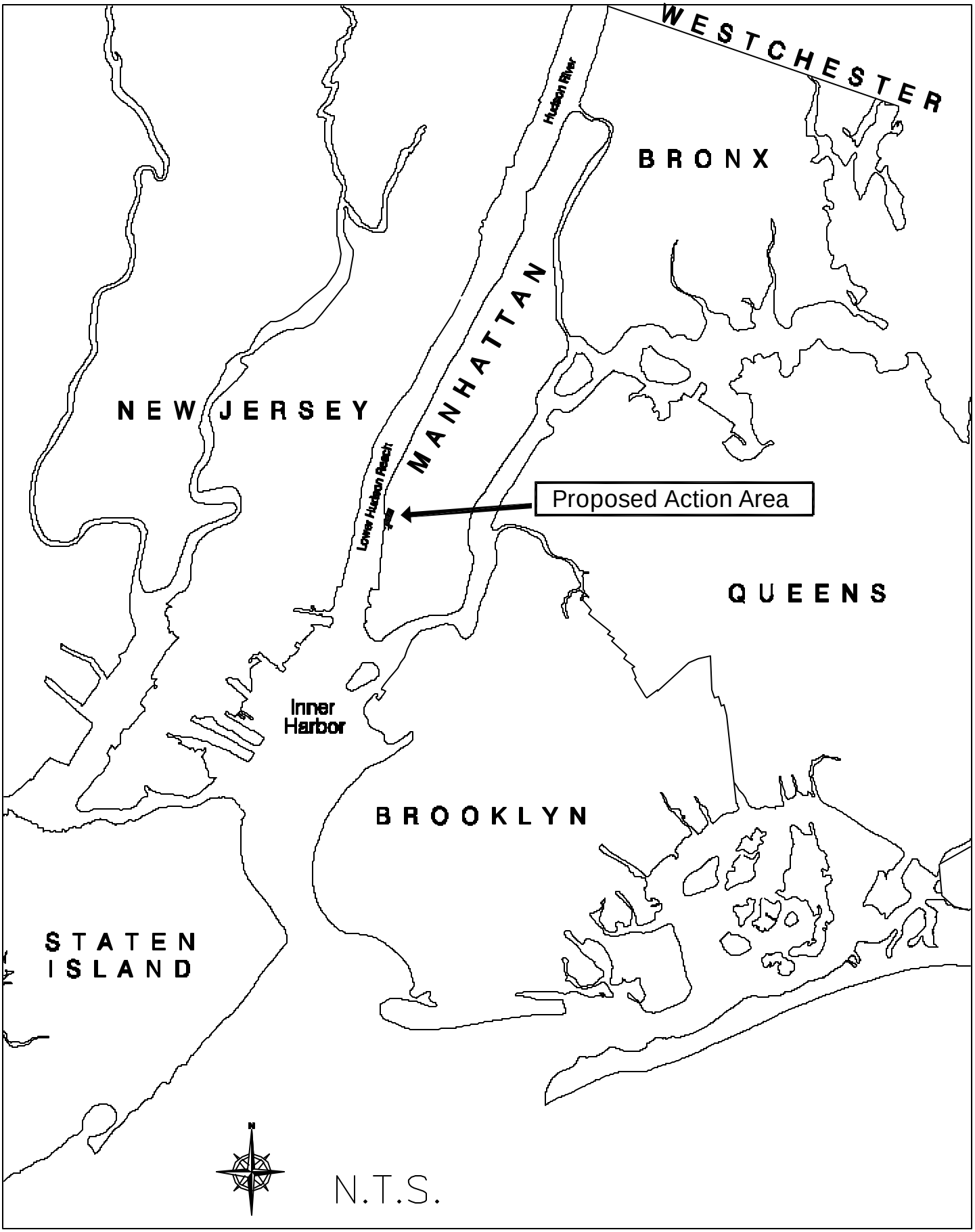
During a significant storm event or sewer infrastructure malfunctions, combined sewer overflows (CSOs) can occur from outlets (outfalls) serving the North River WPCP drainage area into the Hudson River. The overflow would consist largely of stormwater, but would also contain untreated sanitary sewage. There are several outfalls or CSO discharge points within the West Chelsea natural resources study area (as shown in Figure 11-1). CSOs to the Hudson River may occur as part of the normal functioning of the combined sewer system, but they are relatively sporadic and result primarily from wet weather events, systems/equipment malfunctions, or combinations of both. CSOs are a significant source of coliform bacteria and floatable pollutants in New York Harbor. Pollutants found in CSOs also include nutrients, such as phosphorus and nitrogen, which have a detrimental effect on water quality as they result in excess plant growth such as phytoplankton and algal blooms, which adversely affect habitat quality.

Under existing conditions, CSO discharges do not result in impairment of water quality in the vicinity of the study area. For all the sampling events conducted in 2002 and 2003, water quality at NYCDEP N4, located off W. 42nd Street near the study area, met NYSDEC water quality standards for Class I saline surface waters. According to NYSDEC regulations, the best uses of Class I waters are secondary contact and recreation and they are suitable for fish propagation and survival.

The US Fish and Wildlife Service (USFWS) has identified the Lower Hudson River estuary as a regionally significant nursery and wintering habitat for a number of anadromous fish species, i.e., fish which swim upstream from salt water to fresh water to spawn, including striped bass. The estuary is also inhabited by estuarine species, marine fish species, and other aquatic species and also

Figure 11-2

Hudson River Estuary in New York City



serves as a migratory route and feeding area for birds and fish that feed on the abundant vertebrate and invertebrate resources in this area.

In the vicinity of the study area, the Hudson River has an average width of about 5,000 feet, an average depth of 40 feet, with its navigable depth in the channel ranging from 30 to 36 feet, which is maintained through periodic dredging by the US Army Corps of Engineers. There is a narrow band of shallow subtidal flats along the shoreline. Most of the shoreline habitat has been extensively disturbed by bulkheads, piers, and landfill from industrial, commercial, and residential development. During the mid-nineteenth century with the advent of steamships and longer vessels requiring deeper berths, an international trade network using the waterfront developed. To accommodate new development, the shoreline was pushed farther west in the river using fill, debris, and other material.

Ground Water

Ground water within Manhattan is not used for potable water supply. Reservoirs located in the Croton, Catskill, and Delaware watersheds provide potable water to Manhattan.

Floodplains

Floodplains are defined as the area low enough in elevation to hold flood waters during large storm events. Regulated floodplains are defined by the Federal Emergency Management Agency (FEMA) and include areas that flood during storms that have a one percent chance of occurring in any given year, which is equivalent to the likelihood of a storm occurring once every 100 years (100-year storm). FEMA also maps the 500-year floodplain but these areas are not regulated. At the local level, New York City's Local Law 33 of 1988 regulates construction in the 100-year floodplain. In all cases, habitable structures must be flood-proofed or raised above the 100-year floodplain.

As discussed in Chapter 12, "Waterfront Revitalization Program," portions of the proposed action area, including some of the projected and potential development sites and the High Line easement, are classified by FEMA as Zone "A", areas of the 100-year flood, and Zone "B", areas of the 500-year flood (refer to Figure 12-2, Flood Insurance Rate Map). Flooding in these areas may be caused primarily by a combination of climatic conditions that may include abnormally high tides, strong southeasterly winds, and abnormally severe precipitation events. The exact combination of climactic events, and the strength and duration of these events, that would cause flooding is unknown.

Coastal Resources

A portion of the proposed action area, between W. 16th and W. 24th Streets and Tenth and Eleventh Avenues, is located within New York City's designated coastal zone. As such, the proposed action is subject to review for its consistency with the policies of the City's Waterfront Revitalization Program (WRP). This assessment is presented in Chapter 12, "Waterfront Revitalization Program."

Wildlife

Wildlife species within the study area primarily consist of aquatic and avian species found in and around the Hudson River. Within the river, this includes a variety of plankton populations, benthic organisms, i.e., those which live within river sediment and on the surfaces of hard substrates such as pilings, rocks, and debris, including shellfish, and finfish. Over 70 fish species have been documented in the Lower Hudson River Estuary (Woodhead, 1988, 1991). Finfish common in the area include striped bass and white perch. The lower Hudson River, which encompasses the study area, is a spawning ground for anadromous fish. There are also concentrations of wintering waterfowl and shore birds. Birds found along the lower Hudson include Canada Goose (*Branta canadensis*), Mallards (*Anas platyrhynchos*), Black Ducks (*Anas rubripes*), and Wood Ducks (*Aix sponsa*). New York City is an important migration corridor and provides stopover habitat for migrating birds. Surveys of migrating birds in open spaces in the metropolitan area have revealed a high abundance and diversity of such birds. Common species within the study area include House Wren (*Troglodytes aedon*), Yellow Warbler (*Dendroica petechia*), and Song Sparrow (*Melospiza melodia*). The lower Hudson River area is also home to known nesting populations. Amphibians, reptiles, and mammals are less commonly found in the study area.

Wetlands

There are no freshwater wetlands located within the study area. A portion of the Hudson River in the study area is mapped by the NYSDEC as a Tidal Wetland Littoral Zone (LZ - all lands under tidal water less than 6 feet deep at mean low water). There are also small areas of estuarine wetlands, mapped as part of the National Wetlands Inventory designated by the USFWS, located along some of the piers and shorelines in the study area. The estuarine wetlands are shown in Figure 11-1.

Upland Resources

Upland resources include all natural areas that are not water or wetland resources. They encompass a variety of habitats and are generally defined by their vegetation. The proposed action area and adjoining area between it and the Hudson River shoreline supports little vegetation, as most of the area has been developed or is comprised of impervious surfaces. Similar to conditions in most other areas of Manhattan, existing vegetation includes predominately ornamental and invasive tree/shrub species and do not provide habitats for wildlife species other than typical urban species (e.g., mice, rats, pigeons).

Built Resources

The entire shoreline in the study area is man-made. Bulkhead types along the Hudson River include concrete or granite vertical walls rising from mudline to the bulkhead, and a platform with piles extending from the mudline of the low-tide water line. Rip-rap (large stones) protects portions of the shoreline. There are a number of piers/platforms present within the study area, several of which are operational, while some are in disrepair or remain only as pile fields.

The existing operational and deteriorated piers provide habitat and protective structure for certain marine species, including algae, mussels, and barnacles, as well as clams, striped bass, winter flounder (*Pleuronectes americanus*), summer flounder (*Paralicthys dentatus*), American eel (*Anguilla rostrata*), Atlantic herring (*Clupea harengus*), white perch (*Morone americana*), bay anchovy (*Anchoa mitchilli*), and other species. In addition, the older piers may provide habitat for a number of bird and other wildlife species, due to the lack of human activity in the area and their proximity to water.

A unique characteristic of the study area is the High Line, the formerly active freight rail line unused since 1980, which has become host to a variety of plants. A survey of flora, conducted in September 2004, identified 76 species of plant life on the structure (the complete survey is included in Appendix C). These included 33 native species, 32 non-native species and 11 unclassified species. Generally these plants have grown from the railbed and along the structure. None of these species are designated endangered or threatened. Photographs of vegetation on the High Line are shown in Figure 11-3.

Significant, Sensitive, or Designated Resources

The Lower Hudson Reach, which extends from Battery Park to Stony Point, was designated as a significant habitat in August 1992. This designation requires a coastal consistency review for proposed projects within the designated area pursuant to the CZMA. This is addressed in Chapter 12, "Waterfront Revitalization Program."

The Lower Hudson Reach, including the portion within the study area, has been designated as one of 15 Significant Coastal Fish and Wildlife Habitat areas in New York City. This designation is given to habitats that have been evaluated and rated by NYSDOS, in cooperation with NYSDEC, to be "protected, preserved, and, where practicable, restored so as to maintain their viability as habitats."

The Hudson River Park Act established a portion of Hudson River Park as the Hudson River Park Estuarine Sanctuary. It encompasses all of the inter-pier and under-pier marine environments of the Hudson River located from Battery Park City to Pier 99 at W. 59th Street between the onshore bulkhead and the offshore pier-head line. The approximately 400-acre sanctuary represents over 70 percent of Hudson River Park's surface area. The Hudson River Park Trust Board of Directors approved the Estuarine Sanctuary Management Plan in September 2002, addressing issues in environmental education and research, public recreation and water use, and environmental protection and monitoring. The plan is subject to continual review, with specific updates every three years.

Through correspondence with the USFWS and NYSDEC, the *No. 7 Subway Extension-Hudson Yards Rezoning and Development Program FGEIS* (November 2004) reviewed the Hudson Yards area to identify any endangered or threatened species. As that study area is immediately adjacent to, partially overlaps, and is substantially similar to the West Chelsea study area, the findings from that assessment are also considered applicable for this assessment.

Figure 11-3
Vegetation on the High Line

Photographs from Friends of the High Line web site <www.thehighline.org>

Above: ©Joel Sternfeld 2000

Above and below: © Friends of the High Line 2003

There are no known federally listed or proposed endangered or threatened species in the area, except for occasional transient individuals. In addition, no habitat within the study area, under provisions of the Endangered Species Act and under the jurisdiction of the USFWS, is designated or proposed as a critical habitat. The peregrine falcon (*Falco peregrinus*), which nests in Manhattan but not in the study area, is listed by the State of New York as endangered, but is not listed as threatened or endangered by the USFWS.

According to the National Marine Fisheries Service (NMFS), federally listed endangered species in New York that may exist in the Hudson River include the shortnose sturgeon (*Acipenser brevirostrum*), the leatherback turtle (*Dermochelys coriacea*), the hawksbill turtle (*Eretmochelys imbricata*), and the Atlantic Ridley turtle, also known as Kemp's Ridley turtle (*Lepidochelys kempi*). In addition, threatened marine species in the study area may include the green turtle (*Chelonia mydas*) and loggerhead turtle (*Caretta caretta*). Of the species listed above, the shortnose sturgeon is the only species known to occur in the Hudson River, with the remaining species being only transient through the area.

The study area includes a portion of the Hudson River Estuary, which as a whole has been identified as an essential fish habitat (EFH) for 15 species of fish. EFHs are designated by regional fishery management councils that are required by the federal Sustainable Fisheries Act of 1996 to identify these EFHs within their jurisdiction to better manage and conserve each species. The species and life stages for the Lower Hudson River are shown below in Table 11-1.

C. FUTURE WITHOUT THE PROPOSED ACTION

In the future without the proposed action, a number of developments and changes that could affect conditions in the vicinity of the study area are expected to occur. Chapter 2, "Land Use, Zoning, and Public Policy," provides a description of developments expected to occur by the 2013 analysis year, including development associated with the No. 7 Subway Extension-Hudson Yards Rezoning and Development Program and the completion of Hudson River Park. No-Action development in the natural resources study area would most likely affect the portion of the study area within the City's designated Coastal Zone and the Hudson River.

By 2013, Hudson River Park is expected to be completed, which would include changes to existing conditions along the Hudson River waterfront in the study area. Renovations to piers would be made, including the redevelopment of Pier 57 and the completion of the western portion of Chelsea Waterside Park (which spans from Pier 62 to Pier 64) which is expected to feature great lawns, groves of trees, and gardens. Chapter 5, "Open Space," contains a comprehensive overview of the planned waterfront renovations and Table 5-4 provides a summary. Construction of these projects are not expected to significantly affect the natural resources within the Lower Hudson River.

Table 11-1, Life Stages of Fish Species with Designated Essential Fish Habitat in the Lower Hudson River

Species	Eggs	Larvae	Juveniles	Adults
Red Hake (*Urophycis chuss*)		x	x	x
Winter Flounder (*Pleuronectes americanus*)	x	x	x	x
Windowpane Flounder (*Scopthalmus aquosus*)	x	x	x	x
Atlantic Sea Herring (*Clupea harengus*)		x	x	x
Bluefish (*Pomatomus saltatrix*)			x	x
Atlantic Butterfish (*Peprilus triacanthus*)		x	x	x
Atlantic Mackerel (*Scomber scombrus*)			x	x
Summer Flounder (*Paralicthys dentatus*)		x	x	x
Scup (*Stenotomus chrysops*)	x	x	x	
Black Sea Bass (*Centropristus striata*)			x	x
King Mackerel (*Scomberomorus cavalla*)	x	x	x	x
Spanish Mackerel (*Scomberomorus maculatus*)	x	x	x	x
Cobia (*Rachycentron canadum*)	x	x	x	x
Sand Tiger Shark (*Odontaspis taurus*)		x		
Sandbar Shark (*Charcharinus plumbeus*)		x		x

Source: National Marine Fisheries Service (NMFS), NOAA Fisheries, "Summary of Essential Fish Habitat (EFH) Designation" at http://www.nero.noaa.gov/hcd/STATES4/new_jersey/40407400.html
10' x 10' square with coordinates (North) 40°50.0' N, (East) 74°00.0" W, (South) 40°40.0' N, (West) 74°10.0' W.
Square description: Atlantic Ocean waters within the square affecting the following: the Hudson River and Bay from Guttenberg, NU south to Jersey City, NJ, including the Global Marine Terminal and the Military Ocean Terminal, Bayonne, NJ, Hoboken, NJ, Weehawken, NJ, Union City, NJ, Ellis Island, Liberty Island, Governors Island, the tip of Red Hook Point on west tip of Brooklyn, NY, and Newark Bay.

As the upland areas are generally urbanized and largely devoid of natural resources, future No-Action development in the study area is not expected to have any natural resources effects. In the future without the proposed action, significant storm events or sewer infrastructure malfunctions could continue to cause CSOs from outlets (outfalls) serving the North River WPCP to the Hudson River. As new residential and commercial development is expected to occur, sanitary sewage volumes would continue to increase, which could increase the levels of sanitary sewage discharged during a CSO event; however, the NYCDEP is currently preparing a hydraulic assessment of the sewer infrastructure (including regulators and interceptors), taking into account development associated with the Hudson Yards Rezoning and Development Program. This assessment would identify areas requiring improvements. New developments would be evaluated with respect to potential effects to the combined sewer system, and necessary upgrades identified to accommodate increases in sewage volume.

The amount of impervious coverage, and therefore, the amount of stormwater discharged to the combined sewer system, would likely be similar to existing conditions. Based on current water quality conditions within the Lower Hudson River, which meet the water quality criteria established for Use Class I waters, CSO discharge events in the future without the proposed action would not adversely affect surface water in 2013. Furthermore, based on the results of water quality monitoring conducted throughout the Harbor, including the West Chelsea study area, recent trends in the improvement of water quality would continue, even with ongoing and planned activities within the Hudson River.

Refer to Chapter 13, "Infrastructure," which discusses possible improvements to the sewer infrastructure that the City may adopt in response to an assessment of the system's needs due to the development expected from the Hudson Yards development. It should be noted that according to the FGEIS for the *No. 7 Subway Extension - Hudson Yards Rezoning and Development Program,* no significant changes in water quality due to increased sewage discharges during CSO events are expected by the 2010 build year used in the FGEIS.

As discussed in the FGEIS for the *No. 7 Subway Extension - Hudson Yards Rezoning and Development Program*, conservative evaluations were made of conditions in 2010 and 2025 of the potential impacts of CSOs within the North River Water Pollution Control Plant (WPCP) drainage area upon surface water quality in the Hudson and Harlem Rivers. This analysis included consideration of not only the Hudson Yards projected development, but also other development within the North River WPCP drainage area, such as West Chelsea development. The FGEIS analyzed the following parameters: dissolved oxygen, total nitrogen, total phosphorus, total suspended solids, total coliform, copper, lead, and zinc. The analysis found that changes to pollutant mass loadings by 2010 would be insignificant for the water quality parameters analyzed, while by 2025 minor increases in pollutant loadings would occur. In both 2010 and 2025, the incremental changes in dissolved oxygen concentrations, total coliforms, total nitrogen, total phosphorus, total suspended solids, copper, lead and zinc concentrations would all be at insignificant levels and, as applicable, would comply with NYSDEC Class I water quality standards. The analysis presented in the FGEIS is contained in Appendix C and concluded that no significant changes to water quality would occur in 2010 or 2025.

With regard to effluent flows from the North River WPCP, the FGEIS concluded that no significant changes to water quality in the Hudson River would result in 2010 (and 2025). Projected dissolved oxygen concentrations were predicted to remain above NYSDEC Class I water quality standards. Likewise, total coliform was predicted to remain in compliance with NYSDEC Class I water quality standards, as were copper, lead and zinc concentrations. While the FGEIS acknowledged increases in concentrations for total nitrogen, total suspended solids and total phosphorus, the increases would be insignificant and would not result in significant changes to water quality or wildlife. The assessment presented in the Hudson Yards FGEIS is included in Appendix C.

In addition, new developments and other changes in the future without the proposed action are not expected to have any significant impacts on other natural resources, including ground water, floodplains, coastal resources, wildlife, wetlands, uplands, built resources, and significant, sensitive,

or designated resources. None of the expected new office and residential projects under No-Action conditions would result in construction within the Hudson River.

D. FUTURE WITH THE PROPOSED ACTION

The proposed action would not result in significant adverse impacts to natural resources.

As described in Chapter 1, "Project Description," the proposed action is expected to result in projected development on 25 sites, consisting of net increases in development of 4,708 DUs, ~~292,676~~ 195,215 sf of retail space, and 198,726 sf of museum space, and net decreases of ~~816,847~~ 796,947 sf of office space, 131,100 sf of hotel space, ~~40,809~~ 74,818 sf of storage/manufacturing space, ~~318,580~~ 225,940 sf of parking/auto related uses, and ~~25,064~~ 4,080 sf of vacant space. In addition, the proposed action includes the site selection and acquisition of the High Line to create a publicly accessible ~~6.7~~ 5.9-acre open space on the High Line. The expected effects of the proposed action on natural resources areas of concerns are as follows.

Surface Water

With the increased residential and commercial development, as discussed in Chapter 13, "Infrastructure," it is expected that the volume of sewage discharged to the combined sewer system would increase and therefore would have the potential to result in an increase in the concentration of sewage discharged to the Hudson River during CSO events. The larger volume of water that would be present within the Lower Hudson River during precipitation events sufficient to result in CSOs would provide for the rapid dilution and dispersion of CSO discharge in the Hudson River.[1]

As noted above under "Future Without the Proposed Action," an assessment of future water quality conditions in 2010 and 2025 was prepared for the Hudson Yards FGEIS, to assess the effects of future development in the North River WPCP drainage area, including Hudson Yards related development and West Chelsea development. That analysis concluded that with increased CSO events, CSO volumes, and CSO pollutant loadings, these changes would have no significant adverse impacts on water quality and water quality conditions would continue to meet the standards and uses established, where applicable, for Class I waters. Therefore, it is reasonable to conclude that occasional CSO events in this portion of the Lower Hudson River, even if discharging a higher concentration of sewage than under current conditions, would not result in significant adverse impacts to water quality in the Hudson River. Based on the lower amount of development anticipated with the proposed action, as compared to development expected in Hudson Yards, even with potential additional CSO events that may occur under with-action conditions, it would be reasonable to conclude that potential effects on water quality would be small and would not result in significant adverse impacts to water quality in the Hudson River.

[1] Hudson Yards FGEIS.

With regard to effluent flows from the North River WPCP, the FGEIS concluded that no significant adverse impacts to water quality in the Hudson River would result in 2010 (and 2025). Projected dissolved oxygen concentrations were predicted to remain above NYSDEC Class I water quality standards. Total coliform was predicted to remain below NYSDEC Class I water quality standards, as were copper, lead and zinc concentrations. While the FGEIS acknowledged increases in concentrations for total nitrogen, total suspended solids and total phosphorus, the increases would be insignificant and would not result in significant adverse impacts to water quality or wildlife. Based on the nature and extent of the of the proposed action, as compared to Hudson Yards, it is reasonable to assume that the proposed action would, likewise, not result in significant adverse impacts to water quality or wildlife.

Ground Water

Ground water in Manhattan is not used for potable water and would not be adversely affected by West Chelsea projected developments and the High Line open space.

Floodplains

As shown in Figure 12-2, portions of the study area are situated in the 100-year floodplain, primarily contained within the area south of W. 23rd Street and west of the High Line. However, this area is not classified as floodway. Structures planned for this area would not be considered a significant encroachment and would not result in any increases in flood levels in surrounding areas. The area is currently occupied by mainly impervious development; therefore, the proposed action would not eliminate existing primary beneficial floodplain characteristics.

Wildlife

The proposed action would not result in any significant adverse impact to wildlife within the study area. Areas of concern considered in making this assessment include CSO discharges, shadow effects, and potential effects of tall buildings on migratory birds.

As discussed above, the FGEIS for the *No. 7 Subway Extension - Hudson Yards Rezoning and Development Program*, concluded that even with increased CSO events, CSO volumes, and CSO pollutant loadings, no significant adverse impacts on water quality would result because water quality conditions would continue to meet the standards and uses established for Class I waters. The FGEIS also concluded that in 2010 (and 2025), decreases in dissolved oxygen and insignificant increases in total nitrogen, total phosphorus and total suspended solids would not result in significant adverse impacts to aquatic biota or cause eutrophication or algal blooms in the Hudson River. It further stated that increases in copper, zinc, and lead concentrations would not affect compliance with applicable NYSDEC Class I water quality standards which provide protection for fish propagation. Since the analysis presented in the FGEIS, and contained in Appendix C, considered development in the Hudson Yards area to the north, and also took into account future projected development within the North River WPCP drainage area for 2010 (and 2025), and based upon the relative lower amount of development anticipated with the proposed action (as compared to the

amount of development expected in Hudson Yards), it is reasonable to conclude that the proposed action would not result in significant adverse impacts to aquatic biota.

The Hudson Yards analysis concluded, with respect to effluent flows from the North River WPCP, that the predicted water quality concentrations for the parameters described above (dissolved oxygen, total nitrogen, total phosphorus, total suspended solids, total coliform, copper, lead, and zinc), would not result in significant adverse impacts to wildlife within the Hudson River. Since the analysis presented in the Hudson Yards FGEIS considered other development within the WPCP drainage area, such as West Chelsea, as well as Hudson Yards, in both the 2010 and 2025 analysis years, it is reasonable to conclude that the proposed action would not result in significant adverse impacts to aquatic biota.

CSO Discharges

As noted above in the "Surface Water" assessment of With-Action conditions, CSO events that may occur in the 2013 future with the proposed action would not be expected to result in significant adverse impacts to water quality in the Hudson River. As a result, there would be no significant adverse impacts on aquatic biota. CSO events are sporadic and their effects are localized in the vicinity of the discharge points. Temporary, localized changes to water quality that may occur as a result of a CSO event would not be expected to result in significant adverse impacts to aquatic biota. Life stages of estuarine-dependent and anadromous fish species, bivalves, and other macroinvertebrates are fairly tolerant of varying environmental conditions that are typical of estuarine environments and have developed behavioral and physiological mechanism for dealing with these variations (Birtwell et al. 1987, Dunford 1975, Levy and Northcote 1982, and Gregory 1990 in Nightingale and Simenstad 2001a, LaSalle et al. 1991). Fish are mobile and generally avoid unsuitable conditions in the field such as temporary increases in suspended sediment, noise, and low dissolved oxygen (Clarke and Wilber 2000), and also have the ability to expel materials that may clog their gills when they return to cleaner, less sediment-laden waters. Most shellfish are adapted to naturally turbid estuarine conditions and can tolerate short-term exposures to unsuitable conditions by closing valves or reducing pumping activity. More mobile benthic invertebrates that occur in estuaries have been found to be tolerant of elevated suspended sediment concentrations. In studies of the tolerance of crustaceans to suspend sediments that lasted up to two weeks, nearly all mortality was caused by extremely high suspended sediment concentrations (greater than 10,000 mg/L) (Clarke and Wilber 2000), that would be unlikely to occur from CSO events.

Shadows

Shadows cast by the projected/potential development would extend into the Hudson River, which, as discussed in Chapter 6, "Shadows," is considered an important natural resource. A preliminary shadow analysis found that the worst - case scenario for the length and duration of shadows cast by Projected Development Sites 12, 13, 19, and 21 would be on the December 21 analysis day, when shadows would be cast in morning and be the longest. As shown in Figure 6-2, shadows cast on this day would be narrow and would extend over a relatively small portion of the river. In December, shadows are the longest, but move rapidly.

The shadows cast by action-induced structures would reduce the light available for plant photosynthesis within the footprint of the shadows. However, because the structures are not built directly over the Hudson River, the shadows generated by the action-induced buildings would be diffused. Height above the water is an important factor in determining the shadow footprint and reduction in light intensity that a structure casts over submerged habitats (Nightingale & Simenstad 2001b).

The decrease in light intensity could affect primary productivity within the study area, but the largest shadow footprint and longest shadow duration on the Hudson River would occur in the winter, when primary productivity and most biological activity are at their lowest level. Primary productivity within the study area is generated mainly from phytoplankton. There are some benthic macroalgae present which are primarily limited to hard surfaces such as pilings and bulkheads, and there is no submerged aquatic vegetation present. Light requirements for phytoplankton are low (Strickland 1958; Parsons, Takahashi, & Hargrave 1977; Dennison et al. 1993). Therefore, any reduction in light within the shadow footprint would have a negligible impact on phytoplankton populations. In addition, the phytoplankton communities would be carried by the Hudson River and tidal currents, and would be exposed to the shadows for relatively short periods of time, and would move with the current through the study area and out of the building shadows.

The shadows cast on the Hudson River would not have a significant adverse impact on fish communities. The proposed action would not result in new structures built directly over the water and shadows cast by upland structures would have a negligible effect on fish communities. Similarly, there would not be adverse impacts on benthic communities, as the majority of species are not visual feeders, but filter food particles out of the water column or deposit feed on surrounding sediments. As such, the proposed action would not have significant adverse impacts on the biotic communities in the Hudson River and therefore, further shadow analysis of this resource is not necessary.

Potential Effects of Tall Structures on Migratory Birds

Avian nighttime collisions with buildings and towers are more common than daytime collisions. Most species of migratory birds use the stars to navigate at night, and brightly illuminated buildings and broadcast towers attract birds, particularly when poor weather conditions cause birds to fly at lower altitudes. The height or altitude of migration is an important factor in the determination of the potential for collisions with structures. Migration altitudes vary depending on species, location, geographic features, season, time of day, and weather (Ogden, 1996). According to published reports, approximately 75 percent of neotropical migratory birds fly at altitudes between 500 and 6,000 feet during migration (Able, 1999). Shorebirds generally migrate at altitudes of between 1,000 and 13,000 feet.

Buildings (ranging up to 390 feet) are expected to be constructed in West Chelsea by 2013. These structures could result in a strike hazard for migratory birds. Development under the proposed action could result in increased collisions of migrating birds over those realized under current conditions and the No-Action scenario. However, given the maximum height of the projected developments

(all under 400 feet, most under 200 feet), the number of collisions and resulting bird mortality is expected to be insignificant when compared to the total numbers of birds migrating along the Atlantic Flyway.

Wetlands

As there are no freshwater wetlands within or adjacent to the study area no freshwater impacts would occur due to the proposed action.

Upland Resources

The upland portion of the West Chelsea natural resources study area, which encompasses all of the proposed action area, does not contain any notable natural resources and does not provide habitats for wildlife species other than typical urban species (e.g., mice, rats, pigeons). The projected developments would occur on sites that have been previously developed or improved. Accordingly, as this area does not contain any important natural resources, the proposed action is not expected to result in any significant adverse impacts related to upland resources.

Built Resources

Existing structures along the waterfront include bulkheads, piers, platforms, and the High Line. These structures would continue to provide habitat for both marine and terrestrial species adapted for these areas. The proposed action does not include any projected developments that would modify existing waterfront structures nor does it have the potential to have such effects.

As part of plans to redevelop the High Line into a new public open space resource, it is possible that significant amounts of the existing vegetation on the High Line would be removed and replaced with new plantings. A design consultant team has been chosen to plan the rehabilitation and conversion of the High Line. Though no final design has been completed, it is assumed that a diverse mix of flora would replace the existing vegetation. Additionally, areas of existing vegetation may be preserved in some locations. The plant life found on the High Line does not represent a unique or important resource as no threatened or endangered species have been identified by the survey of flora. Therefore, there would be no significant, adverse impacts to natural resources associated with modification of these structures.

Significant, Sensitive, or Designated Resources

Coastal Resources

As described above, a portion of the proposed action area, between W. 16th and W. 24th Streets and Tenth and Eleventh Avenues, is located within New York City's designated coastal zone. The study area is near the Lower Hudson Reach, which extends from Battery Park to Stony Point. The Lower Hudson Reach was designated a significant habitat in August 1992. This designation requires a coastal consistency review pursuant to the Coastal Zone Management Act. As habitat protection is

fundamental to assuring the survival of wildlife and fish populations, proposed activities within this area must be consistent with New York State Coastal Policies, and should not result in the destruction or significant impairment of the habitat area. DCP administers the Local WRP in New York City. Consistency review of the 10 coastal policies of the Local WRP is discussed in Chapter 12, "Waterfront Revitalization Program." As discussed therein, the proposed action would be consistent with the Local WRP.

Threatened and Endangered Species

Given that no construction activity in the Hudson River is proposed or possible as a result of the proposed action and no significant adverse impacts on surface water quality due to CSO discharges are anticipated, no impacts to threatened or endangered species would result from the proposed action.

Essential Fish Habitat (EFH)

With no construction within the Hudson River as a result of the proposed action, there would be no direct impact on EFH. In addition, as discussed above, there would be no significant adverse impacts to EFH due to CSO discharges to the Hudson River, effluent flows from the North River WPCP, or shadows.

E. BASE FAR SCENARIO

No significant adverse impacts to natural resources are anticipated under the Base FAR Scenario. The natural resources study area would be the same as that of the proposed action. The Base FAR Scenario includes development on the same 25 projected development sites as the proposed action, but at lower densities, resulting in shorter buildings.

As discussed in Chapter 1, "Project Description," the Base FAR Scenario is expected to generate a net increase of 3,041 DUs (1,667 fewer DUs than the proposed action) and the same amount of projected development for non-residential uses. As this scenario would generate the same amount of non-residential development and less residential development than the proposed action, it would commensurately generate less effects on natural resources. As natural resource effects for this action are density-specific, and with the proposed action not expected to result in significant adverse impacts, the Base FAR Scenario does not have the potential for impacts and detailed analysis is not warranted.

F. CONCLUSION

The proposed action would not result in significant adverse impacts to natural resources. The study area does not contain any significant natural resources as the projected and potential development sites and the future High Line open space are located in upland, urbanized areas already occupied

by buildings, structures and paved areas. The assessment of natural resources focuses predominately on the Hudson River, Hudson River Park, and land between the river and the proposed action area, as this is the area where the proposed action has the potential to affect natural resources. Possible effects include changes to water quality through discharges of sewage during CSO events and effects on water quality and habitat from shadows; however, these effects would not result in significant adverse impacts to surface waters, EFHs or aquatic biota.