III.C: Natural Features

C. Natural Features

This section of the DEIS includes analyses of surface and subsurface water and soil resource conditions, vegetation and wildlife. Since there are no water resources on the Cacace site, only the other impacts are addressed in this section with respect to that project site. In addition, since the Palisades Point site is on the Hudson River and the water resource impacts in particular are so different than the River Park and Larkin Plaza sites, the impacts with respect to this site will be addressed in a separate section specific to this site.

1. Existing Conditions: River Park Center, Cacace Center and Larkin Plaza

   a. Water Resource - Saw Mill River Conditions

   The Saw Mill River, formerly known as the Nepperhan River, is a tributary of the Hudson River and the river's headwaters are located approximately 23 miles north of the City of Yonkers in the Town of New Castle, NY. The Saw Mill River has historically been altered, culverted and relocated as downtown Yonkers was developed. In the 1800's and early 1900's, dams were constructed and portions of the river were diverted through the "Chicken Island" site (n/k/a the River Park Center Site) to service the mills and factories along the river valley, and further railroad and industrial waterfront development along the Hudson River (see attached figures). As the City further developed into the 20th century, buildings were constructed over the river from Warburton Avenue to Ann Street. Within Larkin Plaza, west of Warburton Avenue, a flume was constructed as part of the 1920's Army Corps of Engineers project. This flume connects to a bridge structure under the Buena Vista Avenue, the railroad and the station building to the west that discharges in the tidal basin to the Hudson River.

   The Saw Mill River flows nearly 23 miles from the Town of New Castle to where it enters the Hudson River at Dock Street in Yonkers. The Saw Mill River flows underneath Yonkers in a tunnel or flume for the last 2,000 feet before reaching the Hudson River. Approximately 750 feet of the 1,100 lineal feet of the river at River Park Center is open; this is the last open area before the river flows within the tunnel/flume until it reaches the confluence with the Hudson River. This last exposed reach of the Saw Mill River flows downhill, has been channelized between nearly vertical man-made concrete wall embankments that has resulted in a somewhat rectangular stream channel, and has a substrate composed primarily of small rocks and gravel with debris scattered throughout the channel. During most times of the year, there is generally less than one foot of water flowing in the approximately 30 to 40-foot wide channel.

   The Saw Mill River has also been subject to various modifications throughout recent history to accommodate transportation projects and streamside development. During the last 25 years, 4 flood control projects have been constructed along the length of the river under the auspices of the Army Corps of Engineers (ACOE). Within the City of Yonkers, river modifications have included the 1980's Nepera Park and Croton Aqueduct Flood Control projects.

Throughout the River Park Center project area, beginning at the Elm Street Bridge, the Saw Mill River has an open section that flows in a southwesterly direction, under the bridge at the John Street extension and enters a culvert at the School Street Bridge. The river proceeds under the Henry Herz parking facility in a westerly direction parallel to Nepperhan Avenue and re-immerges west of Henry Herz Street. The river then turns north and enters the flume at Ann Street. The river falls approximately 13 feet in elevation along this length. The river bottom throughout this area is naturalized, with a cobble/boulder streambed. The open portions of the river have a channel width between 30 and 40 feet and steep sloping or vertical banks stabilized with concrete, stone riprap or masonry walls. The bridges over the river and the culverted sections are aligned with the river and have dimensions greater than or equal to the channel width. The river channel walls exhibit varying degrees of undermining and erosion, and the channel bottom exhibits scour and/or aggradation, as well as debris accumulation in many locations.

At Ann Street, the river enters the culvert/flume and flows in a northerly direction toward Getty Square, under buildings located along North Broadway to Manor House Square, and then in a westerly direction south of and parallel to Dock Street under Larkin Plaza and the park area, under Buena Vista Avenue and the Metro North Railroad tracks to the Hudson River. The construction and overall dimensions of the flume varies substantially between Ann Street and Warburton Avenue, and is described and photo-documented in detail in a report prepared by McLaren Engineering Group entitled "Nepperhan/Saw Mill River Culvert/Flume Inspection, Yonkers, New York", dated August 2006. The report is provided in Appendix 3.B of this document. The documentation and photographs within this report demonstrates the challenges (debris, spillways) to fish migrating upstream into and through Yonkers to reach the upper reaches of the Saw Mill River. This conclusion is further supported in the PK Environmental Fish and Wildlife Resources Impact Analysis, which was prepared in conjunction with the Brownfield Cleanup Program environmental investigation. Further information on the existing conditions of the flume is provided in Section III.D.

b. Water Resource Impact - Proposed Daylighting River Park Center Project I and Larkin Plaza Project II

One of the stated priorities of the Project is to daylight and/or naturalize the culverted and channelized portions of the Saw Mill River. The proposed Daylighting Project includes improvements to the Saw Mill River at River Park Center, and if the City elects to make them, improvements at Larkin Plaza. As a result, there are effectively two separate daylighting projects. Further details and descriptions on the non-aquatic and upland portions of the projects are provided in Chapter II "Description of the Proposed Action." The proposed improvements are described below.

(1) Daylighting Project I River Park Center

The river realignment in River Park Center also have three specific zones, each with a distinct geometry and character. The proposed river improvements at River Park Center will include daylighting of approximately 400 linear feet and

re-alignment of approximately 1,100 linear feet of the river between Elm Street and Palisades Avenue (see Riverwalk Plan). These improvements will also enhance the river edge eco-system by using native plantings to establish habitat for indigenous river species. Realigned portions of the river will have a cross sectional area equal to or exceeding the existing river sections. The proposed design will not increase the existing flood elevations at the Elm Street Bridge. The three zones are described below and shown in Exhibits III.C-1 through III.C-5:

- Zone 1 - The "Upper River" portion generally entails the portion of the river between Elm Street and the vicinity of the existing School Street Bridge, which curves through the site for a distance of approximately 1,100 linear feet to create a continuous open river, which will be the centerpiece of the surrounding development (see Exhibits III.C-1 and C-5, River Park Center Proposed Riverwalk Plan and Sections). The grades of this portion of the river bottom will be reduced to approximately 1% to allow for more placid water flow. Pedestrian walkways and terraces will flank each side of the river and will be set above the 100-year flood elevation. River bottom and lower banks throughout this portion will be a "naturalized" stone and/or rip-rap surface, constructed to the 10-year flood elevation. The banks between the 10- and 100-year flood elevations will be stabilized using a combination of "hard-scape", live branch cuttings through boulders/rip-rap/geotextile baskets and live plantings through live fascine bundles, as conditions and access requirements dictate.

  During any 100-year flood event, if necessary the river could be partially diverted through a proposed concrete culvert that would run through the site to the north of the river (see Section III.M). However, calculations provided in Appendix 3.C demonstrate that the proposed reconstructed river will be capable of accommodating a 100-year flood event. The culvert will also allow for the diversion of the river from the channel to allow for periodic cleaning and maintenance of the river channel.

- Zone 2- The "Rapids" is the narrowest section of the river and encompasses the portion flowing adjacent to Nepperhan Avenue, extending approximately 350 feet downstream from the "Upper River" (see Exhibits III.C-1 and C-3 River Park Center Proposed Riverwalk Sections: Sections 2 and 3). The grade separation between this portion of the river and Nepperhan Avenue is in excess of 30 feet, creating a canyon or gorge-like environment, which limits direct public physical interaction with the river but creates visual and audible interaction. To enhance this area, the improvements will create visual and audible interest by means of rushing water. This area will have a naturalized boulder stream bed with numerous small spillways/waterfalls (i.e., grade controls), allowing for a grade change of approximately eight feet through the area. The naturalized boulder stream bed will allow for areas for fish to rest in the flowing waters. An elevated

pedestrian walkway will be constructed along the southern bank of the river. This walkway will be set at or above the 100-year flood elevation and will allow a pedestrian connection between the "Upper River" and the downstream portion of the River Park Center site. Once constructed, water flows through the Rapids will be similar to existing conditions. The proposed diversion culvert will allow for construction of the new stream bed and if necessary will be used to divert high flows during rain events. This will allow for fish species to utilize the area much in the same manner as it currently exists.

- Zone 3 – The "Pond" or "Bend" area encompasses the final portion of the river daylighting, prior to the return of the river to a culvert (see Exhibit III.C-1 and C-2 River Park Center Proposed Riverwalk Plan and Sections: Section 1). The area is generally located in the northeast quadrant of the intersection of New Main Street and Nepperhan Avenue. Educational "fact plaques" are proposed to be located at appropriate locations to inform users about the natural and cultural history of the river and the river's ecology.

  The proposed improvements will include a widening of the existing river section and construction of a spillway to create a still water area. All spillways proposed for the rehabilitation of the Saw Mill River will not hinder the upstream migration of fish species. The area will be bounded to the south and west by an elevated pedestrian riverwalk and amphitheater and to the east by a shopping promenade. River banks will be stabilized using a combination of "hard-scape", live branch cuttings through boulders/rip-rap/geotextile baskets and live plantings with live fascine bundles, as conditions and access requirements dictate.

  The spilwways/waterfalls will not hinder the upstream migration of fish species. The river channel will be shaped to allow for water to flow during all times of the year, including during low flow events.

(2) Daylighting Project II Larkin Plaza

The proposed daylighting and realignment of approximately 800 linear feet of the culverted portion of the Saw Mill River in Larkin Plaza, between Warburton Avenue and Buena Vista Avenue, will include creation of a naturalized section of the river within a linear park, complete with pedestrian bridges and pathways (see Larkin Plaza Daylighting Plan). As this area is in an active waterway, the new river channel would need to be built outside of the existing flume. Once built the water would be diverted from the existing flume to the newly constructed river. The flume would remain in place for overflow purposes similar to the diversion channel on the River Park Center site.

(3) Water Habitat - Freshwater vs. Tidal Riparian Habitats:

(4) Daylighting Project I – Freshwater Habitat

Due to the topography and hydrology in this area, the daylighted river would have two very separate and distinct riparian habitats. The upper section, roughly from Warburton Avenue to Bashford Street, would be a freshwater system. As the elevation of the river falls as it flows towards the Hudson River, a small dam would be located in this upper section of the project near Woodworth Avenue. As discussed in Chapter I, Section G—Reviews and Approvals and in Chapter II, Section I—Summary of Reviews and Approvals, the proposed daylighting will require an Article 15 permit. However, the permit should be deemed acceptable as a waterfall/spillway would be constructed to create a freshwater pool. A fish ladder or other similar device will be constructed to allow for the upstream migration of native species, with the American eel being the prime species.

(5) Daylighting Project II - Tidal Habitat:

The lower section from Bashford Street to Buena Vista Avenue would be a marine environment. At this location, brackish tidal flows from the Hudson River would mix with the freshwater of the Saw Mill River, and after the Atherton Bridge, the river would widen to create a tidal pool.

The landscaping proposed for each of the Daylighting Project areas would change to reflect the plants tolerance to fresh vs. salt water and changing water levels.

(6) Water Habitat Impact - Riverbed Construction:

(7) Daylighting Project I - Riverbed Construction:

The riverbed would be temporarily disturbed during construction. However, once the new riverbed is constructed, it will be "naturalized" to the extent feasible. Stone and/or stabilized riprap underlined by a plastic geotextile membrane to prevent infiltration of contaminants, will re-create the existing riverbed, which currently consists principally of stone. As shown on the plans presented in the previous section, the banks would also be stabilized using a combination of "hard-scape" (limited to the extent necessary), soil and live branch cuttings intertwined with boulders/rip-rap/geotextile baskets, and live plantings with live fascine bundles will be incorporated, as conditions and access requirements dictate (see Project Plans for Stream Rehabilitation in Section III.L). Appropriate native landscape species (see Exhibit II-13 in Chapter II "Description of Proposed Action" of this document) would be planted in each zone to enhance the river edge eco-system.

(8) Daylighting Project II – Riverbed Construction: Due to the Larkin Plaza area's proximity to the tidally influenced Hudson River, special considerations have been given to the potential for storm surge compounding the 100-year flood condition. This would be addressed by a combination of berms and walls with a top elevation set at 2-feet above 100-year flood at high tide. This would create an impound area to contain these flood waters during a flood condition.

c. Construction Impacts and Schedule

Each project analyzed in this DEIS has a different potential impacts and associated construction schedule. The River Park Center and Cacace Projects may proceed at the same time, however, the Applicant anticipates that the construction process for River Park Center would take approximately 30 months and Cacace Center would take approximately 20 months to complete. The work to complete Larkin Plaza and Palisades Point is separate and not dependent on the River Park Center and Cacace Center construction. Specifically, with respect to the two daylighting projects, the River Park Center project will proceed simultaneously with the construction project as described below. The City must implement the Larkin Plaza project, which will likely be implemented on a different schedule.

(1) Daylighting Project I River Park Center

As noted above, there will be a temporary impact from construction of the riverbed, as well as the project in general. The general sequence of the construction will be site preparation and demolition; then construction of the new channel of the Saw Mill River and foundations; then building superstructure construction; then building interiors; and finally exterior streetscape completion (refer to Exhibits III.M-1 through III.M-6). As indicated on Exhibit III.M-2, the diversion of the Saw Mill River would be diverted during the first few months of the construction process.

The construction of a new channel for the Saw Mill River presents a unique construction challenge for the River Park Center project. One of the first actions on-site will be the installation of sediment and erosion control measures along the exposed portion of the river. No work will occur in the current riverbed until the river is diverted. The diversion will be accomplished by installing a continuous box culvert from south of Elm Street to east of Palisade Avenue, where the river exits the site. The box culvert will be permanent and will permit flood flows to be diverted and potentially allow for the river to be diverted for cleaning and repair of the new channel. The short term impacts of diverting the river if and when it needs to be cleaned will be analyzed in an Article 15 Stream Diversion Permit described below. On January 7, 2007, the NYSDEC Fish & Wildlife Division expressed concern over the river flow being diverted for this purpose. The Applicant contends the short-term impacts are overcome by long-term benefits because debris often blocks the river flow in this river. Moreover, the natural conditions of this river are not desirable and unfortunately being located within an extensive urban environment will periodically require some minor maintenance efforts (i.e., removing debris, plastics, bottles, etc. and revegetation as needed) to continue to encourage the long-term existence of enhanced habitat areas for fish and wildlife.

Once the river is diverted into the new culvert, work can progress on the remainder of the existing river channel. The river will remain diverted until the new channel and the riverwalk are completed. The diversion will necessarily impact the aquatic community of the existing channel. However, once the new

channel is operational, it is anticipated that the area will not only be reestablished but significantly enhanced to natural conditions via the downstream migration or "drift" of organisms that currently reside in upstream communities. Existing sediment contamination will be removed and debris be periodically removed to enhance the habitats that will be created.

See Exhibit II-14 in Section II Description of the Proposed Action for comparison of existing and proposed channel of the Saw Mill River through the River Park Center project site.

(2) Daylighting Project II - Larkin Plaza (refer to Exhibits III.M-1 and III.M-12 through III.M-13):

If the City elects to make the Larkin Plaza improvements, the construction work would include opening the enclosed underground flume to provide a public walkway along the daylighted river after a new river is constructed. The preliminary design would require the new daylighted river channel to be built outside of the existing flume. It is anticipated that the Larkin Plaza improvements would take approximately 18 months to complete. Based on historic photo-documentation, the Larkin Plaza site was extensively disturbed to construct the current flume, parking lots and roadways. Based on record drawings for the existing flume, it is not anticipated that blasting would be required in order to make the improvements contemplated.

However, unlike the River Park project, construction should not impact the existing aquatic tidal habitat as the existing flume will remain in place and the new river bed constructed outside the flume with enhanced habitat opportunities. The new more naturalized river will be a new habitat environment, but because it will be preferable to existing conditions, fish and wildlife should readily adapt in the short term and further propagate in the long term.

d. Storm Water, Erosion, and Sediment Impacts & Pollution Prevention, Soil Erosion and Sediment Control

Since the Project (including the improvements to the Saw Mill River) will result in the disturbance of one (1) acre or more of total land area, stormwater management and erosion control measures must comply with New York State Department of Environmental Conservation ("NYSDEC") State Pollution Discharge Elimination System for Discharges from Construction Activity, General Permit No. GP-02-01 (the "General Permit"). To be covered under the General Permit, the Project is required to conform with the technical standards for stormwater quantity and quality controls presented in the New York State Stormwater Management Design Manual ("DEC Design Manual"), including Chapter 9, ("Redevelopment Projects") of the DEC Design Manual. The General Permit requires the preparation of a Stormwater Pollution Prevention Plan ("SWPPP"). The SWPPP is discussed in detail in Section III.D(2)(d) of this DEIS.

The New York State Department of Environmental Conservation Design Manual criteria state that if redevelopment results in no increases of impervious area or changes to hydrology that increase the discharge rate, the ten-year and hundred-year criteria do not apply. Also, the water quality requirements can be achieved if the plan proposes a reduction of impervious cover by a minimum of 25% of the existing total site impervious area. A reduction in site imperviousness will reduce the volume of stormwater runoff, thereby achieving, at least in part, stormwater criteria for both water quality and quantity.

As discussed in Section III-D, an approved Soil Erosion and Sediment Control Plan would also be implemented prior to and during construction to properly manage the on-site soils and sediments related to the improvements of the Saw Mill River. On-site and downstream surface water bodies will be protected by the use of best management practices to protect them from sedimentation. With the proper implementation of the approved Soil Erosion and Sediment Control Plan, there should be no impacts related to soil erosion of the uplands or an increase in sedimentation in the Saw mill River.

(1) Daylighting Project I – River Park Center

Most of the site is currently paved with the exception of the grassy area along Elm Street. The site has storm drains that divert untreated stormwater to the Saw Mill River. While the total impervious area will increase by approximately 1.2 – 1.5 acres as a result of the project due principally to the elimination of the grassy area along Palisades Avenue (NOTE: 1.2 comes from lawn section on C-9), the Applicant contends there will be no net stormwater discharge increases because the calculated discharge of pre-development versus post-development flows results in zero net increase in stormwater discharge. In addition, the project will incorporate the latest storm water treatment prior to discharge to the Saw Mill River, which is further described in the mitigation section. Therefore, the applicant contends there will be no adverse stormwater impacts. In addition, the project is enhancing flood protection since there will not only be a newly constructed riverbed designed to handle storm events, but the diversion channel will be in place in the rare instance it is needed for excess storm water. This is further discussed in the next section on flooding below. With the proper implementation of an approved Soil Erosion and Sediment Control Plan, there should be no impacts from construction activities that result in the erosion of on-site soils.

(2) Daylighting Project I – Larkin Plaza

This Site is currently an impervious paved parking lot with a small grass area on the west side of the Site near the train station. The daylighting project on this Site is expected to reduce the impervious surfaces by 35%. Therefore, water quality requirements will be achieved since the plan proposes a reduction of impervious cover by more than 25% of the existing total site impervious area. In addition, the project is enhancing flood protection since there will not only be a newly constructed riverbed designed to handle storm events but the existing

flume will remain in place for the rare instance it is needed for excess storm water. This is further discussed in the next section on flooding. As presented above, with the proper implementation of an approved Soil Erosion and Sediment Control Plan, there should be no impacts from construction activities that result in the erosion of on-site soils.

(3) Cacace Center

While Cacace does not have a water resource, these will still be a requirement to manage on-site generated stormwater. All stormwater from this site will be treated in the same manner to meet NYSDEC stormwater quality and quantity requirements. The existing storm water drains in the currently impervious parking lot, which constitutes most of the site, will be replaced by new drains that will tie to treatment systems before being discharged to the Saw Mill River.

e. Maintenance of Stormwater Management Measures

The presence of debris in the river is a potential cause of blockage and decrease in capacity to of the underground portions of the river. The reconstructed Saw Mill River will include plans for mechanisms to collect debris prior to flowing to the underground sections, including debris racks either within the River Park Center site or offsite/upstream of the Project. The impacts of these mechanisms and racks will be analyzed in the Article 15 permit application. As noted above, the Applicant contends that cleaning the river will be necessary to continue proper river flow, which will cause long term habitat enhancement rather than damage habitat. The short term impacts are overcome by the long term benefits. Also, the long term continued development of the Nepperhan Valley and cleanup and control of the areas adjacent to the river will reduce potential for debris entering the river. However, this is not expected to occur short term, but rather over the next 10-20 years.

f. Existing Known Flooding Conditions Adjacent to the Project Sites

Various officials from the City of Yonkers, including the City Engineer, City Planning Director and Commissioner of Public Works were interviewed regarding flooding in the River Park Center area and indicated that they are not aware of any current or prior flooding problems in the Project area.

Additionally, various reports confirm that flooding has not occurred in this vicinity in the recent past. Notably, the report entitled “Daylighting Potential for Saw Mill River in Downtown Yonkers”, prepared by Han-Padron Associates, LLP dated March 2004, depicts the ordinary high water elevation and the “180 year” flood elevation at various locations along the relevant portion of the river. None of these locations show overtopping during the flood event. This information is consistent with the hydraulic modeling of flood events in the existing river performed by the Applicant’s consultants.

On April 15th and 16th 2007, a Nor’easter storm impacted the region with over 7 inches of rain within a 24 hour period. This storm resulted in severe flooding conditions within the Saw Mill River valley. In the Nepera Park section of Yonkers,

the Saw Mill River Parkway was completely inundated and many homes were impacted. As the river reached peak elevation during the morning of Monday April 16th, observations were made of the river at the River Park Center site, and revealed that the flood flow was maintained below the top of bank. From Elm Street to Ann Street the adjacent properties were not flooded. This is consistent with prior data collected and with the hydraulic modeling of flood events performed by the Applicant's consultants.

Therefore, as noted above in the stormwater impact section, the new diversion ditch at the River Park site and the remaining flume at the Larkin Plaza site, coupled with the new rivers at each site should be more than adequate to handle future flood events since each site will effectively have two rivers – one underground and one above ground.

g. NY State Regulated Wetlands

As depicted on the NYS Wetlands Maps, there are no regulated wetlands on or within 0.5 miles of the River Park Center site. The project site is located in an older heavily developed urban area, and based upon site inspections, and review of additional publicly available information, there are no freshwater or tidal wetlands, shellfish beds, or weed beds on or near the site. The Hudson River, which is located within 0.5 miles of the project site, at a location that is also highly commercialized and developed, is tidally influenced, and is considered a tidal wetland. Therefore the Larkin Plaza site is within .5 miles of a tidal wetland and that project will have to evaluate that impact in more detail as it progresses. However, there are no documented shellfish beds in this immediate area, and there is no visual evidence of weed beds within the Saw Mill River or the Hudson River in this area.

h. Existing Wildlife and Vegetation

River Park Center, Cacace Center and Larkin Plaza - The City of Yonkers is a very urbanized environment developed with buildings and impervious surfaces, which provide limited wildlife habitat for terrestrial vertebrate species. The small, fragmented and isolated nature of the existing vegetated area limits habitat to all but the most adaptable of wildlife. The following mammals have the potential to be found within all of the Project areas at certain times of the year: opossum *(Didelphis marsupialis)*, eastern mole *(Scalopus aquaticus)*, eastern chipmunk *(Tamias striatus)*, woodchuck *(Marmota monax)*, gray squirrel *(Sciurus carolinensis)*, raccoon *(Procyon lotor)*, striped skunk *(Mephitis mephitis)*, house mouse *(Mus musculus)* and Norway rat *(Rattus norvegicus)*.

Avian species that have the potential to use the Project areas include crows *(Corvus brachyrhynchos)*, ring-billed gulls *(Larus delawarensis)*, rock doves *(Columba livia)*, mourning doves *(Zenaida macroura)*, common grackle *(Quiscalus quiscula)*, blue jays *(Cyanocitta cristata)*, cardinal *(Cardinalis cardinalis)*, catbird *(Dumetella carolinensis)*, black-capped chickadee *(Parus atricapillus)*, American robin *(Turdus migratorius)*, starling *(Sturnus vulgaris)*, and house sparrow *(Passer domesticus)*

Since the Cacace Center does not have a water resource, but does have vegetation and wildlife in the Waring Park section of the site, this Site is discussed in this section.

(1) Cacace Center

This site is located slightly uphill and adjacent to the River Park Center site and across Nepperhan Avenue. As noted above, the Saw Mill River does not flow through or adjacent to the site. Waring Park, with its existing landscaping, is the prime natural resource for this project site. The vegetation and wildlife in the park will be described in this section.

(2) River Park Center

This site is located adjacent to the Saw Mill River. Due to its location in an urban environment, which has mostly been paved, and the historic channelization of the river on approximately half of the site, there is limited vegetation along the banks that are exposed (about 750 linear feet) and in an approximately 1.2 acre grassy area along Palisades Avenue. The vegetation and wildlife in these areas will be described in this section.

(3) Larkin Plaza

This site has been completely paved with the exception of a small park area on the west side of the site. Since the portion of the Saw Mill River that flows through this site has been buried in a flume, there is no associated vegetation. The wildlife present in the flume is described in the aquatic resources section.

The following sources of mapped information were reviewed for this section of the DEIS: United States Geological Survey ("USGS") Maps; Soil Survey Maps; National Wetlands Inventory Maps, Aerial Photographs, and Federal Emergency Management Agency ("FEMA") Maps. In addition, previous studies, environmental impact statements and resource information related to the City of Yonkers were reviewed from the following agencies and organizations: U.S. Fish and Wildlife Service; National Marine Fisheries Service, U.S. Environmental Protection Agency, New York State Department of Environmental Conservation; Interstate Environmental Commission: U.S. Army Corps of Engineers; Clean Ocean Action; Natural Resources Defense Fund; and Hudson River Foundation.

i. On-Site Vegetation

Except for the narrow fragmented vegetation areas described above and further described below, the River Park Center site is completely impervious, consisting of asphalt pavement for a myriad of roads, parking areas, and buildings. The on-site vegetation includes no rare, threatened or endangered fauna, and consists of vegetation typical within stressed urban areas, as follows:

(1) Cacace Center

The vegetation in Waring Park consists of loctus, red maple, black cherry, and London plane trees.

(2) River Park - Maintained Lawn Area

A grassy open area, that is approximately 1.2 acres in size, borders Palisades Avenue, James Street, School Street, and the parking area adjacent to John Street. This open area is fenced off from public access due to unsafe ground conditions that are likely the result of past building demolition and site filling/re-grading activities. In addition to the extensive grassy area, remnant landscaped and invasive vegetation in this area includes ailanthus, honey locust, and yews.

(3) River Park - Riparian Corridor of Saw Mill River

In the two on-site lengths of open River channel, the steep riparian banks consist of rip-rap, concrete, and limited woodland vegetation. These steep banks are heavily littered with debris composed of plastics, glass and automobile parts, and dominated by invasive species of vegetation, typical of heavily urbanized areas. The riparian banks generally range from 15-feet to 25-feet in width, but there are wider areas located near the intersection of Nepperhan Avenue and School Street. The total area of low quality woodlands along the Saw Mill River is estimated at 0.53-acres, with overstory vegetation within the riparian corridor consisting of Norway maple *(Acer platanoides*), silver maple *(Acersaccharinum)*, catalpa *(Catalpa bignonioides)*, American elm *(Ulmus Americana)*, and mulberry trees *(Morus rubra)*. Understory species include bittersweet *(Celastrus scandes)*, multiflora rose *(Rosa multiflora)*, knotweed *(Polygonum cuspidatum)*, pokeweed *(Phytolacca americana)*, honey locust *(Gleditsia triacanthos)*, staghorn sumac *(Rhus typhina)*, mugwort *(Artemisia vulgaris)*, and goldenrod *(Solidago sps.)*.

(4) River Park - Nepperhan Avenue (Steep Sloped Woodland Area**)**

This steeply sloping woodland area is approximately 0.8-acres in size in the northeast section of the project area, and begins at the intersection of Nepperhan Avenue and School Street, and extends northeast behind the Baptist Church to Elm Street. This low quality isolated woodland is fenced off and heavily littered with trash. Woodland vegetation includes sugar maple *(Acer saccharum*, Norway maple, catalpa, and mulberry trees, with fox grape *(Vitis labrusca)*, poison ivy *(Rhus radicans)*, bittersweet *(Celastrus scandens)*, multiflora rose, curled dock *(Rumex crispus)*, and blackberry *(Rubus allegheniensis)*. Except for the area near School Street, where it adjoins the Saw Mill River, the isolated woodland is bordered by roads, buildings, and impervious area on all sides.

(4) Larkin Plaza

The vegetation present in the small park area on the west side of Larkin Plaza consists of several large pin oak, black oak and red maple trees and grass.

j. Aquatic Wildlife Resources

There is no government agency that routinely monitors the water quality or has done detailed sampling of aquatic resources in the Saw Mill River. Non-governmental environmental groups have collected seine and benthic samples from the mouth of the Saw Mill River and from just upstream of the River Park Center site. The results of these studies have been analyzed for each applicable project site:

(1) River Park

The only fish species that could make its way upgradient from the mouth of the Saw Mill River to the River Park Center site is the American eel *(Anguilla rostrata)*. A report entitled the "Longitudinal Distribution of the Fishes of the Saw Mill River", dated Summer 2003, documents the presence of longnose lace *(Rhinichthys cataractae)* tessellated darter (*Etheostoma olmstedi)* and blacknose dace *(Rhinichthys atratulus)* in the Saw Mill River at a location just upstream of the River Park Center site at the Old Nepperhan Avenue bridge. Additional freshwater species that could potentially be washed down from upriver sources include pike *(Esox lucius)*, pickerel *(Esox niger)*, smallmouth bass *(Micropterus dolomieu)*, carp *(Cyprinus carpio)*, golden shiner *(Notemigonus crysoleucas)*, yellow perch *(Perca flavescens)*, and brook trout *(Salvelinus fontinalis)*. However, due to the shallow nature and extreme slope of the Saw Mill River at the River Park Center site, there are limited existing habitat resources to permanently support these larger fish species. Rare and endangered species have not been observed at the River Park Center site or documented by the NYSDEC.

A benthic macro invertebrate study was conducted on December 13, 2007 to assess the invertebrate community located in the Saw Mill River in the area of the proposed River Park Center site. The two sections of the river located just north and south of the site, which are not channelized, were assessed using the USEPA's *"Rapid Bioassessment Protocol for Use in Streams and Wadeable Rivers"*. The control location was the section of the Saw Mill River located further north in the Yonkers War Memorial Field. The most dominant species were aquatic worms from the Lumbriculidate Family and caddis flies from the Hydropsychidae Family. Other macroinvertebrates found in limited numbers included, flatworms, aquatic sow bugs. sideswimmers, springtails, predaceous diving beetles, riffle betles, lead beetles, moth flies, black flies, midges, horseflies, pouch snails and orb snails. A pollution tolerance level was identified for each group, and the range was from 4 to 10, with 10 having the highest tolerance to polluted environments and 1 having the lowest tolerance.

(2) Larkin Plaza

In this area, samples have been collected by environmental groups at the mouth of the Saw Mill River containing many of the fish routinely found in the immediately adjacent Hudson River, as well as some freshwater species. The predominant fish included hogchoker (*Trinectes maculatus*), Atlantic tomcod (*Microgadus tomcod*), striped bass *(Morone saxatilis)*, white perch *(Morone Americana)*, killifish *(Fundulus heteroclitus)* and bay anchovy (*Anchoa*

mitchilli). The freshwater species included pike *(Esox lucius)*, pickerel *(Esox niger)* and American eel. Rare and endangered species have not been observed in the mouth of the Saw Mill River or documented by the NYSDEC. The pike and pickerel are freshwater species that prefer the flume area but are tolerant of the waters of the Hudson River during periods of low salinity.

While the construction phase of the daylighting and other construction projects on the River Park Center will have a temporary impact on the American eel migratory pathway when the river is diverted through the channel, the project will be creating a new pathway not eliminating a pathway. For the Larkin Project, the diversion will only occur for a very short period of time (i.e. a matter of days) since the river will remain flowing in the existing flume until such time as the new riverbed is constructed. Overall, while there may be short term diversion impacts, over the long term, aquatic resources should increase. The river will be cleaner, there will be more opportunities for migration up to the River Park Center site and there will be new habitats. There should be non-ecological exposure pathways to the aquatic resources during these construction projects. Specifically, with respect to the remediation and construction project on River Park, PK Environmental, a Fish and Wildlife consulting firm, concluded "*As a result,… potential adverse effects and ecological risks to fish and wildlife resources will be unlikely from migration of constituents of potential ecological concern. In addition, the proposed natural resource improvements to the Saw Mill River will include the daylighting and realignment of the River, where these improvements will enhance the ecological value of the River by incorporating native vegetation to reestablish habitat for indigenous species.*"

k. Water Quality

NYSDEC assigns water quality classifications to waterways. The water classifications describe if the waters are suitable for aquatic resources to, at a minimum, propagate and survive. The water quality classifications of the Saw Mill River vary along the length of the river, and are based in part on pollution the main sources of which include: runoff from residential and commercial development and roads (i.e., Saw Mill River Parkway, Saw Mill River Road and streets); sewage overflows from the Saw Mill River Pump Station of Mount Kisco; and numerous untreated discharges from residential, commercial and industrial facilities located in the watershed of the Saw Mill River. Former industrial uses on a site can also impact water quality. Fortunately, the SESI environmental investigation of the River Park Site documented in its December 2007 Remedial Investigation Report (RIR) that the River Park Site contamination is not contributing contamination to surface water quality. Sediments in the river have been slightly impacted from the site and area-wide contamination from upgradient sources. See Hazardous Materials section for more details.

The 1.7 miles upstream of the mouth of the Saw Mill River are predominantly channelized in the flume under the streets of Yonkers; however, there are several

locations within Yonkers where the Saw Mill River is open and visible for small stretches. This underground section upstream to the Yonkers water supply, which is 1.3 miles south of the City line, has a NYSDEC water quality classification of C. This is NYSDEC's second lowest designation for fresh water classification, and is defined as follows: *"The best usage of Class "C" waters is fishing. These waters shall be suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes."*

The NYSDEC has placed a warning on the consumption of American eel from this part of the Saw Mill River whereby only one eel a month is considered safe. North of the Yonkers water supply dam, the Saw Mill River's water quality classification is A/B(t). The A classification is the second highest standard for water quality and its best use is as *"a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish propagation and survival."* The B classification is not intended for drinking water but allows for *"primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival."* The (t) is a designation for trout breeding and feeding.

The daylighting projects and planned environmental remediation of the river on both the River Park and Larkin Plaza sites should have the positive effect of improving water quality in the Saw Mill River, which may improve its water quality classification long term.

(1) Protection of Waters Permit

Article 15, Title 5 of the Environmental Conservation Law (NY ECL §§ 15-0501, 15-0503, 15-0505) requires a Protection of Water permit for: (1) any activity which changes, modifies or disturbs the course, channel or bed of any stream with a water quality classification of "C" or higher; (2) the erection, construction, reconstruction or repair of any dam; or (3) the excavation or placement of fill material below the mean high water level in any of the navigable waters of the state. The New York State Department of Environmental Conservation ("DEC") can issue one single permit for one or a combination of the above referenced activities.

As noted above, the Saw Mill River's current water quality classification is C. As such, a permit will be required for any changes or modifications to the river under Article 15, Title 5. This permit is intended to prevent erosion, turbidity, irregular velocity, temperature and water levels, the loss of fish and wildlife, the destruction of natural habitat and flood pollution. As a condition of approval of the permit, the DEC may approve the manner and extent to which the channel is changed, limit the amount of material removed, and designate the area where material may be removed.

Further, any barrier which is 10 feet or less, impounds one million gallons of water or less, and the area which drains into the impoundment does not exceed one square mile, is exempt from the permitting requirements of Article 15, Title 5 for dams. 6 NYCRR §608.3(c).

The Saw Mill River is also considered "navigable", so a permit will be required for the excavation and fill activities that will be involved as part of the daylighting project.

An application for a Protection of Water permit requires a plan for the proposed project and a location map. For dams, the permit application also requires hydrological, hydraulic, and soils information, a design report, and a construction plans that details the safety aspects of the dam. In evaluating the permit application, DEC will consider several factors listed in 6 NYCRR §608.7, including but not limited to:

- the effects on aquatic, wetland and terrestrial habitats; unique and significant habitats; rare, threatened and endangered species habitats;
- water quality, including such criteria as temperature, dissolved oxygen and suspended solids;
- hydrology, including such criteria such as water velocity, depth, discharge volume, and flooding potential;
- the design and construction techniques for structures;
- operational and maintenance characteristics;
- the safe commercial and recreational use of water resources;
- the water dependent nature of a use;
- the safeguarding of life and property; and
- natural resource management objectives and values.

In order to issue the permit, the DEC must also determine pursuant to the criteria in 6 NYCRR §608.8 that the proposal: (1) is in the public interest; (2) is reasonable and necessary; (3) will not endanger the health, safety or welfare of the people of New York; and (4) will not cause unreasonable, uncontrolled or unnecessary damage to the natural resources of the state, including soil, forests, water, fish, shellfish, crustaceans and aquatic and land-related environment.

Finally, the project must receive a Water Quality Certification permit, pursuant to 6 NYCRR §608.9, which calls for a joint application with the United States Army Corps of Engineers ("USACOE"). The USACOE Clean Water Act permit is discussed in Section II of the DEIS.

The proposed daylighting of the river will meet all of the substantive requirements for an Article 15, Title 5 Protection of Water permit because it will significantly improve the environmental condition of the river, along with promoting natural resource objectives and values. Not only will the contaminated sediment in the river be remediated on the River Park Center site,

but more natural habitat and river conditions will be restored. In addition, the recreational value of the river to the public will be increased dramatically, as the daylighting will include the construction of a river promenade on the River Park Center Site and the Larkin Plaza Site. The river promenade, and flow control measures (including a permanent flume designed to accommodate high flow events, and prevent flooding) will protect the public from flooding conditions, and ensure the maintenance of the natural conditions established by the daylighting projects.

l. Woodlands/Urban Wildlife Resources and Habitat

As previously stated, the City of Yonkers is a very urbanized environment developed which provide limited wildlife habitat for terrestrial vertebrate species. The small, fragmented and isolated nature of the existing vegetated area limits habitat to all but the most adaptable of wildlife. The preferred habitable areas are limited to the existing Saw Mill River channel and park areas. The structures and buildings provide limited habitat for the area's urban wildlife. With the exception of birds, most mammals have had to adapt to being nocturnal to avoid conflicts with humans.

m. Ecological Exposure Pathways

The small areas of woodlands/urban wildlife habitat and open lengths of the Saw Mill River on the River Park Center Site were identified by PK Environmental as limited potential ecological receptors. The following is a summary of the exposure pathways as they relate to the potential ecological receptors at the River Park Center and Cacace Site. No environmental testing or an associated ecological analysis has been performed for Larkin Plaza to date.

(1) Soil

Recent soil sampling at the River Park Center site completed by SESI Consulting Engineers documents the presence of soil contamination from volatile organic compounds, semi-volatile organic compounds, metals, PCBs and pesticides. The site is presently developed and mostly impervious, which prevents direct contact with the soil by wildlife. The planned redevelopment of the site will include capping of any areas that will not be impervious, therefore preventing any potential direct contact with the contaminated soils in the future. The impervious surface also prevents surface water from infiltrating into the sites soils and provides an incomplete exposure pathway.

(2) Surface Water & Sediment

The Saw Mill River receives little direct surface stormwater sheet flow runoff from the River Park Center site, as the impervious on-site areas include a number of storm grates which redirect this stormwater to the river. Surface water and sediment sampling reveals elevated levels of contamination along the entire lower reach of the Saw Mill River. In addition, surface water sampling at the River Park Center site shows the presence of contaminants above the applicable State Water Quality Standards, however no trends in sample concentrations were observed. Sediment samples indicate the presence of

similar contaminants, however no trends in sample concentrations were observed that would indicate contaminants entering from the subject site. Surface water and sediment contamination is assumed to be from non-point source pollutants in the stormwater runoff from the entire watershed, and not directly connected to the River Park Center site.

(3) Groundwater to Surface Water

The groundwater sampling results indicates that groundwater in all the sampled monitoring wells is impacted with a combination of volatile organic compounds, semi-volatile organic compounds, PCBs and metals, at concentrations that exceed the applicable standards. Petroleum impacts, potentially associated with a gasoline station on School Street, were observed in the nearby monitoring wells. An associated contamination plume appears to follow the local groundwater flow in a westerly direction.

Chlorinated volatile organic compounds were detected primarily along the southeastern property boundary, and the CVOC concentrations are relatively low. Various metals such as arsenic, barium, beryllium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, sodium and zinc were detected in various combinations in all the monitoring wells at concentrations that exceeded the applicable standards. Most of these levels are likely due to the high turbidity of the groundwater samples that were collected.

Mercury that is associated with historic on-site operations was detected in 18 monitoring wells that are spread out throughout the site. Relatively high concentrations of lead, chromium, iron, nickel and zinc were detected in the groundwater sample associated with monitoring well MW-8. Although the groundwater elevations appear to coincide with the channel bottom elevations of the Saw Mill River, most of the groundwater flow is directed toward sections of the river that are piped, thereby preventing a pathway connection. In addition, a preliminary groundwater modeling study indicates that the flow of groundwater is very limited in volume, and therefore, the groundwater to surface water pathway is determined to be an incomplete exposure pathway at this site.

2. Anticipated Impacts and Mitigation Measures: River Park Center, Cacace Center and Larkin Plaza

a. Post-Development Stormwater Runoff

Based on the building program for the Project, an analysis of the proposed stormwater runoff conditions was performed to determine the impact of the Project on the existing City combined sewer system and to the Saw Mill River. (See Section III.D of this DEIS for further details).

To the extent possible, the drainage from the developed sites will be conveyed by new separate storm drains and discharged to the Saw Mill River to reduce the runoff to the City combined sewer system as follows:

(1) River Park Center

The runoff from the proposed development will be directed to discharge directly to the Saw Mill River. The only portions of the site that will continue to discharge to the City's combined sewers will be the property on the southeast corner of New Main Street and Palisade Avenue and the Church property along Nepperhan Avenue, which are not part of the Project. The area of runoff to the combined sewers is reduced from 3.2 acres to approximately 0.71 acres. The runoff from building and parking garages will be conveyed to outlets along the riverwalk at the site. Runoff from the pedestrian areas along the Saw Mill River will drain directly to area drains and then to the river. Water quality facilities will be sized to capture and treat 90% of the average annual stormwater runoff from site discharge points to the River. All discharges will pass through water quality structures. The River Park Center development includes the turf baseball field on the roof of the building. This will encompass approximately three acres of turf area. With the construction of the ballpark, the amount of impervious area within this portion of the Project will not increase over existing conditions.

(2) The Cacace Center

The construction in this area will be comprised of the parking garage, Fire Department Headquarters building and the office building/hotel. In order to not impact the peak stormwater discharge toward the South Broadway combined sewer, runoff from the entire garage structure will be directed to the Nepperhan Avenue and New Main Street storm drains and discharge to the Saw Mill River. The stormwater runoff to the combined sewer will be reduced

(3) Larkin Plaza

The improvements at Larkin Plaza would result in approximately 0.68 acres of impervious area, including the daylighted portion of the Saw Mill River. This represents a 44 % reduction of impervious area over the existing conditions. The stormwater quantity and quality requirements for the Project will be subject to the New York State Stormwater Management Design Manual, Chapter 9 "Redevelopment Projects." The New York State Department of Environmental Conservation criteria state that if redevelopment results in no increases of impervious area or changes to hydrology that increase the discharge rate, the ten-year and hundred-year criteria do not apply. This is true because the calculated discharge of pre-development versus post-development flows results in zero net increase in stormwater discharge. Also, the water quality requirements can be achieved if the plan proposes a reduction of impervious cover by a minimum of 25% of the existing total site impervious area. A reduction in site imperviousness will reduce the volume of stormwater runoff, thereby achieving, at least in part, stormwater criteria for both water quality and quantity. Since the Projects will result in the disturbance of more than one acre, an SWPPP will be prepared to address the above requirements and will provide for the required sediment and erosion control measures and phasing of the Project.

Since the Project (including the improvements to the Saw Mill River) will result in the disturbance of one (1) acre or more of total land area, stormwater management and erosion control measures must comply with New York State Department of Environmental Conservation State Pollution Discharge Elimination System for Discharges from Construction Activity, General Permit No. GP-02-01 (the "General Permit"). To be covered under the General Permit, the Project is required to conform with the technical standards for stormwater quantity and quality controls presented in the New York State Stormwater Management Design Manual ("DEC Design Manual"), including Chapter 9, ("Redevelopment Projects") of the DEC Design Manual. The General Permit requires the preparation of a Stormwater Pollution Prevention Plan ("SWPPP"). The SWPPP is discussed in detail in Section III.D(2)(d) of this DEIS.

The applicable NYSDEC criteria state that if redevelopment results in no increases of impervious area or changes to hydrology that increase the discharge rate, the ten-year and hundred-year storm criteria do not apply. This is true because the calculated discharge of pre-development versus post-development flows results in zero net increase in stormwater discharge. Also, the water quality requirements can be achieved if the plan proposes a reduction of impervious cover by a minimum of 25% of the existing total site impervious area. A reduction in site imperviousness will reduce the volume of stormwater runoff, thereby achieving, at least in part, stormwater criteria for both water quality and quantity.

The total impervious area will increase by approximately 1.5 acres. Runoff will be directed to water quality and underground-filtering structures prior to discharge enters the Nepperhan Avenue storm drain system and discharged to the Saw Mill River. The objective of the proposed stormwater management systems is to meet the pollutant removal goals of capturing and treating 90% of the average annual storm water runoff volumes. The Project will meet water quality objectives by the use of a combination of underground treatment and/or filtration devices, hydrodynamic devises (gravity and vortex separators) and inlets and sumps with oil hoods prior to discharge. All systems will be constructed in accordance with NYSDEC requirements and treat Project generated stormwater rather than allow for the direct discharge of particulates and pollutants to the Saw Mill River.

The minor increase in impervious area as a result of the Project and the diversion of runoff to the Saw Mill River will not increase the peak discharge in the Saw Mill River and the culver/flume to the Hudson River. The Project will not have an impact of the drainage conditions downstream or adjacent to the Project.

(4) Conclusion

Enhanced landscaping is an important element of the design that will support the Cacace Center. Waring Park will be preserved and new tree plantings and

landscaping are proposed along Nepperhan Avenue. The enhanced landscaping plan (see Section III-B) will provide new nesting and roosting sites for the area's avian species. The daylighting of the Saw Mill River and improvements to the river channel at River Park Center and Larkin Plaza would improve upon the quality of the stormwater that is discharged into the Saw Mill River. Currently, due to the extensive amount of impervious street surfaces located around the Saw Mill River, all precipitation runs overland directly unabated to the Saw Mill River, and soon after to the Hudson River. With the implementation of the Project, stormwater runoff from impermeable surfaces, such as roadways and buildings, would be directed to a stormwater management/treatment system that will be constructed in accordance with NYSDEC requirements and treat Project generated stormwater rather than allow for the direct discharge of particulates/pollutants to the Saw Mill River. A separate sanitary sewage system would be constructed for any new buildings and will not contribute to combined sewer overflows.

At the River Park Center site, all proposed structures will be situated above the 100-year flood elevation. As no building construction will occur within the floodway of the Saw Mill River, construction of the Project will not result in increased flooding in adjacent areas along the Saw Mill River/Hudson River waterfront in Yonkers.

Potential adverse effects and ecological risks to fish and wildlife resources will be unlikely from migration of constituents of potential ecologic concern. All contaminated sediments found at the Project site will be removed and managed off-site so as to not reintroduce them to the waterways and potentially expose the contaminants to aquatic species. Any significant sources of contamination will be eliminated and the Saw Mill River and its sediments cleaned to the extent practicable given the highly urbanized watershed of the river.

As discussed previously, the lower Saw Mill River has limited aquatic resources. These resources include birds, fish, and benthic organisms. The Project would not have an adverse effect on these aquatic resources, as the stormwater to be generated by the Project will meet NYSDEC water quality requirements, an improvement over existing conditions. Most species within the confluence of the Saw Mill River and Hudson River are tolerant of variations in salinity and the treated stormwater to be generated from River Park Center would not alter the levels of salinity or fresh water input beyond the ranges that these species can tolerate.

With the proposed use of native vegetation to enhance the reconstruction of the Saw Mill River combined with the proposed engineering design of the river within River Park Center and Larkin Plaza, the proposed Project will result in a beneficial impact upon the hydrology and aquatic resources of the Saw Mill River. No adverse impacts have been identified from implementing the Project as designed, and no further mitigation measures are required.

3. Existing Conditions: Palisades Point

a. Existing Vegetation and Wildlife

The Palisades Point site is located on the Hudson River waterfront, the second largest tidal estuary along the east coast that reaches from the Battery in Manhattan north to the federal dam at Troy, New York. The Project area is situated in the lower Hudson River estuary, the portion of the Hudson River extending from the Battery at the southern tip of Manhattan north to Stony Point at the northern end of Haverstraw Bay. Estuaries are among the most biologically productive areas of the world, often compared to tropical rainforests for their production and diversity of plants and animals. Municipalities within the lower reach of the Hudson River estuary include: Alpine, Edgewater, Englewood Cliffs, Fort Lee, Guttenburg, Hoboken, Jersey City, North Bergen, Tenafly, Weehawken, and West New York in New Jersey, and; Bronx, Clarkstown, Cortlandt, Greenburgh, Haverstraw, Manhattan, Mount Pleasant, Nyack, Orangetown, Ossining, Peekskill, Stony Point, and Yonkers in New York.

The following sources of mapped information were reviewed for this section of the DEIS: USGS Maps; NYSDEC Tidal Wetlands Maps; Soil Survey Maps; National Wetlands Inventory Maps, Nautical Charts, Aerial Photographs, and FEMA Maps. In addition, previous studies, environmental impact statements and resource information related to the City of Yonkers were reviewed from the following agencies and organizations: National Marine Fisheries Service including Essential Fish Habitat analysis; U.S. Fish and Wildlife Service; NYSDEC; Interstate Environmental Commission: U.S. Army Corps of Engineers; Clean Ocean Action; Natural Resources Defense Fund; and Hudson River Foundation.

(1) Existing Vegetation

The Palisades Point project site is already severely disturbed due to on-site remedial measures and stockpiles of excavated soils, and does not support significant vegetative resources. Major portions of the site are barren ground and the vegetative community is dominated by invasive species composed predominantly of ragweed *(Ambrosia artemsiifolia)* combined with goldenrod *(Solidago sps.)*, mugwort *(Artemisia vulgaris)*, and cotton wood trees *(Populus deltoids)*. There are no vegetated communities within the riprap that rings the waterward portion of the site.

(2) Hudson River Estuary

The Hudson River can be divided into salinity habitat zones based on average annual salinities: the polyhaline (high salinity – 18 to 30 ppt.) zone from Manhattan north to Yonkers; the mesohaline (moderate salinity – 5 to 18 ppt.) zone from Yonkers north to Stony Point; the oligohaline (low salinity – 0.5 to 5 ppt.) zone from Stony Point north to about Wappingers Falls; and the tidal freshwater (0 to 0.5 ppt.) zone from Wappingers Falls north to the Troy Dam. Yonkers is located on the Hudson River in an area that is at the intersection of the polyhaline/mesohaline zone boundary. However, the salinity gradient that influences these two zones vary greatly with the season, with the salt front

pushed as far south as the Tappan Zee Bridge or upper harbor during high spring flows and brackish water extending as far north as Poughkeepsie during low summer flows. The Hudson River estuary is a tidally dominated system with only an average of 10% of the total flow made up by freshwater inflows. Salinity influences the distribution and function of both plants and animals within the Hudson Estuary. The average locations of salinity zones in the Hudson River are presented in Table III. C-1. However, the location of the "salt wedge" moves up and down the Hudson River in a seasonal pattern that is correlated with freshwater inflows.

Table III. C-1
Average Locations of Salinity Zones in the Hudson River

Type of System	Zones	Approximate Geographic Locations	Salinity
Riverine	Nontidal Fresh	Hudson and Mohawk Rivers at Troy, and above head of tide tributaries	0 ppt
Estuarine	Tidal Fresh	Troy dam to about Wappinger Falls and all Hudson tributaries to head of tide	0 - 0.5 ppt
Estuarine	Oligohaline	Wappinger Falls to Stony Point	0.5 - 5.0 ppt
Estuarine	Mesohaline	Stony Point to Yonkers	5.0 - 18.0 ppt
Estuarine	Polyhaline	Yonkers to Manhattan	18.0 - 30.0 ppt
Marine	Euhaline	Manhattan seaward - Harbor Estuary	>30.0 ppt

Source: U.S. Fish and Wildlife Service, 1997

The significant habitat complex boundary for the lower Hudson River estuary follows the shores of the Hudson River from the tip of Battery Park, Manhattan, generally referred to as river mile 0, north to Stony Point at river mile 41 – Yonkers is located at approximately river mile 19. The boundary of the Hudson River's lower estuary encompasses riverine and estuarine habitats, including open water and tidal wetlands in this stretch of the river. This section of the river is the major site of river's fresh water flowing off the uplands mixing with ocean water in the Hudson Estuary, and includes the moderate and high salinity zones (mesohaline and polyhaline salinity zones, respectively) of the river.

There are two distinct sections of the river within the lower estuary. The first, from the Battery at river mile 0 to the New York-New Jersey state line at river mile 22 (Yonkers is at the higher end of this section of the Hudson River at river mile 19), is fairly narrow, with an average width of about 5,000 feet, an average depth of about 40 feet, and semi-diurnal tides of 4 to 5 feet. Most of the shoreline habitat, especially from Manhattan north to beyond Croton-on-Hudson, is extensively disturbed from industrial, commercial, and residential development. The shoreline already consists of rip rap and has been filled in substantial areas. Above Fort Lee, New Jersey, the western shoreline is dominated by a rocky shoreline at the base of the Palisades. The northern section of the lower estuary, which starts just north of Yonkers, from the state line north to Stony Point, (river mile 22 to about river mile 41) includes the Tappan Zee, and Haverstraw and Croton Bays, and is known as the wide bays region. In this section, the river is much wider (to 3.5 miles wide) and shallower

(6 to 12 feet), except for the 40-feet deep channel. In Haverstraw Bay, the channel is maintained by dredging to a depth of 32 feet.

The Hudson River at the Yonkers waterfront is a mixture of Atlantic Ocean saltwater and Hudson River freshwater. Although the lighter freshwater tends to flow over the denser saltwater, at the Yonkers waterfront, the water column is vertically stratified. As the two water systems mix in this stretch of the river, no sharp boundary between them exists, with the exception of a lightly increasing salinity at the bottom as compared to the top of the water column. The salinity varies with the stage of the tidal cycle and the volume of freshwater runoff. The water temperature varies with the seasons and volumes of freshwater and saltwater flows. This section of the Hudson is generally the zone of greatest mixing of river water and ocean water. The salt front where the ocean water and lower salinity river water meet also functions as a nutrient and plankton trap, making this zone of the river the most productive in the lower estuary with respect to supporting populations of phytoplankton and zooplankton. During periods of high freshwater flow, much of the plankton is flushed out of the river; the exception is the shallow bays that trap some of the plankton. Plankton is also carried into the lower estuary with ocean waters on flood (outgoing) tide. High turbidity in this part of the estuary may limit primary productivity, with a range of sunlight penetration from one to fifteen feet below the river's surface.

The mean tidal flow is approximately 425,000 cubic feet per second (cfs) at the Battery and freshwater flow is estimated 19,000 to 20,000 cfs for the lower Hudson River. The Hudson Estuary has a semi-diurnal tide (two high and two low tides each day). The mean tide range – the vertical distance between high and low water–is 3.7 feet and the spring range-during the new and full moons-is 4.4 feet at the Yonkers shoreline. The maximum tidal currents of the Hudson River are 1.5 nautical miles per hour (knots) on the ebb (incoming) tide and 1.4 knots on the flood (outgoing) tide.

The distribution of tidal marsh communities and plants in the Hudson River is influenced by surface water salinity; freshwater tidal marsh communities generally occur north of Newburgh-Beacon and brackish tidal marsh communities generally occur south of Newburgh-Beacon. Yonkers falls into the area that potentially supports brackish tidal marsh communities. However, there are no tidal marshes or wetlands on or adjacent to the Palisades Point site. Benthic communities vary in distribution depending on bottom water salinity, with a typically marine benthos from Stony Point south dominated by marine worms and crustacean – Yonkers is located within this reach of the benthic community. Further north, a mixture of freshwater and marine organisms are found between Stony Point and Poughkeepsie, and freshwater snails, clams, chironomids (i.e., midge/gnat), and insects are present north of Poughkeepsie.

(3) Aquatic Resources

The complete length of the Hudson River shoreline in Yonkers is mapped as tidal wetlands by the NYSDEC. The classification is "littoral zone", and is defined as all lands under tidal waters to a depth of six feet below mean low water. The value of the littoral zone can be highly variable depending upon its location and uses. The tidal wetland mapping was conducted utilizing aerial photography, and was not individually surveyed in the field by the NYSDEC. Based upon site inspections, the water depths immediately in front of the riprapped shoreline of the Palisades Point site are greater than six feet. No areas of vegetated marsh or submerged aquatic vegetation are located within the site.

The NYSDEC, the primary state regulatory agency for water quality, has designated the waters of the Hudson River at Yonkers as class SB. This water classification is for saline water and indicates that the river's best usages are *"primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival."*

The Hudson River is regionally significant as a productive estuary, and is one of only a few major tidal rivers on the North Atlantic coast of the United States. The lower Hudson River supports regionally significant fish populations, as well as populations of wintering and migratory birds, which feed on the rich fish and benthic resources. This productive estuary area is a regionally significant nursery and wintering habitat for a number of anadromous (live at sea and spawn in fresh water), catadromous (live in fresh water and spawn at sea), estuarine, and marine fish species, and is a migratory and feeding area for birds and fish that feed on the abundant fish and benthic invertebrate resources in this area. The most common anadromous fish are the striped bass *(Morone saxatilis)* and white perch *(Morone Americana)*. The lower estuary is the primary nursery and overwintering area for striped bass in the Hudson River with striped bass from the Hudson River accounting for approximately 30 to 40 percent of the total North Atlantic population. The American eel *(Anguilla rostrata)* is the most common catadromous fish species.

There are 240 species regularly using the lower Hudson River estuary, incorporating 151 bird species and 80 fish species (see Tables III. C-2 and C-3), including the following federally and state-listed species:

- Federally listed endangered:
- Peregrine falcon *(Falco peregrinus*)
- Shortnose sturgeon (Acipenser brevirostrum)
- Federally listed threatened:
- Bald eagle (Haliaeetus leucocephalus)
- Federal species of concern:
- Northern diamondback terrapin (*Malaclemys t. terrapin*)
- New York State-listed threatened:
- Osprey (Pandion haliatus)
- New York State-listed special concern animals:

- Banded sunfish (Enneacanthus obesus)

In the lower Hudson River estuary, primary production of zooplankton is moderate and populations are extremely variable; both estuarine and marine forms occur. Copepods (e.g., small crustaceans) dominate the zooplankton (e.g., microscopic aquatic animals) community; their density somewhat follows that of the phytoplankton (e.g., microscopic aquatic plants), in that it decreases with increased upriver distance from the New York - New Jersey Harbor. Meroplankton, organisms that spend only part of their life cycle as plankton (e.g., benthic invertebrate larvae and fish larvae) dominate during the summer. In the estuary, meroplankton can range in abundance from 1,000 to 400,000 individuals per cubic meter, whereas copepod abundance can range from 1 to 90 individuals per cubic meter in the estuary. Shellfish species are abundant, including northern quahog (*Mercenaria mercenaria*), soft clam (*Mya arenaria*), and eastern oyster (*Crassostrea virginica*); however, the waters are not certified for human consumption of shellfish. The predominant crustaceans include grass shrimp (*Palaemonetes* spp.), sand shrimp (*Crangon septemspinosa*) and blue crab (*Callinectes sapidus*). Early life stage blue crab larvae require high salinities and, therefore, the lower estuary is a prime adult blue crab spawning region.

Many marine spawners use the lower estuary as a nursery area as it provides an ideal habitat for the early critical life stages of these invertebrate and fish species. The lower Hudson River estuary is ranked among the most productive systems on the northern Atlantic coast for fisheries. Marine finfish that use this area include American eel (*Anguilla rostrata*), Atlantic menhaden (*Brevoortia tyrannus*), fourbeard rockling (*Enchelyopus cimbrius*), bluefish (*Pomatomus saltatrix*), weakfish (*Cynoscion regalis*), northern pipefish (*Syngnathus fuscus*) and longhorn sculpin (*Myoxocephalus octodecemspinosus*). Estuarine fish that spawn in this stretch of the Hudson River include winter flounder (*Pleuronectes americanus*), bay anchovy (*Anchoa mitchilli*), hogchoker (*Trinectes maculatus*) and mummichog (*Fundulus heteroclitus)*.

Correspondence from the National Marine Fisheries Service's (NMFS) Regional Administrator for Protected Resources notes the potential for shortnose sturgeon (federally endangered) and Atlantic sturgeon (candidate species) to be found in the waters of the Hudson River by Palisades Point. The NYSDEC Natural Heritage Program concurs with NMFS on the potential for shortnose sturgeon to be within the vicinity of the Palisades Point site during parts of the year. Any in-water construction activities will be first coordinated with NMFS and NYSDEC in relation to any required storm water and Article 15 permit activities to determine if mitigation measures or seasonal timing restrictions are needed to protect these fish resources.

The Lower Hudson River is important wintering habitat for young-of-the-year, yearling, and older striped bass between mid-November and mid-April. Striped

bass spawn upriver of Haverstraw Bay and utilize nursery areas in Haverstraw Bay and the Tappan Zee before moving downriver to overwinter, generally feeding on the abundant invertebrates found in this area. Significant numbers of yearling winter flounder also occupy this stretch of the river in the winter. The NYSDEC has conducted fish surveys of the Upper Bay of New York Harbor/Hudson River estuary and collected 23 fish species dominated by six species: bay anchovy, winter flounder, American shad (*Alosa sapidissima*), Atlantic tomcod (*Microgadus tomcod*), and alewife (*Alosa pseudoharengus*.

This stretch of the river has significant concentrations of wintering waterfowl, especially canvasback (*Aythya valisneria*), with lesser numbers of scaup (*Athya* spp.), mergansers (*Mergus* spp.), mallard (*Anas platyrhynchos*), and Canada goose (*Branta canadensis*). Bald eagles have recently been observed overwintering along the lower Hudson reach, with a roost site in the Palisades. Birds use the Hudson River as a migrating route called the Atlantic Flyway whereby the birds travel from northern breeding grounds to southern wintering areas. The Hudson estuary is essential in providing food and shelter to the migrating birds during their journey. Table III. C-2 presents the list of invertebrate species and Table III C-3 lists the vertebrate species of the Lower Hudson River Estuary that can potentially be found during varying times of the year at the Yonkers waterfront:

Table III.C-2
Lower Hudson River Estuary (Invertebrate Species)

Scientific Name	Common Name(s)
MOLLUSCA	
Crassostrea Virginica	Eastern Oyster
Mercenaria Mercenaria	Northern Quahog
Mya Arenaria	Softshell Clam
Rangia Caneuta	Atlantic Rangia
CRUSTACEA	
Callinectes Sapidus	Blue Crab
Homarus Americanus	American Lobster
MEROSTOMATA	
Limulus Poly Phemus	Horseshoe Crab

Source: U.S. Fish and Wildlife Service, 1997

Table III. C-3
Lower Hudson River Estuary (Vertebrate Species)

Scientific Name	Common Name	Scientific Name	Common Name
FISH		Ameiurus Catus	White Catfish
Labidesthes Sicculus	Brook Silverside	Ameiurus Natalis	Yellow Bullhead
Menidia Beryllina	Inland Silverside	Ameriurus Nebulosus	Brown Bullhead
Menidia Menidia	Atlantic Silverside	Tautoga Onitis	Tautog
Ichthyomyzon Unicuspis	Silver Lamprey	Tautogolabrus Adspersus	Cunner
Lampetra Appendix	American Brook Lamprey	Lophius Americanus	Goosefish
Carcharinus Obscurus	Dusky Shark	Mugil Cephalus	Striped Mullet
Mustelus Canis	Smooth Dogfish	Osmerus Mordax	Rainbow Smelt
Raja Erinacea	Little Skate	Morone Americana	White Perch
Squalus Acanthias	Spiny Dogfish	Morone Saxatilis	Striped Bass
Acipenser Brevirostrum	Shortnose Sturgeon	Perca Flavescens	Yellow Perch
Acipenser Oxyrinchus	Atlantic Sturgeon	Pleuronectes Americanus	Winter Flounder
Ammodytes Americanus	American Sandlance	Pomatomus Saltatrix	Bluefish
Opsanus Tau	Oyster Toadfish	Salmo Trutta	Brown Trout
Strongylura Marina	Atlantic Needlefish	Salvelinus Fontinalis	Brook Trout
Paralichthys Dentatus	Summer Flounder	Cynoscion Regalis	Weakfish
Scophthalmus Aquosus	Windowpane	Leiostomas Xanthurus	Spot
Acantharchus Pomotis	Mud Sunfish	Menticirrhus Saxatilis	Northern Kingfish
Enneacanthus Obesus	Banded Sunfish	Micropogonias Undulatus	Atlantic Croaker
Micropterus Dolomieu	Smallmouth Bass	Scomber Scombrus	Atlantic Mackerel
Micropterus Salmoides	Largemouth Bass	Scomberomorus Maculatus	Spanish Mackerel
Alosa Aestivalis	Blueback Herring	Centropristis Striata	Black Sea Bass
Labidesthes Sicculus	Brook Silverside	Trinectes Maculates	Hogchoker
Alosa Mediocris	Hickory Shad	Stenotomus Chrysops	Scup
Alosa Pseudoharengus	Alewife	Peprilus Triacanthus	Butterfish
Alosa Sapidissima	American Shad	Syngnathus Fuscus	Northern Pipefish
Brevoortia Tyrannus	Atlantic Menhaden	Prionotus Carolinus	Northern Searobin
Clupea Harengus	Atlantic Herring	Prionotus Evolans	Striped Searobin
Dorosoma Cepedianum	Gizzard Shad	Umbra Pygmaea	Eastern Mudminnow
Cottus Cognatus	Slimy Sculpin	**REPTILES**	
Myoxcephalus Aenaeus	Grubby Sculpin	Malaclemys T. Terrapin	Northern Diamondback Terrapin
Cyprinella Spiloptera	Spotfin Shiner	**BIRDS**	
Cyprinus Carpio	Common Carp	Podilymbus Podiceps	Pied-Billed Grebe
Hybognathus Nuchalis	Silvery Minnow	Ardea Herodias	Great Blue Heron
Notemigonus Crysoleucas	Golden Shiner	Botaurus Lentiginosus	American Bittern
Notropis Hudsonius	Spottail Shiner	Bubulcus Ibis	Cattle Egret
Pimephales Notatus	Bluntnose Minnow	Casmerodius Albus	Great Egret
Semotilus Corporalis	Fallfish	Egretta Caerulea	Little Blue Heron
Fundulus Diaphanus	Banded Killifish	Egretta Thula	Snowy Egret
Fundulus Heteroclitus	Mummichog	Egretta Tricolor	Tricolored Heron
Anchoa Hepsetus	Striped Anchovy	Ixobrychus Exilis	Least Bittern
Anchoa Mitchilli	Bay Anchovy	Nycticorax Violaceus	Yellow-Crowned Night-Heron
Esox Americanus Americanus	Redfin Pickerel	Nycticorax Nycticorax	Black-Crowned Night-Heron
Gadus Morhua	Atlantic Cod	Plegadis Falcinellus	Glossy Ibis
Merluccius Bilinearis	Silver Hake	Branta Canadensis	Canada Goose
Microgadus Tomcod	Atlantic Tomcod	Branta Bernicla	Brant
Pollachius Virens	Pollack	Chen Caerulescens	Snow Goose
Urophycis Chuss	Red Hake	Aix Sponsa	Wood Duck
Urophycis Tenuis	White Hake	Anas Acuta	Northern Pintail
Apeltes Quadracus	Fourspine Stickleback	Anas Americana	American Wigeon
Gobiosoma Bosci	Naked Goby	Anas Clypeata	Northern Shoveler
Gobiosoma Ginsburgi	Seaboard Goby	Anas Crecca	Green-Winged Teal

Scientific Name	Common Name	Scientific Name	Common Name
Anas Discors	Blue-Winged Teal	Tringa Melanoleuca	Greater Yellowlegs
Anas Platyrhynchos	Mallard	Larus Philadelphia	Bonaparte's Gull
Anas Rubripes	American Black Duck	Sterna Antillarum	Least Tern
Anas Strepera	Gadwall	Coccyzus Americanus	Yellow-Billed Cuckoo
Aythya Valisineria	Canvasback	Coccyzus Erthropthalmus	Black-Billed Cuckoo
Aythya Americana	Redhead	Asio Otus	Long-Eared Owl
Aythya Collaris	Ring-Necked Duck	Strix Varia	Barred Owl
Aythya Marila	Greater Scaup	Caprimulgus Vociferus	Whip-Poor-Will
Aythya Affinis	Lesser Scaup	Chordeiles Minor	Common Nighthawk
Bucephala Clangula	Common Goldeneye	Archilochus Colubris	Ruby-Throated Hummingbird
Bucephala Albeola	Bufflehead	Chaetura Pelagica	Chimney Swift
Clangula Hyemalis	Oldsquaw	Dryocopus Pileatus	Pileated Woodpecker
Lophodytes Cucullatus	Hooded Merganser	Sphyrapicus Varius	Yellow-Bellied Sapsucker
Mergus Merganser	Common Merganser	Contopus Virens	Eastern Wood-Pewee
Mergus Serrator	Red-Breasted Merganser	Empidonax Alnorum	Alder Flycatcher
Anas Crecca	Green-Winged Teal	Empidonax Flaviventris	Yellow-Bellied Flycatcher
Oxyura Jamaicensis	Ruddy Duck	Empidonax Minimus	Least Flycatcher
Accipiter Cooperii	Cooper's Hawk	Empidonax Traillii	Willow Flycatcher
Accipiter Gentiles	Northern Goshawk	Empidonax Virescens	Acadian Flycatcher
Accipter Striatus	Sharp-Shinned Hawk	Myiarchus Crinitus	Great Crested Flycatcher
Buteo Lineatus	Red-Shouldered Hawk	Nuttallornis Borealis	Olive-Sided Flycatcher
Buteo Lagopus	Rough-Legged Hawk	Tyrannus Tyrannus	Eastern Kingbird
Buteo Platypterus	Broad-Winged Hawk	Eremophila Alpestris	Horned Lark
Circus Cyaneus	Northern Harrier	Hirundo Pyrrhonota	Cliff Swallow
Falco Columbarius	Merlin	Progne Subis	Purple Martin
Falco Peregrinus	Peregrine Falcon	Riparia Riparia	Bank Swallow
Haliaeetus Leucocephalus	Bald Eagle	Steldidopteryx Serripennis	Northern Rough-Winged Swallow
Pandion Haliaetus	Osprey	Certhia Americana	Brown Creeper
Fulica Americana	American Coot	Cistothorus Palustris	Marsh Wren
Gallinula Chloropus	Common Moorhen	Catharus Fuscescens	Veery
Porzana Carolina	Sora	Catharus Guttatus	Hermit Thrush
Rallus Elegans	King Rail	Hylocichla Mustelina	Wood Thrush
Rallus Limicola	Virginia Rail	Polioptila Caerulea	Blue-Gray Gnatcatcher
Rallus Longirostris	Clapper Rail	Sialia Sialis	Eastern Bluebird
Charadrius Semipalmatus	Semipalmated Plover	Dumetella Carolinensis	Gray Catbird
Pluvialis Dominica	Lesser Golden-Plover	Vireo Flavifrons	Yellow-Throated Vireo
Pluvialis Squatarola	Black-Bellied Plover	Vireo Griseus	White-Eyed Vireo
Haematopus Palliatus	American Oystercatcher	Vireo Solitarius	Solitary Vireo
Arenaria Interpres	Ruddy Turnstone	Dendroica Caerulescens	Black-Throated Blue Warbler
Bartramia Longicauda	Upland Sandpiper	Dendroica Cerulea	Cerulean Warbler
Calidris Alba	Sanderling	Dendroica Coronata	Yellow-Rumped Warbler
Calidris Alpina	Dunlin	Dendroica Discolor	Prairie Warbler
Calidris Bairdii	Baird's Sandpiper	Dendroica Fusca	Blackburnian Warbler
Calidris Canutus	Red Knot	Dendroica Magnolia	Magnolia Warbler
Calidris Fuscicollis	White-Rumped Sandpiper	Dendroica Palmarum	Palm Warbler
Calidris Minutilla	Least Sandpiper	Dendroica Pensylvanica	Chestnut-Sided Warbler
Calidris Pusilla	Semipalmated Sandpiper	Dendroica Pinus	Pine Warbler
Catoptrophorus Semipalmatus	Willet	Dendroica Striata	Blackpoll Warbler
Limnodromus Griseus	Short-Billed Dowitcher	Dendroica Virens	Black-Throated Green Warbler
Limosa Fedoa	Marbled Godwit	Helmitheros Vermivorus	Worm-Eating Warbler
Limosa Haemastica	Hudsonian Godwit	Icteria Virens	Yellow-Breasted Chat
Numenius Phaeopus	Whimbrel	Mniotilta Varia	Black-And-White Warbler
Oxyura Jamaicensis	Ruddy Duck	Oporomis Philadelphia	Mourning Warbler
Tringa Flavipes	Lesser Yellowlegs	Oporornis Formosus	Kentucky Warbler

Table III. C-3
Continued

Scientific Name	Common Name
BIRDS CONTINUED	
Parula Americana	Northern Parula
Seiurus Aurocapillus	Ovenbird
Seiurus Motacilla	Louisiana Waterthrush
Seiurus Noveboracensis	Northern Waterthrush
Setophaga Ruticilla	American Redstart
Vermivora Chrysoptera	Golden-Winged Warbler
Vermivora Pinus	Blue-Winged Warbler
Vermivora Ruficapilla	Nashville Warbler
Wilsonia Canadensis	Canada Warbler
Wilsonia Citrina	Hooded Warbler
Piranga Olivacea	Scarlet Tanager
Pheucticus Ludovicianus	Rose-Breasted Grosbeak
Ammodramus Caudacutus	Sharp-Tailed Sparrow
Ammodramus Maritimus	Seaside Sparrow
Ammodramus Savannarum	Grasshopper Sparrow
Junco Hyemalis	Dark-Eyed Junco
Vireo Flavifrons	Yellow-Throated Vireo
Vireo Griseus	White-Eyed Vireo
Passerculus Sandwichensis	Savannah Sparrow
Pipilo Erythrophthalmus	Rufous-Sided Towhee
Pooecetes Gramineus	Vesper Sparrow
Zonotrichia Albicollis	White-Throated Sparrow
Dolichonyx Oryzivorus	Bobolink
Icterus Spurius	Northern Oriole
Sturnella Magna	Eastern Meadowlark
Carduelis Pinus	Pine Siskin
Carpodacus Purpureus	Purple Finch

Source: U.S. Fish and Wildlife Service, 1997

(a) Essential Fish Habitat Evaluation

Essential Fish Habitat ("EFH") is defined in the Magnuson-Stevens Fishery Management and Conservation Act as *"... those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity."* As required by the Act, the National Marine Fisheries Service ("NMFS") has promulgated regulations to provide guidance to the regional fishery management councils for EFH designation. The regulations further clarify EFH by defining *"waters"* to include: aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; *"substrate"* to include sediment, hard bottom, structures underlying the waters, and associated biological contribution to a healthy ecosystem; and *"spawning, breeding, feeding, or growth to maturity"* to cover a species' full life cycle.

The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act set forth a number of new mandates for NMFS, regional

fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The councils, with assistance from NMFS, are required to delineate EFH for all managed species. Federal agencies that fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to NMFS's recommendations. In addition, NMFS is required to comment on any state agency activities that will impact EFH. The EFH evaluation for Palisades Point follows.

The Palisades Point project site is located in the City of Yonkers on the eastern shore of the Hudson River. NMFS has designated the Hudson River in the project area to be an estuarine "mixing zone" which includes the mixing of freshwater with brackish saline waters. The NMFS designated mixing zone for the Hudson River extends from Albany to the southern tip of Manhattan with a broad range of salinities from a low of 0.5 part per trillion (ppt) to a high of 25 ppt. The Hudson River at the Yonkers waterfront is a mixture of Atlantic Ocean saltwater and Hudson River freshwater, with the lighter freshwater flowing over the denser saltwater, however, at the Yonkers waterfront the water column is vertically stratified. As the two water systems mix in this stretch of the river, no sharp boundary between them exists, with the exception of a lightly increasing salinity at the bottom as compared to the top of the water column. The salinity varies with the stage of the tidal cycle and the volume of freshwater runoff. The water temperature also varies with the seasons and volumes of freshwater and saltwater flows. This section of the Hudson River is generally the zone of greatest mixing of river water and ocean water. See Section 6(a) for further information on the distribution of the salinity gradient at the project site.

The Palisades Point project site has been designated as EFH for several species (see Table III.C-4). The managed fish species and related life history stages of concern are red hake (*Urophycis chuss*), winter flounder (*Pleuronectes americanus*), windowpane flounder (*Scopthalmus aquosus*), Atlantic herring (*Clupea harengus*), bluefish (P*omatomus saltatrix*), Atlantic butterfish (*Peprilus triacanthus*), Atlantic mackerel (*Scomber scombrus*), summer flounder (*Paralicthys dentatus*), scup (*Stenotomus chrysops*), black sea bass (*Centropristus striata*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculates*), and cobia (*Rachycentron canadum*). The life stage, habitat requirements and distribution of the designated fish species are discussed following Table III.C-4.

Table III. C-4
Summary of NMFS Designated Essential Fish Habitat (EFH) Species

Species	Scientific Name	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Red hake	Urophycis chuss		X	X	X	
Winter flounder	Pleuronectes americanus	X	X	X	X	X
Windowpane flounder	Scopthalmus aquosus	X	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			S	X	
Summer flounder	Paralicthys dentatus		X	X	X	
Scup	Stenotomus chrysops	X	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	

Source: NMFS 2007

- Red Hake (*Urophycis chuss*) - Red hake have planktonic eggs with oil globules. According to the fisheries management EFH source documents, red hake juveniles are mainly found in salinities between 23 and 33 ppt. Furthermore, dissolved oxygen (DO) levels are 5-12 mg/L and depths ranged from 20-75 feet. Red hake adults are mainly found in DO levels of 6-11 mg/L, depths of 30-70 feet and salinities of 24-31 ppt.

- Summer Flounder (*Paralicthys dentatus*) - Summer flounder have planktonic eggs with oil globules. Juvenile summer flounder are primarily located in areas with DO levels at 6-11 mg/L, depths between 10 and 70 feet and salinities ranging from 22-32 ppt. Maximum growth rate and efficiency occurs at salinities greater than 10 ppt, corresponding with these salinities where the juveniles are most abundant in estuaries. NMFS studies indicate that juveniles less than 29 cm were found in salinities greater than 16 ppt. Adult summer flounder are found mainly in DO levels of 4-12 mg/L, depth of 15-50 feet and salinities of 20-32 ppt.

- Winter Flounder (*Pleuronectes americanus*) - Winter flounder eggs are most abundant in water with salinities of 10 to 30 ppt. Eggs are demersal, sticky and are usually deposited on sandy bottoms in estuaries. Eggs hatch with abnormal larvae development at salinities less than 10 ppt with little survival. Embryos are uryhaline with best survival between salinities of 10 and 30 ppt. Winter flounder juveniles are benthic and seldom lose contact with the substrate. Most juveniles spend much of their first two years in or near shallow natal waters, where they move in response to extreme heat or cold. After metamorphosis, the juveniles prefer a substrate of sand or sand and silt. Older juveniles in estuaries gradually move seaward as they grow larger. Temperature is a less important factor in the distribution of juveniles, which tolerate higher temperatures than adults. Adult winter flounder are found predominantly in 60-140 feet of water on muddy sand, clean sand, pebbly or gravelly bottom. The adults tolerate wide ranges of salinities, temperatures and DO.

- Atlantic butterfish (*Peprilus triacanthus*) - Atlantic butterfish eggs are planktonic with oil globules. Fisheries Management Program (FMP) studies indicate juvenile populations to be most abundant in areas with a DO level of 5-12 mg/L, depths of 15-65 feet and salinities of 19-33 ppt. Adults in the same region were most abundant in DO levels of 6-12 mg/L, depths of 15-65 feet and salinities of 20-33 ppt.

- Windowpane flounder (*Scopthalmus aquosus*) - The windowpane flounder has eggs that are usually found in seawater salinities of 25 ppt or greater and are planktonic with oil globules. Juveniles are most abundantly found in DO levels of 5-12 ppt, depths of 15-50 feet and salinities of 18-33 ppt. Adults desire DO levels of 6-12 mg/L, depths of 15-45 feet and salinities of 20-33 ppt.

- Black sea bass (*Centropristus striata*) - Black sea bass eggs are planktonic with oil globules. According to FMP EFH source documents for black sea bass, juveniles are found mostly in DO levels of 5-11 mg/L, depths of 15-50 feet and salinities of 20-33 ppt. Adults are found in 5-8 mg/L DO levels, depths of 15-65 feet and salinities of 20-30 ppt. Black sea bass are migratory in the northern part of their range, which includes the New York Bight. Black sea bass move inshore and northward in spring and offshore and south in fall due to changes in temperature.

- Bluefish (*Pomatomus saltatrix)* - Bluefish eggs are planktonic with oil globules. These eggs are more buoyant than most planktonic eggs because of a larger oil globule. Larva development takes place in outer continental shelf waters, primarily within 18 feet of the surface, at temperature of 18-26°C and salinities of 30-32 ppt.. Juveniles occur in

outer continental shelf waters of the Middle Atlantic Region from April through June. As inshore waters warm, the juveniles move shoreward across the continental shelf into estuaries between Cape May and Long Island. Juveniles require temperatures higher than 10°C for survival. Juveniles and adults occupy near shore habitats as shallow as 0.05 feet. In the fall and winter most adult bluefish from Atlantic Coast stocks migrate southward and overwinter along the east coast of Florida.

- Atlantic sea herring *(Clupea harengus*) - Atlantic sea herring spawn in the vicinity of bays, estuarine and oceanic banks over rock, pebble, or gravel bottoms, but never over soft mud. They do not spawn in salinities below 31.99 ppt or above 33.0 ppt. Adults are found typically in salinities of 35 ppt.

- Scup *(Stenotomus chrysops)* - Spawning takes place from May to August, with a concentration in June. Eggs are planktonic with oil globules. Annual migrations are made to the offshore winter grounds and the inshore summer grounds. Scup prefer smooth to rock bottom, and temperatures of at least 10°C.

- King mackerel (*Scomberomorus cavalla*) - Adults are a highly migratory species that range from the South Atlantic to Mid-Atlantic Bights. King mackerel prefer sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from the surf zone to the shelf break, but from the Gulf Stream shoreward. King mackerel prefer water temperatures in excess of 20° C and salinities greater than 25 ppt. This species can also be found in high salinity bays, estuaries and seagrass habitats

- Spanish mackerel *(Scomberomorus maculatus)* - Adults are a highly migratory species that range from the South Atlantic to Mid-Atlantic Bights. Spanish mackerel prefer sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island ocean side waters from the surf zone to the shelf break, but from the Gulf Stream shoreward. Spanish mackerel prefer water temperatures in excess of 20° C and salinities greater than 30 ppt.

- Cobia (*Rachycentron canadum*) - Adults are a highly migratory species that range from the South Atlantic to Mid-Atlantic Bights. Cobia are generally found on sandy shoals of capes and offshore bars, high profile rock bottoms and barrier island/ocean side waters from the surf zone to the shelf break, but from the Gulf Stream shoreward. Cobia prefer water temperatures in excess of 20° C and salinities greater than 25 ppt.

4. Anticipated Impacts and Mitigation Measures: Palisades Point

a. Floodplain

All proposed habitable structures at Palisades Point will have the lowest habitatable floors at elevations situated one foot above the 100-year flood elevation. The publicly accessible esplanade will be within the 100-year floodplain. As no building construction will occur within the floodway of the Hudson River, construction of the Project will not result in increased flooding in adjacent areas along the Hudson River waterfront.

b. Stormwater

As discussed previously, the lower Hudson River estuary in the area of the Palisades Point site contains significant aquatic resources. These resources include birds, fish, benthic organisms, planktonic organisms and several threatened/endangered species. The proposed shoreline rehabilitation and upland development would not have an adverse effect on these aquatic resources as the stormwater to be generated from Palisades Point will be treated through new treatment systems that would meet NYSDEC requirements, an improvement over the existing condition. In addition, the rehabilitated shoreline will continue to provide habitat and food resources for fish, including juvenile striped bass. Most species within the Hudson River are tolerant of variations in salinity and the treated stormwater to be generated from Palisades Point would not alter the levels of salinity to beyond the ranges that these species can tolerate. The proposed Project is therefore not expected to result in an adverse impact upon aquatic resources, including identified EFH resources, of the Hudson River. Supporting analysis of potential impacts follows. Section 2.d in Chapter III.M *Construction Impacts* discusses short-term impacts and mitigation associated with the realignment of the Saw Mill River channel, including environmental remediation and erosion, sediment control measures mitigation measures, and sequencing of the realignment of the Saw Mill River. Discussion regarding Remedial Investigation and a Remedial Action Work Plan in cooperation with NYSDEC is provided in Chapter III.L of this DEIS.

c. Local Impacts to Fish Species

Spawning strategies are important to identifying potential impacts to the reproductive success of the local fish and shellfish species managed under the EFH program. Spawning strategies are characterized by the type of eggs produced (i.e., demersal, pelagic) and the time periods during which spawning occurs. Environmental conditions influence the number of eggs that hatch and the success of larvae that mature into adults. The predominant environmental condition in this regard is seasonal water temperature.

Most fish species spawn either demersal or planktonic eggs that hatch into larvae in one day to six weeks, depending on the species, time of year, and water temperature. Demersal eggs are laid on or buried in the bottom sediments and remain on the bottom until the larvae hatch. Very often, demersal eggs are sticky and adhere to surfaces (e.g., rocks) until larvae have hatched. As these surfaces may be located on the bottom of the marine environment, the reproductive success rate of fish that

produce demersal eggs may be lower, due to burial of eggs, than fish that produce planktonic eggs.

Most of the EFH fish species spawn planktonic eggs. Planktonic eggs float in the water column and are often referred to as buoyant. Buoyancy of eggs varies among different species and the eggs may or may not contain an oil globule. Oil globules cause eggs to be more buoyant. Neutrally buoyant eggs have a specific gravity close to that of seawater, thus, they are more readily mixed deeper into the water column by waves and other turbulence. Most planktonic eggs are found in the upper 120 to 150 feet of the water column. Eggs with oil globules are usually located in the upper 45 feet of the water column, closer to the surface than other planktonic eggs.

Water oriented construction activities (i.e., primarily the construction for the kayak/canoe launch and rejuvenation of the existing riprap for shoreline stabilization in the south way of the site) and the effects of these construction activities to the egg, larval, juvenile and adult life stages of EFH species are discussed below. The rip rap in the north half appears to be sufficient.

Egg and Larval Stages - The Palisades Point project site is not suitable for demersal egg laying fish such as the winter flounder. Winter flounder typically deposit eggs over a sandy substrate at depths of 6 to 240 feet. The predominant time frame for winter flounder to lay their eggs starts in January. The bottom of the Palisades Point project area is very soft mud predominantly composed of silts and clays with little sand. This sediment is easily resuspended due to tidal influences and/or wind or waves created by watercraft on the Hudson River. This results in covering of any demersal eggs and ultimately the non-recruitment of the winter flounder. Due to the silty/clay substrate, the Palisades Point project site is generally not deemed as preferred habitat for larvae and egg life stages of winter flounder. Nevertheless, the initial phase of the Palisades Point project, the construction activities related to the canoe/kayak launch and shoreline stabilizing riprap placement, will be scheduled so as to not adversely impact upon the winter flounder breeding period.

Bluefish, scup, butterfish, summer flounder and windowpane flounder produce planktonic eggs with oil globules. These eggs are freeloading and disperse quickly when released. In addition, these species reproduce primarily in the spring, summer and fall months. The proposed construction activities related to the canoe/kayak launch and placement of riprap will take place in the late spring to early summer months, resulting in minimal impacts to the eggs and larvae of these species, as they are free floating and will not likely congregate at the project site.

Juveniles and Adults - Juvenile and adult stages of the EFH species found on or in close proximity to the Palisades Point project site are highly mobile. Winter flounder in particular tend to congregate in the Hudson River Estuary starting in November. Fish species in the immediate canoe/kayak launch and riprap construction area will relocate unharmed to surrounding areas. Once the canoe/kayak launch and riprap construction activities are completed, the habitat will not be disturbed any further.

Therefore, juvenile and adult fish will not be negatively impacted as result of the canoe/kayak launch and riprap construction activities.

Benthic Prey Species and Shellfish - Prey species in the waters surrounding the Palisades Point project area are mainly comprised of polychaetes, oligochaetes and amphipods. Species in the footprint of the canoe/kayak launch and riprap construction area will be displaced. After the initial construction period, recolonization of the benthic prey species from the adjacent areas to the Palisades Point project site is anticipated to occur quickly. In addition, the enhanced riprap shoreline will provide new vertical habitat within the water column upon which invertebrate encrusting organisms can colonize and provide new food resources for EFH species. Colonization of the new riprap will be determined by larval recruitment and immigration of mobile demersal and pelagic species from adjacent areas.

d. Regional Impacts to Fish Species

The proposed construction of Palisades Point will be local in scope. Therefore, no direct regional impacts will occur.

e. Other Impacts to Fish Species

The overall Palisades Point project area is the site of an existing riprapped shoreline, an adjacent port facility (the American Sugar Refinery) to the south and an existing mooring facility further to the north that is scheduled to start providing ferry service in the middle of 2007.

Fishery studies conducted in the Hudson River by the Army Corps of Engineers in the 1980s found that the majority of fish were found in inter-pier areas as opposed to open water shallows. Since these studies, a majority of dilapidated piers and pile fields in the region have been removed, resulting in the loss of this inter-pier habitat for many species of fish. The combination of the existing port facilities to the north and south of the Palisades Point project site maintains the EFH benefits of inter-pier habitat.

Although striped bass have not been designated as an EFH species, it is an important migratory species of the Hudson River estuary system. Striped bass tend to concentrate in interpier areas, especially the young of the year that over winter in the Hudson River. The existing adjacent pile supported structures to the north and south of the Palisades Point project site provides an extensive inter-pier habitat favorable for the striped bass. The proposed Project will not affect the existing inter-pier habitat favored by over wintering striped bass and EFH species.

f. Impacts to Endangered Species

NMFS and NYSDEC have documented shortnose sturgeon *(Acipenser brevirostrum)* as occurring in the Hudson River from the northern end of Staten Island (river mile (rm) –3.5) to the Troy Lock and Dam in Albany (rm 154). The Palisades Point project is proposed at approximately rm 19, within the documented range of shortnose sturgeon, albeit at the southern range for its habitat found in the Hudson River. In

addition, NMFS has listed the Atlantic sturgeon *(Acipenser oxyrinchus)* as a candidate species for protection. As a candidate species, the Atlantic sturgeon do not receive any substantial or procedural protection under the Endangered Species Act; however, NMFS recommends that proponents of projects consider implementing conservation measures to limit the potential for adversely affecting this species. Based upon NMFS's best available scientific information on the Atlantic sturgeon, a reproductive population is located in the Hudson River, with the historical spawning grounds occurring near Hyde Park (rm 130) and Catskill (rm 182).

Some populations of shortnose sturgeon are considered anadromous in that the adults typically live in the ocean, but leave the ocean and migrate upstream into fresh water where they spawn. The adults then either die or migrate back to the ocean. The Hudson River shortnose sturgeon population is more correctly termed amphidromous in that shortnose sturgeon utilizes discrete habitats within a freshwater system for feeding and spawning. Shortnose sturgeons are bottom feeders and feed on a variety of organisms. Using their barbels to locate food and extendable mouths to then vacuum it up, they feed mainly on benthic invertebrates, such as clams, crustaceans, worms, aquatic insect larvae, crayfish, snails, shrimp and smaller fishes.

Concentrations of shortnose sturgeon are found near Kingston (rm 87) for the over wintering period from late fall to early spring. In mid-April, reproductively active adults begin a rapid migration upstream to their Hudson River spawning grounds that extend from the Troy Lock and Dam in Albany (rm 154) to Coxsackie (rm 148-118). Spawning adults remain in this reach of the Hudson River from late April through May after which they quickly disperse to their summer range further down river from rm 24 to rm 94. Juveniles and non-spawning adults occupy the region of Haverstraw Bay (rm 34-39) by late fall and early winter and are distributed throughout the mid-river area, similar to spawning adults, during the summer. Recently, shortnose sturgeons have been documented below the Tappan Zee Bridge (rm 27) from July through December.

Shortnose sturgeons have been documented primarily in freshwater (salinity of 0 to .49 ppt), but a small percentage has been captured in the oligohaline zone (salinity of .5 to 2.9 ppt). In general, shortnose sturgeons are not found in salinities above 1.5 ppt. The Hudson River in the vicinity of the Palisades Point project has salinities that range from a low of 5.0 ppt during a flood event to a high of 25 ppt during drought conditions.

As such, due to the salinity concentrations at the Palisades Point project site, and the documented historic range of the shortnose sturgeon, there is a low potential for shortnose sturgeons to be found in the vicinity of Palisades Point. With the breeding areas of shortnose sturgeon being in the upper Hudson River, there is no potential to impact upon breeding areas. When conditions (salinity and time of year) are within the range for the shortnose sturgeon to survive at the Palisades Point project site (i.e., high concentrations of fresh water flow (flood event) in the Hudson River that drives back the salt wedge) they may potentially be found for a short period of time at the

project site. However, due to the normal range of salinity concentrations at the project site, and the historic range of the shortnose sturgeon, there is a low potential for shortnose sturgeon to be found in the vicinity of the Palisades Point project site.

Once water related construction activities are completed, including the placement of new riprap to rejuvenate the shoreline and the construction of the canoe/kayak launch area, the substrate in the Hudson River waters fronting Palisades Point will continue to provide the food resources that are preferred by the shortnose sturgeon. The proposed construction of Palisades Point is therefore not likely to jeopardize the shortnose sturgeon or result in the destruction or adverse modification of its critical habitat.

g. Summary

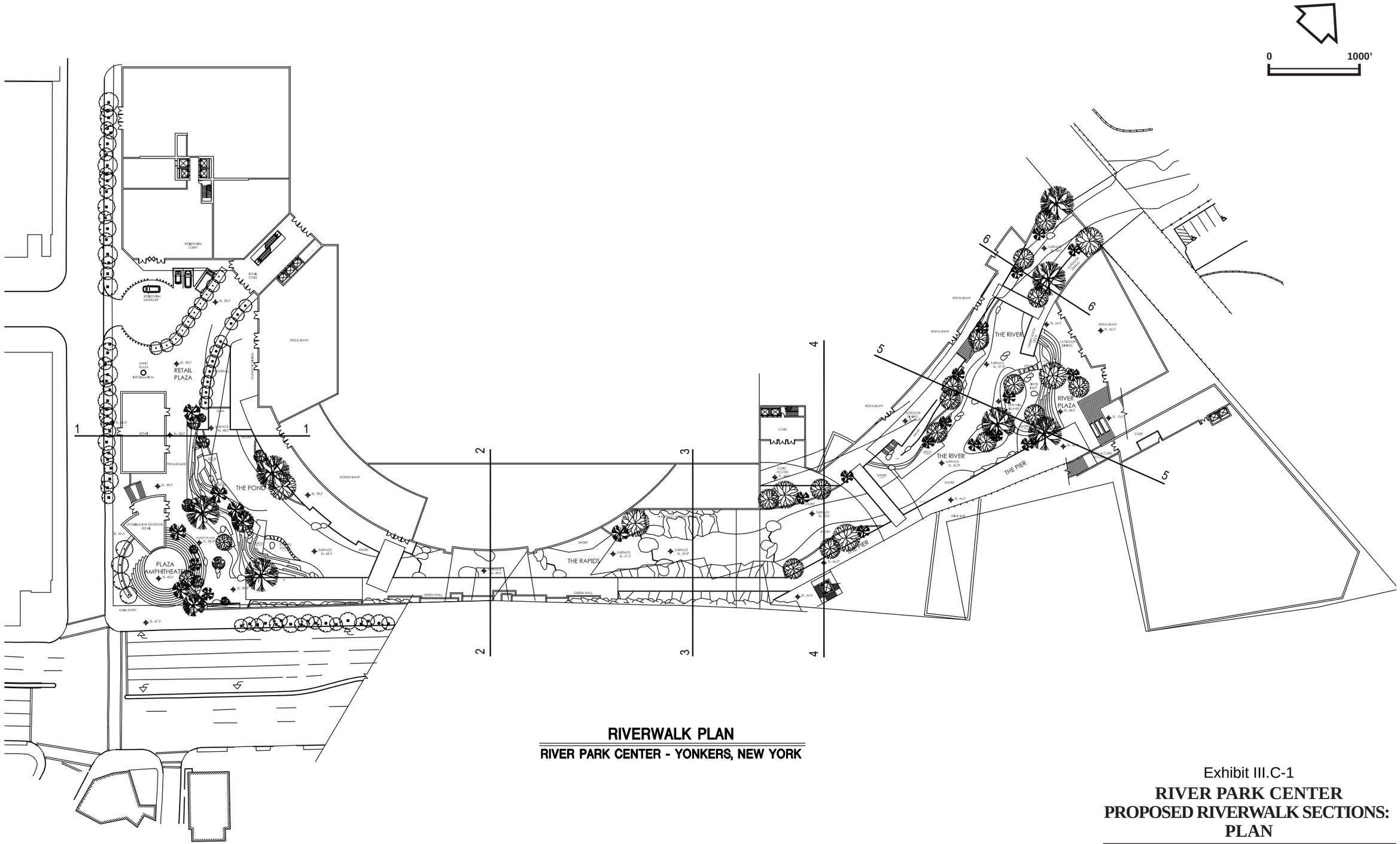
In evaluating EFH impacts, it is necessary to address fish life cycles by using the five stages of life that include: egg; larval; juvenile; adult; and spawning adults. Juvenile and adult life stages are usually highly mobile and able to retreat during disturbances. This also allows for a quick repopulation of a project site once construction activities are completed as fish are likely to return when disturbances cease. Egg and larval stages are the most often impacted life stages due to their lack of mobility.

The redevelopment/construction of the Palisades Point project site is planned to provide enhanced food resources and habitat for EFH species, especially from the new riprap that will stabilize and rejuvenate the shoreline. The waters of the Hudson River that front the site are not generally considered suitable for demersal egg laying fish such as the winter flounder. Winter flounder typically deposit eggs over a sandy substrate at depths of 6 to 240 feet. The project site is subject to strong currents and the bottom of the Hudson River in the area is composed of very soft mud, predominantly silts and clays with very little sand, and is not deemed as preferred habitat for the larvae and egg life stages of winter flounder. This sediment is easily resuspended due to wind, waves or currents created by watercraft and tidal influence on the Hudson River. The continued resuspension of these fine sediments results in the sediments covering of any demersal eggs and ultimately the non-recruitment of the winter flounder. Juvenile and adult fish species in the immediate construction area are capable of relocating unharmed to surrounding areas. The proposed construction/redevelopment activities will be local and should not adversely impact the breeding period or eggs (if present) of winter flounder.

The proposed supplemental riprap will provide new vertical structures that will in turn provide a larger surface area for the recruitment of encrusting organisms, thus providing an enhanced food source for many EFH species. The existing mooring structures to the north and south of the project site will not be impacted by the proposed redevelopment/construction activities and will continue to provide over wintering habitat for striped bass and winter flounder. In addition, the proposed shoreline rehabilitation activities are not likely to jeopardize the shortnose sturgeon or result in the destruction or adverse modification of its critical habitat.

The development of Palisades Point will improve the quality of the stormwater that is discharged into the Hudson River. Currently, all precipitation either percolates into the ground and reaches the Hudson River via a subsurface route, or runs directly unabated to the Hudson River. With the implementation of the Project, impermeable surfaces, such as roadways and buildings, will limit infiltration of the precipitation. To prevent flooding of the uplands and minimize pollutants reaching the Hudson River, a stormwater management/treatment system will be constructed in accordance with NYSDEC requirements to limit the discharge of particulates/pollutants to the Hudson River. A separate sanitary sewage system would be constructed and will not contribute to combined sewer overflows and thereby not contribute pollutant loads to the Hudson River.

The proposed Project is not expected to have an adverse effect upon the hydrology of the Hudson River, nor will the Project have an adverse impact upon the existing aquatic resources, including EFH resources. With proposed improvements that will manage stormwater discharges in accordance with NYSDEC requirements, the quality of water discharged to the Hudson River will be improved over existing conditions. No adverse impacts have been identified from implementing the Project as designed, and no further mitigation measures are required.



RIVERWALK PLAN

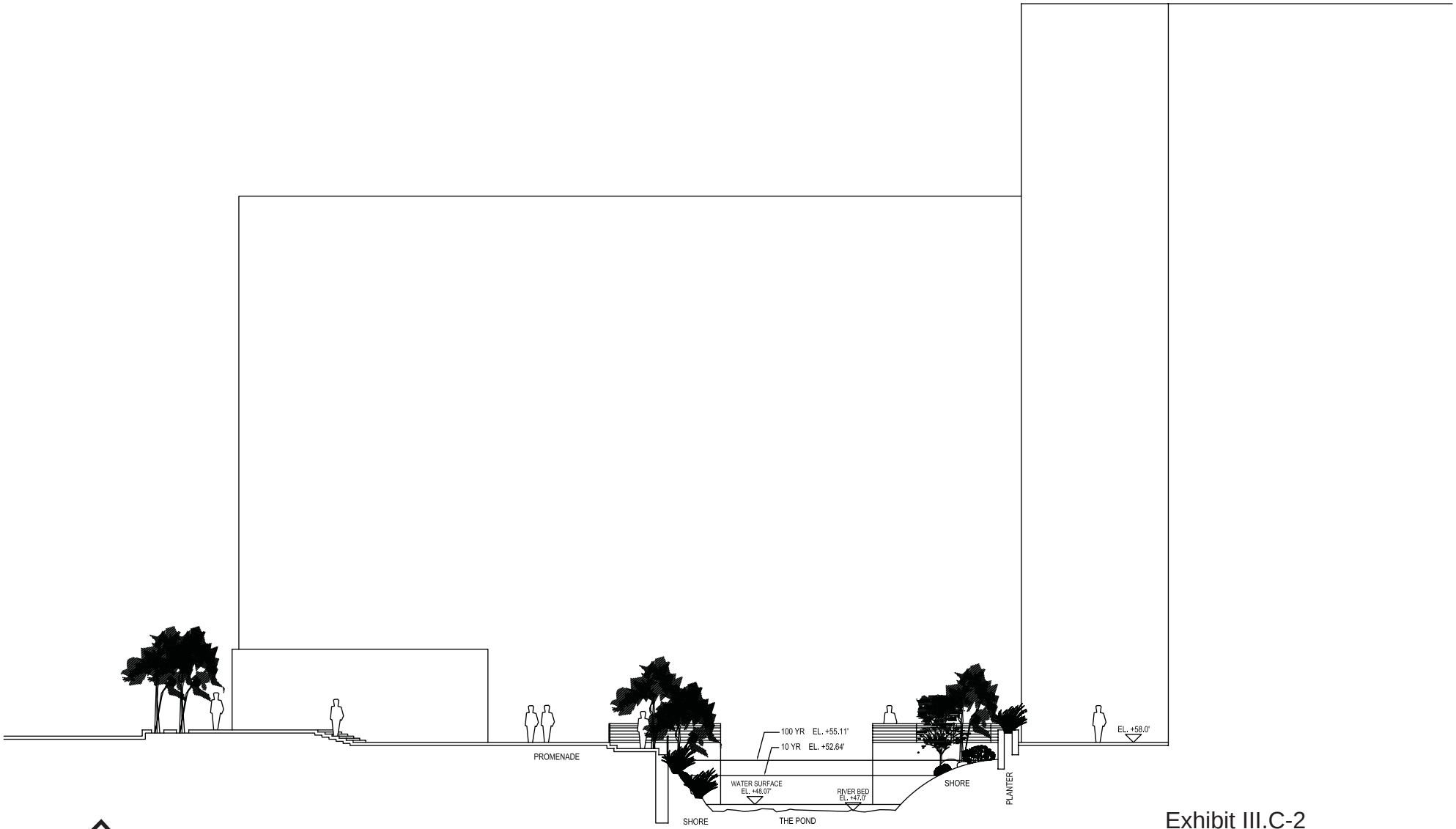
RIVER PARK CENTER - YONKERS, NEW YORK

Exhibit III.C-1

RIVER PARK CENTER
PROPOSED RIVERWALK SECTIONS: PLAN

SFC PHASE I PROJECTS

STRUEVER FIDELCO CAPPELLI LLC



SECTION 1-1

RIVER PARK CENTER - YONKERS, NEW YORK

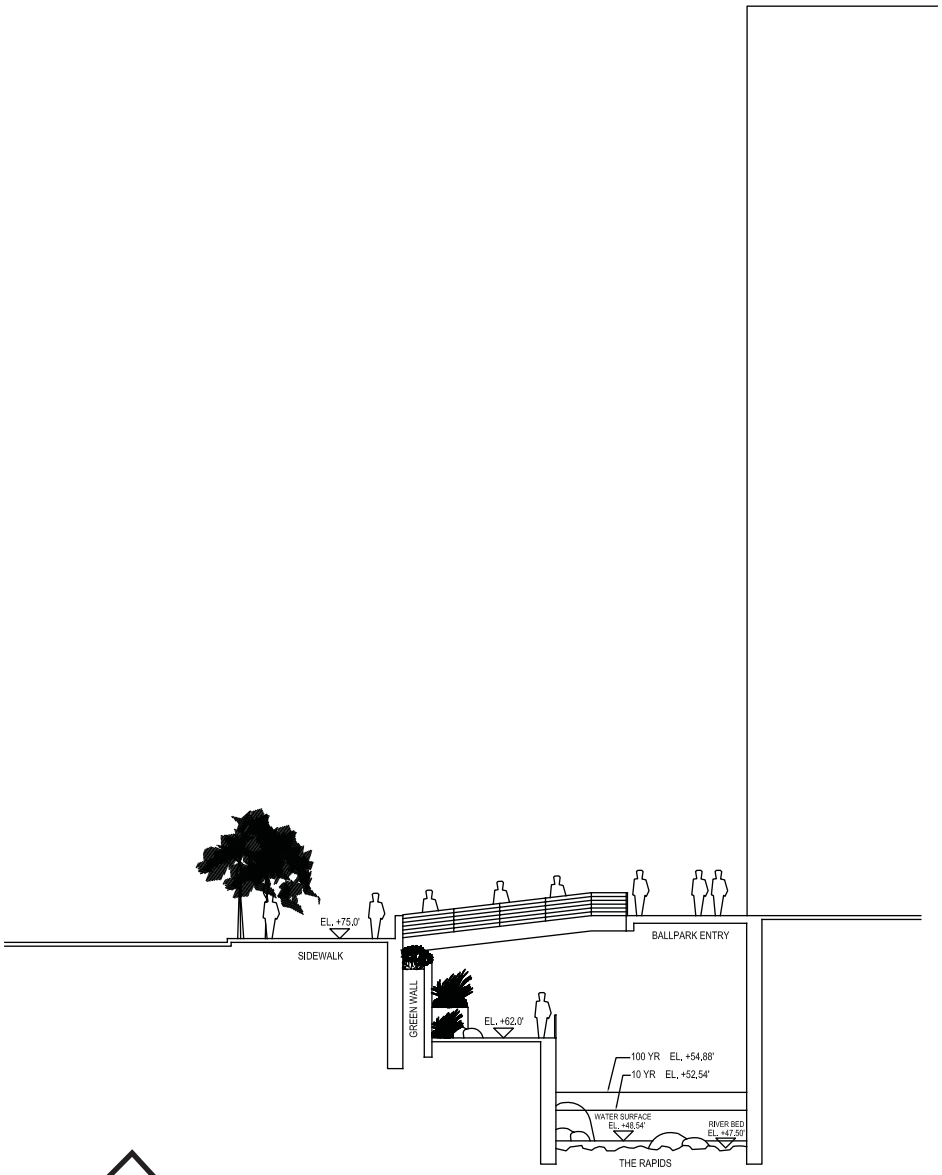
0 200'

Exhibit III.C-2

RIVER PARK CENTER PROPOSED RIVERWALK SECTIONS: SECTION 1

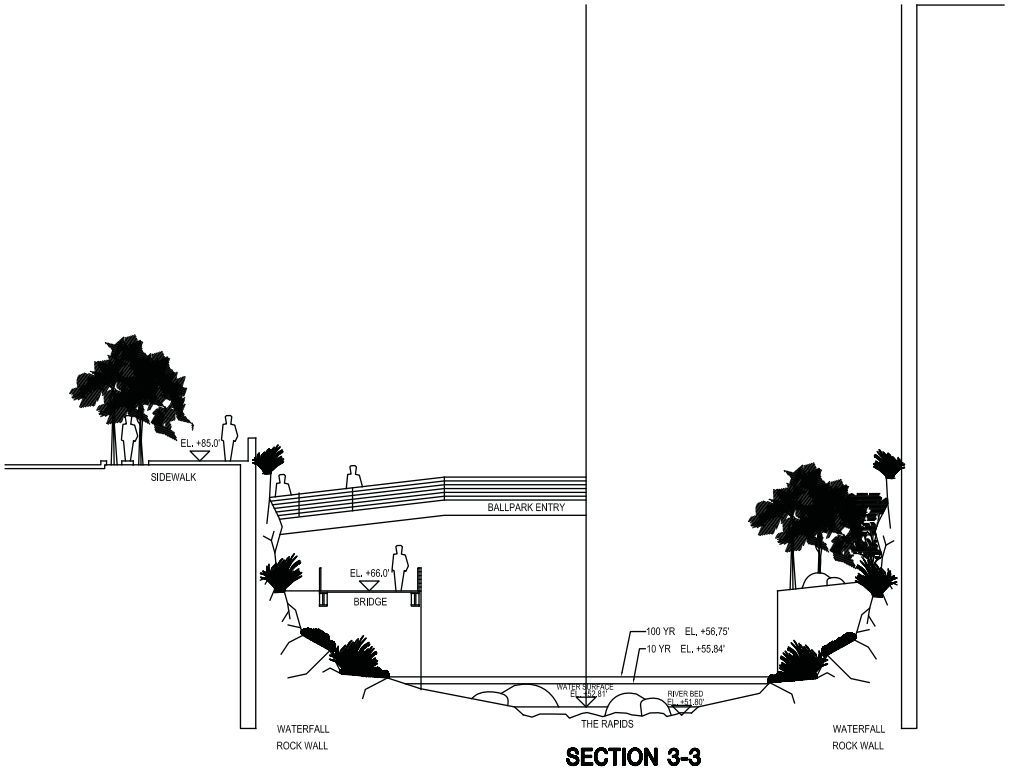
SFC PHASE I PROJECTS

STRUEVER FIDELCO CAPPELLI LLC



SECTION 2-2

RIVER PARK CENTER - YONKERS, NEW YORK



SECTION 3-3

RIVER PARK CENTER - YONKERS, NEW YORK

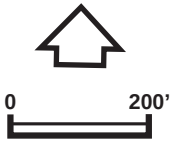
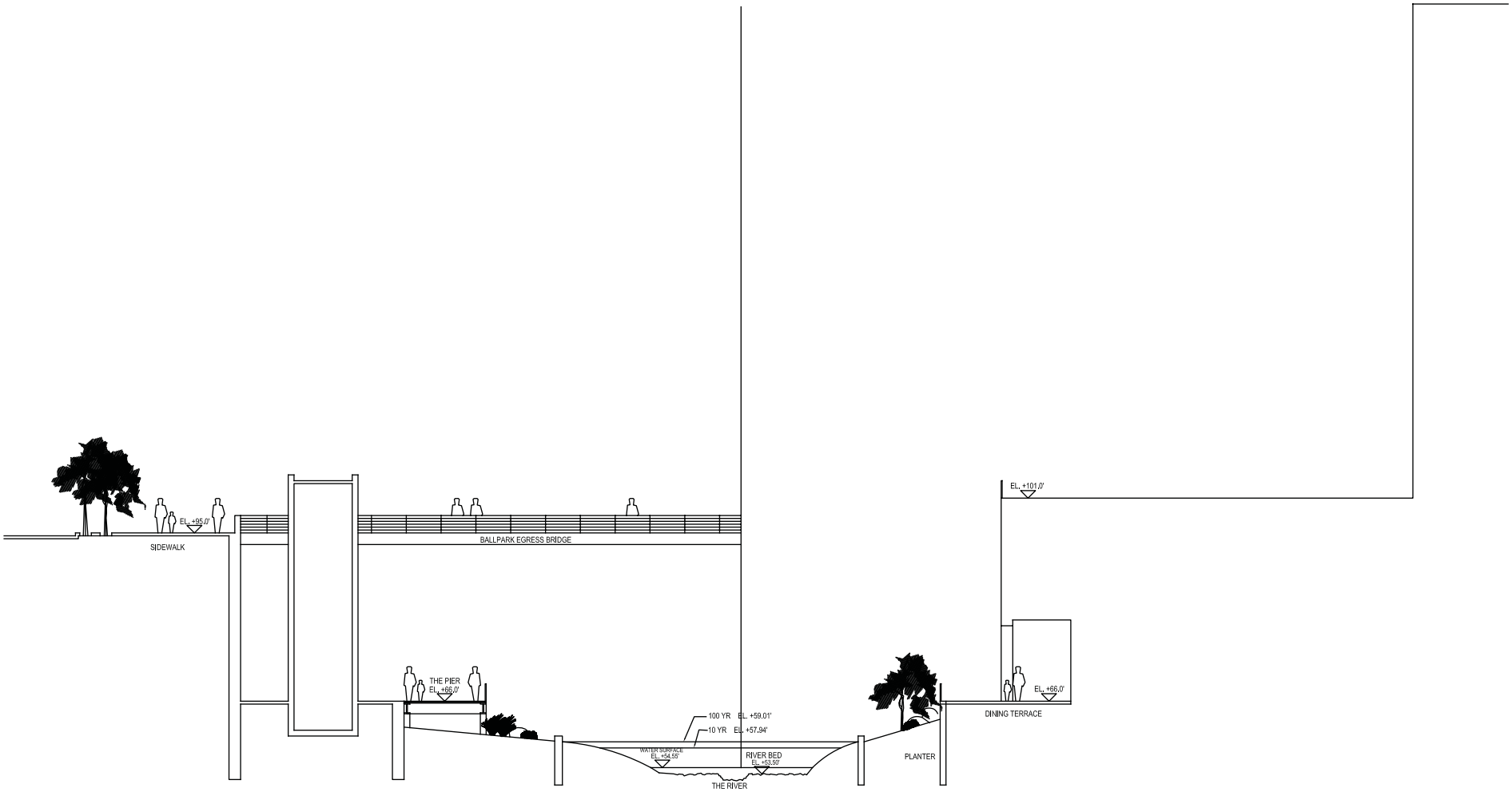


Exhibit III.C-3

RIVER PARK CENTER
PROPOSED RIVERWALK SECTIONS: SECTION 2 AND 3

SFC PHASE I PROJECTS

STRUEVER FIDELCO CAPPELLI LLC



SECTION 4-4

RIVER PARK CENTER - YONKERS, NEW YORK

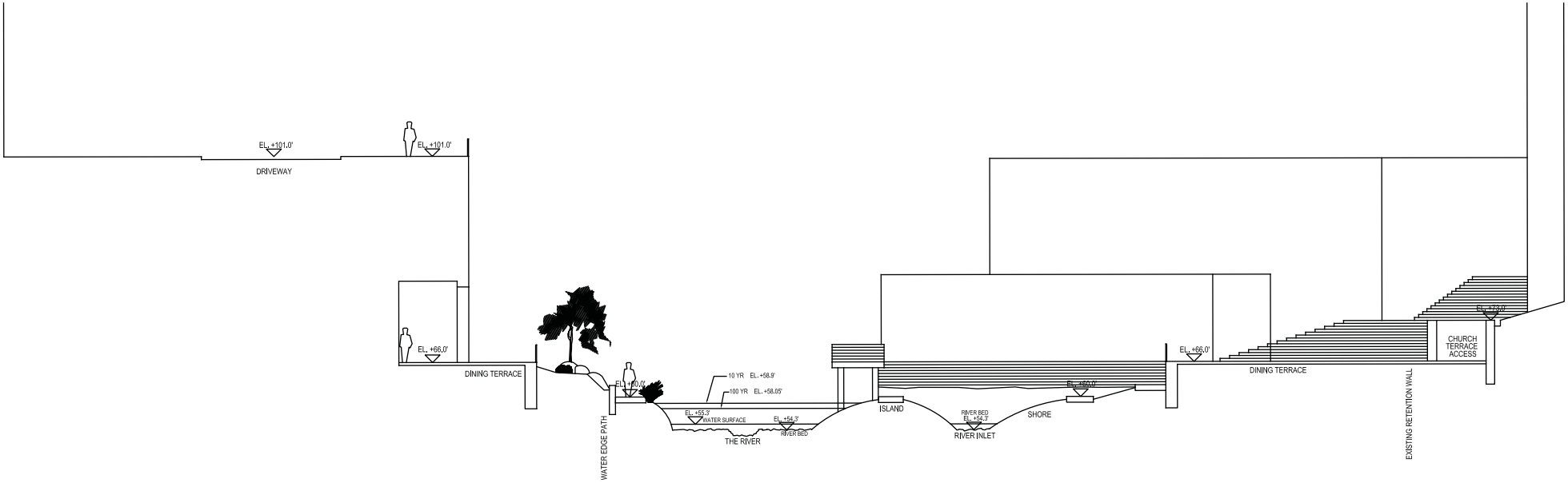
0 200'

Exhibit III.C-4

RIVER PARK CENTER
PROPOSED RIVERWALK SECTIONS: SECTION 4

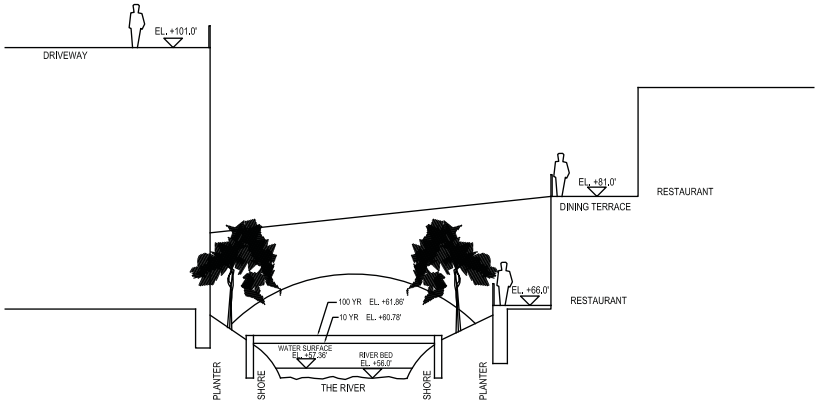
SFC PHASE I PROJECTS

STRUEVER FIDELCO CAPPELLI LLC



SECTION 5-5

RIVER PARK CENTER - YONKERS, NEW YORK



SECTION 6-6

RIVER PARK CENTER - YONKERS, NEW YORK

0 200'

Exhibit III.C-5

RIVER PARK CENTER PROPOSED RIVERWALK SECTIONS: SECTION 5 AND 6

SFC PHASE I PROJECTS

STRUEVER FIDELCO CAPPELLI LLC