Chapter 24: Final Section 4(f) Evaluation

24.1 INTRODUCTION

This Final Section 4(f) Evaluation evaluates and documents the Hudson Tunnel Project (the Project) in terms of its compliance with the requirements of Section 4(f) as codified at 23 USC 138 and 49 USC 303.[1] Section 4(f) governs the use of land from publicly owned parks, recreation areas, and wildlife and waterfowl refuges and publicly or privately owned significant historic sites (collectively, Section 4(f) properties) that may be affected by projects approved or funded by the U.S. Department of Transportation (USDOT). The requirements of Section 4(f) apply to the operating administrations of USDOT, including the Federal Railroad Administration (FRA), the Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA).

FRA has made revisions to this Section 4(f) Evaluation since completion of the Draft Section 4(f) Evaluation for the Hudson Tunnel Project in 2017:

- FRA updated the information on parks in proximity to the Preferred Alternative to include one additional park in New Jersey.
- FRA added new information to reflect a new construction option in the discussion of proposed construction activities for the Preferred Alternative in Hudson River Park in New York.
- For Hudson River Park in New York, the Draft Section 4(f) Evaluation described that FRA anticipated that the proposed construction activities for the Preferred Alternative would qualify as an exception from Section 4(f) as a temporary occupancy of land that would be so minimal as not to constitute a Section 4(f) use. Based on continuing analyses of proposed construction activities in Hudson River Park and consultation with the official with jurisdiction for that park, the Hudson River Park Trust (HRPT), FRA has concluded that the proposed construction activities would result in a use of that Section 4(f) property.
- As required by the Section 4(f) regulations, FRA has coordinated with the U.S. Department of the Interior regarding the Draft Section 4(f) Evaluation and this Final Section 4(f) Evaluation and that coordination is now described in this evaluation.

This chapter contains the following sections:

[1] In 1983, Section 4(f) of the U.S. Department of Transportation Act was codified as 49 USC § 303(c), but this law is still commonly referred to as Section 4(f).

24.2 REGULATORY CONTEXT

During development of this Environmental Impact Statement (EIS) and Final Section 4(f) Evaluation, FRA and the New Jersey Transit Corporation (NJ TRANSIT) developed methodologies for evaluating the potential effects of the Hudson Tunnel Project in coordination with the Project's Cooperating and Participating Agencies (i.e., agencies with a permitting or review role for the Project). The methodologies used for this Section 4(f) Evaluation are summarized in this chapter.

Following completion of the Draft Environmental Impact Statement (DEIS) and Draft Section 4(f) Evaluation, the Port Authority of New York and New Jersey (PANYNJ) became the Project Sponsor for the Hudson Tunnel Project (see Chapter 1, "Purpose and Need," Section 1.1.2, for more information). Consistent with the roles and responsibilities defined in Section 1.1.1 of Chapter 1, as the current Project Sponsor, the PANYNJ will comply with mitigation measures and commitments identified in the Record of Decision (ROD).

FRA and NJ TRANSIT, as joint lead agencies, prepared the DEIS and Draft Section 4(f) Evaluation. When the PANYNJ became the Project Sponsor, it also became a joint lead agency for the development of the Final EIS (FEIS) and Final Section 4(f) Evaluation. The PANYNJ, in its role as Project Sponsor, has accepted and relied on the evaluations and conclusions of the FEIS and Final Section 4(f) Evaluation.

Section 4(f) prohibits USDOT operating administrations, including FRA, from approving any program or project that requires the "use" of any publicly owned parkland, recreation area, or wildlife and waterfowl refuge; or any land from a publicly or privately owned historic site of national, state, or local significance (collectively, "Section 4(f) properties"), unless (a) the agency determines that the use of the property will have a *de minimis* impact; or (b) there is no feasible and prudent avoidance alternative to the use of the land, and the action includes all possible planning to minimize harm to the Section 4(f) property. A historic site is a property that is listed on, or eligible for listing on, the National Register of Historic Places (NRHP).

At the time the EIS was initiated, FRA did not have its own Section 4(f) regulations. Therefore, FRA relied on its *Procedures for Considering Environmental Impacts*[2] (*Procedures*) to address Section 4(f) requirements and, in making Section 4(f) determinations, FRA used the joint FTA and

[2] 64 Federal Register 28545, May 26, 1999.

FHWA Section 4(f) regulations (23 CFR Part 774) and FHWA's *Section 4(f) Policy Paper*[3] as guidance. Since this publication of the Draft EIS and Draft Section 4(f) Evaluation, in October 2018, FRA formally joined the regulations at 23 CFR Part 774, making them FRA's Section 4(f) implementing regulations. Because the effective date of this change was after the Notice of Intent for the Hudson Tunnel Project (which was published in the Federal Register in 2016), FRA continues to rely on its *Procedures* and the Part 774 regulations as guidance for this evaluation.

24.2.1 SECTION 4(f) USE

Pursuant to 23 CFR § 774.17, a project uses a Section 4(f) property when:

- Land from the Section 4(f) property is permanently incorporated into a transportation facility;
- There is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose, as determined by the criteria in 23 CFR § 774.13(d) (e.g., when all or part of the Section 4(f) property is required for project construction-related activities); or
- There is a "constructive" use of a Section 4(f) property, as defined in 23 CFR § 774.15(a).[4]

Whenever a Section 4(f) property would be used for a transportation project, the responsible USDOT operating administration must demonstrate that there is no feasible and prudent alternative to the use of the Section 4(f) property, and that the project includes all possible planning to minimize harm to the Section 4(f) property. In addition, the responsible USDOT operating administration must coordinate with the U.S. Department of the Interior (DOI), and if appropriate, with the U.S. Department of Housing and Urban Development (HUD) and the U.S. Department of Agriculture (USDA), and the appropriate official(s) with jurisdiction over the Section 4(f) property, prior to approving the use of a Section 4(f) property (23 CFR § 774.5(a)).[5] This coordination must be documented in a project's Section 4(f) evaluation.

24.2.1.1 DE MINIMIS IMPACTS

The Section 4(f) regulations (23 CFR Part 774) establish procedures for determining if the use of a Section 4(f) property has a *de minimis* impact on a property. The regulations define *de minimis* impacts related to historic sites as those where the responsible USDOT modal administration made a determination of either "no effect" or "no adverse effect" pursuant to Section 106, and the State Historic Preservation Officer (SHPO) concurred with that determination. *De minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not "adversely affect the activities, features, and attributes" of the Section 4(f) property (23 CFR § 774.17). Once FRA, through appropriate consultation and public involvement, and having received concurrence from the official(s) with jurisdiction, determines that a transportation use of a Section 4(f) property results in a *de minimis* impact, and documents that determination consistent with the requirements of FRA's *Procedures for Considering Environmental Impacts*,

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[3] *Section 4(f) Policy Paper*, FHWA Office of Planning, Environment and Realty, July 20, 2012.

[4] "A constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired."

[5] As defined in 23 CFR § 774.17, for public parks, recreation areas, and wildlife and waterfowl refuges, the official(s) with jurisdiction are the official(s) from the agency or agencies that own and/or administer the property in question, and who are empowered to represent the agency or agencies on matters related to the property. For historic sites, the official with jurisdiction is the relevant State Historic Preservation Officer (SHPO), as well as the Advisory Council on Historic Preservation (ACHP) if ACHP has chosen to participate in consultation in accordance with Section 106 of the National Historic Preservation Act (NHPA) (Section 106). There may be more than one official with jurisdiction for the same Section 4(f) property.

analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete.

24.2.1.2 EXCEPTIONS FROM SECTION 4(f)

The Section 4(f) regulations (23 CFR § 774.13) identify various exceptions to the requirement for Section 4(f) approval, including, among others: (1) restoration, rehabilitation, or maintenance of transportation facilities that are on or eligible for the NRHP when adverse effects will not occur; (2) archaeological sites that are on or eligible for the NRHP when the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place; and (3) temporary occupancies of land that are so minimal as to not constitute a use within the meaning of Section 4(f).

24.2.1.3 EXEMPTIONS FROM SECTION 4(f)

The Section 4(f) legislation at 23 USC § 138(f) and 49 USC § 303(h) exempts from Section 4(f) review improvements to, or the maintenance, rehabilitation, or operation of, railroad and rail transit lines, or elements thereof, that are in use or that were historically used for the transportation of goods and passengers. The exemption applies regardless of whether the railroad or rail transit line, or element thereof, is listed on or eligible for listing on the NRHP. The exemption has two exceptions:

- The exemption does not apply to rail stations or transit stations; and
- The exemption does not apply to bridges or tunnels located on a rail line that has been abandoned under the process described in 49 USC § 10903, or a transit line that is not in use.

24.2.2 AVOIDANCE ALTERNATIVES

When a project would use a Section 4(f) property, the transportation agency must demonstrate that there is no feasible and prudent alternative to avoid the use of the property.

24.2.3 LEAST OVERALL HARM ALTERNATIVE

If there is no feasible and prudent avoidance alternative to the use of a Section 4(f) property, and multiple alternatives would use Section 4(f) properties, FRA may approve only the alternative that causes the least overall harm in light of Section 4(f)'s preservation purpose.

24.3 NEED, PURPOSE, GOALS, AND OBJECTIVES

The existing North River Tunnel beneath the Hudson River is a critical Northeast Corridor (NEC) asset and is the only passenger rail crossing into Penn Station New York (PSNY) from New Jersey and areas west and south. This tunnel, constructed between 1904 and 1908 and opened for service in 1910, is more than 100 years old and was designed and built to early 20th-century standards. Service reliability through the tunnel, already suboptimal because of the tunnel's age and antiquated standards, has been further compromised because of the damage to tunnel components caused by Superstorm Sandy.

The purpose of the Hudson Tunnel Project is to preserve the current functionality of the National Railroad Passenger Corporation's (Amtrak) NEC service and NJ TRANSIT's commuter rail service between New Jersey and PSNY by repairing the deteriorating North River Tunnel; and to strengthen the NEC's resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains between New Jersey and the existing PSNY. These improvements must be achieved while maintaining uninterrupted commuter and intercity rail service and by optimizing the use of existing infrastructure.

FRA and NJ TRANSIT established five goals and related objectives to address the Project purpose and need. The objectives further define the goals and provide specific and measurable means by which to evaluate Project alternatives:

Goal 1: Improve service reliability and upgrade existing tunnel infrastructure in a cost-effective manner.

- Objective 1.1: Reduce infrastructure-related delays due to poor condition of the North River Tunnel following Superstorm Sandy.
- Objective 1.2: Rehabilitate the North River Tunnel to modern system standards.

Goal 2: Maintain uninterrupted existing NEC service, capacity, and functionality by ensuring North River Tunnel rehabilitation occurs as soon as possible.

- Objective 2.1: Optimize use of existing infrastructure.
- Objective 2.2: Use conclusions from prior planning studies as appropriate and to the maximum extent possible.
- Objective 2.3: Avoid regional and national economic impacts associated with loss of rail service.

Goal 3: Strengthen the NEC's resiliency to provide reliable service across the Hudson River crossing, facilitating long-term infrastructure maintenance and enhancing operational flexibility.

- Objective 3.1: Construct additional tracks to allow for continued NEC rail operations during maintenance periods and unanticipated human-caused and natural events.

Goal 4: Do not preclude future trans-Hudson rail capacity expansion projects.

- Objective 4.1: Allow for connections to future capacity expansion projects, including connections to the Frank R. Lautenberg Station (Secaucus Junction Station) through to the Portal Bridge over the Hackensack River, and connections to station expansion projects in the area of PSNY.

Goal 5: Minimize impacts on the natural and built environment.

- Objective 5.1: Avoid/minimize adverse impacts on communities and neighborhoods.
- Objective 5.2: Strive for consistency with local plans and policies.
- Objective 5.3: Preserve the natural and built environment to the extent practicable.

24.4 ALTERNATIVES

The Project's EIS considers two alternatives in detail: the No Action Alternative and the Preferred Alternative. These are described in Chapter 2 of the EIS, "Project Alternatives and Description of the Preferred Alternative," and summarized below.

24.4.1 NO ACTION ALTERNATIVE

The National Environmental Policy Act (NEPA) requires examination of a No Action Alternative, which is an alternative against which the potential benefits and impacts of Build Alternatives can be compared. The No Action Alternative represents the conditions that would exist in the analysis year without implementation of the Preferred Alternative. In the No Action Alternative, no new passenger rail tunnel across the Hudson River would be constructed and rehabilitation of the North River Tunnel would not occur. For purposes of analysis in the EIS, FRA and NJ TRANSIT have assumed that the existing North River Tunnel would remain functional and in operation at least

through the EIS analysis year of 2033, with continued maintenance as necessary to address ongoing deterioration to the extent possible. As part of the ongoing maintenance, Amtrak will implement a North River Tunnel Interim Reliability Improvements Program, a program to advance critical repair work during short-term tunnel outages to improve reliability and safety in the North River Tunnel in the near term, before complete rehabilitation of the North River Tunnel would occur as proposed in the Hudson Tunnel Project. However, without full rehabilitation of the North River Tunnel, damage to the North River Tunnel caused by Superstorm Sandy will continue to degrade systems in the tunnel. This ongoing deterioration combined with the tunnel's age and intensity of use would likely lead to increasing instability of rail operations in the tunnel, and may lead to its eventual closure.

24.4.2 PREFERRED ALTERNATIVE

The Preferred Alternative for the Project would consist of a new two-track tunnel, the Hudson River Tunnel, together with rehabilitation of the existing tunnel, the North River Tunnel. The new Hudson River Tunnel would have two new tracks extending from the NEC in Secaucus, New Jersey, beneath the Palisades (North Bergen and Union City, New Jersey) and the Hoboken/Weehawken, New Jersey waterfront area, and beneath the Hudson River to connect to the existing PSNY approach tracks at A Yard in New York. New ventilation shafts and associated fan plants would be located above the tunnel in New Jersey and New York for regular and emergency ventilation and emergency access. The western terminus of the new tunnel and related tracks and infrastructure would be east of County Road in Secaucus, New Jersey and the eastern terminus would be at approximately Ninth Avenue in Manhattan, New York. No changes east of A Yard (at approximately Ninth Avenue in New York), and no changes to PSNY platforms or platform tracks, are proposed as part of the Preferred Alternative.

Major components of the Preferred Alternative's new tunnel would include:

- Two new surface tracks parallel to the south side of the NEC beginning at a realigned Allied Interlocking in Secaucus, New Jersey just east of NJ TRANSIT's Frank R. Lautenberg Secaucus Junction Station. These tracks would be accessible for maintenance and emergency services via a new access road.[6]
- A new tunnel with two tracks in two separate "tubes" (i.e., single-track tunnels) beneath the Palisades and the Hoboken/Weehawken waterfront area east of the Palisades in New Jersey, continuing beneath the Hudson River to Manhattan, New York. In New Jersey, the tunnel would begin at a portal in the western slope of the Palisades,[7] just east of Tonnelle Avenue (U.S. Routes 1 and 9). The two new tubes would continue through the below-ground foundation of the Manhattan bulkhead at the water's edge, beneath Hudson River Park and Twelfth Avenue (New York State Route 9A), which both run north-south along the Manhattan Hudson River shoreline, to meet the underground Hudson Yards Right-of-Way Preservation Project that Amtrak is constructing beneath the Hudson Yards overbuild project at the Western and Eastern Rail Yards in Manhattan.
- Two new tracks and associated rail systems to be added by the Project to the Hudson Yards Right-of-Way Preservation Project.
- Extension of the tunnel past the Hudson Yards Right-of-Way Preservation Project beneath Tenth Avenue to a tunnel portal east of Tenth Avenue, within the complex of tracks located

[6] An interlocking is a system of switches and signals that allows trains to make connections from one track to another.

[7] The Palisades are a steep ridge with cliffs along both sides, running north-south along the western side of the lower Hudson River in New Jersey and continuing north into New York.

beneath the existing building that spans the tracks on the east side of Tenth Avenue (450 West 33rd Street). The new tunnel portal would be close to the tunnel portals for Amtrak's Empire Line and for the North River Tunnel.

- Track connections east of Tenth Avenue to the existing approach tracks into PSNY.
- A ventilation shaft and associated fan plant in Hoboken, New Jersey at the Hoboken-Weehawken border.
- A ventilation shaft and associated fan plant near Twelfth Avenue between West 29th and 30th Streets (on the tax block identified as Manhattan Block 675) in New York.
- A fan plant beneath the building at 450 West 33rd Street in Manhattan, which spans across the existing and proposed rail right-of-way east of Tenth Avenue between West 31st and 33rd Streets.

The Preferred Alternative would also include a rehabilitated North River Tunnel, with a repaired tunnel lining that addresses leaks, cracks, and spalls; replaced bench walls; a new direct fixation track system with a new track drainage system, new track alignment, and profile; and new or rehabilitated systems, including signal overhead contact system, communications, traction power, and fire-life safety.

Once construction of both tubes of the new tunnel is complete and Amtrak and NJ TRANSIT service shifts to the new tunnel, rehabilitation of the North River Tunnel would proceed, one tube at a time. In this way existing levels of train service on the NEC could be maintained while rehabilitation of the North River Tunnel occurs.

24.5 IDENTIFICATION AND USE OF SECTION 4(f) PROPERTIES

This evaluation identifies Section 4(f) properties that could be affected by the Project, based on analyses conducted for the EIS and described in Chapter 8, "Open Space and Recreational Resources," and Chapter 9, "Historic and Archaeological Resources." FRA and NJ TRANSIT prepared the chapters of the EIS. The PANYNJ, in its role as Project Sponsor, has accepted and relied on the evaluations and conclusions of the EIS chapters.

24.5.1 WILDLIFE OR WATERFOWL REFUGES

No wildlife or waterfowl refuges are located in proximity to the Preferred Alternative, and no wildlife or waterfowl refuges would be affected by the Preferred Alternative. Therefore, the Preferred Alternative would not result in the use of any such resources.

24.5.2 PARKLANDS AND RECREATIONAL RESOURCES

As listed in **Table 24-1** and shown in **Figures 24-1 and 24-2**, the Preferred Alternative would have the potential to affect seven parks or recreational resources because of their proximity to the tunnel alignment or other construction activities associated with the Project—one in North Bergen, New Jersey; one in Weehawken, New Jersey; three in Hoboken, New Jersey; and two in Manhattan, New York. The tunnel alignment would pass directly below five of those parks, and surface construction activities would occur in close proximity to all of the parks, with construction directly in one of the parks.

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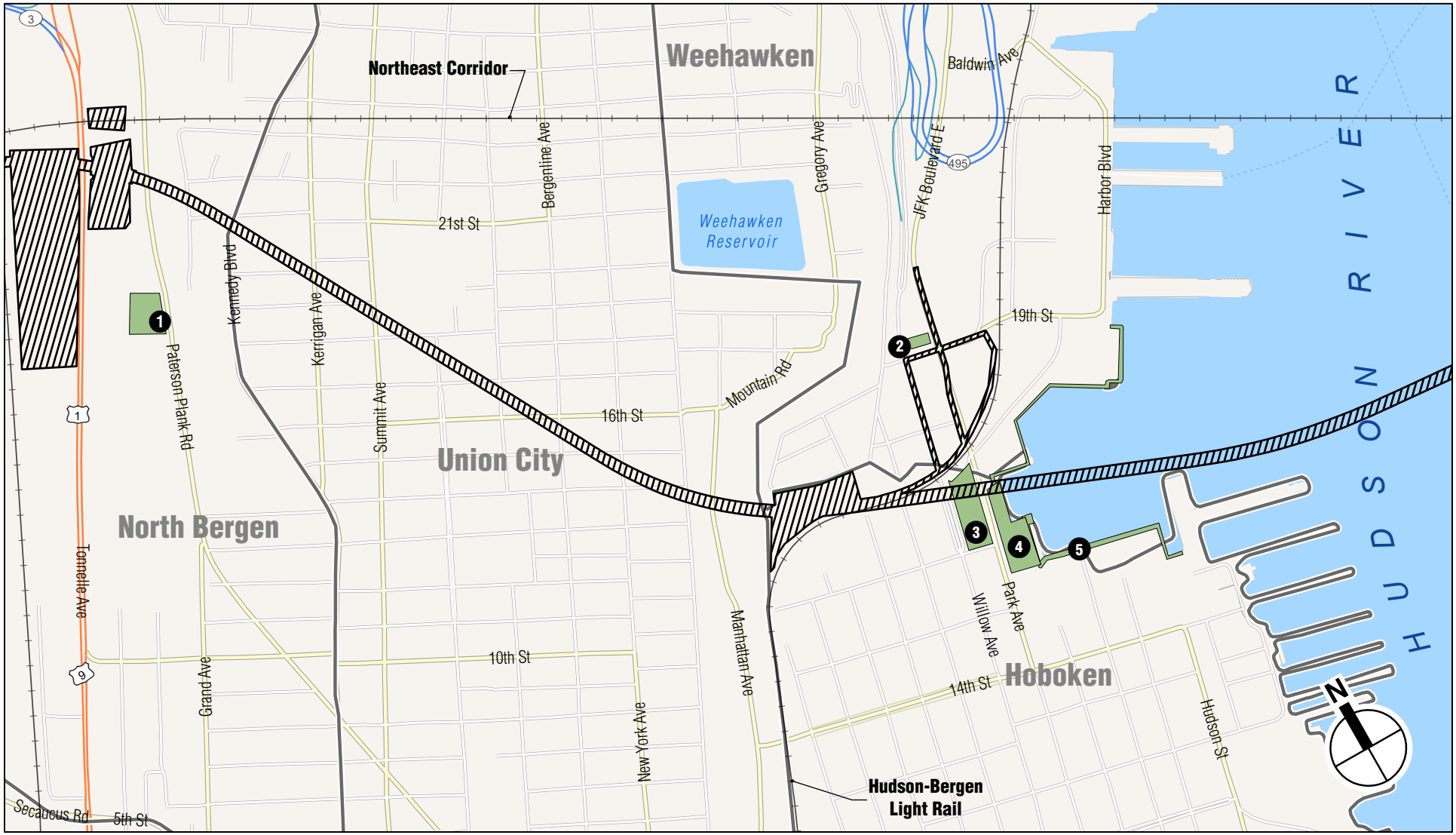

Project Site

Municipal Boundaries

Open Space and Outdoor Recreation (see Table 24-1)

1. *Paterson Plank Road Park*
2. *19th Street Basketball Courts*
3. *1600 Park*
4. *Harborside/Hoboken Cove Park*
5. *Hudson River Waterfront Walkway*

0 1,000 FEET

HUDSON TUNNEL PROJECT

Section 4(f) Park Resources in New Jersey

Figure 24-1

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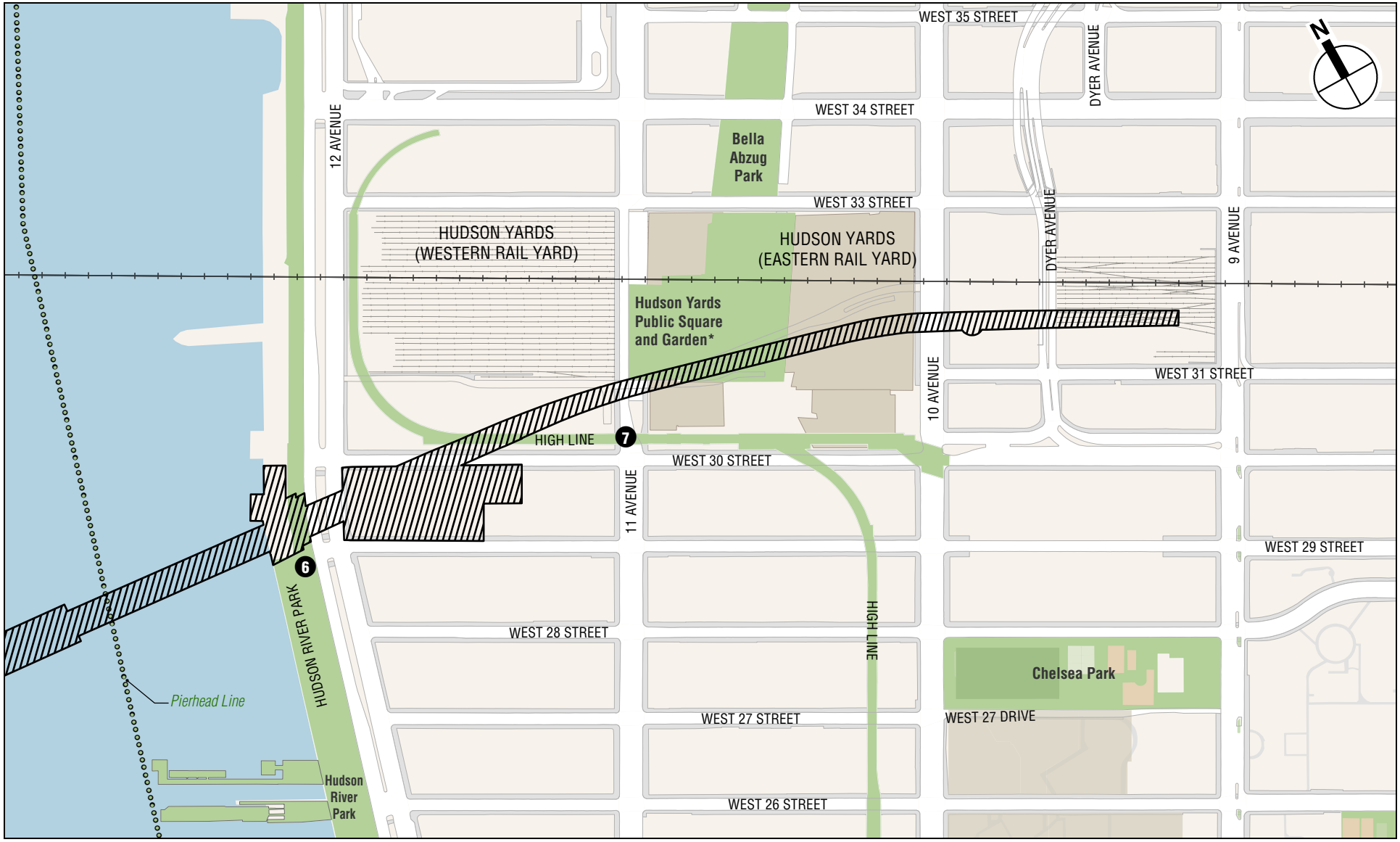

Project Site

Existing Northeast Corridor

Open Space and Outdoor Recreation (see Table 24-1)

6 *Hudson River Park*

7 *High Line*

**NOTE: Hudson Yards Public Square and Garden is a privately-owned park and therefore, Section 4(f) does not apply*

0 500 FEET

HUDSON TUNNEL PROJECT

Section 4(f) Park Resources in New York

Figure 24-2

Table 24-1
Section 4(f) Properties—Parklands and Recreational Resources

Map No.*	Park or Recreational Resource, Location, Jurisdiction	Description of Park	Project Activities at or Near the Park	Section 4(f) Use
1	Paterson Plank Road Park Paterson Plank Rd, North Bergen, NJ Jurisdiction: Township of North Bergen, NJ	1.6-acre playground with splash pad, open lawn areas, and a gazebo	Temporary construction activity in proximity to park	None
2	19th Street Basketball Courts 19th St at Willow Ave, Weehawken, NJ Jurisdiction: Township of Weehawken, NJ	0.22-acre paved basketball and handball courts within fenced area	Temporary construction truck route adjacent to park on two sides	None
3	1600 Park 1600 Park Ave, between Willow and Park Aves, Hudson-Bergen Light Rail and 16th St, Hoboken, NJ Jurisdiction: City of Hoboken and Township of Weehawken, NJ	2.5-acre multi-use playing field with baseball, soccer, and lacrosse facilities; also dog run, slide hill, and restrooms	Permanent tunnel alignment beneath the park; temporary construction activity in proximity to park	None
4	Harborside Park/Hoboken Cove Park 15th St and Park Ave, Hoboken, NJ Jurisdiction: City of Hoboken and Township of Weehawken, NJ	1-acre active park with playground; additional 3 acres of mapped parkland that is undeveloped with future improvements planned	Permanent tunnel alignment beneath the park; temporary construction activity in proximity to park	None
5	Hudson River Waterfront Walkway, including Harbor Path Hoboken, NJ Jurisdiction: Adjacent property owners; Hudson River Waterfront Conservancy (non-profit advocacy group) monitors compliance	18.5-mile-long, 30-foot-wide waterfront walkway being created along the Hudson River's edge from Bayonne to the George Washington Bridge; part of the East Coast Greenway Trail; fully developed in Project area	Permanent tunnel alignment beneath the park; temporary construction activity in proximity to park	None
6	High Line New York, NY Jurisdiction: New York City Department of Parks & Recreation; operated by non-profit Friends of the High Line	1.5-mile long walkway and landscaped area on elevated former rail line	Permanent tunnel alignment beneath the park; temporary construction activity in proximity to park; permanent fan plant near park	None
7	Hudson River Park New York, NY Jurisdiction: Hudson River Park Trust (New York State public benefit corporation)	4-mile-long waterfront park with walkway, esplanade, and landscaped areas; 550 acres total (including 400 acres of lands under water); part of the Manhattan Waterfront Greenway	Permanent tunnel alignment beneath the park; temporary construction in park related to ground improvement for the Preferred Alternative; other construction activity in proximity to park; permanent fan plant near park	Use during the 1.5-year construction period in the park

Note: See **Figure 24-1** for resources in New Jersey and **Figure 24-2** for resources in New York.

This evaluation considers parks located directly above the proposed tunnel alignment, parks where surface construction activity would occur, parks where noise impacts would occur as determined in the evaluation presented in EIS Chapter 12A, "Noise," and parks where construction activities would be visible as determined in the evaluation presented in EIS Chapter 10, "Visual and Aesthetic Resources." Other parks would not be affected by the Preferred Alternative (see Chapter 8, "Open Space and Recreational Resources") and therefore are not considered in this Section 4(f) evaluation.

Since completion of the DEIS and Draft Section 4(f) Evaluation, a new public plaza has been completed directly above the proposed tunnel alignment in New York. This plaza, the Hudson Yards Public Square and Garden, is part of the large Hudson Yards development being built on a platform above a large rail yard west of PSNY. Thus, the plaza is already above active rail tracks. Moreover, it is a privately owned open space resource. Since Section 4(f) applies only to publicly owned parks and recreational areas and since the new plaza was constructed above railroad infrastructure, it is not a Section 4(f) property and is not evaluated in this Final Section 4(f) Evaluation.

24.5.2.1 PATERSON PLANK ROAD PARK

Since completion of the DEIS and Draft Section 4(f) Evaluation, a new public park has been completed on the western face of the Palisades, overlooking Tonnelle Avenue (U.S. Routes 1 and 9) and the New Jersey Meadowlands beyond. This park, Paterson Plank Road Park, consists of a playground with play equipment, a splash pad, open lawn areas, and a gazebo. The Preferred Alternative would have temporary construction activities near this park, as described below. The Preferred Alternative would not result in any permanent use of Paterson Plank Road Park, since it would not physically alter or occupy the property.

24.5.2.1.1 Temporary Construction Activity in Proximity to Paterson Plank Road Park: No Constructive Use

24.5.2.1.1.1 Description of Construction Activity

A construction staging site for the Preferred Alternative, the Tonnelle Avenue staging site, would be at the bottom of the slope of the Palisades beneath Paterson Plank Road Park. It would be approximately 500 feet from Paterson Plank Road Park. In addition, construction areas for the Preferred Alternative's surface alignment parallel to the existing tracks of the NEC would be farther away, beyond the Tonnelle Avenue staging area. Work at the Tonnelle Avenue staging area would take place over the full construction period for the Preferred Alternative, approximately 11 years of construction; work along the Preferred Alternative's surface alignment would take place in stages over approximately 7 years.

24.5.2.1.1.2 No Constructive Use

The nearby construction activities would not constitute a constructive use under Section 4(f). As defined in the Section 4(f) regulations, a constructive use under Section 4(f) occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Construction activity at the Tonnelle Avenue staging site and for the surface alignment in the Meadowlands may be visible from the edge of this park, but in the context of the wide vistas available from this location, these construction activities would not be visually intrusive. Based on the noise analysis presented in Chapter 12A of the FEIS, "Noise," Section 12A.6.2.2, construction noise would not result in noise levels that would exceed the FTA construction noise impact thresholds at the park. Therefore, the Preferred Alternative would not result in a constructive use of Paterson Plank Road Park under Section 4(f).

24.5.2.2 19TH STREET BASKETBALL COURTS

The 19th Street Basketball Courts consist of a paved, fenced court area. The park is located at a busy intersection and fronts on local streets on three sides, including Willow Avenue, 19th Street, and Park Avenue/JFK Boulevard East. The Preferred Alternative would have temporary construction activities near this park, as described below. The Preferred Alternative would not result in any permanent use of the 19th Street Basketball Courts, since it would not physically alter or occupy the property.

24.5.2.2.1 Temporary Construction Activity in Proximity to 19th Street Basketball Courts: No Constructive Use

24.5.2.2.1.1 Description of Construction Activity

The proposed truck route for construction trucks traveling to and from the Hoboken construction staging site would pass the basketball courts on both 19th Street and Park Avenue/JFK Boulevard East. Trucks traveling to and from the construction site would pass directly alongside the basketball/handball court over the course of the approximately seven years of construction at the Hoboken staging area (see Chapter 12A, "Noise," Section 12A.6.2.3).[8] This estimate of the duration of the adverse impact is conservative, and the actual duration would likely be shorter, since intensive trucking activity would not be required for all stages of construction.

24.5.2.2.1.2 No Constructive Use

The nearby construction activities at the 19th Street Basketball Courts would not constitute a constructive use under Section 4(f). As defined in the Section 4(f) regulations, a constructive use under Section 4(f) occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Based on the noise analysis presented in Chapter 12A of the FEIS, "Noise," Section 12A.6.2.3.1, the truck route would not result in noise levels that would exceed the FTA construction noise impact thresholds at the park. Moreover, the 19th Street Basketball Courts have active recreational uses that are not noise-sensitive and therefore the increase in noise would not substantially impair the protected activity (the use of the park for active recreation) during the seven-year-long period when the increased noise from construction traffic would occur. Therefore, the Preferred Alternative would not result in a constructive use of the 19th Street Basketball Courts under Section 4(f).

24.5.2.3 1600 PARK

1600 Park is a 2.5-acre park recently developed by the City of Hoboken on a full block between the Willow and Park Avenue viaducts just south of the Hudson-Bergen Light Rail (HBLR) right-of-way. The park has two components: a slide hill (a constructed hill with a staircase and slide built into it) at its northern end and a playing field for team sports to the south. The Preferred Alternative would have temporary construction activities near this park and the permanent tunnel alignment of the Preferred Alternative would be directly beneath the park.

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[8] As described in Chapter 12A, "Noise," of the FEIS, the noise analysis for the EIS was conducted following procedures described in the FTA guidance manual, *Transit Noise and Vibration Impact Assessment Manual*, FTA Report No. 0123, September 2018. The impact thresholds used for the analysis are the thresholds set forth in the FTA manual.

24.5.2.3.1 Temporary Construction Activity in Proximity to 1600 Park: No Constructive Use

24.5.2.3.1.1 Description of Construction Activity

Construction activities for the Preferred Alternative would occur in close proximity to and beneath 1600 Park. The construction activities near the park would include the following:

- Construction truck route: The proposed truck routes for construction trucks traveling to and from the Hoboken construction staging site would include a new temporary access road along the north side of the existing HBLR tracks that would be within 150 feet of 1600 Park at its northern end, where the active play slide hill is located. Trucking activity would be discernible from the slide hill, but would not result in noise impacts at the park. Based on the noise analysis presented in EIS Chapter 12A, "Noise," Section 12A.6.2.3.1, the truck route would not result in noise levels that would exceed the FTA construction noise impact thresholds at the park.
- Construction noise associated with pile drilling: At Willow Avenue (adjacent to the park's slide hill), the Preferred Alternative would involve short-term construction activity associated with underpinning (supporting) the foundation of the Willow Avenue viaduct. The underpinning would include installation of piles, which will be drilled into place rather than driven, to reduce noise levels. Pile drilling at Willow Avenue adjacent to the park would produce noise levels at the park that exceed FTA noise impact thresholds. This would occur for approximately two months on weekdays, 7 AM–11 PM. Due to the active recreational uses in the park, which are generally not noise-sensitive, and the relatively short duration of this exceedance, the noise impact would not constitute an adverse construction noise impact at this park (see EIS Chapter 12A, "Noise," Section 12A.6.2.3).
- Vibration during tunnel boring: The new Hudson River Tunnel's alignment would be constructed directly beneath this park, approximately 75 feet below the surface. The new tunnel would be constructed by two tunnel boring machines (TBMs) drilling the two separate tubes of the tunnel. The TBMs would work entirely underground and any vibration from tunnel construction would be barely perceptible (see Chapter 12B, "Vibration," Section 12B.6.2.4). The subsurface construction work for tunnel boring beneath the park would not be visible from the park, would not occupy any park space, and would not be staged from the park.

These temporary construction activities for the Preferred Alternative would occur in close proximity to 1600 Park but would not result in physical alterations to or occupation of the park.

24.5.2.3.1.2 No Constructive Use

The nearby construction activities and associated noise increase at 1600 Park would not constitute a constructive use under Section 4(f). As defined in the Section 4(f) regulations, a constructive use under Section 4(f) occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. 1600 Park has active recreational uses that are not noise-sensitive and therefore the increase in noise would not substantially impair the protected activity (the use of the park for active recreation) during the two months when pile drilling occurs. In addition, the Project Sponsor will coordinate with the City of Hoboken and Township of Weehawken, which are the officials with jurisdiction for this park, regarding pile installation for the underpinning of the Willow Avenue viaduct, to avoid disruption to special events in the park and to provide advance notification, so that the city and township can provide public notification of this activity and its expected duration. Therefore, the Preferred Alternative would not result in a constructive use of 1600 Park under Section 4(f).

24.5.2.3.2 Permanent Tunnel Alignment Beneath 1600 Park: No Use

The Preferred Alternative's permanent tunnel alignment would be located beneath 1600 Park. This permanent feature beneath the park would not constitute a Section 4(f) use of the park. When construction is occurring, the TBMs operating 75 feet below the park would not have result in noticeable vibrations and therefore also would not result in any damage to the park. Once the tunnel is complete and operational, the presence of the tunnel would not be noticeable in the park or affect the protected activities in the park. Operation of trains in the completed tunnel would not result in vibration impacts (see Chapter 12B, "Vibration," Section 12B.7.2). Therefore, the permanent presence of a tunnel beneath 1600 Park would not harm the protected purpose of the park and would not result in a use according to Section 4(f).

24.5.2.4 HARBORSIDE/HOBOKEN COVE PARK

Harborside/Hoboken Cove Park is a waterfront park that is still under development. This park, east of Park Avenue in Hoboken and directly across from 1600 Park, is publicly owned and designated as parkland, and a 1-acre area fronting on 15th Street is complete. The completed portion of the park includes an active park space and a playground. North of the completed park, approximately 3 acres of Harborside/Hoboken Cove Park is designated parkland that is currently undeveloped. This area is in the planning phase and will be completed in the future as part of the New Jersey Department of Environmental Protection's (NJDEP) Rebuild By Design project. The Rebuild By Design project proposes to improve this section of Harborside/Hoboken Cove Park with a signature park with playgrounds, lawns, game courts, and a viewing deck.[9] The Hudson Tunnel Project Preferred Alternative would have temporary construction activities near this part of Harborside/Hoboken Cove Park and the permanent tunnel alignment would be directly beneath this part of the park. Although this portion of the park is not currently a recreational resource, it is a planned future Section 4(f) property that is likely to be in place during tunnel construction nearby, and this Section 4(f) evaluation conservatively assumes that this area will be completed as a recreational resource before construction of the Preferred Alternative occurs.

In addition, Harborside/Hoboken Cove Park abuts a waterfront walkway that is part of the Hudson River Waterfront Walkway, discussed below in Section 24.5.2.4.

24.5.2.4.1 Temporary Construction Activity in Proximity to Harborside/Hoboken Cove Park: No Constructive Use

24.5.2.4.1.1 Description of Construction Activity

Construction activities for the Preferred Alternative would occur in close proximity to and beneath the undeveloped section of Harborside/Hoboken Cove Park. Construction activities would not affect the currently developed portion of Harborside/Hoboken Cove Park. The construction activities near the park would include the following:

- Construction truck route: Two of the proposed truck routes for construction trucks traveling to and from the Hoboken construction staging site (haul route Options 1 and 3) would include a new temporary access road along the north side of the existing HBLR tracks that would be approximately 150 feet from the undeveloped section of Harborside/Hoboken Cove Park at its closest point (a currently undeveloped stretch of waterfront along Park Avenue that will be developed in the future; the timing for this construction is not known). Trucking activity would be discernible from this area of the park, but would not result in noise impacts at the park. Based on the noise analysis presented in Chapter 12A of the FEIS, "Noise," Section

[9] https://www.nj.gov/dep/floodresilience/rbd-hudsonriver.htm.

12A.6.2.3.1, the truck route would not result in noise levels that would exceed the FTA construction noise impact thresholds at the park.

- Construction noise associated with pile drilling: Pile drilling at the Willow Avenue underpinning work area (one block or approximately 250 feet away from the undeveloped portion of the park at its nearest point) would produce noise levels at the park that exceed FTA noise impact thresholds. This would occur for approximately two months, Monday through Friday, 7 AM–11 PM. Based on early conceptual planning, this future park will include predominantly active uses—playgrounds, lawns, game courts, and a viewing deck. Due to the relatively short duration of the noise exceedance at this park and its predominantly active uses, which are generally not noise-sensitive, the noise impact would not constitute an adverse construction noise impact at this park (see Chapter 12A, "Noise," Section 12A.6.2.3).
- Vibration during tunnel boring: The new Hudson River Tunnel's alignment would be constructed directly beneath this park, approximately 75 feet below the surface. The two TBMs drilling the two separate tubes of the tunnel would work entirely underground and any vibration from tunnel construction would be barely perceptible (see Chapter 12B, "Vibration," Section 12B.6.2.4). The subsurface construction work for tunnel boring beneath the park would not be visible from the park, would not occupy any park space, and would not be staged from the park.

These temporary construction activities for the Preferred Alternative would occur in close proximity to Harborside/Hoboken Cove Park but would not result in physical alterations to or occupation of the park.

24.5.2.4.1.1 No Constructive Use

The nearby construction activities and associated noise increase at Harborside/Hoboken Cove Park would not constitute a constructive use under Section 4(f). As defined in the Section 4(f) regulations, a constructive use under Section 4(f) occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. The affected area of Harborside/Hoboken Cove Park is currently undeveloped. Based on conceptual planning for the Rebuild By Design project, this section of the park will be improved with predominantly active uses in the future. If the park is completed when construction for the Preferred Alternative occurs, the increase in noise resulting from the Preferred Alternative would not impair the protected activity during the two months when pile drilling occurs, since active uses are generally not noise-sensitive. The Project Sponsor will coordinate with the City of Hoboken and Township of Weehawken, which are the officials with jurisdiction for this park, regarding pile installation for the underpinning of the Willow Avenue viaduct, to avoid disruption to special events in the park and to provide advance notification, so that the city and township can provide public notification of this activity and its expected duration. Therefore, the Preferred Alternative would not result in a constructive use of Harborside/Hoboken Cove Park under Section 4(f).

24.5.2.4.2 Permanent Tunnel Alignment Beneath Harborside/Hoboken Cove Park: No Use

The Preferred Alternative's permanent tunnel alignment would be located beneath the currently undeveloped portion of Harborside/Hoboken Cove Park. When construction is occurring, the TBMs operating 75 feet below the park would not have result in noticeable vibrations and therefore also would not result in any damage to the park. Once the tunnel is complete and operational, the presence of the tunnel would not be noticeable in the park or affect the protected activities in the park. Operation of trains in the completed tunnel would not result in vibration impacts (see Chapter 12B, "Vibration," Section 12B.7.2). Therefore, the permanent presence of a tunnel beneath

Harborside/Hoboken Cove Park would not harm the protected purpose of the park and would not result in a use according to Section 4(f).

24.5.2.5 HUDSON RIVER WATERFRONT WALKWAY

The Hudson River Waterfront Walkway is an 18.5-mile-long waterfront walkway under development along the New Jersey waterfront between Bayonne and Fort Lee. Most of the walkway in Weehawken and Hoboken is completed; in the Project area, this linear open space has been completed. The Hudson River Waterfront Walkway passes alongside Harborside/Hoboken Cove Park in the Project area. The Preferred Alternative would have temporary construction activities near the Hudson River Waterfront Walkway and the permanent tunnel alignment would be directly beneath the park.

24.5.2.5.1 Temporary Construction Activity in Proximity to the Hudson River Waterfront Walkway: No Constructive Use

24.5.2.5.1.1 Description of Construction Activity

Construction activities for the Preferred Alternative would occur in close proximity to and beneath a small segment of the Hudson River Waterfront Walkway. The construction activities near the park would include the following:

- Construction truck route: One of the proposed truck routes for construction trucks traveling to and from the Hoboken construction staging site (haul route Option 3) would include a new temporary access road along the north and west side of the existing HBLR tracks that would be located approximately 100 feet from the Hudson River Waterfront Walkway at its closest point along the Harbor Path. Trucking activity would be discernible from this area of the park, but would not result in noise impacts at the park. Based on the noise analysis presented in Chapter 12A of the FEIS, "Noise," Section 12A.6.2.3.1, the truck route would not result in noise levels that would exceed the FTA construction noise impact thresholds at the park.
- Construction noise associated with pile drilling: Pile drilling at the Willow Avenue underpinning work area (one block or approximately 320 feet away from the undeveloped portion of the park at its nearest point) would produce noise levels in a small section of the park (a few hundred linear feet) that exceed FTA noise impact thresholds. This would occur for approximately two months, Monday through Friday, 7 AM–11 PM. Due to the relatively short duration of the noise exceedance at this park and the small section (a few hundred feet) of the 18.5-mile-long walkway affected, the noise impact would not constitute an adverse construction noise impact at this park (see Chapter 12A, "Noise," Section 12A.6.2.3).
- Vibration during tunnel boring: The new Hudson River Tunnel's alignment would be constructed directly beneath this park, approximately 75 feet below the surface. The two TBMs drilling the two separate tubes of the tunnel work entirely underground and any vibration from tunnel construction would be barely perceptible (see Chapter 12B, "Vibration," Section 12B.6.2.4). The subsurface construction work for tunnel boring beneath the park would not be visible from the park, would not occupy any park space, and would not be staged from the park.

These temporary construction activities for the Preferred Alternative would occur in close proximity to the Hudson River Waterfront Walkway but would not result in physical alterations to or occupation of the park.

24.5.2.5.1.2 No Constructive Use

The nearby construction activities and associated noise increase at the Hudson River Waterfront Walkway would not constitute a constructive use under Section 4(f). As defined in the Section 4(f) regulations, a constructive use under Section 4(f) occurs when the transportation project does not

incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Noise resulting from the Preferred Alternative would not impair the protected activity during the two months when pile drilling occurs, since only a few hundred feet of the 18.5-mile-long walkway would be affected. The Project Sponsor will coordinate with the City of Hoboken, which is the official with jurisdiction for this segment of the walkway, and the Hudson River Waterfront Conservancy, which provides oversight, regarding pile installation for the underpinning of the Willow Avenue viaduct, to avoid disruption to special events on the walkway and to provide advance notification, so that the city can provide public notification of this activity and its expected duration. Therefore, the Preferred Alternative would not result in a constructive use of the Hudson River Waterfront Walkway under Section 4(f).

24.5.2.5.2 Permanent Tunnel Alignment Beneath the Hudson River Waterfront Walkway: No Use

The Preferred Alternative's permanent tunnel alignment would be located beneath the Hudson River Waterfront Walkway. When construction is occurring, the TBMs operating 75 feet below the park would not have result in noticeable vibrations and therefore also would not result in any damage to the park. Once the tunnel is complete and operational, the presence of the tunnel would not be noticeable in the park or affect the protected activities in the park. Operation of trains in the completed tunnel would not result in vibration impacts (see Chapter 12B, "Vibration," Section 12B.7.2). Therefore, the permanent presence of a tunnel beneath the Hudson River Waterfront Walkway would not harm the protected purpose of the park and would not result in a use according to Section 4(f).

24.5.2.6 THE HIGH LINE

The High Line is a 1.5-mile-long linear park being developed on the viaduct structure of a former rail freight line that runs between and through existing buildings and around the Metropolitan Transportation Authority (MTA) Long Island Rail Road's (LIRR) John D. Caemmerer West Side Yard. The High Line is also a historic site eligible for the NRHP (the Section 4(f) evaluation related to its historic status is provided below in Section 24.5.3). The High Line consists predominantly of a paved walking area lined with landscaped areas of native plantings evocative of the plants that grew on the abandoned freight right-of-way before it was converted into a park. The entire route is on a steel railroad viaduct approximately 25 to 30 feet above street level that cuts between and through buildings. Access is via staircases and elevators located every few blocks. The High Line is a linear park with a range of different zones that offer a varied experience for visitors, including segments located in narrow corridors between buildings, segments running through buildings, and segments in wide open areas. The High Line is owned by the City of New York and maintained, operated, and programmed by a non-profit conservancy, Friends of the High Line, in cooperation with the New York City Department of Parks & Recreation.

As shown in **Figure 24-2**, in the northern segment (near the Project site), the High Line runs along Twelfth Avenue and then along the north side of West 30th Street. This segment of the High Line is predominantly paved, with limited plantings and some seating areas; an adjacent area of former rail tracks and volunteer vegetation between the tracks is intentionally preserved beside the walkway. Since it is currently located higher than the undeveloped Project site on its south and the open rail yard on its north, the High Line today offers wide vistas of Hudson River Park and the Hudson River beyond.

The Preferred Alternative would have temporary construction activities in proximity to the High Line. In addition, the permanent tunnel alignment for the Preferred Alternative would be directly beneath the High Line. A permanent Project above-grade structure would be in proximity to the park.

24.5.2.6.1 Temporary Construction Activity in Proximity to the High Line: No Constructive Use

24.5.2.6.1.1 Description of Construction Activity

Construction activities for the Preferred Alternative would occur in close proximity to the High Line. Construction activities near the park would include the following:

- Construction staging on the Twelfth Avenue staging site for approximately seven years.
- Truck route along Twelfth Avenue near the High Line for approximately seven years.
- Utility relocation in West 30th Street near Twelfth Avenue for approximately nine months.
- Pile installation at the Twelfth Avenue shaft for approximately five months and for the sewer relocation at West 30th Street for seven months.
- Installation of tracks and systems within the completed tunnel box that is being constructed by the Hudson Yards Right-of-Way Preservation Project.[10]

These construction activities would be noticeable at the High Line and could be temporarily disruptive to people on the High Line. In the future, in the same period while the Preferred Alternative is under construction, extensive construction associated with other projects will also be occurring in the surrounding area. With the Preferred Alternative, a noise wall would surround the Twelfth Avenue staging site, which would also serve to block views into the site. Taller equipment would be visible above the wall, as would the fan plant structure as it is erected. People on the High Line would have views over the wall into the site. Overall, construction activities may result in an adverse visual impact but this effect would be temporary.

The analysis of construction noise that was presented in the DEIS concluded that noise from cut-and-cover construction across West 30th Street in combination with pile driving at the Twelfth Avenue shaft site and in West 30th Street would result in noise levels exceeding the FTA noise impact thresholds for construction at the portion of the High Line that runs along West 30th Street for a period of 12 months. Based on further engineering for the Project design, Amtrak is now proposing a second option for the construction approach at this location. The new construction option involves the use of sequential excavation method (SEM) techniques, a type of tunnel mining involving below-ground excavation. Some cut-and-cover excavation would still occur for utility relocation in West 30th Street and potentially for other tunneling activities. With this new construction option, construction noise would be audible and potentially intrusive on the High Line, but it would not be at a level that would exceed FTA noise impact thresholds. If cut-and-cover construction with pile driving occurs in West 30th Street, this would result in noise levels that exceed FTA noise impact thresholds for up to approximately seven months and could potentially disrupt any passive recreation that occurs on the High Line along its West 30th Street segment (approximately 800 feet long), such as at seating areas.

In addition, the Preferred Alternative would involve installation of tracks and systems within the below-grade concrete tunnel box that is being constructed by a different project, the Hudson Yards Right-of-Way Preservation Project. Construction activity within this tunnel structure beneath the High Line would not result in noise or vibration at the High Line and this subsurface construction

[10] The Hudson Yards Right-of-Way Preservation Project is a concrete tunnel box underneath the West Side Yard that is being constructed to preserve a future location for rail operations, since a large-scale redevelopment, known as Hudson Yards, is planned on a platform above the West Side Yard. The Hudson Yards Right-of-Way Preservation Project is a separate project from the Hudson Tunnel Project and underwent its own environmental review and Section 4(f) evaluation. The Preferred Alternative would make use of this completed tunnel box for its alignment.

work would not be visible from the park, would not occupy above-grade park space, and would not be staged from the park.

These temporary construction activities for the Preferred Alternative would occur in close proximity to the High Line but would not result in physical alterations to or occupation of the park.

24.5.2.6.1.2 No Constructive Use

The nearby construction activities and associated visual changes and noise increase at the High Line would not constitute a constructive use under Section 4(f). As defined in the Section 4(f) regulations, a constructive use under Section 4(f) occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. The High Line is a 1.5- mile-long linear park with a range of different zones that offer a varied experience for visitors. While construction activity for the Preferred Alternative may result in noise increase that exceed FTA's noise impact thresholds for approximately seven months, this would affect only about 800 linear feet of the High Line, leaving the rest of this long park available for recreation without increased noise. Overall, construction activities for the Preferred Alternative would not impair the protected activity on the High Line (the use of the High Line for recreation). Therefore, the Preferred Alternative would not result in a constructive use of the High Line under Section 4(f).

24.5.2.6.2 Permanent Tunnel Alignment Beneath the High Line: No Use

The Preferred Alternative's permanent tunnel alignment would be located beneath the High Line. The tunnel alignment for the Preferred Alternative would make use of the Hudson Yards Right-of-Way Preservation Project being constructed by Amtrak underneath the West Side Yard, which passes directly beneath the High Line.

When construction is occurring for installation of tracks and systems within the completed tunnel box, this would not result in any damage to the park. Once the tunnel is complete and operational, the presence of the tunnel would not be noticeable in the park or affect the protected activities in the park. Operation of trains in the completed tunnel would not result in vibration impacts (see Chapter 12B, "Vibration," Section 12B.7.3). Therefore, the permanent presence of a tunnel beneath the High Line would not harm the protected purpose of the park and would not result in a use according to Section 4(f).

24.5.2.6.3 Permanent Project Structure in Proximity to High Line: No Constructive Use

The Preferred Alternative would include a permanent new above-grade fan plant on the block between West 29th and West 30th Streets and Eleventh and Twelfth Avenues (Manhattan Block 675), on a site that is currently paved and undeveloped. This new structure would not result in adverse impacts on the High Line and therefore would not result in constructive use, as follows:

- The new structure, with a height that may potentially be up to approximately 150 feet (equivalent to a 15-story building), would change the appearance of the site. However, the area around the Twelfth Avenue fan plant is currently undergoing substantial redevelopment and by 2033, when the Preferred Alternative would be complete, the block where the fan plant site is located (Block 675) will be developed with two tall towers at Eleventh Avenue. On the large blocks to the north between Tenth and Twelfth Avenues, many high-rise buildings and mid- to low-rise buildings will be present. A high-rise commercial building may also be developed on the same lot as the fan plant. Overall, this area of the Far West Side will be transformed into a densely developed neighborhood of large and bulky buildings. The Twelfth Avenue fan plant would be similar in bulk and height to many of the mid-rise buildings that will be present in the surrounding area and much shorter than the high-rise buildings that will be

located on the same block and on the blocks to the north, as well as numerous existing buildings to the south and east, as described in EIS Chapter 10, "Visual and Aesthetic Resources," Section 10.3.3.1.1.

- With the Preferred Alternative, the fan plant would cast new shadows on the High Line from the Twelfth Avenue fan plant site, but the extent of incremental shadows would be small; all affected areas would continue to receive four hours of sunlight or longer over the course of the day so that plantings would not be adversely affected; and large adjacent areas of the High Line would be in sun at the times when incremental shadow would occur, for users seeking sunlight.
- The new fan plant would not result in noise or air quality impacts on the High Line, based on the analyses presented in EIS Chapter 12A, "Noise," Section 12A.7.3, and EIS Chapter 13, "Air Quality," Section 13.7.

The new Twelfth Avenue fan plant would not adversely affect the High Line so as to substantially impair its use, and therefore no constructive use would occur under Section 4(f).

24.5.2.7 HUDSON RIVER PARK

Construction activities for the Preferred Alternative would affect Hudson River Park, a linear park along the Manhattan shoreline of the Hudson River between Lower Manhattan and West 59th Street. The area of the park between approximately West 29th Street and approximately West 30th Street would house a temporary construction site and staging area for an estimated 18 months, to effectuate ground improvement for the below-ground tunnel alignment in this area. This temporary construction activity in the park would be a Section 4(f) use. This use is described and evaluated in Section 24.7 below.

24.5.3 HISTORIC RESOURCES

24.5.3.1 ARCHAEOLOGICAL RESOURCES

Section 4(f) applies to archeological sites that are on or eligible for listing on the NRHP, including those discovered during construction, except when the resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place. This applies both to situations where data recovery is undertaken and where FRA decides, with agreement from the officials with jurisdiction, not to carry out data recovery at the site.

24.5.3.1.1 Potential Archaeological Resources that Qualify as an Exception from Section 4(f)

The following areas of archaeological sensitivity have been identified within the alignment of the Preferred Alternative:

- Potential prehistoric archaeological resources: the Meadowlands portion of the alignment in New Jersey, where new surface tracks would be constructed, has been identified as having moderate potential for deeply buried prehistoric archaeological resources to be present.
- Historic-period archaeological resources, including the former alignment of the Hackensack Plank Road and the former alignment of a historic seawall: these have a moderate to high potential to be located within the alignment of the Preferred Alternative at the eastern side of the Hoboken staging area.
- Historic piers, wharves, and fill-retaining devices have a moderate potential to be located within the alignment in Manhattan from the shoreline to the northern side of West 30th Street.
- The Twelfth Avenue staging area and shaft site on Block 675 Lot 1 also has a moderate potential for industrial, manufacturing, and domestic sites.

All of these archaeological features have importance for what could be learned through data recovery and do not warrant preservation in place. The Section 4(f) regulations specify that Section 4(f) is not applicable for archaeological resources if it is determined that such resources are important because of what can be learned through data recovery rather than through preservation in place (23 CFR § 774.13(b)). Therefore, the Preferred Alternative would not result in a Section 4(f) use of these previously identified archaeological resources.

If additional NRHP-Eligible archaeological resources are found to exist before or during construction of the Preferred Alternative, any activities that would damage or destroy the newly discovered NRHP-Eligible archaeological resources would constitute a Section 4(f) use. Therefore, should it be determined that these resources would warrant preservation in place, the Lead Federal Agency would prepare a separate Section 4(f) evaluation.

The Project's Programmatic Agreement (PA) developed in accordance with Section 106 includes stipulations to address potential impacts to areas that have been identified as archaeologically sensitive. The PA is included with the EIS in **Appendix 9**.

Prior to any Project-related subsurface disturbance at any of the locations that have been determined to be sensitive for historic archaeological resources, the Project Sponsor, in consultation with FRA, the New Jersey Historic Preservation Officer (NJHPO), the New York State Historic Preservation Officer (NYSHPO), Consulting Tribes, and signatories and concurring parties to the PA, will develop an Archaeological Testing Plan and/or an Archaeological Monitoring Plan, as appropriate. The Archaeological Testing Plan and/or Archaeological Monitoring Plan will include provisions for the evaluation of encountered archaeological resources per NRHP eligibility standards, and development of mitigation or data recovery for any archaeological properties found to be NRHP-Eligible.

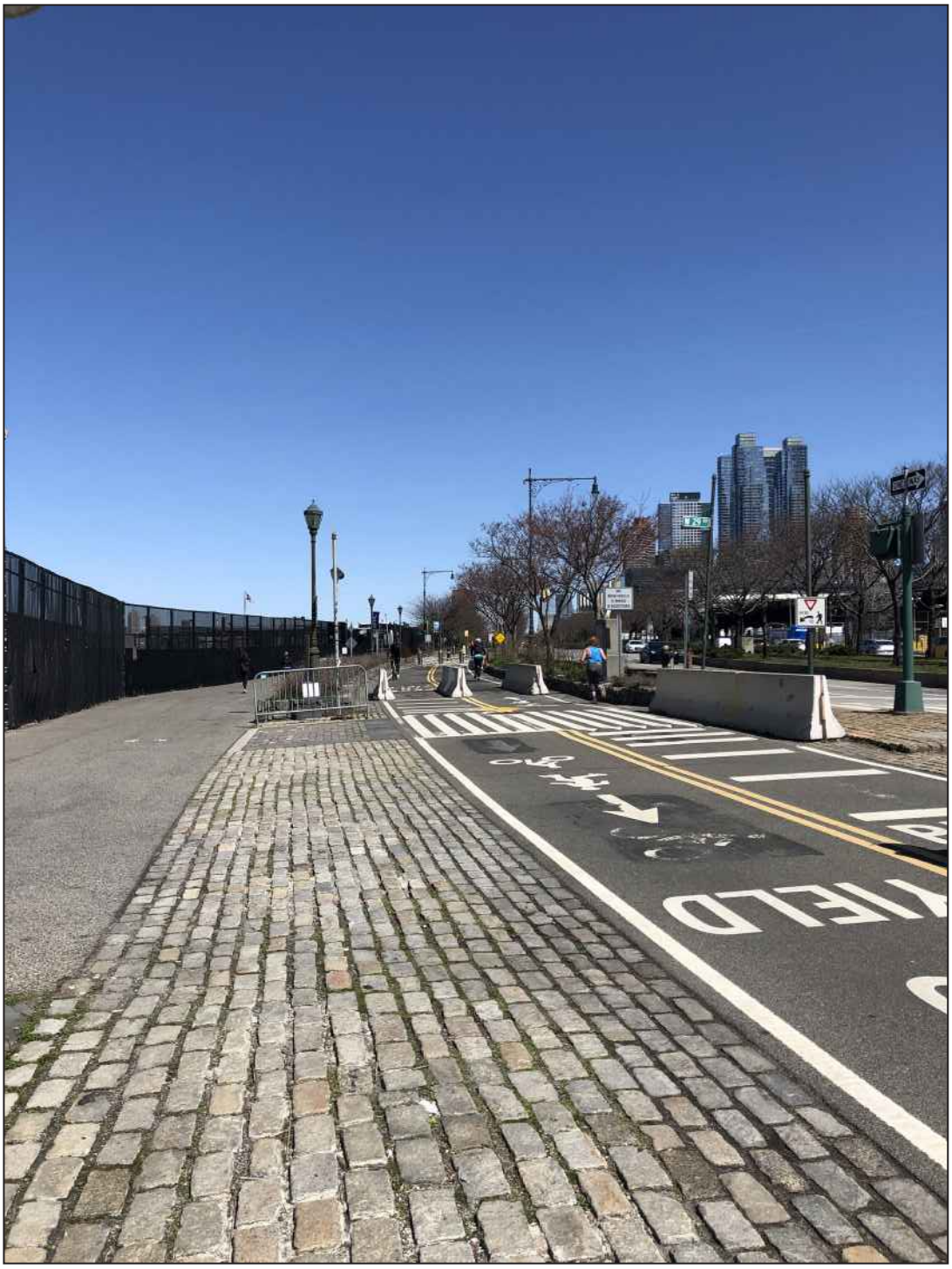
24.5.3.1.2 Hudson River Bulkhead: Section 4(f) Use

Along the New York shoreline, the Preferred Alternative would result in an adverse effect to the Hudson River Bulkhead. The Hudson River Bulkhead is NRHP-Eligible under Criterion A for its association with commerce and industry, under Criterion C for engineering, and Criterion D for its potential to yield data of archaeological significance, and is therefore both an archaeological and historic resource.[11] With respect to this Section 4(f) analysis, the Hudson River Bulkhead is treated as a historic architectural resource (Criteria A and C) rather than an archaeological resource. Its use is described in Section 24.6 below.

24.5.3.2 HISTORIC ARCHITECTURAL RESOURCES

The analysis of effects to historic resources conducted in accordance with Section 106 and summarized in Chapter 9, "Historic and Archaeological Resources," of the FEIS identifies the potential effects of the Preferred Alternative on sites listed on or eligible for listing on the NRHP. As required by Section 106, FRA established an Area of Potential Effect (APE) for the Preferred Alternative, which is defined as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist" (36 CFR § 800.16[d]). FRA and NJ TRANSIT then identified a total of 16 properties that are listed on or eligible for the NRHP in the APE and assessed the effects of the Preferred Alternative on those resources. These resources are shown in **Figures 24-3 and 24-4** and **Table 24-2** lists these resources and the potential effects of the Preferred Alternative. As shown in **Table 24-2**, the Preferred Alternative would result in no effect or no adverse effect on 12 of the 16 historic properties identified as being located in the Preferred Alternative's APE.

[11] The NRHP criteria for evaluation for evaluation are defined in 36 CFR Part 60.



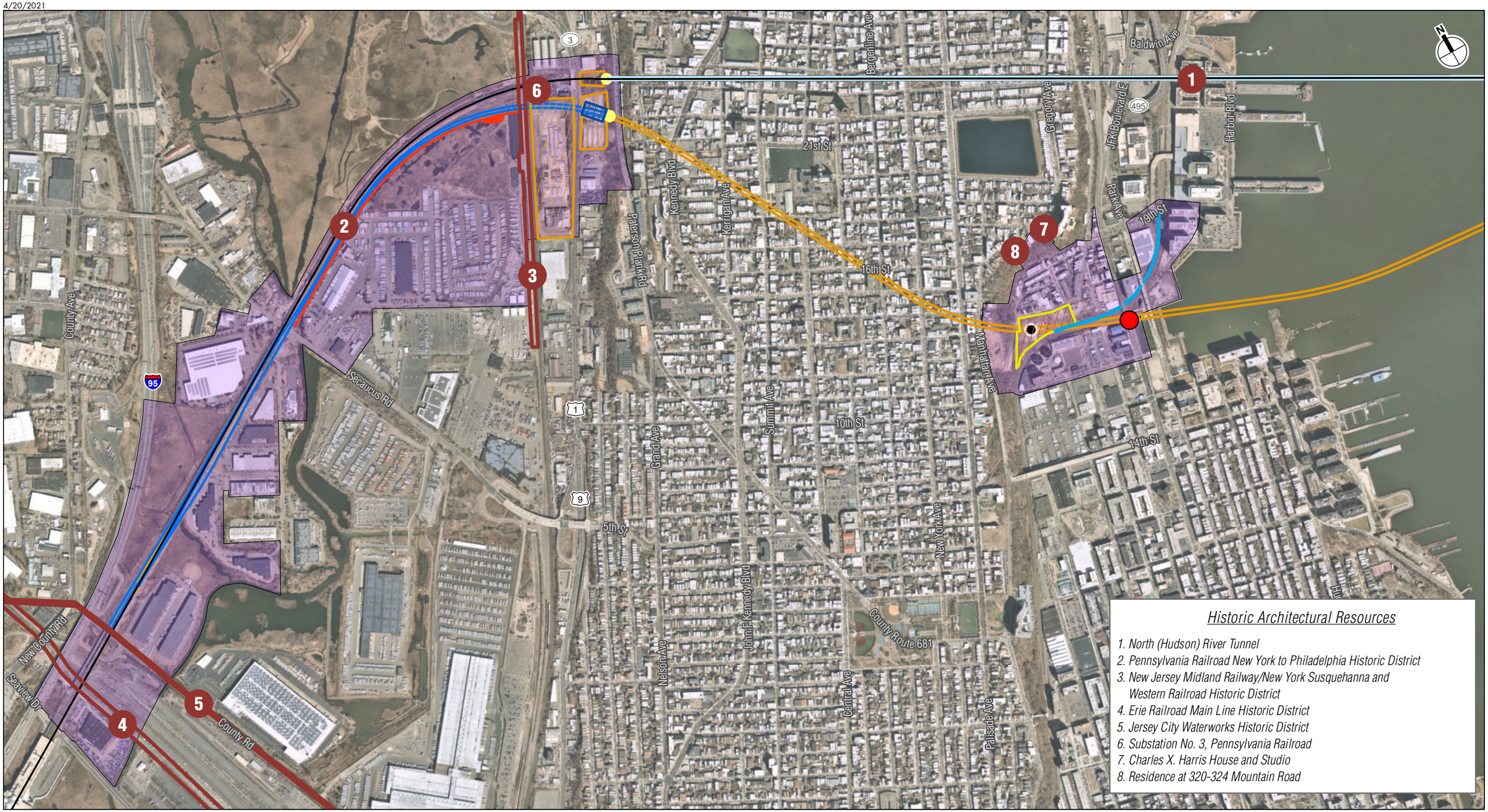
View north at West 29th Street. View shows, from left to right: West 30th Street Heliport on left behind fence, paved interim park walkway, buffer area with paving stones and plantings, two-lane Route 9A bikeway, and Twelfth Avenue/Route 9A

Hudson River Park Walkway
and Route 9A Bikeway
near West 29th Street

Figure 24-3

HUDSON TUNNEL PROJECT

4/20/2021



Existing Northeast Corridor

New Deeply Bored Tunnel

Area of Potential Effect for Indirect Effects

1 Historic Architectural Resource

Area of Potential Effect for Direct Effects

Access Road for New Surface Tracks

New Surface Tracks

Tunnel Portal

New Ventilation Shaft

Existing North River Tunnel

Fan Plant & Construction Staging Area

Construction Staging Area

Cut and Cover Excavation

Construction Access Road to Ventilation Shaft Site

Underpinning

0 1,000 FEET

HUDSON TUNNEL PROJECT

Section 4(f) Historic Resources in New Jersey

Figure 24-4

Table 24-2
Section 4(f) Properties—Historic Resources

Map No.*	Name	Location	Project Activities at or Near the Resource	Section 106 Effect	Section 4(f) Use
New Jersey					
1	North River Tunnel	North Bergen; Union City; Weehawken	Construction activities in the tunnel for its rehabilitation	Adverse effect	No use (exempt from Section 4(f) review per 49 USC § 303(h))
2	Pennsylvania Railroad New York to Philadelphia Historic District	Multiple	Construction activities on the NEC, including New Jersey surface tracks and the North River Tunnel	Adverse effect	No use (exempt from Section 4(f) review per 49 USC § 303(h))
3	New Jersey Midland Railway/New York, Susquehanna and Western Railroad Historic District	Multiple	Construction activity near and bridge over	No adverse effect	No use
4	Erie Railroad Main Line Historic District	Multiple	Construction activity and permanent structure nearby	No adverse effect	No use
5	Jersey City Waterworks Historic District	Multiple	Construction activity nearby	No effect	No use
6	Substation No. 3, Pennsylvania Railroad	North Bergen	Construction activity and permanent structure nearby	No adverse effect	No use
7	Charles X. Harris House and Studio (356 Mountain Rd)	Union City	Construction activity and permanent structure nearby	No adverse effect	No use
8	Residence at 320-324 Mountain Rd	Union City	Construction activity and permanent structure nearby	No adverse effect	No use
New York					
1	New York Improvements and tunnel extension of the Pennsylvania Railroad (North River Tunnel)	Between Weehawken, New Jersey and Long Island City, New York	Construction activities in the North River Tunnel for its rehabilitation	Adverse effect	No use (exempt from Section 4(f) review per 49 USC § 303(h))
2	Hudson River Bulkhead	Between Battery Pl and West 59th St	Tunnel construction through the bulkhead foundation	Adverse effect	Use
3	High Line	Along West 30th St between Tenth and Twelfth Aves, and Twelfth Ave between West 30th and 34th Sts	Permanent tunnel alignment beneath the High Line; construction activity and permanent structure nearby	No adverse effect	No use
4	Master Printers Building	406-416 Tenth Ave	Construction activity nearby	No adverse effect	No use
5	Charles P. Rodgers & Company Building (now demolished)	517-523 West 29th St	None, since the building has been demolished	No effect	No use
6	Former W & J Sloane Warehouse and Garage	541-561 West 29th St and 306-310 Eleventh Ave	Construction activity nearby	No effect	No use
7	Starrett-Lehigh Building	601-625 West 26th St (block between Eleventh and Twelfth Aves, West 26th and 27th Sts)	Construction activity nearby	No effect	No use
8	West Chelsea Historic District	Roughly bounded by West 26th and 28th Sts, Tenth and Twelfth Aves	Construction activity nearby	No effect	No use

Notes: All of the properties in this table are NHRP-Eligible.
* For properties in New Jersey, see **Figure 24-3**; for properties in New York, see **Figure 24-4**.

The Preferred Alternative would involve tunneling beneath one of the resources identified in **Table 24-2**. It would also involve construction activities and permanent structures near some of the resources in the table. Finally, the Preferred Alternative would result in physical alterations to some of the resources, including three resources that are part of the NEC and one that is not.

24.5.3.2.1 Permanent Tunnel Alignment Beneath Resource: No Use

The tunnel alignment for the Preferred Alternative would pass directly beneath the High Line (which is also a park and is evaluated as such in Section 24.5.2.5). As described in FHWA's Section 4(f) Policy Paper, tunneling beneath a Section 4(f) property does not constitute a use of a historic property unless it "substantially impairs the historic values of a historic site." The Preferred Alternative would result in no adverse effect on the High Line. Therefore, the presence of the tunnel beneath the High Line would not result in a Section 4(f) use of the High Line.

24.5.3.2.2 Temporary Construction Activity and/or Permanent Project Structures in Proximity to Resource: No Constructive Use

Most of the historic resources in the APE for the Preferred Alternative would be located near temporary construction activities related to the Project; many would also be located near permanent above-grade structures associated with the Preferred Alternative. In its evaluation conducted pursuant to Section 106, FRA concluded that no adverse effect or no effect would occur to those resources. The Section 4(f) regulations (23 CFR § 774.15(f)(1)) state that no constructive use occurs on a historic resource when review in accordance with Section 106 results in an agreement of "no adverse effect."

Therefore, the Preferred Alternative would not: (1) permanently incorporate land from these resources into a transportation facility; (2) temporarily occupy land that is part of the resources; or (3) constructively use the resources. Therefore, no Section 4(f) use would occur for historic resources for which no effect or no adverse effect would occur.

24.5.3.2.3 Railroad-Related Resources Physically Altered by Project that Qualify for Exemption from Section 4(f)

The Preferred Alternative would result in physical alterations to three historic properties that are railroad-related, resulting in an adverse effect on those resources. Those resources are the North River Tunnel; the Pennsylvania Railroad New York to Philadelphia Historic District; and the New York Improvements and Tunnel Extension of the Pennsylvania Railroad (North River Tunnel). These three resources are part of the NEC.

As described earlier, the Section 4(f) legislation at 23 USC § 138(f) and 49 USC § 303(h) exempts from Section 4(f) review improvements to, or the maintenance, rehabilitation, or operation of railroad and rail transit lines, or elements thereof, that are in use or that were historically used for the transportation of goods and passengers, regardless of whether the railroad or rail transit line is eligible for listing on the NRHP. Three of the historic properties physically altered by the Project are railroad sites that are part of the NEC and are actively used for railroad purposes and meet the criteria for the Section 4(f) exemption, as discussed below.

24.5.3.2.3.1 North River Tunnel

The NEC's existing tunnel beneath the Hudson River, the North River Tunnel, extends from the Bergen Portal in the Township of North Bergen, Hudson County, New Jersey to the Tenth Avenue Portal in New York City, New York County, New York. The tunnel was determined to be eligible for listing in the NRHP under Criteria A and C by NJHPO on November 12, 1998. The tunnel is significant for its contribution to advances in tunneling technology and railroad electrification, which together allowed for the first major direct rail connection between New York and New Jersey. The

tunnel is also a contributing resource within the Pennsylvania Railroad New York to Philadelphia Historic District and is significant for its role in the continued expansion of the railroad.

Subsequently, on March 21, 2011, NYSHPO made a determination that the subterranean and subaqueous railroad tracks and tunnels (North River Tunnel) of the New York improvement and tunnel extension of the Pennsylvania Railroad, extending from Weehawken, New Jersey, beneath the Hudson River, beneath Manhattan, and under the East River to Long Island City, Queens meet NRHP Criterion A for transportation history and Criterion C for engineering design.

NYSHPO's Statement of Significance noted that this project, built between 1903 and 1910, was "the largest and most advanced metropolitan railroad project undertaken in the United States at that point in history." The North River Tunnel was one element of this larger project. The two subaqueous tubes under the Hudson River were constructed using large shields measuring 18 feet in diameter driven from each side of the Hudson River and joined together mid-river. Each tube is cast iron and is lined with monolithic masonry panels. An important component of the design was the bore segments placed every 15 feet to accommodate a screw pile driven into bedrock to stabilize the tubes. This was done to solve the previous problems in building railroad tunnels under the Hudson River due to the unstable silt river floor. The piles kept the silt surrounding the tubes from shifting and potentially fracturing the cast iron tube while a train was moving through it.

Each tube contains only a single set of tracks to prevent train derailments and collisions. The tubes were designed with side benches on both sides of each tube, one foot higher than the average Pullman car in order to prevent derailments. The benches are hollow to accommodate electrical cables, including high-tension and low-tension power lines and telegraph, telephone, and signal wires. Walkways on these concrete benches allow for maintenance and repair.

The Bergen Portal in North Bergen serves as the western terminus of the North River Tunnel. The portal is a coursed stone structure with two arched tunnel openings and with an upper level containing sealed arched openings.

The Preferred Alternative would rehabilitate the North River Tunnel, including both the north and south tubes. No changes would occur to the Bergen Portal as part of the tunnel rehabilitation. All rehabilitation work would occur inside the North River Tunnel. The bench walls would be demolished and replaced, portal to portal, including the embedded duct banks. The new egress walkway (bench walls or otherwise) arrangement would have one high egress walkway, level with the train floor, on the inner tunnel side providing emergency egress via cross passages, and one low egress walkway at a height slightly above the top of rail for ease of maintenance and inspection. In addition, the existing ballasted track system (rail and ballast) would be removed and replaced with a direct fixation track system, which is the current state of practice for rail tunnels. As the Preferred Alternative would remove interior components of the North River Tunnel that include original physical features such as the bench walls, which were technologically innovative and are character-defining features of the NRHP-Eligible resource, and the ballast track system, the Preferred Alternative would result in an adverse effect on this historic architectural resource. However, because the adverse effect would be a result of rehabilitation of a railroad that has historically been used and is in use to transport passengers, and the railroad line has not been abandoned, in accordance with 49 USC § 303(h), the rehabilitation of the North River Tunnel with the Preferred Alternative does not constitute a use of a historic site under Section 4(f).

24.5.3.2.3.2 Pennsylvania Railroad New York to Philadelphia Historic District

The Pennsylvania Railroad New York to Philadelphia Historic District is a linear historic district extending from New York to Philadelphia. NJHPO determined the Pennsylvania Railroad New York to Philadelphia Historic District to be NRHP-Eligible under Criterion A in the areas of Transportation, Engineering, and Commerce, and under Criterion C for its "distinctive and

characteristic array of surviving cuts, embankments, grade separations, overgrade and undergrade bridges and culverts, stations, interlocking towers, and overhead catenary system." The period of significance for the district is 1863-1966.

The Preferred Alternative would directly affect the Pennsylvania Railroad New York to Philadelphia Historic District through alterations to the existing surface tracks and embankment and the addition of new surface tracks on the existing NEC between County Road and Tonnelle Avenue in the Town of Secaucus and Township of North Bergen, New Jersey. However, the addition of new surface tracks would be confined to a relatively small portion of this linear historic district. Furthermore, the alterations would be industrial in nature, consistent with the historic railroad character of the historic district, and would support the continued use of this active historic railroad. The Preferred Alternative would also have a direct effect on the Pennsylvania Railroad New York to Philadelphia Historic District because of the proposed rehabilitation of the North River Tunnel, a contributing resource to the larger historic district. The removal of the bench walls, original physical features of the tunnel that were technologically innovative and are character-defining features of a key contributing resource within the Pennsylvania Railroad New York to Philadelphia Historic District, would result in an adverse effect on the district, as discussed above.

The Pennsylvania Railroad New York to Philadelphia Historic District is a railroad that has historically been used and is in use to transport passengers. The Preferred Alternative would improve the railroad through the addition of redundant capacity including a new tunnel and new surface tracks and connections, and would rehabilitate the railroad by repairing the damaged North River Tunnel, requiring the removal of damaged bench walls and other original physical features of the North River Tunnel, as discussed above. Therefore, in accordance with 49 USC § 303(h), the activity associated with the Preferred Alternative does not constitute a use of a historic site under Section 4(f).

24.5.3.2.3.3 New York Improvements and Tunnel Extension of the Pennsylvania Railroad (North River Tunnel)

The New York Improvements and Tunnel Extension of the Pennsylvania Railroad (North River Tunnel) fully overlaps with the Pennsylvania Railroad New York to Philadelphia Historic District (described above in Section 24.5.3.2.3.2) but was determined eligible for the NRHP by NYSHPO rather than NJHPO. It includes the North River Tunnel, which extends from the Bergen Portal in the Township of North Bergen, Hudson County, New Jersey to the Tenth Avenue Portal in New York City, New York County, New York. The New York portal of the North River Tunnel is located just east of Tenth Avenue beneath the building at 450 West 33rd Street (between Dyer and Tenth Avenues and West 31st and West 33rd Streets). As noted above, NJHPO and NYSHPO previously determined that the tunnel is eligible for listing in the NRHP.

As discussed above, the Preferred Alternative's rehabilitation of the North River Tunnel would remove character-defining features of the New York Improvements and Tunnel Extension of the Pennsylvania Railroad, which would result in an adverse effect on this historic architectural resource. However, as discussed above, because the adverse effect would be a result of rehabilitation of a railroad that has historically been used and is in use to transport passengers, and the railroad line has not been abandoned, in accordance with 49 USC § 303(h), the tunnel rehabilitation does not constitute a use of a historic site under Section 4(f).

24.5.3.2.3.4 Section 4(f) Exemption

Section 4(f) law exempts from Section 4(f) review the use of railroad and rail transit lines, or elements thereof, that are in use or that were historically used for the transportation of goods and passengers. The exemption has two exceptions:

- The exemption does not apply to rail stations or transit stations; and

- The exemption does not apply to bridges or tunnels located on a rail line that has been abandoned under the process described in 49 USC § 10903 or a transit line that is not in use.

The three railroad-related historic resources that would be adversely affected by the Preferred Alternative are all resources that are in use (and were historically used) for the transportation of goods and passengers; none of them are rail stations and none have been abandoned or are no longer in use. Therefore, this exemption applies to these resources and no Section 4(f) review is required for the Preferred Alternative's effect on these resources.

24.5.3.2.4 Non-Railroad-Related Resources Physically Altered by Project

In addition, the Preferred Alternative would result in an adverse effect on one non-railroad historic property, the Hudson River Bulkhead. The permanent incorporation of a portion of the Hudson River Bulkhead into the Preferred Alternative is a use under Section 4(f). Therefore, a Section 4(f) evaluation has been prepared for the Hudson River Bulkhead in Section 24.6 below.

24.6 HUDSON RIVER BULKHEAD

24.6.1 DESCRIPTION OF THE SECTION 4(f) PROPERTY

The Hudson River Bulkhead extends from the Battery (at the southern tip of Manhattan) to West 59th Street within the boundaries of Hudson River Park and has been determined eligible for the NRHP. Significant under Criterion A in the areas of commerce or industry, Criterion C in the area of engineering, and Criterion D for the potential of the bulkhead to yield information about historic engineering methods, the bulkhead and its associated structural systems were constructed between 1871 and 1936 by the New York City Department of Docks. The majority of the construction consisted of masonry walls on a variety of foundation systems, with quarry-faced ashlar granite block forming the visible face along most of the armored frontage. Built between 1876 and 1898, the bulkhead between approximately West 23rd and West 34th Streets consists of a granite wall on narrow concrete block with inclined bracing piles and timber binding frames around the piles.

Design of the bulkhead was the responsibility of George B. McClellan, a general during the Civil War who became the first Engineer-in-Chief of the Department of Docks. McClellan's plans contemplated the creation of a 250-foot-wide marginal street, from which 60- to 100-foot-wide piers with cargo sheds would project 400 to 500 feet around 150- to 200-foot-wide slips. Initiated to respond to the deteriorated, congested, and silt-filled condition of the waterfront, the carefully built granite walls created a consistent monumental surface to the waterfront that reinforced an image of New York City's commercial prominence. As property was acquired and as commerce warranted, New York City built the bulkheads, built or rebuilt pier substructures, and leased redeveloped areas to private companies that were usually responsible for piershed and headhouse construction.

The officials with jurisdiction over the Hudson River Bulkhead are HRPT, the NYSHPO, and the ACHP since it is participating in the Section 106 review for the Project.

24.6.2 USE OF THE SECTION 4(f) PROPERTY

The Preferred Alternative would construct a new Hudson River Tunnel with two single-track tubes, like the existing North River Tunnel. The two tubes of the new tunnel would be relatively shallow beneath the Hudson River's riverbed near the Manhattan shoreline, in order to align with the existing approach tracks leading into PSNY. Therefore, the tubes must pass directly through the substructure portion of Manhattan's Hudson River Bulkhead.

Grout would be installed from the land side of the bulkhead to fill voids in the bulkhead riprap prior to ground freezing. The grouting pressure would be as low as possible. It would be high enough to travel horizontally through the riprap voids, but low enough not to exceed the resistance of the overlying ground weight of 30 feet of overlying silt and clay; this would limit the possibility of grout being released into the river. Instrumentation would be installed that continuously monitors changes of pressures in the ground during grouting. Safe limits of changes of pressures in the ground would be pre-established for specific locations as part of the monitoring plan.

After the grouting, ground improvement would be implemented, using a ground freezing technique, which involves installing a network of piles into the ground through which a freezing agent circulates to freeze the earth, so that it is temporarily hardened for tunneling. Once the ground is frozen at the bulkhead, the tunnel would be constructed through the bulkhead. Excavation through the bulkhead could occur by boring with TBMs continuing from the west that are designed to be capable of cutting through timber piles and riprap under frozen ground conditions. Alternatively, the bulkhead could be excavated manually from within a tunnel that has been mined from the east using the Sequential Excavation Method (SEM), a technique in which a tunnel is sequentially excavated in phases and supported in a controlled manner.

To avoid damaging the structural integrity of the bulkhead structure during construction of the Hudson River Tunnel tubes through the bulkhead and ensure that the Preferred Alternative does not negatively impact its long-term integrity, Amtrak will enter into an agreement with HRPT (the New York State entity responsible for the Hudson River Park, including the New York Hudson River Bulkhead) that defines the geographic area within Hudson River Park above or adjacent to the Hudson River Bulkhead that may be affected by the Project (the “Hudson River Bulkhead Impact Area”) and which sets forth the measures to be implemented by Amtrak for the long-term maintenance of the Hudson River Bulkhead and Bulkhead Impact Area. Amtrak, in coordination with FRA, will also provide a Design Technical Memorandum to HRPT that describes the proposed bulkhead construction techniques and proposed measures to monitor and protect the bulkhead. The Project Sponsor, in coordination with Amtrak, will develop and implement a Bulkhead Protection Plan that will set forth the specific requirements to protect the bulkhead and Hudson River Bulkhead Impact Area during the Project construction period. The Bulkhead Protection Plan will be developed in consultation with the NYSHPO and the HRPT prior to any Project-related demolition, excavation, and/or construction at the Hudson River Bulkhead Impact Area. The requirements to consult with NYSHPO and HRPT and to develop and implement the Bulkhead Protection Plan are included as a stipulation of the PA for the Project

The Preferred Alternative would remove original components of the Hudson River Bulkhead, which would be an adverse effect under Section 106, and therefore, would result in use of this Section 4(f) property.

24.6.3 ALTERNATIVES TO AVOID THE USE OF THE SECTION 4(f) PROPERTY

As set forth in Section 4(f) legislation, FRA may not approve the use of a Section 4(f) property—in this case, the Hudson River Bulkhead—if there is a “feasible and prudent” avoidance alternative. Therefore, if any feasible and prudent avoidance alternatives are available, one must be selected. As defined in the regulations (23 CFR § 774.17), an alternative that would not require the use of any Section 4(f) property is an avoidance alternative. Feasible and prudent avoidance alternatives are those that avoid using any Section 4(f) property and do not cause other severe problems that substantially outweigh the importance of protecting the Section 4(f) property.

As defined in 23 CFR § 774.17, an alternative is *not feasible* if it cannot be built as a matter of sound engineering judgment.

As defined in 23 CFR § 774.17, an alternative is *not prudent* if:

1. It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need;
2. It results in unacceptable safety or operational problems;
3. After reasonable mitigation, it still causes:
    a. Severe social, economic, or environmental impacts;
    b. Severe disruption to established communities;
    c. Severe disproportionate impacts to minority or low income populations; or
    d. Severe impacts to environmental resources protected under other Federal statutes;
4. It results in additional construction, maintenance, or operational costs of an extraordinary magnitude;
5. It causes other unique problems or unusual factors; *or*
6. It involves multiple factors of the above, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

As an initial step in the Project's evaluation in accordance with NEPA, a multi-step alternatives development and evaluation process was conducted to identify Build alternatives that meet the purpose and need for the Project. A total of 15 alternatives were developed and evaluated during the alternatives phase of the NEPA process. This process is described in Section 2.3 of Chapter 2, "Project Alternatives and Description of the Preferred Alternative" in the EIS, with additional detail provided in the Project's Alternatives Development Report completed in April 2017 and included as part of Appendix 2-1. As the result of this process, two alternatives were identified for analysis in the EIS: (1) the No Action Alternative and (2) a single Build Alternative, which is the Preferred Alternative.

The alternatives were evaluated against a two-tiered set of criteria:

- First, each alternative was assessed for its ability to meet purpose and need, including Project goals and objectives as well as established design criteria (engineering and operational factors).
- Alternatives that were found to meet purpose and need were then assessed in terms of feasibility (i.e., whether the alternative can feasibly be constructed and operated given engineering, constructability, and rail operations considerations) and reasonableness (i.e., an alternative may not be reasonable if it would have a likelihood for substantial impacts, a protracted construction time, an unacceptably high cost or great environmental impact relative to other alternatives, or operational characteristics that are unacceptable).

As a result of the screening evaluation, FRA and NJ TRANSIT concluded that the only Build Alternative concept that meets both of the established criteria is a new two-track rail tunnel near the existing North River Tunnel, with rehabilitation of the existing tunnel. Other alternatives were dismissed because they did not meet the Project purpose and need or because they were found to be infeasible or unreasonable. Alternatives that did not meet the Project purpose and need had constraints related to either (1) connecting from the NEC into the existing tracks at PSNY; or (2) maintaining uninterrupted NEC service and functionality.

After FRA issued the DEIS in 2017, information became available about other approaches to tunnel rehabilitation in which rehabilitation of the North River Tunnel could occur while the tunnel remains in service. These include the methodology that New York's Metropolitan Transportation Authority used in 2019 and 2020 to conduct an in-service rehabilitation of a tunnel on the L subway line in New York City and a methodology for an in-service rehabilitation for the North River Tunnel proposed in a 2020 review prepared for the Gateway Program Development Corporation by

London Bridge Associates. If such an approach could be undertaken for the North River Tunnel rehabilitation, another alternative that met the alternatives development criteria might exist and should be examined. Based on the specific engineering requirements for the North River Tunnel, the tunnel's heavy train volumes throughout the day, and the lack of alternative rail access from west of the Hudson River, Amtrak and NJ TRANSIT, in their roles as the operators of rail service in the tunnel and Amtrak in its role as lead for design of the tunnel rehabilitation, have determined that these approaches to rehabilitation cannot be reliably conducted without material delays to commuter and intercity rail service, and thus would not meet the purpose and need of the Project.

For purposes of Section 4(f) evaluation, any alternative that does not meet the Project purpose and need is not prudent (any one of the six items listed above can make an alternative not prudent; not meeting purpose and need is one such item, as noted in item 1). Similarly, any alternative that was determined not reasonable in the NEPA screening can be considered not prudent for purposes of Section 4(f) evaluation, in accordance with the six items provided in the regulations as defining an alternative that is not prudent (see discussion above). **Table 24-3** lists the 15 alternatives that were developed and evaluated in the preliminary screening and conclusions for this Section 4(f) evaluation related to their feasibility and prudence.

Table 24-3
Section 4(f) Screening Evaluation
of Alternatives Developed During NEPA Process

Alternative	Section 4(f) Evaluation
No Action Alternative	Does not meet Project purpose and need and therefore is not prudent
Build Alternative components presented in Scoping Document: new tunnel connecting to PSNY approach tracks	Prudent and feasible (but would not avoid the use of the Hudson River Bulkhead)
Access to the Region's Core (ARC) Project Major Investment Study (MIS) alternatives	Does not meet Project purpose and need and therefore is not prudent
ARC Supplemental DEIS/FEIS Build Alternative	Components that meet Project purpose and need are incorporated into the Build Alternative; other components that might avoid the use of the Hudson River Bulkhead (e.g., a deeper rail tunnel under the Hudson River) do not meet Project purpose and need and therefore are not prudent
Bridge alternative	Is likely to be not feasible. Is not prudent because it does not meet Project purpose and need; it is likely to cause severe social, economic, and an environmental impacts; and it is likely to result in additional construction costs of extraordinary magnitude.
Alternatives for Manhattan terminal options	Does not meet Project purpose and need and therefore is not prudent; also may not avoid use of Hudson River Bulkhead
ARC Scoping and DEIS alternatives	Would not avoid use of Hudson River Bulkhead
Alternative connections in Secaucus	Would not avoid use of Hudson River Bulkhead
Alternative with additional station in NJ	Would not avoid use of Hudson River Bulkhead
Alternative southern routing	Would not avoid use of Hudson River Bulkhead
Alternative routing near Hoboken Terminal	Would not avoid use of Hudson River Bulkhead
Shared passenger and freight rail tunnel	Would not avoid use of Hudson River Bulkhead
Shared passenger rail tunnel and No. 7 subway line	Would not avoid use of Hudson River Bulkhead
Passenger rail tunnel with bicycle lane	Would not avoid use of Hudson River Bulkhead
New tunnel with single track / phased tunnel construction	Would not avoid use of Hudson River Bulkhead
Rehabilitation of portions of the North River Tunnel tubes	Would not avoid use of Hudson River Bulkhead
Rehabilitation of both North River Tunnel tubes at the same time	Would not avoid use of Hudson River Bulkhead

As shown in the table, most of the alternatives considered would not avoid the use of the Hudson River bulkhead. The alternatives that would avoid the use of the bulkhead—the No Action Alternative, a deeper tunnel such as was proposed in the Access to the Region's Core (ARC) Project's Supplemental DEIS and FEIS, or a rail bridge over the Hudson River—would not meet the Project purpose and need and therefore are not prudent. These are discussed below. In addition, for purposes of this Section 4(f) evaluation, another alternative to avoid the use of the Hudson River Bulkhead, a "northern alignment alternative," would not be prudent and may not be feasible, as is also discussed below.

24.6.3.1 NO ACTION ALTERNATIVE

The No Action Alternative would not result in a new tunnel beneath the Hudson River, and therefore, it would not remove a piece of the Hudson River Bulkhead. The No Action Alternative includes those projects that are necessary to keep the existing North River Tunnel in service and provide continued maintenance as necessary to address ongoing deterioration and maintain service. It should be noted that despite the ongoing maintenance that is assumed to continue in the No Action Alternative, damage to the North River Tunnel caused by Superstorm Sandy will continue to degrade systems in the tunnel. This deterioration combined with the tunnel's age and intensity of use will likely lead to increasing instability of rail operations in the tunnel. The No Action Alternative does not address the purpose and need for the Project because it does not preserve the current functionality of passenger rail service between New Jersey and PSNY, does not repair the deteriorating North River Tunnel, and does not strengthen the NEC's resiliency to support reliable passenger rail service by providing redundant capability under the Hudson River. Therefore, the No Action Alternative is not a prudent avoidance alternative.

24.6.3.2 DEEP TUNNEL ALTERNATIVE

A deeper trans-Hudson passenger rail tunnel, such as the one that was included in the ARC Project's Supplemental DEIS and FEIS, could enter Manhattan at an elevation below the Hudson River Bulkhead, and therefore, avoid the use of this Section 4(f) property. However, a deep tunnel could not connect to the existing tracks at PSNY, because the slope required to connect between a deep alignment lower than the Bulkhead and the PSNY approach tracks would be at a grade too steep for train operations.

Given the train lengths (and resulting weight) of NJ TRANSIT's commuter trains serving PSNY, grades should not exceed 2.1 percent for the tunnel design. This is the steepest grade for NJ TRANSIT's trainsets in terms of operational reliability. With a grade of no more than 2.1 percent and the need to connect to existing tracks leading into PSNY at A Yard, the new tunnel must be relatively shallow beneath the Hudson River and its navigation channel to allow a connection to the existing tracks that lead into PSNY.

To avoid the Hudson River Bulkhead, a deep tunnel would have to be approximately 50 feet deeper than the current alignment. To connect to the PSNY approach tracks at A Yard at Tenth Avenue, the tracks would have to ascend at a grade of approximately 4.3 percent, far greater than the maximum 2.1 percent required for the tunnel design, which would cause unacceptable operational problems for Amtrak and NJ TRANSIT.

For these reasons, a deep tunnel alternative would either be infeasible, because such an alternative cannot be constructed as a matter of sound engineering judgement, while avoiding the Bulkhead and still connecting to PSNY, or it would be imprudent, because without a connection to PSNY it would not meet the Project purpose and need. Therefore, this is not a feasible and prudent avoidance alternative to the use of the Hudson River Bulkhead.

24.6.3.3 BRIDGE ALTERNATIVE

An alternative that brings passenger trains to New York on a bridge over the Hudson River rather than using a tunnel beneath the river would avoid the use of the Hudson River Bulkhead. However, this alternative is likely infeasible and is not prudent because: (1) it would not meet the purpose and need of the Project; and (2) it would likely result in severe social, economic, and environmental impacts.

In terms of feasibility, this alternative could not be built as a matter of sound engineering judgment. The bridge would have to be high enough above the Hudson River so as not to adversely affect navigation. This would mean that on the Manhattan side, tracks would have to slope steeply to reach the grade of existing PSNY, which would result in a grade that is much greater than can be used by Amtrak's and NJ TRANSIT's passenger trains, leading to an unacceptable operational problem. In addition, land is not readily available on either side of the river for new support towers for a new rail bridge.

In terms of prudence, a bridge alternative would not meet the Project purpose and need unless it can connect to PSNY. The stated purpose and need is to preserve the current functionality of Amtrak's NEC service and NJ TRANSIT's commuter rail service between New Jersey and PSNY by repairing the deteriorating North River Tunnel, while maintaining uninterrupted commuter and intercity rail service on the NEC, and to strengthen the NEC's resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains between New Jersey and the existing PSNY. In addition, a bridge alternative would require extensive disruption leading to substantial environmental impacts on both sides of the river, assuming the requisite property could be acquired for new support towers. For this alternative to connect from the NEC's surface tracks in New Jersey, it would have to either include a tunnel through the Palisades that leads to the bridge, or a long approach ascending over the Palisades from the Meadowlands. Construction of support tracks connecting to the NEC in New Jersey and into PSNY in New York and construction of support towers would require further property acquisition along the selected alignment. This alternative would have substantial community and environmental impacts to residential properties on the Palisades in New Jersey and residential and commercial properties in New York City from the massive structures that would need to be placed in close proximity to existing buildings and from the train operations on those structures occurring near these adjacent buildings.

For these reasons, a bridge alternative is not a feasible or prudent avoidance alternative to the use of the Hudson River Bulkhead.

24.6.3.4 NORTHERN ALIGNMENT ALTERNATIVE

The Hudson River Bulkhead extends along New York's Hudson River shoreline from the tip of Manhattan (the Battery) to 59th Street. An alternative that enters Manhattan north of 59th Street would avoid the need to use a portion of the Hudson River Bulkhead. However, such an alternative is not feasible or prudent.

This alternative is not feasible. A rail alignment that enters Manhattan north of 59th Street would be approximately 1 mile north of PSNY. PSNY is about ½ mile from the waterfront, so the alignment would have to turn sharply to the south, and then turn sharply east again to connect into PSNY. The tight turns required would not be feasible for train operations, as trains likely would not be able to operate with such tight turns. In addition, it may be very difficult or even impossible to find a suitable below-grade right-of-way beneath densely developed Manhattan that is not already occupied by a substantial number of subsurface structures. These could potentially include subway alignments, building foundations, and the approaches for the Lincoln Tunnel.

In addition, this alternative is not prudent. If the tight turns were feasible for train operations, they would certainly reduce train speeds substantially, significantly reducing the capacity of the NEC to process trains. This would not meet the Project purpose and need, which includes maintaining uninterrupted commuter and intercity rail service on the NEC, and strengthening the NEC's resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains. For these reasons, a northern alignment alternative would not meet the Project purpose and need.

For these reasons, a northern alignment alternative is not a feasible and prudent avoidance alternative to the use of the Hudson River Bulkhead.

24.6.4 LEAST OVERALL HARM ALTERNATIVE

If there is no feasible and prudent avoidance alternative, FRA may approve only the alternative that causes the least overall harm in light of the statute's preservation purpose. As stated in 23 CFR § 774.3, the "least overall harm" is determined by balancing the following list of factors:

- The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
- The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
- The relative significance of each Section 4(f) property;
- The views of the official(s) with jurisdiction over each Section 4(f) property;
- The degree to which each alternative meets the purpose and need for the project;
- After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
- Substantial differences in costs among the alternatives.

If the analysis described in the preceding section concludes that there is no feasible and prudent avoidance alternative, then FRA may approve, from among the remaining alternatives that use Section 4(f) property, only the alternative that causes the least overall harm in light of the statute's preservation purpose. However, this analysis is required only when multiple alternatives that use Section 4(f) property remain under consideration. As described in the preceding section, FRA found only one Build alternative that would be feasible and prudent—the Preferred Alternative—and therefore no analysis of a least overall harm alternative is needed.

24.6.5 MEASURES TO MINIMIZE HARM

When there is no feasible and prudent alternative to the use of a Section 4(f) property, the Project must include all possible planning to minimize harm to the Section 4(f) property.

FRA has developed measures to avoid, minimize, and/or mitigate adverse effects on the Hudson River Bulkhead in consultation with NYSHPO and signatories, Consulting Parties, and concurring parties, including HRPT, as part of the Section 106 process. These measures are set forth in a PA that is provided in **Appendix 9** to the FEIS. All parties, and the public, had an opportunity to review the Draft PA that was included in the (DEIS during the public comment period for the DEIS, and FRA took into account all comments received in finalizing the PA.

Measures included in the PA to minimize harm to the Hudson River Bulkhead, which qualifies for Section 4(f) protection as a historic site and would be used by the Project, are as follows:

- The Project Sponsor, in coordination with the FRA, will compile the information gathered and drawings made in preparation for, and during the construction at, the Hudson River Bulkhead structure into a report documenting the characteristics of the affected bulkhead location. This

information will augment information about the bulkhead as previously documented in the 1997 Building-Structure Inventory Form on file with NYSHPO. The Project Sponsor, in coordination with FRA, will provide NYSHPO and HRPT, the New York State entity responsible for the Hudson River Park including the Manhattan Hudson River Bulkhead, a draft copy of the recordation document for review and comment and a final copy of the recordation.

- The Project Sponsor, in coordination with FRA, will provide for the interpretation of the Hudson River Bulkhead within Hudson River Park. The type, design, and location of the interpretation will be designed in consultation with NYSHPO and HRPT.
- To avoid damaging the structural integrity of the Hudson River Bulkhead structure during construction of the Hudson River Tunnel tubes through the bulkhead and ensure that the Preferred Alternative does not negatively impact its long-term integrity, the following measures will be implemented:
  - Amtrak, in coordination with the Project Sponsor, will enter into an agreement with HRPT that defines the geographic area of Hudson River Park above or adjacent to the bulkhead that may be affected by the Project's impact on the bulkhead (the "Hudson River Bulkhead Impact Area") and sets forth measures to be implemented by Amtrak for the long-term maintenance of the Hudson River Bulkhead and Bulkhead Impact Area.
  - Amtrak, in coordination with the Project Sponsor and FRA, will also provide a Design Technical Memorandum to HRPT that describes the proposed bulkhead construction techniques and proposed measures to monitor and protect the bulkhead.
  - Amtrak, in coordination with the Project Sponsor and FRA, will develop a Bulkhead Protection Plan that will set forth the specific requirements to protect the bulkhead and Hudson River Bulkhead Impact Area during the Project construction period including:
    (i) How the Project Sponsor will ensure that the Project contractor includes professionals that have experience with complex bulkhead structures such as the Hudson River Bulkhead.
    (ii) Information about a monitoring program to be implemented during Project-related demolition, excavation, and/or construction activities; the monitoring measures to be implemented; the thresholds at which specific actions will occur to protect the bulkhead during construction; and the actions that will occur if thresholds are exceeded.
    (iii) Information regarding the design documents that will be provided by the Project Sponsor to HRPT pertaining to the tunnel excavation through the bulkhead and bulkhead protection, including schedule for submission of such documents.
    (iv) Definition of a post-construction period during which monitoring will continue, and which may be extended if an issue arises.
    (v) Details regarding when and how repairs will be made if damage occurs during the Project.

    The Project Sponsor, in coordination with Amtrak and FRA, will provide an initial draft of the Bulkhead Protection Plan to NYSHPO and HRPT for a 45-day review period. The Project Sponsor will consider and incorporate any written comments received within the 45-day review period when finalizing the Bulkhead Protection Plan. The Project Sponsor will submit the final Bulkhead Protection Plan to NYSHPO and HRPT for concurrence no later than 120 days prior to any Project-related construction in the location of the Hudson River Bulkhead.

24.7 HUDSON RIVER PARK

24.7.1 DESCRIPTION OF THE SECTION 4(f) PROPERTY

24.7.1.1 OVERVIEW

Hudson River Park is an approximately 4-mile-long, 550-acre linear waterfront park under development along New York City's Hudson River waterfront. Hudson River Park is the result of long-term efforts by New York City and New York State to transform the underutilized industrial Hudson River waterfront into a network of open space on upland areas and piers and waters of the Hudson River. Approximately 400 acres of the park (70 percent of the park's area) is water area in the Hudson River, designated as the Hudson River Park Estuarine Sanctuary. The park was established by the New York State legislature through the Hudson River Park Act of 1998, which identified the boundaries of Hudson River Park, established the Hudson River waters within the park as an estuarine sanctuary, and created HRPT as a public benefit corporation with the mandate to design, construct, and maintain the park. HRPT is undertaking construction of Hudson River Park incrementally, as funding becomes available, such that the park is now approximately 80 percent complete. In areas that are not yet complete, interim recreational features are present, including a waterfront walkway that runs the length of the park.

The Hudson River Park Act that established Hudson River Park requires that the park be financially self-supporting to the extent practicable. It limits uses within the boundaries of the park to either recreational uses or specific "park/commercial" uses defined in the Act. One such permitted use is a non-tourism/non-recreational heliport. In addition, a 2018 amendment to the Hudson River Park Act allows HRPT to enter into a lease for a new below-grade rail tunnel beneath the park between West 27th and West 30th Streets (i.e., the new Hudson River Tunnel included as part of the Preferred Alternative for the Hudson Tunnel Project).

Hudson River Park extends from just north of Chambers Street in Lower Manhattan to West 59th Street, where it connects to a different linear park along the waterfront, Riverside Park South. Hudson River Park occupies the area from the pierhead line to the western boundary of Manhattan's waterfront arterial, Route 9A (also known as Twelfth Avenue near the Project site).[12] The park includes a waterfront esplanade that runs the length of the park, adjacent to a bikeway that is under the jurisdiction of the New York State Department of Transportation (NYSDOT) as part of the adjacent Route 9A roadway, but is maintained by HRPT. Closer to the water, the park's waterside esplanade provides a safe, segregated alternative for pedestrians and runners, who are not intended users of the bikeway. In places where the permanent walkway has not yet been constructed, an interim walkway provides public access to the waterfront.

The Route 9A bikeway, outside of but adjacent to Hudson River Park, is generally a 16-foot-wide paved route that provides space for non-motorized vehicles (i.e., bicycles, rollerblades, and skateboards). The primary purpose of the bikeway is as a north-south transportation corridor, and as such, it is not a Section 4(f) property. Lane markings clearly separate northbound and

[12] The Hudson River Park Act establishes the eastern boundary of the park as the western boundary of West Street/Eleventh Avenue/Twelfth Avenue, and when Route 9A is complete, as certified by the commission of NYSDOT, the eastern boundary of the park will be the western boundary of Route 9A. Hudson River Park is being developed in conjunction with the reconstruction of Route 9A into a landscaped urban boulevard, also a long-term project that began construction in 1994. At this time, the commissioner of NYSDOT has not yet certified the long-term reconstruction of Route 9A as complete and therefore the exact location of the boundary between the park and the roadway has not yet been established.

southbound users. The bikeway is heavily used during weekdays and weekends by recreational riders and commuters, both during the day and at night.

24.7.1.2 PARK AREA NEAR THE PROJECT ALIGNMENT

Near the proposed Project alignment, Hudson River Park includes a waterfront esplanade with benches, lawns, and landscaped areas in the area generally between West 26th and West 29th Streets, and a plaza with tables and chairs at approximately West 29th Street. Near West 26th Street, Hudson River Park includes two piers, Pier 66A and Pier 66. Pier 66 has an esplanade extending the length of the pier and a boathouse dedicated to non-motorized recreational boating. Three boating programs operate at the boathouse under a permit from HRPT, Hudson River Community Sailing and two other clubs, New York Kayak Polo and New York Outriggers. These programs offer lessons and programs for school groups and others. As permittees that provide a public benefit that aligns with HRPT's mission, the boating programs pay a nominal permit fee, make monetary and in-kind donations to HRPT's non-profit fundraising partner, and contribute toward the cost of utilities. In addition, the Hudson River between Pier 66 and West 29th Street, which is within Hudson River Park boundaries, includes sailboat moorings.

The land area of the park between West 29th Street and West 34th Street consists of an interim walkway beside the Route 9A bikeway; a privately operated commercial heliport, the West 30th Street Heliport, that occupies the area west of the walkway to the water's edge within the boundaries of the park; and a maintenance and storage area for HRPT north of the heliport. The two-lane Route 9A bikeway, which is outside of but adjacent to the park, is adjacent to the interim walkway with a landscaped buffer area between them. **Figure 24-5** provides photographs of this part of the park.

The West 30th Street Heliport is located within the boundaries of Hudson River Park along the Project alignment on land that is publicly owned and designated for parkland use. A heliport has been present at this location since prior to establishment of the park in 1998 and although the heliport is within the park boundaries, it is a private commercial operation that is not open to the public for recreation. The heliport has 10 helipads and provides commercial, general aviation, and air taxi services. No tourist flights operate from the West 30th Street Heliport. The West 30th Street Heliport, operating on a month-to-month basis under a permit, provides revenue to HRPT for operations and maintenance of Hudson River Park as permitted under the Hudson River Park Act. An amendment to the Hudson River Park Act calls for the relocation of the heliport to a floating structure between West 29th and West 32nd Streets, but the timing of such a relocation is unknown.[13]

24.7.2 IMPACTS TO AND USE OF THE SECTION 4(f) PROPERTY

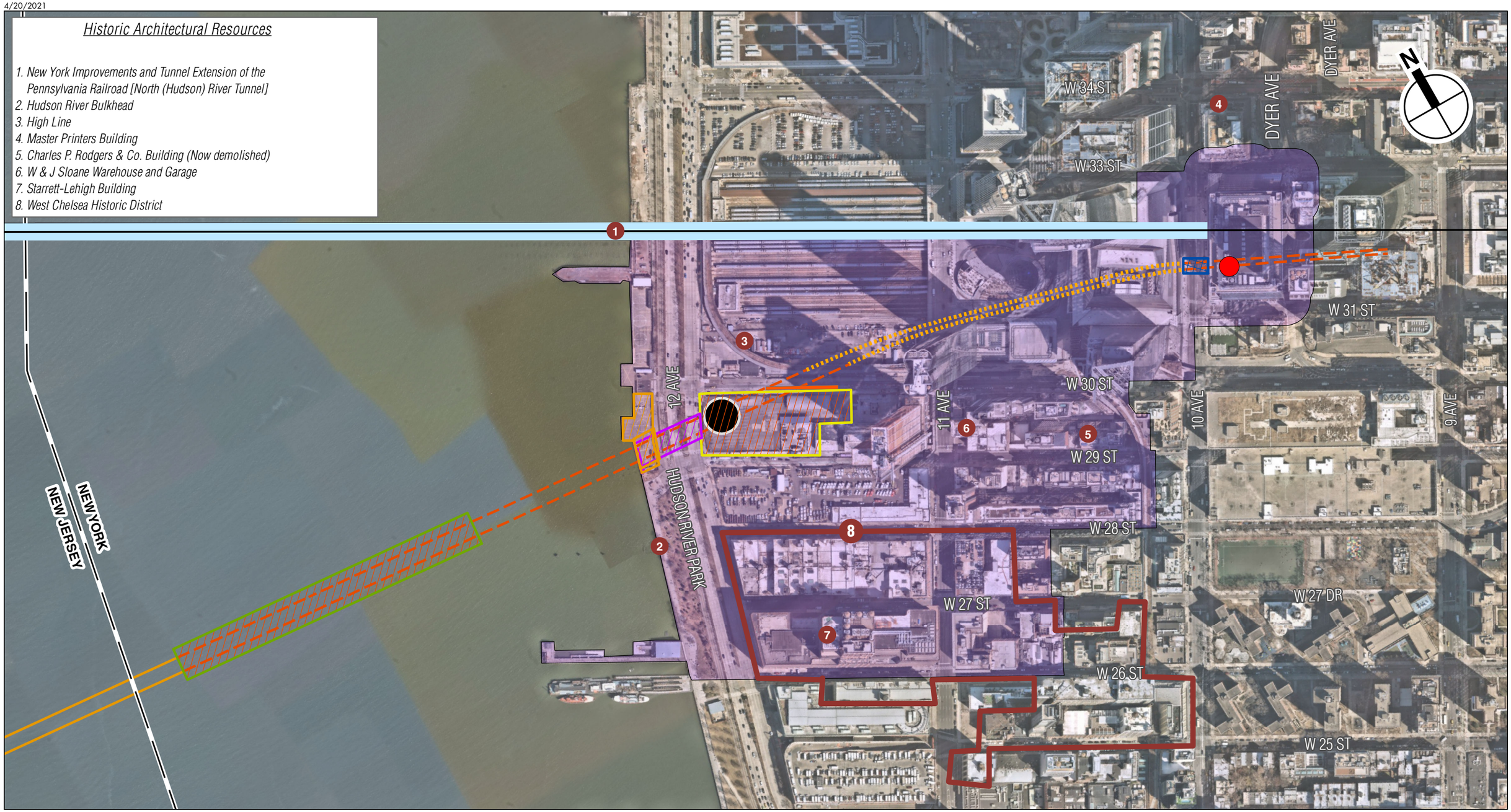
The Preferred Alternative would have temporary construction activities within Hudson River Park. In addition, other temporary construction activities would occur in proximity to the park. Once construction is complete, the permanent tunnel alignment for the Preferred Alternative would be directly beneath Hudson River Park. In addition, a permanent Project above-grade structure would be in proximity to the park. Based on consultation with the official with jurisdiction over Hudson River Park, FRA has determined that the temporary construction activities would interfere with the protected activities of the property, and therefore, would result in a use of this Section 4(f) property.

[13] 2013 Amendment to Hudson River Park Act (Chapter 517 of the Laws of 2013), Section 3(m)(v).

4/20/2021

Historic Architectural Resources

1. New York Improvements and Tunnel Extension of the Pennsylvania Railroad [North (Hudson) River Tunnel]
2. Hudson River Bulkhead
3. High Line
4. Master Printers Building
5. Charles P. Rodgers & Co. Building (Now demolished)
6. W & J Sloane Warehouse and Garage
7. Starrett-Lehigh Building
8. West Chelsea Historic District



1 Historic Architectural Resource

Existing Northeast Corridor
Deeply Bored New Tunnel
Hudson Yards Right-of-Way Preservation
Area of Potential Effect for Indirect Effects

Area of Potential Effect for Direct Effects
New Ventilation Shaft
Existing North River Tunnel
Shallowly Constructed New Tunnel

Fan Plant & Construction Staging Area
Ground Improvement
Construction Staging Area
Utility Relocation

In-Water Ground Improvement
Cut and Cover Excavation
Underpinning

0 1,000 FEET

HUDSON TUNNEL PROJECT

Section 4(f) Historic Resources in New York

Figure 24-5

24.7.2.1 TEMPORARY CONSTRUCTION ACTIVITIES IN HUDSON RIVER PARK

In the Manhattan waterfront section of the tunnel alignment, Amtrak developed the design for the Preferred Alternative with the specific goal of minimizing impacts, including: (1) avoiding any in-water work at the bulkhead, to protect aquatic resources in the Hudson River; (2) to protect the Manhattan bulkhead around the construction zone, to avoid unnecessary adverse effects to that historic property; and (3) avoiding any cut-and-cover excavation across Hudson River Park, to minimize impacts to the park, or across Twelfth Avenue, which is a heavily trafficked urban arterial highway (New York State Route 9A).

To allow tunneling beneath the surface rather than through cut-and-cover excavation, the soft soils in the Manhattan waterfront zone would be strengthened. The Project Partners[14] are considering two options for ground improvement in this area, vertical ground freezing, which was described in the Draft Section 4(f) Evaluation, and a combination of Sequential Excavation Method (SEM) tunnel excavation[15] and ground freezing, which is a new option developed for consideration following completion of the Draft Section 4(f) Evaluation to minimize risk to the Manhattan bulkhead. The Project Sponsor, together with the other Project Partners, will make the final decision on the construction method for this area during final design, in conjunction with the Project contractor.

Both construction options would involve ground freezing, a technique that involves installation of a network of underground pipes and then circulation of a freezing agent through the pipe network until the ground around the pipes freezes solid. In addition to freezing, permeation grouting (primarily cement with some additives) would be conducted to fill voids in the foundation of the bulkhead.

Both ground improvement approaches would affect Hudson River Park for approximately 18 months, because of the time needed to establish a construction zone, implement ground improvement in advance of tunneling with the TBMs, wait for completion of the tunneling, and demobilize after the need for ground improvement is complete. This work would require a temporary construction zone and staging area in the southern portion of the West 30th Street Heliport, in the area between approximately West 29th Street and West 30th Street, which is directly above the proposed tunnel alignment. This construction zone would temporarily displace the heliport operations from this area and would narrow or close a portion of the paved pedestrian walkway in Hudson River Park.

The staging area would be fenced with a solid fence to block views of the construction zone from the adjacent park. Even with this construction fence, the construction equipment in the staging area would be visible to people in nearby areas of Hudson River Park. Construction activities would at times be noisy and disruptive, although this part of the park is already noisy given the presence of a busy urban arterial highway on one side and an active heliport on the other.

Following completion of the construction, the Project Sponsor will restore the affected area of Hudson River Park in coordination with HRPT. The Project Sponsor will undertake this restoration at no cost to HRPT or relevant New York State and City agencies.

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[14] Consisting of NJ TRANSIT, Amtrak, and the PANYNJ, who are working together to advance the Hudson Tunnel Project.

[15] SEM excavation is a mining technique in which a tunnel is sequentially excavated below ground in phases.

The effects on the recreational features of the park and on the West 30th Street Heliport would vary slightly between the two construction options, as described below.

24.7.2.1.1 Vertical Ground Freezing Option

With the vertical ground freezing option, the temporary construction zone would house activities related to ground improvement. This would include equipment needed for ground freezing, such as a freeze plant.

With a vertical ground freezing scheme, the freeze pipes would be installed in a grid pattern from the surface, both vertically and diagonally (i.e., at an incline) to minimize disturbance at the surface from pipe installation. In the park, freeze pipes would be installed in the southern portion of the West 30th Street Heliport. Freeze plants, typically housed within one or two work trailers, would be located on the nearby Twelfth Avenue staging site and potentially within the heliport. Pipes would connect the freeze plants to the underground pipes in the tunnel alignment. Once in place, trenches carrying the freeze pipes would be covered with steel plates or other temporary cover so the area above could be returned to use.

During installation of the freeze pipes for the vertical freeze option, a portion of the paved pedestrian walkway in Hudson River Park would be closed when freeze pipes are being installed and removed, a total duration of approximately nine months. The affected area is approximately 10 feet wide and 150 feet long, or a total of about 1,500 square feet. A small park area near the walkway could also be affected. The walkway would be narrower but would remain open during this time, with a minimum width of approximately 8 feet through the construction zone. The freeze pipes would be below ground and covered with steel plates so the covered area could be returned to park use, although there could be intermittent closures to access the pipes. The adjacent Route 9A bikeway would not be affected by installation of the freeze pipes. During the full 18-month construction period, both the park walkway and the Route 9A bikeway would be subject to potential intermittent short-term closures (up to several days) for trenching of freeze pipes across them. In this case, detours would be established during the closure, and any trench excavated for this purpose would be immediately decked over and the walkway and bikeway reopened.

If the West 30th Street Heliport has not been relocated prior to construction of the Preferred Alternative, the vertical ground freezing option would close the southern portion of the heliport near West 29th Street, affecting the heliport's above-ground fuel tank, two fueling pads, one landing pad, and a driveway and parking area.

Figure 24-6 shows the area where vertical ground freezing would be implemented using this approach.

24.7.2.1.2 SEM Excavation with Ground Freezing Option

Based on further analysis during Project engineering, Amtrak is now considering a second option for ground improvement in the Manhattan waterfront zone, using SEM mining below ground in combination with ground freezing and grouting.

Using SEM techniques in this section of the tunnel alignment would reduce the risk associated with tunneling through the Manhattan bulkhead by allowing construction workers to remove portions of the bulkhead structure within the tunnel horizon using excavators, thereby reducing the amount of bulkhead material that the TBMs would need to bore through when they reach the bulkhead.

With this option, there would be a temporary construction shaft in the southern part of the West 30th Street Heliport. The shaft would be constructed directly above the alignment of the new tunnel's new tubes, so that it could provide access to the tunnel alignment. It would be situated near the bulkhead, but not directly above the bulkhead's foundation, which slopes eastward

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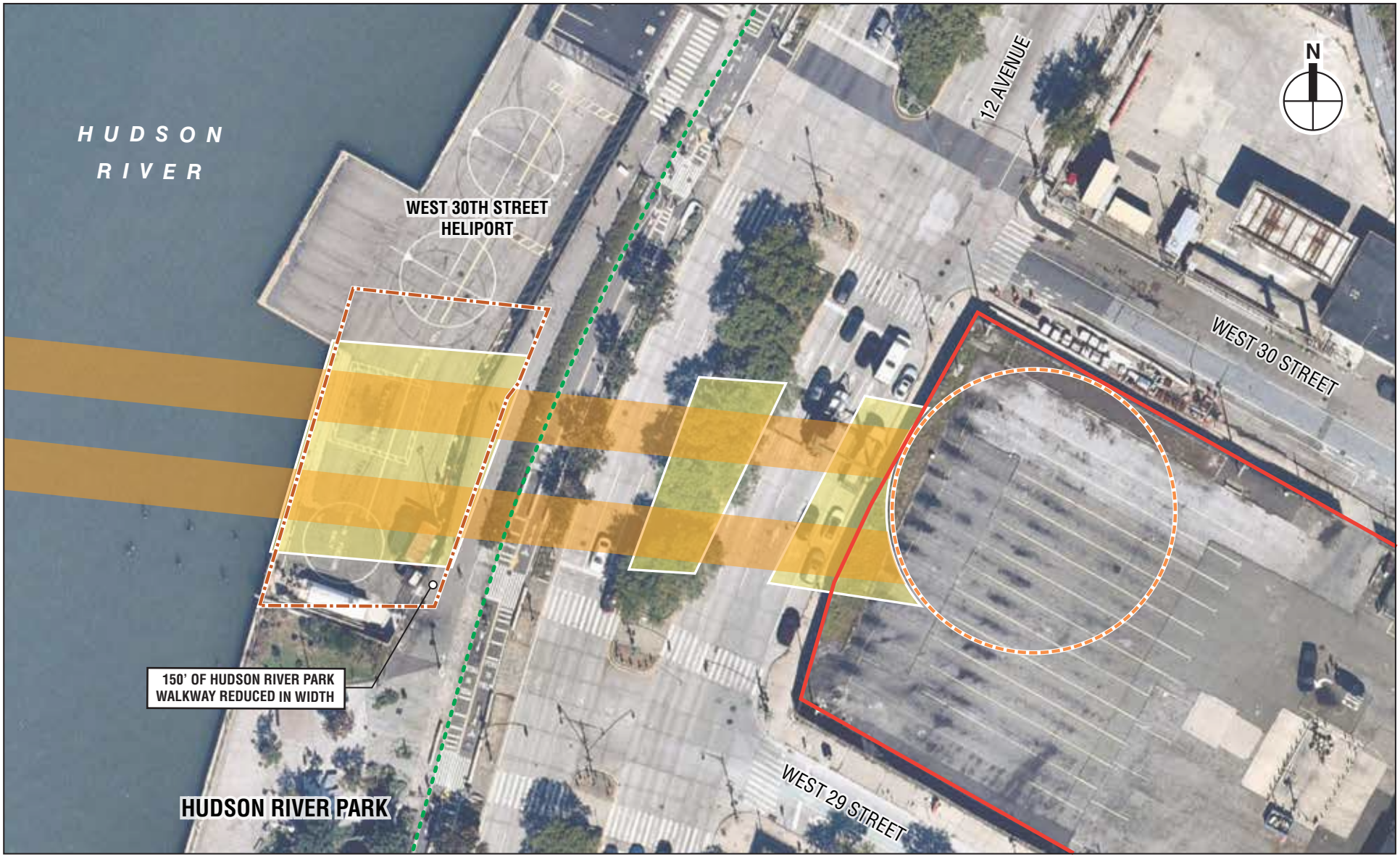

Below-Ground Tunnel Alignment

Shaft Site

Twelfth Avenue Staging Site

Temporary Construction Zone in Park

Surface Work Area for Ground Freezing

Hudson River Park Boundary

0 20 60 100 FEET

HUDSON TUNNEL PROJECT

Potential Construction Zone for Vertical Ground Freezing in Hudson River Park

Figure 24-6

underground from the water's edge. The shaft would be approximately 110 feet long, to encompass both tubes of the new tunnel, and 25 feet wide, to provide enough space for workers and materials to enter and exit.

Once the temporary shaft is in place, it would first serve as the location from which freeze pipes could be routed. Then, once the tunnel alignment has been treated through freezing and grouting, the shaft would also be the starting point for SEM tunnel excavation toward the bulkhead and toward Twelfth Avenue, where the excavation would meet a similar tunnel excavated from the Twelfth Avenue shaft. Use of SEM excavation would allow construction workers in the below-ground excavation to carefully remove components of the bulkhead foundation and obstructions beneath Twelfth Avenue in advance of the TBMs.

With this approach, a larger staging area would be needed to accommodate the temporary shaft above the tunnel alignment. Consequently, this option would involve closing the full width of the park walkway for approximately 200 linear feet (an area about 20 feet wide and 200 feet long, or 4,000 square feet). To allow continued walkway access, the walkway would be shifted eastward into the adjacent Route 9A bikeway and an 8-foot width of the bikeway would be converted into a temporary walkway. This would narrow the bikeway from 15 feet to 10 feet for the length of the staging area, about 200 feet. Pavement markings would separate the park walkway from the Route 9A bikeway. During excavation of the shaft at the heliport and subsequent construction activities there, trucks would enter and leave the staging area, to bring materials and remove excavated materials. To align with the adjacent street directions, trucks would use a one-way circulation pattern through the staging area, with trucks entering through a gate from West 29th Street and exiting through a gate to West 30th Street. Since this would involve truck traffic crossing the park walkway and Route 9A bikeway, flaggers would be present to protect pedestrians and bikers. During approximately two months of the construction, there would be approximately four trucks per hour entering and then leaving the staging area; during the rest of the 18-month construction period in the park, approximately one to two trucks per hour would enter and then leave the staging area.

Figure 24-7 shows the area that would be affected by the SEM with ground freezing option.

If the West 30th Street Heliport has not been relocated prior to construction of the Preferred Alternative, the SEM excavation with ground freezing option would affect the portion of the heliport between West 29th Street and West 30th Street. This would displace the heliport's above-ground fuel tank, two fueling pads, two landing pads, and a driveway and parking area.

24.7.2.2 TEMPORARY CONSTRUCTION ACTIVITIES NEAR HUDSON RIVER PARK

Other construction activities for the Preferred Alternative would occur in close proximity to Hudson River Park. Construction activities near the park would include the following:

- Construction work in the Hudson River approximately 70 feet from the pierhead line (park boundary) for approximately 26 months.
- Construction at the Twelfth Avenue staging site and adjacent area of West 30th Street, and related construction traffic along Twelfth Avenue, for approximately seven years.

24.7.2.2.1 Construction in the Hudson River

Construction of the Preferred Alternative would include in-water construction activities for approximately 26 months in an area above the tunnel alignment within New York waters. The construction zone would be outside of the pierhead line, which is the boundary of Hudson River Park. The in-water construction activities would affect an area of the river approximately 1,200 feet long and 110 feet wide in the designated navigation channel that the U.S. Army Corps of

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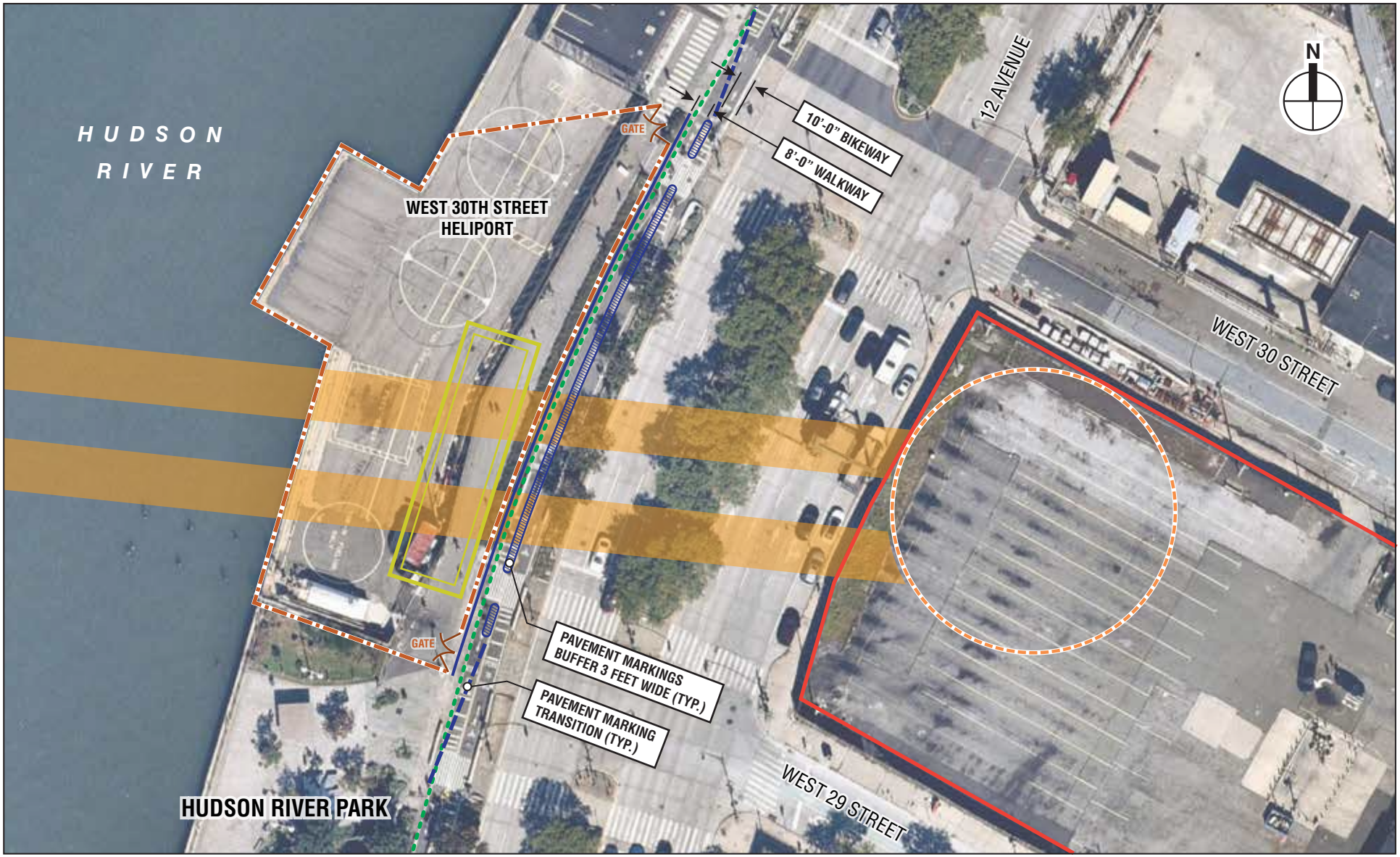

Below-Ground Tunnel Alignment

Shaft Site

Twelfth Avenue Staging Site

Temporary Construction Zone in Park

Temporary Shaft in Park

Hudson River Park Boundary

0 20 60 100 FEET

HUDSON TUNNEL PROJECT

Potential Construction Zone for Sequential Excavation Method Tunneling in Hudson River Park

Figure 24-7

Engineers (USACE) maintains in the Hudson River. As discussed in EIS Chapter 3, "Construction Methods and Activities," Section 3.3.5, the work zone in the river would first be enclosed by a cofferdam—a temporary, watertight structure that would isolate the water affected by construction from the surrounding river water. Barges supporting construction equipment would be permanently moored around the cofferdam until the construction in the river is complete.

Workers would travel to the construction zone on small boats (i.e., tugboats or dinghies) from established piers on the Hudson River shoreline. Two boats are likely to be needed one for the crew and the other for material delivery. Therefore, this aspect of construction would require three tugboats to be in continuous operation to, from, and around the in-water work area during weekdays between approximately 7 AM and 11 PM throughout the ground improvement process. The barges in and around the cofferdams would be permanently moored in place until the construction in that cofferdam is complete.

The Project Partners expect that this in-river construction activity would be conducted in stages to minimize the area of water that is disturbed at any one time. As each stage is completed, the cofferdam would be removed. Based on preliminary design, the Project Partners are proposing to conduct the in-river work in two stages, each 600 feet long. In total, construction activities associated with each 600-foot-long cofferdam would take approximately 13 months to complete. The two cofferdams could be completed separately or work on both sections might overlap so that the full area is in construction at once.

Modifications to the river bottom would require a permit from the USACE and must meet conditions imposed by the USACE to protect the navigation channel and maritime safety.

While the in-water construction activities for the Preferred Alternative would not be within the park's boundary, they would be fairly close (70 to 100 feet from the park boundary), and boaters moving between the navigation channel and the Pier 66 boathouse and nearby moorings would need to avoid the construction zone, which may be inconvenient but would not limit boaters' access to and from the channel. **Figure 24-8** illustrates the location of the boathouse and moorings relative to the construction zone. While this proximity may be inconvenient, it would not result in proximity impacts that would substantially impair the recreational features of the boathouse or the moorings.

Maritime traffic on the Hudson River in the study area includes passenger ferries operating to and from the Midtown West 39th Street ferry terminal, freight and barge traffic, cruise vessels, and other commercial and recreational boats. Accordingly, during construction, the Preferred Alternative would include measures during construction to warn maritime traffic, including recreational boaters such as those operating from the boathouse at Pier 66, of the construction zone and to ensure the continued safety of boaters. Measures would include notifications to mariners via the United States Coast Guard (USCG), installation of lighting on barges and the cofferdam, and automatic identification system (AIS) transponders affixed to barges and cofferdams to enable electronic locating of the cofferdam and tracking of the barges. These measures will be developed in coordination with the USCG as the design advances. The Project Partners will continue to refine the design for the in-river work, in coordination with USACE and the USCG, to minimize the potential for adverse impacts on navigation in the Hudson River during construction and will identify the final staging approach in coordination with USACE and USCG. These measures would also protect recreational boaters, including sailboats, kayaks, and canoes that operate from the boathouse at Pier 66 at West 26th Street in New York, in Hudson River Park.

24.7.2.2.2 Construction at Twelfth Avenue Staging Site, West 30th Street, and Related Construction Traffic

With the Preferred Alternative, a noise wall would surround the Twelfth Avenue staging site across Twelfth Avenue/Route 9A from the park. The wall would also serve to block views into the site. Taller equipment would be visible above the wall, as would the fan plant structure as it is erected

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HUDSON TUNNEL PROJECT

Hudson River Park Features near Proposed Construction Zones

Figure 24-8

at the Twelfth Avenue staging site. Overall, construction activities may result in an adverse visual impact but this effect would be temporary.

Construction activities for the Preferred Alternative that occur in and near Hudson River Park would result in some disruption to park users near the construction zones because of the proximity of the construction activity to the waterfront walkway and other nearby park resources. However, the visual changes, noise increases, and in-water activities would not adversely affect Hudson River Park and would not impact its use as a recreational resource.

As discussed in EIS Chapter 12A, "Noise," Section 12A.6.3.1, construction at the Manhattan waterfront and Twelfth Avenue shaft site would produce noise levels at Hudson River Park that would be noticeable and audible, but would be below FTA noise impact criteria. Construction noise at this location would not affect Hudson River Park visitors' ability to utilize or enjoy the park. Moreover, extensive construction has been occurring across Route 9A from the park in many locations, and the park is located on a busy and noisy traffic arterial; therefore, additional construction activities associated with the Preferred Alternative would not change the character or usefulness of the park's recreational resources.

24.7.2.3 PERMANENT TUNNEL ALIGNMENT BENEATH HUDSON RIVER PARK

The Preferred Alternative's permanent tunnel alignment would be located beneath Hudson River Park. Construction activities for the tunnel would not result in damage to the park. Once the tunnel is complete and operational, this permanent feature beneath the park would not constitute a Section 4(f) use of the park because the presence of the tunnel would not be noticeable in the park or affect the protected activities in the park. Operation of trains in the completed tunnel would not result in vibration impacts (see Chapter 12B, "Vibration," Section 12B.7.3). As noted earlier, a 2018 amendment to the Hudson River Park Act allows HRPT to enter into a lease for a new below-grade rail tunnel beneath the park between West 27th and West 30th Streets.

At Hudson River Park, the permanent location of the tunnel beneath the park would mean that no new pile-supported structures could be located immediately above the tunnel, which would be generally in the area close to West 29th Street, where the tunnel alignment would pass beneath the park. In addition, no deep foundations (any type of driven, vibrated, augured, or bored pile or caisson) could be located above the footprint of the tunnel or any ground treatment area bordering the tunnel. No other restrictions would apply to this area, and this park space could be landscaped or developed for other recreational uses.

The Hudson River Park Act calls for relocation of the West 30th Street Heliport to an in-water site to a floating structure located between West 29th and West 32nd Streets. Within the water area of Hudson River Park (which extends from the New York bulkhead to the pierhead line), any pile supports for the relocated heliport could not be located in the approximately 125-foot-wide area where the new Hudson River Tunnel would be buried beneath the river bottom. While this area would be located close to West 29th Street, it would not interfere with relocation of the heliport to an area between West 29th and West 32nd Streets as designated in the Hudson River Park Act. The restriction on new structures or deep foundations above the tunnels would also not affect any known plans for the future development of the park.

24.7.2.4 PERMANENT PROJECT STRUCTURE NEAR HUDSON RIVER PARK

The Preferred Alternative would include a permanent new above-grade fan plant on the western end of the block between West 29th and West 30th Streets and Eleventh and Twelfth Avenues. Depending on its final placement on this block, the new fan plant may be directly across Twelfth Avenue/Route 9A from Hudson River Park. The new structure, with a height that may potentially be up to approximately 150 feet (equivalent to a 15-story building), would change the appearance

of the site. However, the area around the Twelfth Avenue fan plant is currently undergoing substantial redevelopment and by 2033, when the Preferred Alternative would be complete, the block where the fan plant site is located will also have two tall residential towers at and close to Eleventh Avenue. On the large blocks to the north between Tenth and Twelfth Avenues, many high-rise buildings and mid- to low-rise buildings will be present. A high-rise commercial building may also be developed on the same lot as the fan plant. Overall, this area of the Far West Side of Manhattan will be transformed into a densely developed neighborhood of large and bulky buildings. The Twelfth Avenue fan plant would be similar in bulk and height to many of the mid-rise buildings that will be present in the surrounding area and much shorter than the high-rise buildings that will be located on the same block and on the blocks to the north, as well as numerous existing buildings to the south and east, as described in EIS Chapter 10, "Visual and Aesthetic Resources," Section 10.3.3.1.1.

With the Preferred Alternative, the fan plant would cast new shadows on Hudson River Park from the Twelfth Avenue fan plant site during early morning in the spring, winter, and fall, but the extent of incremental shadows would be small and this area of the park would continue to receive ample sunlight throughout the day.

The new fan plant would not result in air quality or noise impacts on Hudson River Park, as described in EIS Chapter 13, "Air Quality," and EIS Chapter 12A, "Noise."

24.7.2.5 CONCLUSIONS

Based on consultation with the official with jurisdiction over Hudson River Park, HRPT, FRA has determined that the temporary construction activities in Hudson River Park would interfere with the protected activities of the park, and therefore, would result in a use of this Section 4(f) property. This includes the construction activities in the park related to ground improvement using either potential construction option (vertical ground freezing or SEM excavation with ground freezing), which would both involve temporary modifications to the park walkway as well as noise and visual disruption to nearby areas of the park.

24.7.3 ALTERNATIVES TO AVOID THE USE OF THE SECTION 4(f) PROPERTY

As described previously in Section 24.6.3, the discussion of avoidance alternatives for the Hudson River Bulkhead, FRA may not approve the use of a Section 4(f) property if there is a "feasible and prudent" avoidance alternative. The discussion in Section 24.6.3 explains that after conducting a multi-step alternatives evaluation, FRA and NJ TRANSIT concluded that the only Build Alternative concept that meets both of the established criteria is a new two-track rail tunnel near the existing North River Tunnel, with rehabilitation of the existing tunnel. All of the alternatives considered in that evaluation did not meet the purpose and need for the Project, and therefore were not prudent (and in some cases not feasible), and/or would not avoid the use of the Hudson River Bulkhead.

Hudson River Park is in the same location as the Hudson River Bulkhead, and, like the bulkhead, is a linear resource that extends approximately four miles along the Manhattan Hudson River waterfront. Thus, the tunnel alignment for the Preferred Alternative must pass beneath the park. FRA's conclusion that there is no feasible and prudent alternative to the use of Hudson River Park is based on the same analysis that was described for the Hudson River Bulkhead. All alternatives considered were found not to meet the purpose and need for the Project, and therefore would not be prudent (and in some cases not feasible), or they would not avoid the use of Hudson River Park because a new tunnel alignment would need to cross the park. The alternatives that would avoid the use of the bulkhead and also, therefore, the park—the No Action Alternative, a deeper tunnel, a rail bridge over the Hudson River, or a northern alignment for the tunnel—would not meet the Project purpose and need and therefore are not prudent (and in some cases not feasible).

24.7.4 LEAST OVERALL HARM ALTERNATIVE

If the analysis described in the preceding section concludes that there is no feasible and prudent avoidance alternative, then FRA may approve, from among the remaining alternatives that use Section 4(f) property, only the alternative that causes the least overall harm in light of the statute's preservation purpose. However, this analysis is required only when multiple alternatives that use Section 4(f) property remain under consideration. As described in the preceding section, FRA found only one Build alternative that would be feasible and prudent—the Preferred Alternative—and therefore no analysis of a least overall harm alternative is needed.

24.7.5 MEASURES TO MINIMIZE HARM

When there is no feasible and prudent alternative to the use of a Section 4(f) property, the Project must include all possible planning to minimize harm to the Section 4(f) property. To minimize harm to Hudson River Park as a result of construction activities for the Preferred Alternative, the Project Sponsor will implement the following measures; the lead Federal agency will be responsible for ensuring that the Project Sponsor implements these measures, which will be defined in the ROD:

- Tunnel excavation from the bulkhead to the Twelfth Avenue shaft site will be conducted below ground, with ground improvement such as ground freezing to prepare the area. This will avoid the need for excavation across Hudson River Park.
- The Project Sponsor and the other Project Partners will continue to coordinate with HRPT regarding the effects to Hudson River Park during construction for the Preferred Alternative and will seek to avoid and minimize adverse effects wherever possible.
- During construction in and under Hudson River Park, a minimum 8-foot-wide segment of the Hudson River Park walkway will be maintained open and a minimum 10-foot-wide segment of the adjacent Route 9A bikeway will remain open (except possibly for short-term trenching for installation of freeze pipes).
- Construction barricades will be installed to block views of the construction zone within the West 30th Street Heliport for park users. Construction fencing will be clad with aesthetically attractive or artistically enhanced fabric selected in consultation with HRPT.
- Following completion of the construction, the Project Sponsor will restore the affected area of Hudson River Park in coordination with HRPT. The Project Sponsor will undertake this restoration at no cost to HRPT or relevant New York State and City agencies.
- The Project Sponsor will coordinate with the West 30th Street Heliport operator and HRPT, which receives revenues from the heliport, to minimize disruption to the heliport operation during construction of the Preferred Alternative to the extent practicable.
- If the West 30th Street Heliport fuel tank must be relocated to facilitate tunnel construction, the Project Sponsor will relocate it to a suitable location.

24.8 COORDINATION

24.8.1 COORDINATION WITH OFFICIALS WITH JURISDICTION OVER THE SECTION 4(f) PROPERTIES

As set forth in the Section 4(f) regulations (23 CFR § 774.5), Section 4(f) evaluations must be provided for coordination and comment to the officials with jurisdiction over the Section 4(f) properties that will be used by a proposed project, and to the DOI. For this Project, the officials with jurisdiction are the HRPT for Hudson River Park, which includes the Hudson River Bulkhead, and HRPT, NYSHPO, and ACHP for the NRHP-Eligible Hudson River Bulkhead. In addition, the

officials with jurisdiction over any archaeological resources that have been determined to have minimal value for preservation in place are NJHPO and NYSHPO.

HRPT, NYSHPO, ACHP, and NJHPO are all NEPA Participating Agencies for this Project and reviewed and commented on the Draft Section 4(f) Evaluation during development of the DEIS. FRA also coordinated with these agencies during development of the Final Section 4(f) Evaluation and FEIS.

In addition, this Project is being reviewed in accordance with Section 106 concurrently with its review under NEPA and Section 4(f). Section 106 requires Federal agencies to take into account the effects of their undertakings on historic properties that are listed in or meet the eligibility criteria for listing in the NRHP and afford the SHPO(s) and the ACHP, as appropriate, a reasonable opportunity to comment. Section 106 also requires that agency officials work with the SHPOs to identify parties to participate in the Section 106 process (consulting parties). Consulting parties may include local governments, Federally recognized Indian tribes, and individuals and organizations with a demonstrated interest in the project due to the nature of their legal or economic relationship to the project or affected historic properties, or their concern with the project's effects on historic properties. For this Project, Section 106 consultation has involved coordination with the NYSHPO, HRPT, the New York City Landmarks Preservation Commission, and other signatories, Consulting Parties, and concurring parties in the Section 106 process regarding the Preferred Alternative's potential effects to the Hudson River Bulkhead and proposed measures to minimize, avoid, and mitigate adverse effects.

FRA, NJ TRANSIT, and the PANYNJ have coordinated with HRPT during preparation of the DEIS, FEIS and the Draft and Final Section 4(f) Evaluation related to impacts on Hudson River Park and on the Hudson River Bulkhead, which is located in the park. To date, this has included several meetings to discuss the proposed construction work in Hudson River Park and measures to reduce the impact of this construction on the park. In addition, discussions have also considered measures to reduce the impact of Project construction on the Hudson River Bulkhead.

FRA made the Draft Section 4(f) Evaluation available to DOI, NJHPO, NYSHPO, HRPT, and ACHP for comment during the public review period. In a letter dated August 15, 2017, DOI concurred with the conclusions of the Draft Section 4(f) Evaluation. In addition, on April 23, 2021, FRA provided this Final Section 4(f) Evaluation to DOI for review and comment, because of the additional information regarding impacts to Hudson River Park and FRA's determination that construction activities in Hudson River Park constitute a Section 4(f) use. In a letter dated May 10, 2021, DOI concurred with the conclusions of the Final Section 4(f) Evaluation. Correspondence related to the Draft Section 4(f) Evaluation is provided in the FEIS in **Appendix 24**.

24.8.2 PUBLIC INVOLVEMENT

For this Project, FRA provided an opportunity for public review and comment on the Draft Section 4(f) Evaluation for the Project in conjunction with the public review period for the DEIS. The Draft Section 4(f) Evaluation was made available to the public together with the DEIS. Any agency or public comments received during this review period are addressed in the Final Section 4(f) Evaluation. ✷