

10.0 NATURAL RESOURCES

10.1 Introduction

As previously described, the proposed project consists of the construction of additional floors on a building built on a platform over the FDR Drive, and the construction of a new building on a new platform over the FDR Drive. As such, the project site is urban land covered with paving and structures. The following analysis of natural resources will identify existing natural resources in the study area and determine whether the proposed action would result in significant adverse impacts.

10.2 Existing Conditions

There are no freshwater or tidal wetlands in the 800-foot radius study area. There are no upland resources in the 800-foot radius study area. Within an 800-foot radius on the landward side of the project site the land is densely urbanized.

The project site is located near the East River which is a tidal strait. The proposed project site is not located within any of the three (3) designated Special Natural Waterfront Areas or two (2) Recognized Ecological Complexes with Significant Coastal Fish and Wildlife Habitats in the New York City Comprehensive Waterfront Plan. There are no natural resources on the project site.

10.2.1 Geology

Manhattan is situated in the Manhattan Prong, part of the New England Upland Physiographic Province. The Manhattan Prong consists of metamorphic rocks. According to the Geologic Map of New York-Lower Hudson, Manhattan consists of three (3) prominent geologic formations: Manhattan Schist, Inwood Marble, and Fordham Gneiss.

Manhattan Schist occurs throughout Manhattan and is the most prevalent bedrock formation of the Middle Ordovician age (460 to 470 millions years ago). Fordham Gneiss is a coarsely banded hornblende-biotite-quartz plagioclase formation primarily from the Upper Precambrian age (1.2 billion to 544 million years ago). It occurs mostly in the northeastern portions of Manhattan. Inwood Marble is commonly associated with valleys and lower-lying areas and is primarily a white to gray, medium- to coarse-grained rock that ranges in composition from calcite to nearly pure dolomite, of either the Lower Ordovician or Upper Cambrian ages (470 to 510 million years ago). Inwood Marble is found primarily along the shores of the East River in lower Manhattan.

10.2.2 Groundwater

Potable groundwater is not a major resource in Manhattan. Very little is found either above the rock or within fractures in the rock, and it is insufficient as a source of water supply. Groundwater quality is variable, but frequently poor, as it has been altered by more than a century of contamination from industrial uses. Manhattan is criss-crossed by many subsurface streams and some surface streams that flow generally eastward from higher elevations in the west.

10.2.3 Coastal Zone & Floodplain

The project site is located within the NYC Coastal Zone Boundary, and as a result is subject to the Waterfront Revitalization Program (see Chapter 12 “Waterfront Revitalization Program”, see Figure 12-1). Part of the project site is within the 100-year floodplain and within the area between the 100-year floodplain and the 500-year floodplain (see Figure 12-2).

10.2.4 Water Resources – East River

The project site is located along the western shore of the East River. The East River is classified as a tidal strait that connects New York Harbor with the western end of Long Island Sound. Its circulation and salinity are therefore largely determined by conditions in the Upper Harbor and the Sound. The river is approximately sixteen (16) miles long and generally ranges from 600 to 4,000 feet wide. Water depth in the channel is generally forty (40) feet at the southern end and thirty-five (35) feet from that point north to the Throgs Neck Bridge. However, there are portions of the East River that reach a depth of 100 feet. Currents in the East River are approximately five (5) to six (6) knots and the shorelines are virtually entirely bulkheaded.

The tidal range varies from approximately four (4) feet near the southern end to seven (7) feet near the northern end of the East River. Sources of freshwater inputs to the East River are the Bronx River, Westchester Creek, the Harlem River (Hudson River), and combined sewer overflows (CSOs) and water pollutant control plants (WPCP).

Water Quality

Since 1909, New York City has been monitoring the water quality of the New York Harbor. The DEP conducts the survey by collecting water samples at stations in four designated regions: Inner Harbor, Upper East River-Western Long Island Sound, Lower New York Bay-Raritan Bay, and Jamaica Bay. The project site is along the Inner Harbor. DEP evaluates water quality, sediment characteristics, hydrology, phytoplankton and macroinvertebrates. In addition DEP records the water quality parameters including temperature, salinity, density, dissolved oxygen, water transparency, pH, total suspended solids, nutrients, chlorophyll *a*, plankton and coliforms. The results are used to determine the classification for waterbodies and permitted uses.

The East River is classified as a Class I water by NYSDEC. Four major indicators of environmental change in the Inner Harbor are fecal coliforms, dissolved oxygen, chlorophyll *a*, and secchi values. Fecal coliforms, found within the intestines of humans and other animals, indicate levels of sewage in the water. Fecal coliforms have dramatically decreased over the last thirty (30) years attributable to the prevention of raw sewage discharges, dumping, and reduction of CSOs according to the 2004 New York Harbor Water Quality Survey (HWQS). However, in the last 5 years, there has been a gradual increase. The latest levels are still below the Bathing Standard, but the trend is increasing. Dissolved oxygen detects the percentage of dissolved oxygen in the water, critical for respiration of most aquatic life forms. Dissolved oxygen has steadily increased over the last thirty (30) years according to the 2004 HWQS, above DEC levels permitting primary contact and commercial fisheries. Chlorophyll *a* indicates the level of productivity by plankton in the water system. The 2004 HWQS showed a slight overall increase in chlorophyll *a* since 1985. Secchi values indicates the level of water clarity of the water body. Secchi values have been relatively constant since 1986 according to the 2004 HWQS.

10.2.5 Aquatic Flora & Fauna

The high currents, variable salinity, and various industrial/municipal discharges have created harsh conditions in the East River, and have resulted in a community of species highly tolerant of variable conditions.

Phytoplankton

Diatoms are the most widespread class of phytoplankton. Also very common is the green algae genus, *Nannochloris*. Previous studies have shown that algal community composition is heavily influenced by the source waters of the Long Island Sound and New York Harbor than by local water quality conditions.

Submerged Aquatic Vegetation and Benthic Algae

Submerged aquatic vegetation (SAV) are rooted aquatic plants that are often found in shallow areas of estuaries; these organisms are important because they provide nursery and refuge habitat for fish. Benthic algae can be large multicellular algae that are important primary producers in the aquatic environment. The extensively developed shoreline, swift currents, and steeply sloped riverbanks make inhabitation by submerged aquatic vegetation and benthic algae unlikely. However, in the upper East River, there have been observations of *Fucus*, *Ulva*, and *Enteromorpha*.

Zooplankton

Zooplankton are an integral component of aquatic food webs—they are primary grazers on phytoplankton and detritus material, and are themselves serve as food for organisms of higher trophic levels. Crustacean taxa is the most prevalent form of zooplankton in collected samples, including copepods *Acartia tonsa*, *Acartia hudsonica*, *Eurytemora affinis*, and *Temora longicornis*.

Macroinvertebrates

Macroinvertebrates are important in the conversion of detritus and suspended organic material into carbon, serving as major components in the diets of fish and waterfowl species. Macroinvertebrates of New York Harbor include aquatic earthworms, segmented worms, snails, bivalves and soft shell clam, barnacles, cumaceans, amphipods, isopods, crabs, shrimp, hydrozoans, sea anemones, flatworms, oligochaete worms, polychaetes, bivalve, barnacles, gammaridean, caprellid, amphipods, isopods, sea squirts, hermit crabs, rock crabs, grass shrimp, sand shrimp, blue crabs, mud dog whelks, mud crabs, horseshoe crabs, blue mussels, softshell clams, and a sea slug.

Fish

The East River serves as a major migratory route between the Hudson River, New York Harbor and Long Island Sound. The swift currents, lack of protected habitat most likely limit the utilization of the East River by fish. The East River fish community includes Atlantic tomcod, American eel, grubby, sculpin, red hake, mummichog, cunner, northern pipefish, striped bass, white perch, windowpane, winter flounder, and hogchoker. During the warmer months, bay anchovy may be present.

10.3 The Future Without the Proposed Project - 2010

Since no construction is proposed in coast sensitive areas, the future without the proposed project would not impact the natural resources in the study area.

10.4 The Future With the Proposed Project - 2010

10.4.1 Geology

The construction of the proposed project would require the removal of rock and soil for the placement of the support columns of the River Building platform over the FDR Drive. The underlying geology of Manhattan would not be altered. Additionally, since Manhattan's geology is not considered an ecologically sensitive habitat, and since no substantial outcropping would be disturbed as a result of the proposed project, no adverse impacts would occur.

10.4.2 Groundwater

Groundwater resources in Manhattan are not used as potable water, and would not be adversely affected by construction of the proposed project. Therefore, no adverse impacts to groundwater would result from the proposed project.

10.4.3 Coastal Zone & Floodplain

The proposed project would result in the placement of support columns within the Coastal Zone & Floodplain. No significant changes to the coastal zone or floodplain would result with the proposed project, and no adverse impacts would occur.

10.4.4 Water Resources – East River

It is expected that construction of the new platform and the River Building would be carried out in the same manner as the original platform and East Wing Building were carried out: from a barge in the East River containing a crane that would lift materials from the barge, over the esplanade, to the construction site, lasting three (3) months. Some water quality degradation would be expected, such as resuspension of particulates within the water column. However, the current velocities of the East River would disperse suspended material quickly. Additionally, the decrease in water quality would only be temporary and would be minimized using construction best management practices.

10.4.5 Aquatic Flora & Fauna

Construction of the proposed project using the barge containing a crane in the East River would not be expected to result in long-term adverse impacts to phytoplankton, submerged aquatic vegetation, or macroalgae present in the East River. The effects of the barge facility would be limited to temporary and localized increase in turbidity affecting light penetration, resulting in the temporary impairment of photosynthesis. Impacts would be temporary and be limited to a temporary increase of turbidity during construction using the barge, lasting three (3) months. The effects on zooplankton, macroinvertebrates and fish would be short, and would therefore not result in significant adverse impacts.

After construction of the proposed project, the proposed project would not deprive any species of plant or animal access to natural resources. The site is not a built resource for plant or animal species. The site activities would not disrupt surface or subsurface conditions that may effect nearby natural resources. There is no activity that would disrupt the functions of the East River tidal strait either directly or indirectly. Therefore in accordance with Section 3I-200 of the CEQR Technical Manual no significant adverse impacts to natural resources would result from the proposed project, and no further analysis is necessary.