

5.0 Alternatives

This chapter describes and considers alternatives to the Proposed Project. Alternatives selected for consideration in an Environmental Impact Statement (EIS) are generally those that are feasible and have the potential to reduce, eliminate, or avoid adverse impacts of a proposed project while meeting the goals and objectives of the project. In addition to a comparative impact analysis, the alternatives in this chapter are assessed to determine to what extent they would meet the goals and objectives of the Proposed Project.

This chapter considers three alternatives:

- A No Action Alternative
- Design Alternatives, including
 - Pump Station Location Alternatives
- A No Unmitigated Significant Adverse Impact Alternative

The No Action Alternative is required by the State Environmental Quality Review Act (SEQRA) and City Environmental Quality Review (CEQR) and is intended to provide the lead and involved agencies with an assessment of the expected environmental consequences of no action on their part. Under the No Action Alternative (considered in the technical analyses of this EIS as the No Action Condition), there would be no discretionary actions requiring environmental review. There would be no coastal storm protection system installed in the Project Area and, as a result, the Protected Area would remain at risk of flooding from rainfall and storm surges during major storm events.

Design Alternatives were considered during development of the Proposed Project. This chapter presents a summary of the options that were evaluated and either accepted for incorporation into the Proposed Project or rejected.

A No Unmitigated Significant Adverse Impact Alternative is also considered. In order to identify the No Unmitigated Significant Adverse Impact Alternative, the unavoidable impacts identified for the Proposed Project are considered to determine the avoidance measures that would be required for the different types of impacts. The Proposed Project would result in unmitigated or potentially unmitigated significant adverse impacts temporarily during the construction phase, due to construction activity impacts on open space, transportation, noise, and neighborhood character. The No Unmitigated Significant Adverse Impact Alternative examines changes to the Proposed Project and/or the construction thereof specifically to avoid the unmitigated significant adverse impacts associated with the Proposed Project. Overall, in order to eliminate all significant adverse impacts, the Proposed Project would have to be modified to a point where the principal goals and objectives would not be realized.

5.0.1 NO ACTION ALTERNATIVE

The No Action Alternative assumes that the Proposed Project would not be constructed. In the absence of the Proposed Project, the Protected Area would remain at risk from storm surges during major storm events. BPCA is undertaking the repair and upgrade of drainage systems within Rockefeller Park, independent of the Proposed Project, which would be the only project in the Project Area in the future No Action Alternative. The No Action Alternative would not meet the Proposed Project goals of providing comprehensive coastal flood protection for the Protected Area. During a storm event, the Protected Area would experience significant flood risk and potential impacts to human health and safety, as well as damage to property and assets within Battery Park City and the surrounding areas.

5.0.1.1 Land Use, Zoning and Public Policy

Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to land use, zoning, or public policy.

However, unlike the Proposed Project, with the No Action Alternative, none of the proposed coastal storm protection systems would be installed in the Project Area. Therefore, the existing land uses within the Protected Area—including residences, open spaces, institutions, and businesses—would remain at risk from storm surges during major storm events. Overall, the No Action Alternative would not meet the Proposed Project goals of providing comprehensive coastal flood protection for the Protected Area. During a design coastal storm event, the Protected Area would experience significant flood risks and potential impacts to human health and safety, as well as damage to property and assets within Battery Park City and the surrounding areas.

With either the Proposed Project or the No Action Alternative, current land use and development trends are expected to continue, with background projects expected to be completed by the 2030 analysis year.

5.0.1.2 Open Space

Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to open space. With the No Action Alternative, there would be no changes to the open space resources in the Project Area, although there are several park redevelopment projects planned within the Study Area, including the South Battery Park City Resiliency Project, the Battery Park Underpass and West Street Underpass Project and The Battery Coastal Resilience Project. As noted above, an independent project is also planned that will improve drainage conditions within Rockefeller Park.

With the Proposed Project, the overall acreage and availability of open space resources within the Project Area would remain largely unchanged, with the exception of Reach 2 expanding the northern stretch of the Battery Park City Esplanade. Unlike conditions with the No Action Alternative, implementation of the flood protection measures of the Proposed Project would support the protection of existing open space resources in the Protected Area that would otherwise continue to be subject to storm flooding.

5.0.1.3 Historic and Cultural Resources

Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to archaeology. With the No Action Alternative, there would be no ground disturbance that could affect resources. With the Proposed Project, a Phase 1B Archaeological Investigation will be conducted to confirm the presence or absence of archaeological resources, and the study will be completed in consultation with the New York State Historic Preservation Office (SHPO) and New York City Landmarks Preservation Commission (LPC), as well as Section 106 Consulting Parties (including Indigenous Nations). With the completion of the Phase 1B Archaeological Investigation and all subsequent analyses determined necessary, the Proposed Project would not result in any significant adverse impacts on archaeological resources.

The No Action Alternative would not involve construction of new built elements and would not have an adverse impact on historic resources. The Proposed Project would not have an adverse impact on identified resources including South Cove, the Shearwater, New York World Telegram Building, Barclay-Vesey Building (New York City Landmark [NYCL], State and National Register [S/NR]-listed), 90 West Street (NYCL, S/NR), Lamppost 79 (NYCL), and the Hudson River Bulkhead (S/NR-eligible). Pursuant to Section 106 and Section 14.09 procedures, as part of the Proposed Project the Battery Park City Authority (BPCA), in consultation with LPC and SHPO, would develop and implement construction protection plans (CPPs) to ensure protection of historic resources within 90 feet of construction activities.

5.0.1.4 Urban Design and Visual Resources

Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to urban design and visual resources.

Unlike the Proposed Project, the No Action Alternative would not add new design elements to the area, such as the floodwall and closure structures, which would be new features to the public realm installed in locations where there are existing fences and walls or adjacent to building façades. The No Action Alternative would not require the removal of trees such that there would be the temporary adverse effect associated with implementation of the Proposed Project. However, that effect would be lessened through transplanting existing trees where possible and planting new trees throughout the Project Area.

Either the No Action Alternative or the Proposed Project would maintain the visual connectivity between the waterfront, the adjacent inland portions of Battery Park City, and from the neighborhoods east of Route 9A/West Street. While segments of the floodwall could extend into certain view corridors with the Proposed Project, views to the waterfront would be maintained. In other views, the visual experience with the Proposed Project would be the same as or similar to the No Action Alternative.

5.0.1.5 Natural Resources

Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to natural resources.

The effects of the No Action Alternative or the Proposed Project on groundwater would be minimal and would not adversely affect groundwater resources. However, the Proposed Project's flood barrier system's below-grade system of cut-off walls would provide protection from elevated groundwater during a design storm event, which would not be realized with the No Action Alternative.

The No Action Alternative would not require any of the in-water work necessary to implement the Proposed Project, including new piles, construction of precast concrete and sheet pile seepage barriers, concrete bridging structures, and placement of low permeability clean fill. With this alternative, there would be no loss of benthic habitat and water column as a result of new coverage. However, with the Proposed Project, there would be a minimal loss of New York State Department of Environmental Conservation (NYSDEC) littoral zone tidal wetlands, although that loss would be offset using off-site compensatory mitigation (which would not be needed with the No Action Alternative). The Proposed Project also may include potential in-water ecological enhancements on the bulkhead and existing and proposed piles within Reaches 2, 4, and 6, and some ecological enhancements in Reach 7 as well. With these measures and standard best management practices, the Proposed Project—like the No Action Alternative—would not result in significant adverse impacts to NYSDEC littoral zone tidal wetlands.

With the No Action Alternative, improvements to stormwater management, including increased storage capacity and the implementation of green infrastructure, would not be implemented to minimize the potential effects of stormwater runoff on water quality and aquatic resources. Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to aquatic biota due to increased shading or loss of benthic habitat and water column. The proposed widening of the Reach 2 platform, which would provide future flexibility and adaptability for protective and resiliency measures with the Proposed Project, would not be built with the No Action Alternative.

The excavation or displacement of sediment in Reach 5 required for the installation of the bridging structures with the Proposed Project would not be required with the No Action Alternative, but in either case there would not be significant adverse impacts to benthic habitat. Dissolved oxygen levels when the Proposed Project's bridging structures are closed would not result in significant adverse impacts to aquatic habitat or Waters of the U.S. when compared to the No Action Condition.

Neither the No Action Alternative nor the Proposed Project would result in significant adverse impacts to aquatic biota, water quality, or sediment quality, and would not result in significant adverse impacts to aquatic habitat, including those associated with designated Essential Fish Habitat (EFH) or the defining characteristics of the Lower Hudson Reach Significant Coastal Fish and Wildlife Habitat (SCFWH) or the Hudson River Park Estuarine Sanctuary.

For terrestrial resources, the Proposed Project includes a number of measures—including replacement and transplanting trees, shrubs and herbaceous plants—designed to enhance the diversity of ecological communities within the Project Area and benefit terrestrial resources within the Study Area. With these measures in place the Proposed Project, like the No Action Alternative, would not result in adverse impacts to terrestrial resources. Similarly, neither the No Action Alternative nor the Proposed Project would have a significant adverse impact on threatened, endangered, or special concern species.

5.0.1.6 Hazardous Materials

Neither the No Action Alternative nor the Proposed Project would result in any significant adverse impacts with respect to contaminated or hazardous materials.

Unlike the Proposed Action, the No Action Alternative does not include the dredging of sediment or the disturbance of upland areas. Therefore, there is little or no potential for hazardous materials impacts. The No Action Alternative would not require sediment sampling and analysis, a project-specific Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP), Stormwater Pollution Prevention Plan (SWPPP), or any other plans or measures developed to prevent erosion and sediment run-off and to minimize potential health and safety hazards and exposure during construction.

5.0.1.7 Water and Sewer Infrastructure

Under the No Action Alternative, unlike conditions with the Proposed Project, no flood barrier system would be installed, nor would there be any upgrades in the existing sewer infrastructure within the Project Area. During a design coastal storm event, the Protected Area would experience significant flood risk and potential impacts to human health and safety as well as damage to property and assets within Battery Park City and the surrounding areas. While the No Action Alternative is not anticipated to result in significant adverse impacts, unlike conditions with the Proposed Project, flooding risk within the Protected Area is expected to worsen and there would be the potential for significant adverse impacts to water and sewer infrastructure.

5.0.1.8 Transportation

Neither the No Action Alternative nor the Proposed Project would result in any significant adverse transportation impacts, as they would not generate any new trips, reduce traffic capacity, displace any on-street parking, adversely affect the two-way bikeway along Route 9A/West Street, or result in any significant adverse impacts on pedestrian elements or shared pedestrian and bicycle facilities.

5.0.1.9 Greenhouse Gas Emissions and Climate Change

Neither the No Action Alternative nor the Proposed Project would introduce any buildings or other uses with energy demands or transportation needs that would generate substantial greenhouse gas emissions.

The No Action Alternative would not respond to anticipated climate change. As noted above, unlike the Proposed Project, with the No Action Alternative none of the proposed coastal storm protection systems would be installed in the Project Area. Uses within the Protected Area would remain at risk from storm surges during major storm events. Overall, the No Action Alternative would not meet the Proposed Project goals of providing comprehensive coastal flood protection for the Protected Area. During a design coastal storm event, the Protected Area would experience significant flood risks and potential impacts to human health and safety as well as damage to property and assets within Battery Park City and the surrounding areas.

5.0.1.10 Neighborhood Character

Neither the No Action Alternative nor the Proposed Project would adversely alter defining features of the neighborhood or result in a significant adverse impact or a combination of impacts that would adversely impact neighborhood character. However, with the No Action Alternative, no new comprehensive coastal protection system would be installed in the Project Area. Therefore, during a coastal storm event, the Project Area that would otherwise be protected under the Proposed Project would experience coastal flooding and damage.

5.0.1.11 Construction**Open Space**

As described in Chapter 3.11, “Construction,” the Proposed Project is expected to require construction that would occur over a 5-year period and would result in a temporary, significant adverse open space impact. Unlike the Proposed Project, the No Action Alternative would not require the temporary closure of open spaces or the construction activities associated with the Proposed Project. Therefore, the No Action Alternative would not result in construction-related significant adverse open space impacts identified for the Proposed Project.

Natural Resources

Neither the No Action Alternative nor the Proposed Project, as described in Chapter 3.11, “Construction,” would result in construction-related impacts to natural resources, including groundwater, floodplains, wetlands, aquatic resources, terrestrial resources, threatened and endangered species, and sensitive habitats.

Transportation

Unlike the Proposed Project, the No Action Alternative would not result in any construction in the Project Area. There would be no increase in truck and worker related traffic due to construction, nor would there be any required temporary roadway or sidewalk narrowing and/or closures. As described in detail in Chapter 3.11, “Construction,” significant impacts were conservatively based on a 66-month construction schedule. Traffic and pedestrian volumes at pedestrian elements previously analyzed would decrease with the current schedule and 2027 peak analysis year, with the exception of Route 9A/West Street and North Moore Street which would increase by up to 13 passenger car equivalent trips per hour, as described further in Chapter 3.11, “Construction.” Under the 66-month construction schedule, from traffic due to construction worker and truck activity and Maintenance and Protection of Traffic (MPT) measures, there would be two significantly impacted intersections during the construction weekday AM peak hour, four intersections during the construction weekday PM peak hour, and one intersection during the commuter AM/PM and Saturday peak hour. Under the 66-month construction schedule, due to MPT measures, there would be five significantly impacted pedestrian elements (two sidewalks/walkways, one corner, and two crosswalks). There may be temporary unmitigatable significant adverse traffic and pedestrian impacts throughout the 7-month Early Works Package (EWP) and temporary unmitigated significant adverse

effects on pedestrians and bicyclists throughout the duration of the construction schedule due to pedestrian and cyclist diversions from closed open spaces. The No Action Alternative would not result in these construction-related significant adverse transportation impacts identified for the Proposed Project.

Air Quality

Unlike the Proposed Project, the No Action Alternative would not require the use of construction equipment or vehicles that have the potential to affect mobile source and stationary source air quality. As with the Proposed Project, the No Action Alternative would not result in significant adverse construction-related air quality impacts.

Greenhouse Gases

The total fossil fuel use in all forms associated with construction of the Proposed Project would result in up to approximately 40,385 metric tons of CO₂e emissions. These emissions would not occur with the No Action Alternative. Potential measures for further reductions of emissions from construction of the Proposed Project are under consideration and may include the use of biodiesel, expanded use of recycled steel and aluminum, as well as expanded construction waste reduction.

Noise and Vibration

Based on the projected construction activities associated with the Proposed Project, receptors adjacent to construction work areas would experience construction noise levels of a magnitude and duration that would constitute a temporary significant adverse impact. These significant adverse impacts would not occur with the No Action Alternative, since it is assumed that there would be no major sustained construction and that noise levels would remain largely unchanged. With respect to vibration, construction activities with the Proposed Project may produce noticeable vibration, but this would only be experienced for limited periods of time at certain locations and would not result in a significant adverse impact. Therefore, neither the Proposed Project nor the No Action Alternative would result in significant adverse vibration impacts.

Neighborhood Character

Unlike the Proposed Project, the No Action Alternative would not result in any construction in the Project Area. There would be no changes to the defining features (i.e., land use, socioeconomic conditions, open spaces, historic and cultural resources, urban design and visual setting, transportation features, and ambient noise) of the neighborhood character during the construction period. As discussed in Chapter 3.11, "Construction," the Proposed Project would have significant adverse open space, traffic, and noise impacts during the construction period that would result in significant adverse neighborhood impacts during construction. The No Action Alternative would not result in these construction-related significant adverse neighborhood impacts identified for the Proposed Project.

5.0.2 Design Alternatives

5.0.2.1 OVERVIEW

This section provides an overview of the design considerations and options that were considered and that led to developing the Proposed Project. Generally, the design of the proposed project considered two alignments—inboard and outboard. The Proposed Project is a hybrid of both approaches.

The inboard and outboard alignments are described below, followed by additional information for design options that were developed and either chosen for implementation as part of the Proposed Project or rejected in favor of design options that were ultimately chosen for implementation.

Although many of the flood barrier system design options that were evaluated for each reach were considered practicable from a constructability standpoint, those that have been chosen for incorporation into Proposed Project best meet the Project's Purpose and Need and overall community objectives, while also resulting in the least impact to regulated marine resources and other natural, cultural, and built features that comprise the Project Area.

Some of the key criteria that were considered during development and refinement of the design options for each reach included the following:

- **Preservation of Existing Infrastructure:** For areas involving existing platform replacement, retain piers and piles that support the existing Esplanade wherever practical to minimize in-water disturbance and to maintain the current functions and values they provide relative to aquatic habitat.
- **Minimizing Impact on Aquatic Species:** In addition to retaining existing piles in place where feasible, provide for continued tidal exchange and unimpeded fish passage in areas where the Port Authority Trans-Hudson (PATH) tunnels are located within Reach 5.
- **Minimizing Construction Footprint Impacts:** Minimize the number and size of piles required to support reconstructed platforms, the area of in-water disturbance and water column displacement associated with the flood barrier system and its foundation, and the footprint of disturbance related to the PATH bridging structures (Reach 5) to the greatest extent possible while meeting engineering and Federal Emergency Management Agency (FEMA) regulatory and design certification criteria.
- **Safeguarding Access to Critical Infrastructure:** Preserve the functionality and connectivity of existing access to buildings, utilities, and other critical infrastructure currently located within the Proposed Project area.
- **Consideration of Climate Change:** Develop an adaptable design that fully integrates the projected increase in the frequency and intensity of precipitation and coastal storm events as well as extreme temperature fluctuations.
- **Adaptability and Flexibility:** Develop a system that is adaptable to future sea-level rise projections/scenarios and increased wave action/intensity.
- **Monitoring and Maintenance:** Ensure the continued future effectiveness of the flood barrier system.

Inboard Alignment Scenario

The objective of the Inboard Alignment's Flood Protection scenario was to provide flood protection along the most upland location from the water's edge. This alignment would include an upland portion that begins along the west side of Greenwich Street in Reach 1, following along the south sidewalk of North Moore Street, and crossing Route 9A (West Street) south of Harrison Street. In Reach 2, at Battery Park City's North Esplanade, the Inboard Alignment would involve in-place reconstruction, without modification of width. Turning southward this alignment would generally follow the existing BPCA retaining wall that frames the interior edge of Rockefeller Park, thereby minimizing park modifications in Reach 3. In Reach 4, this alignment would reconstruct the waterfront platform at the location of the Ferry Terminal. Within the North Cove in Reach 5, this alternative would be aligned along the upland terraces of the plaza to be integrated with the existing plaza platform and would cross the two PATH tunnels which would require special subsurface bridging structures and sluice gates. Continuing along the South Esplanade, in Reach 6 this alignment would replace the existing privacy walls with the goal of maximizing the preservation of existing trees and minimizing changes to the Esplanade, to the extent feasible. In Reach 7, South Neighborhood, the system would be integrated with the existing elevated sidewalks and privacy walls along the eastern edge of the cove. The alternative generally would minimize regulatory approvals resulting in a lower cost and shorter construction period as compared to the outboard approach (described below) with less modification of existing open spaces and urban design features and a lesser impact on existing view corridors; however, this alignment also would provide the least protection of the existing waterfront open spaces.

Outboard Alignment Scenario

The Outboard Alignment Flood Protection scenario would provide flood protection nearer to the water's edge and increased modification of existing open spaces. In Reach 1, this alignment would include a similar point of origin along the west side of Greenwich Street, and then follow an alignment along Chambers Street, crossing Route 9A/West Street between Greenwich and Harrison Streets. This alignment would not provide coastal flood protection for areas south of North Moore or Harrison Streets, which are included in the Inboard Alternative. Under this alignment in Reach 2, the North Esplanade would be reconstructed and expanded, providing for future adaptability as well as additional public space for pedestrian, vehicular and bicycle access. Continuing southward to Reach 3, the flood barrier alignment would run through the center of Rockefeller Park, with the flood protection wall installed beneath a partially raised and reconstructed park. Within Belvedere Plaza in Reach 4, the flood protection would require reconstructing the waterfront platform with a temporary relocation of the Ferry Terminal. In Reach 5, Brookfield Place, the flood barrier system would be outboard, extending along the marina breakwater with a barge gate to be deployed at the entrance. This alignment would also cross the two PATH tunnels with special subsurface bridging structures and sluice gates. In the South Esplanade in Reach 6, the flood protection would be co-located with a reconstructed and raised Esplanade structure. Only one alignment was considered for Reach 7 due this reach's geographical constraints, and would be comprised of elevated sidewalks and privacy walls along the eastern edge of the cove.

This alternative generally would increase the area of BPCA assets receiving protection including open space resources and public art installations; however, it would also require more in-water work and increases the duration of temporary closure of public open space during construction. It would also result in more permanent alterations to existing open space resources. While this alternative would also be expected to have greater costs and construction duration, upon completion, it could increase the opportunity for new public space programming, amenities and accessways. This alignment would also eliminate the need for deployable structures in some reaches with the opportunity to provide in-water ecological features.

5.0.2.2 Design Options Evaluated

Reach 2 Design Options

Two design options were considered for Reach 2.

Reach 2—Platform Reconstruction

This design option would involve in-place reconstruction of the Battery Park City North Esplanade without changing its width. Reconstructing the existing platform in-place within the existing footprint would reduce the available space for landscaping and visual screening from the adjacent Tribeca Pointe building and Stuyvesant High School. The width of the existing North Esplanade platform is 40 feet, with approximately 50-percent devoted to access (approximately 15-foot width for pedestrians and bicyclists with a five (5)-foot width for waterfront seating, canopy, and egress from Stuyvesant High School) and 50-percent (5,600 square feet [sf]) devoted to green space that includes trees. The new flood barrier system requires approximately three (3) feet of the total width of the existing 40-foot deck surface (floodwall thickness plus some minimal clearance from the high school and Tribeca Pointe buildings), which would be approximately 8-percent of the 40-foot platform width under Alternative 2.A. Additional clearance would need to be allocated for building vents at Tribeca Pointe. As such, the flood barrier system would account for approximately 12-percent of the total existing 40-foot deck width at Tribeca Pointe.

Reconstructing the North Esplanade within the existing footprint falls short in terms of planning and preparing for future challenges posed by climate change. Platform reconstruction without increasing its existing width would not provide enough space for the future construction of an outboard parapet wall as an adaptation to further protect the Esplanade from dynamic climate change conditions. This could potentially leave the Esplanade vulnerable to severe weather events beyond the project planning horizon. An outboard parapet wall would take up critical space on the Esplanade thereby restricting travel (bike/emergency access) through this highly travelled area. For these reasons, this alternative was eliminated from further consideration.

Reach 2—Platform Reconstruction and Expansion

Under this design option, which was selected for implementation as part of the Proposed Project, the flood barrier system would be positioned as close to Stuyvesant High School as is feasible. This configuration ensures a comprehensive and secure flood protection measure while respecting the

constraints posed by the high school's building foundation footings and the need to preserve the existing bulkhead. A new North Esplanade would be reconstructed on top of the existing North Esplanade platform with existing piles remaining in place as requested by NYSDEC, and the new platform would be expanded six feet northward.

This northward expansion creates an enduring structure that has additional structural capacity to provide flexibility and adaptability for a future project (e.g., adding a parapet wall) that could be built on top of the new platform if additional wave attenuation becomes necessary due to dynamic climate and sea level conditions—without the need to replace the full platform. This future project could involve constructing a solid parapet wall along the platform edge and a recurve could be installed on top of the parapet wall for additional wave attenuation. This provides for future adaptability, particularly within this complex Reach 2 region, which poses the most significant challenges for flood barrier system reconstruction within the entire Study Area. This option would create capacity for future construction, taking into account the escalating frequency of wave overtopping driven by climate change.

Additionally, the design of this extension includes rounding out the corners of the platform at its eastern and westernmost ends, thereby enhancing access along this heavily travelled stretch of the Esplanade to fully accommodate all movements, including New York City Fire Department (FDNY) access during an emergency. Rounding the corners also alleviates existing choke points and enhances overall pedestrian and bicycle circulation through the area.

While this design would increase overwater coverage of aquatic areas compared to a no-expansion design, it would not result in significant adverse impacts to natural resources or operational impacts on the use of the waters within Hudson River Park as a mooring field for recreational vessels.

This design option was chosen and incorporated into the Proposed Project because the increased platform width would allow for future adaptability with the addition of an outboard parapet wall and better overall pedestrian and bicycle circulation along this heavily travelled section of the Esplanade. This is especially important during emergencies when egress from Stuyvesant High School and along the Esplanade must occur with utmost safety and efficiency.

Reach 4 Design Options

A total of four design options were considered for Reach 4.

Reach 4—Platform Reconstruction and Permanent Ferry Terminal Relocation

This option would replace the existing platform with a new elevated platform with integrated flood defense components and would permanently relocate the Port Authority of New York and New Jersey (PANYNJ) Ferry Terminal north of its existing location, closer to residential buildings and the playground. Alternative 4.A would require the relocation of the Ferry Terminal on a permanent basis and would require the redesign of existing assets such as the playground and Lily Pond. While the permanent Ferry Terminal relocation would increase noise and foot traffic near homes and the playground, the Esplanade area adjacent to the relocated terminal would be wider, decreasing foot traffic congestion.

This design option was eliminated from further consideration due to regulatory constraints, including leasing agreements and legislation. Relocation of the Ferry Terminal is also limited by the location of twin water intakes for multiple buildings that make up the Brookfield Place complex. These intakes are located slightly north of North Cove and require water that is not impacted or compromised by prop-wash which could occur from ferry vessel traffic if the Ferry Terminal were to be relocated south of its current location to allow full platform reconstruction.

Reach 4—Platform Reconstruction and Temporary Ferry Terminal Relocation

This design option would temporarily relocate the Ferry Terminal to the north to the same location as described above. After construction is complete, the Ferry Terminal would be moved back to its existing location. While this alignment avoids permanent impacts to residential buildings and the playground compared to the permanent relocation option, it also requires considerably more construction effort (and increased construction cost and time) to move the Ferry Terminal twice—before and after construction. This design option would not address congestion resulting from the currently constrained area by the Ferry Terminal. Ultimately, this option, with temporary Ferry Terminal relocation to the north, was also eliminated from further consideration due to the same technical and regulatory constraints as identified above for option involving the permanent relocation of the Ferry Terminal.

Reach 4—Updated Design Alternative

Under this design there would be a building-integrated flood barrier system that would not involve any platform reconstruction (and therefore no in-water work). While this design would improve upon existing deployable systems currently implemented at 300 Vesey Street, it was eliminated from further consideration due to concerns about the ability to meet FEMA standards and achieve accreditation by FEMA. In addition to concerns regarding the existing building foundations' and structural components' capacity for flood loading, this alternative would incorporate entire buildings into the flood barrier system, requiring agreements with building owners for operation and maintenance to meet the current FEMA maintenance and access standards.

Reach 4—Platform Reconstruction (Revised)

This design option would replace the existing platform with a new elevated platform with integrated flood defense components without involving temporary relocation of the Ferry Terminal. This revised design would involve full platform replacement with small areas of partial platform replacement to the north and south of the building at 300 Vesey. It would be implemented in different phases during construction to allow for continuous operation of the Ferry Terminal, which was a key concern voiced by community members and PANYNJ. The new platform would be constructed above the existing platform at a higher elevation while retaining existing piles. However, installation of new piles is required to support the increased load. These new piles have been configured to minimize in-water impacts to the greatest extent feasible. Platform reconstruction in this area is the only practicable flood defense option that meets FEMA standards.

This design option was selected for incorporation into the Proposed Project based on an evaluation of several key factors (such as minimizing in-water impacts and creation of a new elevated platform with integrated flood defense components without involving temporary relocation of the Ferry Terminal) and would present improvements to the queuing and pedestrian flow south of the Ferry Terminal. BPCA has been coordinating with the PANYNJ on the design relative to its implication on the Ferry Terminal operations. The flood barrier system alignment optimizes the movement of ferry passengers in the area south of the terminal, thereby improving the overall efficiency and experience for those using the ferry services. This improvement in queuing and pedestrian flow is crucial for providing a smooth and seamless transit experience, particularly in a bustling transportation hub like this Ferry Terminal.

Reach 5 Design Options

Three design options were considered for Reach 5.

Reach 5—Upland Plaza

This design would include an upland plaza alignment that integrates the flood barrier system and elevated platforms within the various plazas encompassing the Marina. Avoiding the existing underground World Trade Center pumphouse in Kowsky Plaza and avoiding encroachment upon waters of the U.S. beyond the existing platform within the North Cove marina, while also providing the PANYNJ with the required spanning of the North and South PATH tunnels (to avoid adding loads above the tunnels), would necessitate locating the flood wall alignment within sections of the existing platform. To avoid encroachment into the marina and provide a structure spanning (bridging) the South PATH tunnel that complies with all PANYNJ requirements, including distance of supporting piles from the PATH tunnels, would require locating part of the bridging structure beneath Pumphouse Park.

The flood barrier system alignment crosses perpendicular to the North and South PATH tunnels with special bridging structures that will be hidden below the decking of Belvedere Plaza. The design of these bridging structures incorporates butterfly valves that can be operated and closed from the surface during storm surges to prevent the open waters over and adjacent to the PATH tunnels from becoming a flooding pathway. During normal conditions (no storm surge), these special structures will allow the continued tidal flushing of the open water areas located above and adjacent to the PATH tunnels that extend eastward below the platform to Route 9A/West Street. The tidal flushing dynamics associated with the butterfly valves have been demonstrated in the hydraulic studies that were conducted for this alternative. The upland alignment enables a lower flood barrier system height, due to the natural wave attenuation as storm waves move inland. The design and location of the bridging structure spanning the south PATH tunnel would encroach slightly on Pumphouse Park. While this would have an adverse impact on Pumphouse Park, it avoids placement of the PATH South tunnel bridging structure partly within the North Cove marina. The upland alignment at the PATH South tunnel, therefore, offers several advantages, including minimizing visual impacts, avoiding adverse impacts on the recreational use of the North Cove marina, and above all, avoids filling open waters in the marina that are west of the existing edge of the Esplanade platform.

Considering these key benefits, this design option for Reach 5 has been chosen for incorporation into the Proposed Project. The alignment and design allow for a flood barrier system wall height with reduced visual/aesthetic impacts, lower operation and maintenance costs, less impact on regulated federal and state waters and aquatic habitats from isolation of waters during a flood event, and lower overall construction costs.

Reach 5—Barge Gate

This design option is an outboard (waterward) alignment that would use the existing North Cove marina breakwater as the western location of the flood barrier system. This design has the advantage of requiring much less disruption of the North Cove Plaza areas during construction. However, it also presents several important and significant disadvantages. Foremost, the outboard alignment would isolate tidal exchange within regulated federal and state waters; the area isolated under this alternative would be measurably greater than the Proposed Project. This impact would occur for a limited time when gates would be closed during a storm event and for brief periods during testing as part of the flood barrier system operation and maintenance plan. This would result in significant adverse environmental impacts to the tidal areas located landward of the tidal gates. Secondly, the water depth increases rapidly near the waterfront, necessitating a much greater vertical extent of fill for piles to support the flood barrier system compared to the Proposed Project. Along the breakwater, the water depth is almost 40 feet. The gate required for this opening would substantially increase the cost of construction, operation, and maintenance of the flood barrier system compared to the Proposed Project. Lastly, placing the flood barrier system at the western edge of the marina would require a higher structure to minimize wave overtopping, leading to greater visual impacts on views of the Hudson River from Belvedere Plaza compared to the Proposed Project.

Overall, due to potential environmental impacts, increased construction costs, and negative effects on existing views, this option was eliminated from further consideration.

Reach 5—Mid-Marina

This option is a variation of the outboard alignment. The Mid-Marina alternative utilizes the lower water depth within the marina (generally less than 20 feet) by placing the flood barrier system alignment across the water within the Marina. This approach allows for smaller and less costly gate options compared to the Barge Gate design. By positioning one gate over each PATH tunnel, these gates can serve dual purposes as both flood barriers and bridging structures for the flood barrier system across the tunnels. Additionally, a pedestrian path could be created along the top of this alignment to improve foot traffic/flow on the Battery Park City Esplanade and North Cove Plaza. However, the primary disadvantage of this alternative is that it would require either reducing the size of the Marina or completely repurposing it. The alignment would still involve considerable in-water work and would result in the isolation of more federal and state regulated waters and aquatic habitat than the Proposed Project. This option would also negatively impact the recreational use of these waters within the North Cove Marina.

Overall, the Proposed Project offers significant advantages in terms of construction, cost-effectiveness, aesthetics, and environmental considerations. For these reasons, this Mid-Marina variation of the outboard alignment was dismissed from further consideration.

Reach 6 Design Options

Three design options were considered for Reach 6.

Reach 6—Privacy Wall

This alternative would replace the privacy walls that run along most of the reach, allowing the flood barrier system to be installed at the edge of the existing relieving platform without the need for its replacement. The only exception is a short stretch in front of the Gateway Plaza Apartments, where the cantilevered design of one building (375 South End Avenue) mandates a section of platform reconstruction, leading to an unavoidable in-water impact. To minimize platform reconstruction and in-water fill, this design strategically positions the flood barrier system along the privacy walls and landward of the existing relieving platform. However, this alignment encounters a unique challenge when reaching the segment adjacent to the Gateway Plaza Apartments. In this specific area, the absence of available space between the building and the relieving platform, mainly due to the cantilevered design, poses a significant constraint.

The decision to place the flood barrier system in its proposed location underwent a thorough evaluation process that considered several critical factors. These factors, which were assessed and evaluated by the design team in conjunction with BPCA, included the building's dimensions and weight, the load-bearing capacity of the foundations, and potential logistical hurdles that might arise if the flood barrier system were to be positioned in closer proximity to the Gateway Plaza building. These logistical challenges included issues related to limited space or restricted access during construction. Furthermore, the location of the flood barrier system wall was further constrained by existing maintenance easements, which stipulate a mandatory minimum requirement of 10 feet of space adjacent to the building. This requirement served as a crucial parameter that guided the precise placement of the flood barrier system. By adopting this alignment of the flood barrier system, the filling of federal and state waters in this area is greatly minimized when compared to the other two design options for Reach 6 described below.

Reach 6—Platform Reconstruction and Elevation

This design option would replace all of the existing relieving platform within Reach 6 in order to install the flood barrier system alignment farther away from the waterfront buildings, thus minimizing visual impacts on their private yards. However, there are significant drawbacks to this option. Due to the limited width of the South Esplanade in this reach, large portions of the Battery Park City South Esplanade would need to be closed off during construction. The progressive replacement of sections of the relieving platform would necessitate rerouting pedestrian traffic along South End Avenue, which does not offer the same water view experience. Moreover, implementing this design would require the removal of all existing trees in the area and require more extensive in-water work. Considering the construction schedule, cost

implications, and potential environmental impacts associated with the full platform replacement, this design was eliminated from further consideration.

Reach 6—Platform Reconstruction

This design option would replace the relieving platform along Reach 6 and locate the flood barrier system at the waterfront. This would realize the substantial benefit of a fully passive system in this area and no flooded public spaces during a storm surge. However, there are two major technical/regulatory issues with this option. In an ideal flood protection system, the seepage barrier is located directly below the flood barrier. If the seepage barrier were installed at the waterfront, there would be considerable fill placed within the regulated federal and state waters behind it, significantly more than required for the Proposed Project, as it constitutes a substantial intrusion into open waters. If seepage barriers were to be installed landward of the relieving platform, but the flood barrier were at the waterfront, considerable uplift pressures would be generated during a storm surge condition. While this could be accounted for using anchors and the weight of fill for surface grading, the additional cost of this design would be substantial compared to the Proposed Project. In addition, this alternative would require removal of all existing trees in the area.

This design was eliminated from consideration due to potential environmental impacts—specifically in-water impacts that would have been significant and would have increased the construction schedule and cost.

Reach 7 Design Options

Three design options were considered for Reach 7.

Reach 7—Privacy Wall

The Privacy Wall alignment on the eastern side of South Cove follows the upland topography and the existing privacy walls of the existing buildings to minimize visual impact. At the north end of the cove, the flood barrier system alignment roughly follows the existing elevated frontage. At the intersection of South End Avenue and 3rd Place, some regrading is proposed to minimize the visual impact of the floodwall and gates that will be necessary to allow pedestrian access to the South Esplanade. The wall itself is designed to be adjacent to the existing privacy wall, to minimize impact to the private courtyards of the adjacent buildings.

Reach 7 also includes a section of lower-level Esplanade, along the eastern length of the cove, which is projected to be more frequently inundated by future storm events. In this area, the low decking could be removed and replaced with an intertidal landscape. Daylighting and encouraging intertidal vegetation in this area would still be respectful of the intent of the existing environmental art installation by Mary Miss and Susan Child. Circulation in this area would likely be impacted by implementation of the flood barrier system.

Reach 7—Combination of Water’s Edge and Platform Reconstruction

This design option would include a flood barrier system alignment that would be located closer to the water’s edge, along the eastern length of South Cove. This would entail platform reconstruction and elevation of the Esplanade. This would require fill in federal and state waters and major changes to the existing Mary Miss and Susan Child environmental art installation. This design was eliminated from further consideration because it would require full platform reconstruction, which would separate the upland areas from the water, and would affect the existing environmental art installation. It would also require a longer construction schedule, with higher capital costs, and would require significantly more fill in regulated federal and state waters and aquatic habitats as compared to the Proposed Project.

Reach 7—Privacy Wall with Partial Platform Reconstruction

During the design process, the Privacy Wall option was refined in order to further minimize the in-water impact of the project. To achieve this goal, the alignment of the flood wall was shifted to the north, closer to the Regatta building. This adjustment enables most of the flood barrier system alignment to be located on land. There is a 10-foot-wide maintenance easement along the building and access to ground-level retail space that must be maintained, preventing the wall from being located totally on land, and off the platform. Thus, while the alignment requires some fill (piles), it avoids a complete platform replacement, which would involve significantly more fill. Instead, this design calls for micropiles to support the flood barrier system where it intersects with the existing platform.

This design option was selected for implementation as part of the Proposed Project because it minimizes platform reconstruction and the associated in-water impacts and it would lessen potential impacts to the art installation.

5.0.3 Pump Station Alternatives

As noted in Chapter 1.0, “Project Description” the Proposed Project includes a pump station to manage interior flooding that would otherwise result from the inability of the sewer system to drain stormwater during storm surge events and rain events. As part of the design process for the Proposed Project¹, three locations were considered for potential siting of the pump station:

- The BPCA ballfields;
- The schoolyard of PS/IS 289; and
- The area east of and adjacent to Stuyvesant High School. This site was ultimately chosen and is considered in this EIS as part of the Proposed Project.

¹ The design team also evaluated temporary options for the pump station, but due to the operations and maintenance (O&M) complexities associated with running a temporary pump station, a permanent pump station was chosen as the preferred option.

Additionally, there are three alternatives, referred to as design options, for the above-grade electrical room structure under consideration by NYCDEP and BPCA. The alternative design Options 1, 2 and 3 are also discussed below.

5.0.3.1 BPCA Ball Fields

The BPCA ball fields are located between Murray Street and Warren Street, west of Route 9A/West Street. The ball fields are divided into North Field and South Field. Under this design alternative, the pump station would be installed at the southeast corner of the fields at the intersection of Murray Street and Route 9A/West Street. This area is fenced off from the ball fields and contains some existing infrastructure. While this alternative affords space to install a below-ground electrical room and above-ground connection to an emergency generator, access for maintenance vehicles during the construction phase or during the maintenance operations could disrupt use of the ball fields. This alternative could also result in more substantial disturbance to the historic bulkhead over a larger area than the Proposed Project, due to the routing of the influent line and force main of the pump station. Being the location farthest from the final discharge point, approximately 1,000 linear feet of force main would need to be installed from the pump station to the point of connection. In addition, portions of the pump station would need to be located below the sidewalk, bike path and a portion of Route 9A/West Street, which would increase construction-phase impacts to the public realm during its construction as well as during maintenance operations.

5.0.3.2 PS/IS 289 Schoolyard

PS/IS 289 is located between Warren Street and Chambers Street and its schoolyard, a potential site for the pump station, runs along the west side of Route 9A/West Street. The length of the force main from this site to the connection point would be approximately 300 feet compared to the 1,000-foot force main that would be required at the ball fields location.

At this alternative location, the bulkhead runs beneath a significant portion of the play area. As such, this alternative would require modifications to the bulkhead or moving the pump station and electrical room eastwards, extending into the pedestrian walkway and trail.

Since the play area is a functioning component of the school, additional challenges include restricted use of the play area during construction and times of maintenance, a need for access hatches that would be located within the play area, and challenges with identifying a safe location to connect an emergency generator.

Overall, due to difficulties from a constructability and operational point of view, this alternative was not chosen for further consideration.

5.0.3.3 Area Adjacent to Stuyvesant High School

This alternative design would site the pump station on the east side of Stuyvesant High School, located north of Chambers Street and west of Route 9a/West Street.

This location offers advantages including construction, public health and safety and operations and maintenance when compared to the other alternatives. This alternative is closest to the outfall location (approximately 50 feet) which offers construction advantages in terms of complexity, duration, and cost.

The proposed pump station's proximity to Route 9A/West Street would allow better access for construction and maintenance, as well as emergency access.

This alternative does offer challenges in terms of the limited space available, and construction and maintenance operations could disrupt the public realm, as the plaza serves as public circulation space.

BPCA and its design team determined that this alternative was the most advantageous in terms of location near the outfall, construction, operations and maintenance, safety and other factors and therefore selected it for inclusion as part of the Proposed Project. Therefore, as noted above, this site is considered in this EIS as part of the Proposed Project.

Pump Station Electrical Structure – Above-Grade Design Alternatives

As described in Chapter 1.0, "Project Description," an electrical room needs to be provided proximate to the subgrade mechanical systems for the purpose of activating the pumps and related mechanical equipment when needed during the design storm event. It has been determined through BPCA's collaboration with NYCDEP that this electrical room must be located above grade. Recognizing the space limitations within the Stuyvesant High School Plaza area for such a facility, with the need to maintain circulation and access at the school and along the Greenway, three alternatives, referred to as design options, are under consideration. Each of the design options assumes a new structure to house the necessary natural gas or diesel fired backup electrical power generation and operational panels at a location in the pedestrian plaza north of the east entrance to Stuyvesant High School and adjacent to the Route 9A pedestrian overpass.

Design Options 1 and 2 separate the electrical operational panel space and power generation unit into two separate spaces thereby minimizing the size and height of the structure at grade by placing the backup electrical power generator in a separate structure. Under these design options, the proposed structure at-grade under Option 1 is approximately 31 feet long by 15 feet wide and 20 feet high. Option 2 has a smaller footprint at approximately 22 feet long by 13 feet wide and 20 feet high. Option 2 would minimize the footprint of the structure as compared to Option 1, by reducing the length of the building by approximately 9 feet and the width by 2 feet as compared to Option 1. While Design Options 1 and 2 minimize the size of the at-grade structure, they are subject to an assessment of both structural and mechanical feasibility as well as review, coordination and approval of the New York City School Construction Authority (SCA) and the Stuyvesant High School administration for placing the power generation unit, which would vary in size depending on the option, on the roof as well as a power conduit along the exterior wall.

Design Option 3 assumes a two-story structure at grade that houses all the necessary electrical station functions, along with the backup electrical power unit and the operational panels, within the same at grade structure. Under this design option the proposed structure is larger at approximately 30 feet long

by 18 feet wide and 37 feet high, with an exhaust fan routed along the high school exterior wall to a height 10 feet above the building roof. In each specified option, the at-grade footprint of the new structure would be located within the plaza area adjacent to the school while accommodating the continued use of the plaza as open space and as a pedestrian circulation area. There would be no encroachment onto the Hudson River Greenway or Bikeway/Pathway.

In each of these options, the at-grade footprint of the structure would be within the plaza area adjacent to the school, but there would continue to be plaza circulation space this location with no structure in the Hudson River Greenway. Each of the above options is also subject to further analysis of feasibility, space programming and design, and related approvals, including approval by the New York City Public Design Commission. In each of the scenarios, the above-ground elements of the pump station are to be designed with the objective of minimizing effects on pedestrian circulation in this public space and avoiding interference with the emergency entrance/exit at the high school. Final exterior finishes are to enclose all equipment and achieve design compatibility with the aesthetic context of the adjacent school and bridge. Selection of a final design option will require approval from SCA and NYCDOT.

5.0.4 No Unmitigated Significant Adverse Impact Alternative

As described in detail in Chapter 6.0, “Unavoidable Adverse Impacts,” unavoidable temporary significant adverse impacts have been identified during the construction phase on open space, transportation, noise, and neighborhood character. BPCA and its design team have sought to balance the need for construction of the Proposed Project with potential impacts to the surrounding community. The design elements of the Proposed Project, the methods of construction and the schedule and implementation of construction activities have been considered to minimize impacts to the extent practicable, while still meeting the purpose and need for the project and satisfying its goals.

With a No Unmitigated Significant Adverse Impact alternative, the design would avoid all identified unmitigated significant adverse impacts. However, to eliminate all unmitigated significant adverse impacts, detailed below, the Proposed Project would have to be modified to a point where its principal goals and objectives would not be realized.

5.0.4.1 Construction Open Space

There would be a temporary significant adverse impact to open space resources during construction due to the closure of open spaces needed during project construction. The temporary closures of open space in the Project Area during construction would redirect users to other Study Area open spaces that would in turn experience increased demand, thereby resulting in potential indirect effects on the Study Area open space ratios during project construction. The decrease in available open space resources over the construction period would be considered a significant adverse impact. In the absence of identified avoidance or mitigation measures, the Proposed Project would result in an unavoidable adverse effect on open spaces during construction.

5.0.4.2 Construction Transportation

As detailed in Chapter 3.11, “Construction,” traffic conditions were evaluated at 14 intersections for the Peak Construction Analysis scenario for the construction weekday AM and PM peak hours. The transportation analyses reflected in Chapter 3.11 “Construction,” as well as the recommended mitigation measures in Chapter 4.0, “Mitigation” were based on the initial construction schedule of 66 months. In response to public comments and concerns, this schedule was further refined and condensed to 60 months, with the peak quarter of construction trips occurring in 2027. The previous construction schedule had the same or higher numbers of workers and trucks during the peak quarter, and the peak would have occurred in 2030, at which time there would have been additional traffic and pedestrian growth as compared to 2027. Additional discussion comparing the two schedules for transportation analysis purposes can be found in Chapter 3.11, “Construction.”

In the 2030 Proposed Action condition, significant adverse traffic impacts were identified at two intersections during the construction weekday AM peak hour and four intersections during the construction weekday PM peak hour under the Peak Construction Analysis scenario. The significant adverse traffic impacts could be mitigated at all locations and time periods except for two intersections during the PM peak hour. The intersections of Route 9A/West Street and Murray Street and Route 9A/West Street and Liberty Street would be unmitigated in the construction PM peak hour. According to traffic analyses conducted under the MPT Construction Analysis scenario, potential significant adverse traffic impacts at two intersections could result: Route 9A/West Street and Harrison Street (AM peak hour) and Route 9A/West Street and North Moore Street (midday, PM, construction PM, and Saturday peak hours). With the implementation of standard traffic mitigation measures (signal timing changes), the significant adverse traffic impacts at both intersections could be mitigated in all five peak hours.

As detailed in Chapter 3.11, “Construction,” the Construction MPT Analysis scenario was evaluated. Under this scenario, two sidewalks are proposed to be fully closed which would divert pedestrians to the other side of the street and six pedestrian sidewalks/walkways are to be narrowed. The proposed geometric modifications and the pedestrian elements identified for quantified analysis include eight sidewalks/walkways, four corners, and two crosswalks. The majority of the significant adverse pedestrian impacts could not be mitigated (see Table 6-2 for a list of the partially mitigated, and unmitigated intersections). The LOS on the northeast corner of Greenwich Street and Franklin Street could be improved by removing the trash can from the corner reservoir area (partially mitigated) but would still result in an unmitigated impact. The remaining one walkway and two crosswalks could not be mitigated in any peak hour.

As previously described, these impacts were based on the 66-month construction schedule. After evaluating the revised traffic patterns for worker vehicles and trucks at the intersections that were analyzed assuming the initial construction schedule, vehicle trips generated by construction activity would generally decrease under the revised schedule assumptions. The number of intersections that would warrant detailed analysis according to the methodology used in this chapter would be reduced by two intersections if the current construction schedule was applied. However, construction vehicles would increase by up to 13 passenger car equivalent trips at the Route 9A/West Street and North Moore Street

intersection. The implementation of the recommended mitigation for the previous analysis at Route 9A/West Street and North Moore Street (i.e., a signal timing change) would adequately mitigate for the limited additional vehicles at this location.

Since traffic and pedestrian volumes at other locations previously analyzed for construction peak and MPT conditions would decrease with the current schedule and 2027 peak analysis year, the implementation of the recommended mitigation measures for the 66-month schedule, specifically, signal timing changes for traffic at North End Avenue and Vesey Street, Route 9A/West Street and Laight Street, Route 9A/West Street and Harrison Street, and Route 9A/West Street and Albany Street, and removal of a trash can on the northeast corner of Greenwich Street and North Moore Street and removal of flowerpots along the east sidewalk of Greenwich Street between Franklin Street and North Moore Street for pedestrian impacts due to MPT would negate any need for any further mitigation at those locations.

At unmitigated traffic intersections (Route 9A/West Street and Murray Street and Route 9A/West Street and Liberty Street) and pedestrian elements (West Walkway along Route 9A/West Street between Harrison Street and Chambers Street, Greenwich Street and North Moore Street South Crosswalk, and Greenwich Street and Franklin Street North Crosswalk), the volumes would be lower with the current schedule, but the significant impacts at those locations may persist and may continue to be unmitigatable.

The proposed mitigation measures would be subject to approval by NYCDOT and the New York State Department of Transportation prior to implementation.

There may be temporary unmitigatable significant adverse traffic and pedestrian impacts throughout the 7-month Early Works Package (EWP) and temporary unmitigated significant adverse effects on pedestrians and bicyclists throughout the duration of the construction schedule due to pedestrian and cyclist diversions from closed open spaces.

5.0.4.3 Construction Noise

Based on the projected construction activities associated with the Proposed Actions, construction-generated noise is expected to result in significant adverse effects at multiple receptors adjacent to construction work areas. Receptors where noise level increases were predicted to exceed the construction noise evaluation thresholds for extended durations were identified. Construction activity is expected to follow the requirements of the NYC Noise Control Code. However, the implementation of these measures, as well as additional noise control measures beyond the Code regulations committed for the construction associated with the Proposed Actions, would not eliminate the identified significant adverse construction noise impacts predicted to occur during hours when the loudest pieces of construction equipment are in use. In order to completely avoid significant adverse construction noise impacts, project-generated construction would have to be restricted in such a manner so as to occur neither on the same block, nor within one block of any noise receptors, which would require elimination of the proposed flood control measures in the vicinity of these sensitive receptors. This would not be consistent with the Project's goals and objectives. Therefore, no reasonable alternative could be developed to avoid the temporary unmitigated construction-period noise impact without substantially compromising the Proposed Project's stated goals.

5.0.4.4 Construction Neighborhood Character

As discussed above, the Proposed Project would result in unavoidable significant adverse open space, traffic, and noise impacts during the construction period. Therefore, since these elements are considered to be part of the defining features of neighborhood character, the Proposed Project is also expected to result in unavoidable significant adverse neighborhood impacts during the construction period.

5.0.5 Assessment

In order to eliminate the significant adverse impacts that would occur with the Proposed Action, key features of the Proposed Project would need to be eliminated or redesigned to such an extent that the Project's goals and objectives would not be met. Closure of public open spaces would be necessary to complete the Proposed Project's construction, and to avoid the closures of open spaces, the flood barrier system would either need to be greatly reduced in size thus rendering it ineffective, or completely relocated which would also not meet the goals and objectives of the Project. Mitigation of the unmitigated construction traffic and noise impacts would necessitate redesign of the Proposed Project such that the flood barrier system would be greatly reduced in size so that the construction activities would be minimal. Reducing the size or changing the location of the Proposed Project would render it ineffective and would not meet the goals and objectives of the Project.