Chapter 22: Environmental Justice

22.1 INTRODUCTION

Federal agencies are required to identify disproportionately high and adverse effects of their actions on minority and low-income populations (environmental justice populations) and, where such effects are identified, to identify mitigation for those effects and conduct outreach to the affected populations to seek their input on the impacts and mitigation. This chapter of the Environmental Impact Statement (EIS) provides the analysis that the Federal Railroad Administration (FRA) and the New Jersey Transit Corporation (NJ TRANSIT) conducted of the Preferred Alternative's effects on environmental justice populations. The Port Authority of New York and New Jersey (PANYNJ), in its role as Project Sponsor, has accepted and relied on the evaluations and conclusions of this chapter.

This chapter reflects the following changes made since the Draft EIS (DEIS) for the Hudson Tunnel Project:

- The chapter is updated to describe current conditions in the affected environment and any related updates to the analysis of potential impacts.
- The chapter incorporates design modifications related to the permanent features of the Project (e.g., modifications to surface tracks and tunnel alignment) and changes to construction methods and staging.
- The chapter incorporates the revised conclusions presented in the other chapters of this EIS.

This chapter contains the following sections:

22.2 ANALYSIS METHODOLOGY

During development of this Environmental Impact Statement (EIS), FRA and 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 analysis of environmental justice are summarized in this chapter.

22.2.1 REGULATORY CONTEXT

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), requires Federal agencies to identify and address disproportionately high and adverse effects of their actions on minority and low-income populations. EO 12898 also requires Federal agencies to work to ensure greater public participation in the decision-making process. The Council on Environmental Quality (CEQ), which has oversight of the Federal government's compliance with EO 12898 and the National Environmental Policy Act (NEPA), has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed *(Environmental Justice Guidance under the National Environmental Policy Act,* December 1997, referred to in this chapter as CEQ guidance). Federal agencies may supplement this guidance with more specific procedures tailored to their particular programs or activities. The U.S. Department of Transportation (USDOT) issued additional guidance in its Updated Environmental Justice Order 5610.2(a), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*[1] (referred to in this chapter as the USDOT Order) and the Federal Transit Administration (FTA) issued guidance in its *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (FTA C4703.1, effective August 15, 2012, referred to in this chapter as the FTA Circular). These documents establish policies and procedures for the agencies to use in complying with EO 12898.

At the state level, New Jersey's EO 131 commits to ensuring that communities of color and low-income communities are afforded fair treatment and meaningful involvement in decision-making. The New Jersey Office of Environmental Justice within the New Jersey Department of Environmental Protection (NJDEP) supports environmental protection through public involvement. In New York State, projects seeking certain permits from the New York State Department of Environmental Conservation (NYSDEC) that may impact environmental justice areas must confer with and obtain input from the affected community. NYSDEC's guidance for incorporating environmental justice concerns into the agency's permit review process is provided in CP-29, *Environmental Justice and Permitting* (issued March 19, 2003).

Identification of a disproportionately high and adverse effect on minority or low-income populations does not preclude a project from moving forward. The USDOT Order requires that projects that would disproportionately affect minority or low-income populations may proceed only if: (1) further mitigation measures or alternatives that would avoid or reduce the

[1] This Order updates USDOT's original Environmental Justice Order, which was published April 15, 1997.

disproportionately high and adverse effects are not practicable; and (2) a substantial need for the action exists, and other alternatives that would have less adverse impacts on the subject population and still satisfy that need, would either have other adverse impacts that are more severe or involve increased costs of extraordinary magnitude.

Additionally, as set forth in the USDOT Order (Section 8.b.), "In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be implemented and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and the relevant number of similar existing system elements in non-minority and non-low-income areas."

Following completion of the Draft EIS (DEIS), the 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 that chapter, as the current Project Sponsor, the PANYNJ will comply with mitigation measures and commitments identified in the Record of Decision (ROD).

22.2.2 ANALYSIS TECHNIQUES

This environmental justice analysis was prepared to comply with the guidance and methodologies set forth in the USDOT Order, the FTA Circular, and the CEQ guidance. It also complies with New Jersey and New York State guidance (EO 131 and CP-29).

Consistent with those documents, this analysis involved five basic steps:

1. Identify the area where the Preferred Alternative may cause impacts (i.e., the study area);
2. Compile race and ethnicity and income data for the census block groups in the study area and identify minority and low-income populations;
3. Identify the Preferred Alternative’s potential adverse impacts on minority and low-income populations;
4. Evaluate the Preferred Alternative’s potential adverse effects on minority and low-income populations relative to its effects on non-minority and non-low-income populations to determine whether the Proposed Action would result in any disproportionately high and adverse effects on minority or low-income populations; and
5. For projects that would result in disproportionately high and adverse effects on minority or low-income populations, determine whether: (1) further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable; and (2) a substantial need for the action exists, and other alternatives that would have less adverse impacts on the protected population and still satisfy the need would either have other adverse impacts that are more severe or involve increased costs of extraordinary magnitude.

In addition, where minority and low-income populations are present in the study area, conduct outreach targeted to those populations.

22.2.2.1 DELINEATION OF STUDY AREA

The environmental justice analysis study area encompasses the area most likely to experience impacts during construction and operation of the Preferred Alternative. The study area therefore includes the census block groups that are within 500 feet of the Project site. FRA and NJ TRANSIT excluded the underground footprint of the North River Tunnel from the Project site used to define the environmental justice study area, since the analyses provided in other chapters of this EIS conclude that underground construction work would not result in adverse environmental impacts.

Because of their physical separation and different statistical points of reference, FRA and NJ TRANSIT treat the New Jersey and New York portions of the study area separately in this analysis. As shown in **Table 22-1** and **Figure 22-1**, the environmental justice study area includes 24 census block groups in New Jersey and 4 census block groups in New York.

Table 22-1
Environmental Justice Study Area Block Groups

State / County	Municipality	Census Tract	Block Group
New Jersey / Hudson	Jersey City	69	1
New Jersey / Hudson	North Bergen	148	2, 3, 4
New Jersey / Hudson	Union City	170	3
New Jersey / Hudson	Union City	171	1, 2, 3, 4
New Jersey / Hudson	Union City	172	1, 2
New Jersey / Hudson	Union City	173	1
New Jersey / Hudson	Union City	174	1, 2
New Jersey / Hudson	Union City	175	1
New Jersey / Hudson	Union City	178	1
New Jersey / Hudson	Weehawken	179	1, 2
New Jersey / Hudson	Weehawken	182	1, 4
New Jersey / Hudson	Hoboken	183.02	1
New Jersey / Hudson	Hoboken	184	1
New Jersey / Hudson	Secaucus	199	2, 3
New York / New York	Manhattan	97	2, 4
New York / New York	Manhattan	99	1
New York / New York	Manhattan	103	1

22.2.2.2 IDENTIFICATION OF ENVIRONMENTAL JUSTICE POPULATIONS

Within the environmental justice study area, this analysis identifies whether minority and/or low-income populations (also referred to as environmental justice populations) are present that may be affected by the Preferred Alternative. FRA and NJ TRANSIT used the following definitions for this identification:

- **Minority Populations:** As defined in the FTA Circular, minority populations include persons who are American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander. This environmental justice analysis also considers minority to include persons identified as being either "some other race" or "two or more races" in the census data.

  Following CEQ guidance, minority populations were identified where either: (1) the minority population of the affected area exceeds 50 percent; or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. For this analysis, FRA and NJ TRANSIT used Hudson County as the primary statistical reference area for the New Jersey portion of the study area and New York County (Manhattan) as the primary statistical reference area for the New York portion of the study area. Approximately 71.3 percent of the population in Hudson County and 53.1 percent of the population in New York County is minority; to be conservative, the CEQ guidance threshold of 50 percent was used as an indicator of minority population for both portions of the study area.

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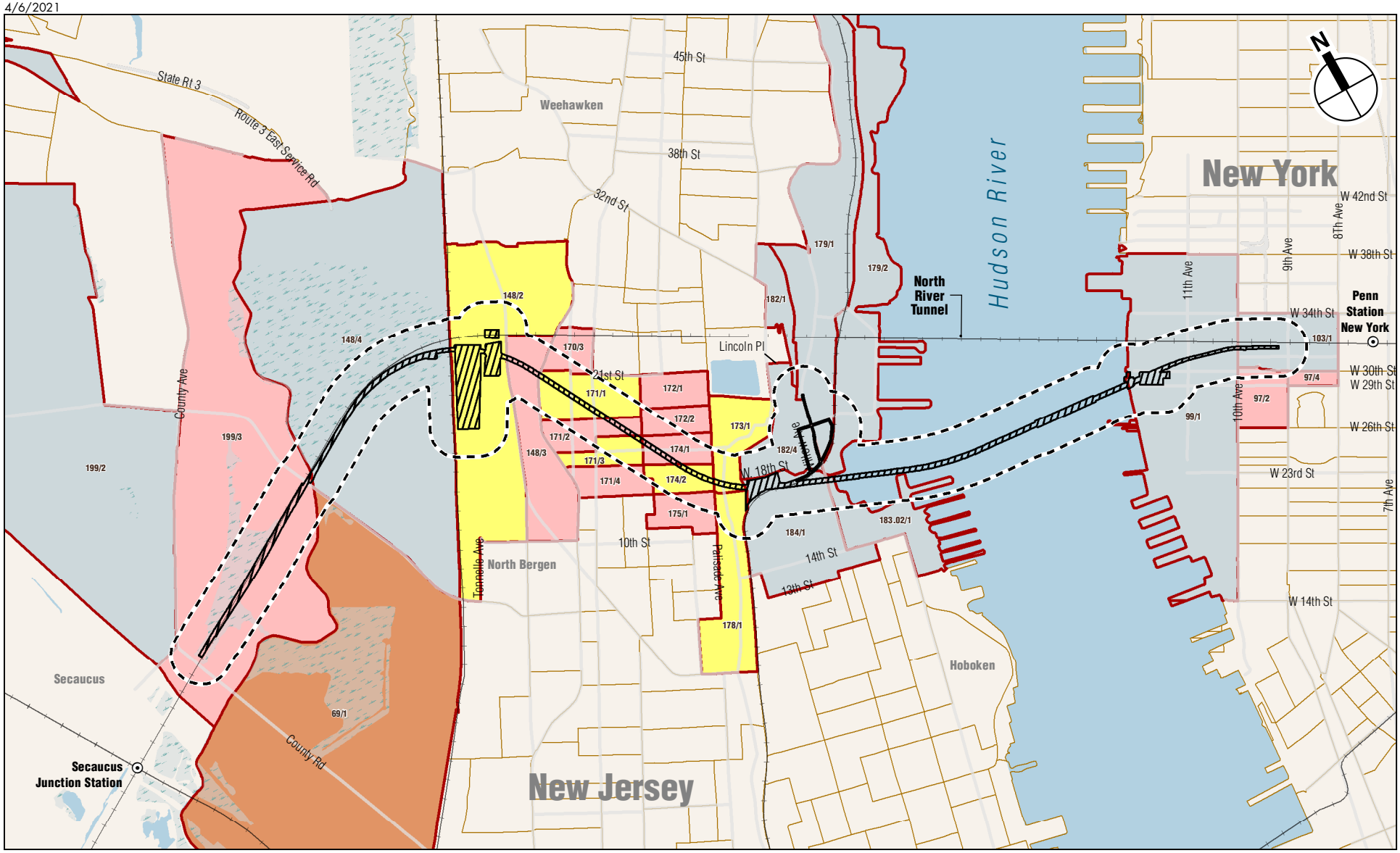

Project Site
Study Area (500-foot boundary)
Census Tract Block Group Boundary
Environmental Justice (EJ) Block Group in Study Area
EJ Poverty & Minority Block group
EJ Minority Block group
Non-EJ Block Group
EJ Poverty Block Group

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Environmental Justice Communities in the Study Area

Figure 22-1

- **Low Income Populations:** According to the FTA Circular, low income means a person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. Low-income population means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed USDOT program, policy or activity. The FTA Circular notes that FTA grant recipients are encouraged to use a locally developed threshold or a percentage of median income for the area, provided that the threshold is at least as inclusive as the HHS poverty guidelines. Therefore, in accordance with that guidance, the percentage of individuals below poverty level in each census block group was used to identify low-income residents. In Hudson County, approximately 15.3 percent of individuals live below the Federal poverty threshold; therefore, FRA and NJ TRANSIT considered any census block group with more than 15.3 percent of its individuals living below the poverty level to be a low-income area. In New York County, approximately 15.8 percent of individuals live below the Federal poverty threshold; as a conservative approach, FRA and NJ TRANSIT considered any census block group with more than 15.8 percent of its individuals living below the poverty level to be a low-income area. This methodology is more inclusive than the HHS poverty guidelines.

Within the study area, FRA and NJ TRANSIT collected demographic data at the census block group level from the American Community Survey (ACS) 2015-2019 Five-Year Estimates. The data were aggregated and mapped to illustrate the location of environmental justice populations within the study area. In accordance with FTA guidance, FRA and NJ TRANSIT also attempted to identify additional small or localized environmental justice populations beyond these thresholds by looking for facilities servicing any identified environmental justice community, dedicated housing communities, or other program indicators of minority or low-income communities.

22.2.2.3 IDENTIFICATION OF POTENTIAL ADVERSE EFFECTS AND POTENTIAL DISPROPORTIONATE IMPACTS

The next step in the analysis was to identify the adverse effects that would occur in the environmental justice study area as a result of the Preferred Alternative, based on the analyses presented in other chapters of this FEIS, and then to determine whether those impacts would result in disproportionately high and adverse effects on environmental justice populations.

To determine whether disproportionately high and adverse effects would occur to identified environmental justice populations, FRA and NJ TRANSIT examined the potential for adverse effects on human health and safety and environmental resources that would occur to environmental justice populations in comparison to those that would occur to non-environmental justice populations, taking into account any mitigation that would eliminate or reduce effects to environmental justice populations. The FTA Circular notes that even when the minority or low-income population in an area is small, this does not eliminate the possibility of a disproportionately high and adverse effect of a proposed action. It is important to consider the comparative impact of an action among different population groups.

22.2.2.4 OUTREACH TO ENVIRONMENTAL JUSTICE POPULATIONS

FTA's Environmental Justice Circular notes that a key component of environmental justice is engaging environmental justice populations as part of the transportation planning process. This allows project sponsors to understand the needs and priorities of environmental justice populations and to balance the benefits of a proposed project against its adverse effects.

FRA and NJ TRANSIT held public outreach meetings throughout development of the DEIS and FEIS documentation, including large meetings at key Project milestones and smaller, targeted meetings for specific stakeholders (see Chapter 25, "Process, Agency Coordination, and Public Involvement" and Section 22.8 of this chapter). FRA and NJ TRANSIT held meetings in parts of the study area where environmental justice communities live, and conducted targeted outreach to affected property owners and stakeholders in these communities. Project materials were provided in both English and Spanish to ensure participation by Limited English Proficient (LEP) communities. Future outreach in the design and construction phases will continue to involve environmental justice communities in the study area, including targeted outreach to LEP populations.

22.3 IDENTIFICATION OF ENVIRONMENTAL JUSTICE POPULATIONS

This section presents an overview of demographic data (e.g., race/ethnicity and poverty status) in the New Jersey and New York portions of the study area to identify whether environmental justice populations are present. FRA and NJ TRANSIT used data from the 2015-2019 ACS Five-Year Estimates for this study, which are presented in **Table 22-2**.

22.3.1 NEW JERSEY

Based on 2015-2019 ACS Five-Year Estimates, the New Jersey portion of the study area had a population of 40,331 in 2019. Approximately 47.8 percent of this population identified themselves as Hispanic or Latino, comprising the largest race/ethnicity cohort. Overall, approximately 62.8 percent of the study area residents are minority. For Hudson County as a whole, a larger proportion of residents are minority (71.3 percent). Of the 24 individual block groups in the study area, 15 have more than 50 percent minority residents and therefore meet the definition of minority populations.

Of the 24 block groups in the New Jersey portion of the study area, 10 have low-income percentages that are greater than 15.3 percent and are therefore considered to be low-income communities. Overall, approximately 12.3 percent of the study area population lives below the poverty level.

Since publication of the DEIS, one block group (Census Tract 182, Block Group 4) that FRA and NJ TRANSIT previously identified as an environmental justice community no longer meets the thresholds for minority or low-income populations based on updated census data. This block group is the area of Weehawken referred to as "the Shades," which would be adjacent to the proposed Hoboken staging area and fan plant site for the Preferred Alternative. To be conservative, FRA and NJ TRANSIT have continued to treat this block group as an environmental justice community for this FEIS.

In sum, most of the New Jersey portion of the study area is home to environmental justice communities, with high proportions of minority and low-income residents. Waterfront block groups in Hoboken and Weehawken, and certain areas in the Meadowlands west of Tonnelle Avenue, do not meet the thresholds for environmental justice communities. Further study in these areas did not reveal any small or localized environmental justice populations and was determined by looking for facilities servicing any identified environmental justice community, dedicated housing communities, or other program indicators of minority or low-income communities. Therefore, these areas are not environmental justice communities.

Table 22-2
Study Area Minority and Low-Income Characteristics

State / Census Tract / Block Group	Total Population	Percent White (Non-Hispanic)	Percent Black (Non-Hispanic)	Percent Asian (Non - Hispanic)	Percent Other (Non - Hispanic)	Percent Hispanic or Latino	Percent Total Minority	Percent Individuals Below Poverty Level
NJ Tract 69 BG 1	68	61.8	0.0	0.0	5.9	32.4	38.3	**38.2**
NJ Tract 148 BG 2	2,869	41.4	0.0	3.9	0.0	54.7	**58.6**	11.8
NJ Tract 148 BG 3	2,203	4.5	22.4	12.2	1.8	59.2	**95.6**	**18.1**
NJ Tract 148 BG 4	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NJ Tract 170 BG 3	1,811	24.7	2.0	8.0	2.7	62.6	**75.3**	**26.7**
NJ Tract 171 BG 1	1,535	16.0	0.8	0.7	4.3	78.4	**84.2**	3.3
NJ Tract 171 BG 2	1,413	20.6	0.8	3.1	0.0	75.5	**79.4**	**38.8**
NJ Tract 171 BG 3	911	1.9	4.6	10.7	1.2	81.7	**98.2**	6.6
NJ Tract 171 BG 4	1,158	8.7	15.3	0.0	0.0	76.0	**91.3**	**16.7**
NJ Tract 172 BG 1	1,636	20.1	2.7	1.5	1.1	74.6	**79.9**	**24.0**
NJ Tract 172 BG 2	1,661	15.1	0.4	4.0	0.0	80.6	**85.0**	**16.4**
NJ Tract 173 BG 1	2,520	30.6	0.9	7.5	5.2	55.8	**69.4**	9.6
NJ Tract 174 BG 1	1,105	12.6	1.0	1.5	1.2	83.8	**87.5**	**16.5**
NJ Tract 174 BG 2	1,384	14.3	2.5	0.3	3.4	79.6	**85.8**	12.8
NJ Tract 175 BG 1	2,886	8.1	2.8	1.5	0.4	87.1	**91.8**	**27.0**
NJ Tract 178 BG 1	1,841	33.2	1.5	14.6	5.8	44.9	**66.8**	12.8
NJ Tract 179 BG 1	804	58.2	5.6	6.0	3.0	27.2	41.8	0.5
NJ Tract 179 BG 2	2,722	54.3	2.1	29.1	2.1	12.3	45.6	3.2
NJ Tract 182 BG 1	764	55.8	4.5	10.5	5.1	24.2	44.3	2.1
NJ Tract 182 BG 4	664	81.5	0.0	12.5	0.0	6.0	18.5	4.7
NJ Tract 183.02 BG 1	4,418	70.6	2.3	14.3	2.4	10.4	29.4	2.4
NJ Tract 184 BG 1	1,598	79.2	1.6	8.8	3.0	7.5	20.9	2.8
NJ Tract 199 BG 2	3,480	68.9	0.0	17.9	4.1	9.1	31.1	3.8
NJ Tract 199 BG 3	880	39.8	0.0	18.3	1.7	40.2	**60.2**	**17.6**
NJ Portion of Study Area	*40,331*	*37.2*	*3.1*	*9.5*	*2.4*	*47.8*	***62.8***	*12.3*
Hudson County	*670,046*						***71.3***	***15.3***
NY Tract 97 BG 2	979	3.0	30.6	19.0	1.6	45.8	**97.0**	**47.3**
NY Tract 97 BG 4	1,112	38.0	5.7	43.9	1.6	10.8	**62.0**	**22.5**
NY Tract 99 BG 1	5,981	63.8	5.5	15.6	2.9	12.2	36.2	7.4
NY Tract 103 BG 1	2,065	60.6	6.0	23.0	4.7	5.7	39.4	11.5
NY Portion of Study Area	*10,137*	*54.5*	*8.0*	*20.5*	*3.1*	*13.9*	*45.5*	*13.7*
Borough of Manhattan	*1,631,993*						***53.1***	***15.8***

Notes: Percentages in **bold** indicate minority or low-income areas.
Total minority percentage consists of all population other than non-Hispanic Whites.
Totals may not add up to 100 percent due to rounding.
Source: U.S. Bureau of the Census, 2015-2019 American Community Survey Five-Year Estimates.

22.3.2 NEW YORK

Based on 2015-2019 ACS Five-Year Estimates, the New York portion of the study area had a population of 10,137. Approximately 54.5 percent of this population identified themselves as White (non-Hispanic), comprising the largest race/ethnicity cohort. Approximately 45.5 percent of the study area residents are minority. This is less than New York County (the Borough of

Manhattan), where approximately 53.1 percent of residents are minority. Two of the four individual block groups in the study area have more than 50 percent minority residents and therefore meet the definition of a minority population.

Of the four block groups in the New York portion of the study area, two have low-income percentages that are greater than 15.8 percent, and therefore are considered to be low-income communities. Overall, approximately 13.7 percent of the study area population lives below the poverty level.

Overall, some parts of the New York portion of the study area meet the thresholds for environmental justice communities because of their high proportions of minority and low-income residents. The areas west of Tenth Avenue and north of West 30th Street do not meet these thresholds. Further study in these areas did not reveal any small or localized environmental justice populations and was determined by looking for facilities servicing any identified environmental justice community, dedicated housing communities, or other program indicators of minority or low-income communities. Therefore, these areas are not environmental justice communities.

The New York study area is undergoing extensive redevelopment that includes a number of large-scale mixed use (commercial and residential) developments, commercial developments, as well as several public transportation infrastructure and open space improvement projects (see Chapter 6A, "Land Use, Zoning, and Public Policy," Section 6A.4.3.1). The addition of a large amount of new commercial office space and retail space, new hotels, and thousands of new apartments is changing the economic profile and residential characteristics of the New York study area and will continue to do so by the analysis year of 2033. In addition to recently completed major developments, construction is ongoing and new buildings will continue to be completed over approximately the next decade, so that some new residents will be present in the New York study area when the construction for the Preferred Alternative in New York is under way. The characteristics of this future population are unknown.

22.4 IMPACTS OF NO ACTION ALTERNATIVE

For purposes of analysis in this EIS, FRA and NJ TRANSIT have assumed that the existing North River Tunnel remains functional and in operation at least through the FEIS analysis year of 2033, with continued maintenance as necessary to address ongoing deterioration to the extent possible. However, without a full rehabilitation of the North River Tunnel, damage to the 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, and may lead to its eventual closure.

Under the No Action Alternative, construction of the Preferred Alternative would not occur. As a result, there would be no Project-related impacts to environmental justice communities in the study area. However, the No Action Alternative would result in adverse effects on socioeconomic conditions in New Jersey, New York, and throughout the Northeast, which would directly and indirectly affect environmental justice communities in the study area (see Chapter 7, "Socioeconomic Conditions," Section 7.5). Without proper maintenance of the transportation infrastructure, delays on Amtrak and NJ TRANSIT service for unplanned maintenance and repairs would continue to worsen. As trans-Hudson travel demand continues to grow, access to work, home, and areas of commerce may become more difficult in New Jersey, New York, and throughout the NEC as public transportation service becomes more unreliable. Increasing travel time required for work commutes and the movement of goods and services in the region would increase the cost of doing business and ultimately make the region a less desirable location to live and work. However, these effects of the No Action Alternative would not fall

disproportionately on environmental justice communities because sizeable non-environmental justice communities are also served by trans-Hudson and other regional transportation infrastructure and would be equally affected.

22.5 BENEFITS AND IMPACTS OF THE PREFERRED ALTERNATIVE AND MEASURES TO AVOID, MINIMIZE, AND MITIGATE IMPACTS

Since publication of the DEIS, the Preferred Alternative has changed from what was presented in the DEIS as a result of design advancement and changes made in response to comments received on the DEIS. Amtrak has continued to advance the design of the Preferred Alternative, including incorporating design refinements based on further engineering analysis and information, resulting in some modifications to the design presented in the DEIS. FRA and NJ TRANSIT, in response to comments received during the public comment period and working with the other Project Partners, have identified ways to reduce the impacts of Project construction on local communities near the construction sites in New Jersey and Manhattan. Design refinements made after publication of the DEIS for Project elements near residential communities include the following (described in detail in the Foreword, in Section F.2):

- In the Meadowlands, a 1,900-foot-long segment of the surface alignment that was on embankment would now be on a viaduct.
- Also in the Meadowlands, the access road adjacent to the surface alignment east of Secaucus Road would now be two-way with a turnaround loop and would not connect to 16th Street.
- In Union City, Hoboken, and Weehawken, the tunnel alignment is now shifted slightly north to avoid the need for disruptive underpinning work beneath a PSE&G facility.
- Some staging activities have shifted from the Hoboken staging area to the Tonnelle Avenue staging area in New Jersey in order to reduce construction-period impacts to the Shades neighborhood of Weehawken. As described throughout this FEIS, during the public comment period for the DEIS, residents of the Shades neighborhood and neighboring communities submitted numerous comments about the proposed intensive construction activity in close proximity to their neighborhood over a seven-year period, about the timeframe for daily construction activities on the Hoboken staging area, and about the heavy truck traffic through Weehawken, where many intersections are congested throughout the day. To address the concerns raised by residents and elected officials from Weehawken and nearby communities, FRA and the Project Partners developed a revised approach to construction staging and sequencing that would reduce the adverse construction-related impacts to local residents near the Hoboken staging area without substantially increasing adverse impacts to other communities and resources or affecting the Project's effectiveness in meeting its purpose and need.
- A third possible truck route (also referred to as "haul route") option is now available to access to the Hoboken staging area that would shift trucks away from local roads and the Shades neighborhood.
- In Manhattan, tunneling beneath West 30th Street would no longer require a full street closure and one lane could remain open, other than short-term lane closures for utility relocation.
- In the Manhattan waterfront area, a second possible construction technique is now available that 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 tunnel

boring machines (TBMs) would need to bore through when they reach the bulkhead. With this new option, a larger area of Hudson River Park would become a temporary construction staging site (for approximately 1.5 years).

22.5.1 NEW JERSEY

22.5.1.1 OVERALL PROJECT IMPACTS

In New Jersey, construction of the Preferred Alternative would result in temporary, but long-term, adverse impacts on the communities near the construction sites at the Tonnelle Avenue staging area and the Hoboken staging area. Construction activities would generally be disruptive to nearby land uses because of the appearance of the equipment and the traffic, noise, and dust associated with construction.

Construction activities for the surface tracks through the Meadowlands would require partial acquisitions of easements in abutting industrial properties. Temporary easements would be required to accommodate installation of below-grade drainage infrastructure and to allow construction access for workers installing the railroad embankment and structures. In most instances, access to commercial establishments adjacent to construction sites would be maintained at all times and temporary and permanent easements would be limited to partial takings of vacant land. However, certain businesses would experience temporary disruptions to parking areas or loading docks, generally for six months to a year over a period of five years.

Construction activities at the Tonnelle Avenue construction site in North Bergen, New Jersey would occur over an 11-year period, including utility relocation and construction of a new Tonnelle Avenue roadway bridge over the railroad alignment, staging for the surface track construction, staging for the construction of the new Hudson River Tunnel, and staging for rehabilitation of the North River Tunnel. During this time there would be heavy truck activity and the use of noisy construction equipment (see Chapter 12A, “Noise,” Sections 12A.6.2.2 and 12A.6.2.4). The Project Sponsor would develop a Maintenance and Protection of Traffic (MPT) plan in consultation with the local municipality (North Bergen) to minimize traffic disruptions. As with any construction project, construction activities would at times be disruptive to nearby activities. Adverse noise impacts would occur throughout the 11-year construction period at residences on Paterson Plank Road and Grand Avenue above the staging area, at a religious facility (BAPS Shri Swaminarayan Mandir Hindu temple) close to the staging area on Tonnelle Avenue, and on Tonnelle Avenue near 10th Street and Secaucus Road from increased truck traffic.

Construction activities at the Hoboken staging area would occur over a seven-year period, during which time there would be heavy truck activity and the use of noisy construction equipment (see Chapter 12A, “Noise,” Section 12A.6.2.3). Traffic on local streets, potentially including Willow Avenue, Park Avenue, 19th Street, and JFK Boulevard East, could experience delays caused by the introduction of construction trucks, depending on the truck route(s) used. The Project Sponsor would develop an MPT plan in consultation with the local municipality (Weehawken) to minimize traffic disruptions. A new off-street access road (i.e., truck route, or haul route) to the Hoboken staging area that would be constructed for the Project along the adjacent Hudson-Bergen Light Rail (HBLR) tracks would shift truck traffic away from the nearby residential neighborhood, but truck traffic would still use local streets; the specific streets would depend on which truck route option(s) are selected. This EIS evaluates three potential truck routes, all of which would use an off-street segment from Willow Avenue to the staging site, to allow a comparison of routing options so that potential impacts from the trucking can be minimized. The final truck route(s) to be used will be determined by the Project Sponsor in coordination with the Project contractor during final design. The Project Sponsor will conduct a community outreach program during final design and construction for the Project through which

it will provide updates and information to affected residents relating to the selected truck routes and other design developments (see Section 22.8 of this chapter). Adverse noise impacts would occur for up to seven years at residences along the truck routes—i.e., residences along the Park Avenue service road and Willow Avenue service road between the HBLR right-of-way and 19th Street and, for haul route Option 3, residences in west-facing apartments in Hamilton Cove, the new 15-story residential complex at 800 Harbor Boulevard east of the HBLR tracks.

During the public comment period for the DEIS, residents of the Weehawken neighborhood adjacent to the Hoboken staging area—a neighborhood known as the Shades—submitted numerous comments. Residents were concerned about the intensive construction activity in close proximity to their neighborhood over a seven-year period, about the timeframe for daily construction activities on the site, and about the heavy truck traffic through Weehawken, where many intersections are congested throughout the day. Based on comments received on the DEIS, design refinement, and further coordination with representatives and residents of the Townships of Weehawken and North Bergen and the Cities of Hoboken and Union City, FRA and NJ TRANSIT, working with the other Project Partners, evaluated alternative methods for constructing the Preferred Alternative and have incorporated modifications to the construction methods into the Project that will reduce construction impacts on local residents near the Hoboken staging area. The revised construction methodology involves removing spoils from excavation of the river tunnel segment primarily at the Tonnelle Avenue staging area rather than at the Hoboken staging area. Additionally, the maximum number of trucks per hour has been reduced by half, from 16 to a maximum of 8 trucks per hour that would arrive at and then depart from the Hoboken staging area. The revised construction approach would substantially reduce the level of construction activity at the Hoboken staging area, to address concerns raised by the residents and elected officials of Weehawken. At the same time, while the revised approach would shift some construction activity to the Tonnelle Avenue staging area, it would not alter the overall character of activities at Tonnelle Avenue that FRA and NJ TRANSIT analyzed in the DEIS. In either the DEIS approach or the modified approach, a total of 11 years of construction activities would occur at the Tonnelle Avenue staging area. This modification would not substantially increase the duration of construction activities at the Tonnelle Avenue staging area, and the increased activity there would not result in substantial changes to the traffic, noise, or air quality effects that would occur there during Project construction, based on the conclusions of analyses presented in other chapters of this EIS (see Chapter 5A, “Traffic and Pedestrians;” Chapter 12A, “Noise,” and Chapter 13, “Air Quality”).

Once the construction is complete and the Project is in operation, there would be few permanent adverse effects of the Preferred Alternative in New Jersey. Permanent infrastructure would be present along the NEC, at Tonnelle Avenue, and at the new Hoboken fan plant. The fan plant would be similar in character to the adjacent light industrial uses and would be designed to be visually compatible with the visual character of the surrounding area. The shape, size, and design treatment of the fan plant will be refined during advanced engineering. The Project Sponsor, in cooperation with the other Project Partners, will coordinate with the local community and seek input in determining the appropriate design for the visible portions of the fan plant. The fans within the fan plant would operate intermittently, as needed to provide cool air to the tunnel below and exhaust hot air, to exhaust smoke in emergencies, and for testing. The fan plant would be equipped with silencers and dampers and its operation would not result in adverse noise or air quality impacts on the adjacent neighborhood.

As detailed in previous chapters of this EIS, the benefits and adverse impacts of the Preferred Alternative on the New Jersey study areas evaluated in this EIS and the associated mitigation that the Project Sponsor will implement to address these impacts are summarized in **Table 22-3** below. The lead Federal agency will be responsible for ensuring that the Project Sponsor implements these mitigation measures, which will be identified in the ROD.

Table 22-3
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts

Traffic and Pedestrians	• Disruptions from construction traffic at nearby intersections at the Tonnelle Ave staging area in North Bergen (11 years) and on streets in Hoboken and Weehawken during construction at the Hoboken staging area (7 years).
	• Near Tonnelle Avenue staging area, adverse traffic impacts at three locations during peak periods on weekdays during construction for the new Hudson River Tunnel:
	  ○ Tonnelle Ave at Wendy's and White Cap Construction Supply (1500 Tonnelle Ave, signalized)
	  ○ Tonnelle Ave northbound at 10th St (unsignalized)
	  ○ Tonnelle Ave northbound at the entrance ramp from Secaucus Rd (unsignalized).
	• Near Tonnelle Ave staging area, adverse traffic impacts at four locations during peak periods on weekdays and Saturdays during North River Tunnel reconstruction:
	  ○ Tonnelle Ave at Wendy's and White Cap Construction Supply (1500 Tonnelle Ave, signalized)
	  ○ Tonnelle Ave northbound at 10th Street (unsignalized)
	  ○ Tonnelle Ave northbound at the entrance ramp from Secaucus Rd (unsignalized)
	  ○ Tonnelle Ave at Taco Bell (2020 Tonnelle Avenue, signalized).
	• Near Hoboken staging area, adverse traffic impacts at up to four locations during peak periods on weekdays:
	  ○ Willow Ave at 19th St (signalized) – with haul route Options 1 and 2
	  ○ Park Ave at 19th St (signalized) – with haul route Option 1
	  ○ Willow Ave at 15th St (signalized) – if workers park off-site
	• Park Ave at 16th St (signalized) – if workers park off-site
		• Maintenance and Protection of Traffic (MPT) plans for vehicular traffic during construction, including the use of traffic enforcement agents where needed in North Bergen, Weehawken, and Hoboken.
		• Coordination with the appropriate local transportation authorities where adverse traffic impacts were identified to implement mitigation measures, as appropriate, including changes to signal timing or phasing, changes to pavement markings, and changes to lane designation. The costs for these mitigation measures would be Project costs that will be borne by the Project Sponsor rather than the local community.
		• Maintenance, repair, and cleaning of designated truck routes on local streets; reconstruction of any streets damaged by Project trucking activity. Advance or preventive rehabilitation of the proposed truck routes before the onset of construction, as necessary.
		• Strict enforcement of identified Project truck routes; trucks will wait inside construction staging areas rather than in the public right-of-way, to the extent practicable.
		• Evaluation during final design, in coordination with NJDOT, the potential creation of new signalized intersection on Tonnelle Ave at the staging area driveway to avoid unnecessary construction vehicle movements on Tonnelle Ave.
		• Maximum of no more than 8 trucks per hour (cap) in each direction traveling to and from the Hoboken staging area; no trucks on local roads in Weehawken or Hoboken between 10 PM and 7 AM.
		• Use of construction haul route along the north side of the Hudson-Bergen Light Rail (HBLR) that would connect to the existing street network at Willow Ave, Park Ave, and/or 19th St in Weehawken to divert construction traffic headed to and from the Hoboken staging area away from the nearby Shades neighborhood of Weehawken. The Project Sponsor, in coordination with the Project contractor, will select the final truck route during final design and will coordinate with the local municipality regarding this selection.
		• Construction workers at the Hoboken staging area will park either within the staging area or at a designated off-site parking facility, with shuttle transportation provided between the staging area and the parking facility. Construction workers will not park on local streets in Weehawken.
		• Creating high-visibility crosswalks at appropriate intersections near truck routes in Weehawken.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Transportation Services (Passenger and freight rail, mass transit, maritime, and helicopter services)	• Maintenance of full NEC peak-hour rail passenger service (Amtrak and NJ TRANSIT) during rehabilitation of North River Tunnel. • Rehabilitated North River Tunnel that would provide new resiliency against severe weather and redundancy for operational flexibility. • Potential for disruptions to rail passenger service during construction in the vicinity of active passenger rail tracks on the NEC. • Possible conflicts with HBLR right-of-way during construction at the Hoboken staging area. • Potential effects on bus service on and near truck routes near the Hoboken staging area because of traffic congestion due to construction trucks. • Possible effects on freight rail operations during construction of a bridge over the Conrail and New York, Susquehanna & Western Railway (NYSW) freight rail right-of-way in North Bergen, NJ.	• To the extent practicable, construction work on and near the NEC during nights and weekends to avoid the need for daytime train outages. • Construction work within the operating envelope of the HBLR scheduled during off-peak time periods to avoid impacts on HBLR services; coordination of any required special safety protocols with NJ TRANSIT and the operators of the HBLR. • Traffic mitigation measures, including an MPT plan, to minimize traffic delays that might affect buses. • Construction activities at the new bridge over the freight rail right-of-way scheduled in coordination with the freight rail companies to avoid impacts on their operations.
Land Use, Zoning, and Public Policy	• Temporary but long-term disruption to nearby activities due to construction traffic, noise, dust; may affect religious facility and businesses on Tonnelle Ave in North Bergen (11 years); residences and a park on Paterson Plank Rd, Grand Ave, and along Tonnelle Ave in North Bergen (11 years); and residents in Weehawken and Union City adjacent to the Hoboken construction staging area and truck routes (7 years). • Modified construction approach to reduce impacts near Hoboken staging area. • New permanent above-ground fan plant at Hoboken fan plant site.	• Outreach program to local neighborhoods, to include a staffed local neighborhood outreach office near each construction site (i.e., Tonnelle Ave and Hoboken); a dedicated Project liaison; a 24-hour hotline for emergencies and construction complaints; and regular meetings and notifications about construction status and upcoming activities • Mitigation for traffic, noise, vibration, air quality, contaminated materials, and temporary and permanent property acquisition, as discussed in each respective section of this table. • Use of construction haul route along the north side of the HBLR that would connect to the existing street network at Willow Ave, Park Ave, and/or 19th St in Weehawken to divert construction traffic headed to and from the Hoboken staging area away from the nearby Shades neighborhood of Weehawken. • MPT plan to ensure access to the street network for fire trucks and emergency vehicles at the North Hudson Regional Fire and Rescue Engine 3 station on Park Ave at 19th St in Weehawken. • Noise mitigation including barriers at construction sites and providing funding for sound-reducing windows for residences above Tonnelle Ave staging area and along truck routes for the Tonnelle Ave staging area and Hoboken staging area. • Removal of excavated materials from construction of the river tunnel segment primarily via the Tonnelle Ave staging area, in order to minimize trucking to and from the Hoboken staging area. • Truck trips serving the Hoboken staging area would not exceed a maximum (cap) of 8 trucks per hour in each direction throughout the construction period and trucking would not occur between 10 PM and 7 AM.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Land Use, Zoning, and Public Policy (Cont'd)		• Lighting at staging areas would be designed to minimize light pollution affecting adjacent areas. • Hoboken fan plant to be designed to be compatible with adjacent uses; the Project Sponsor, in cooperation with the other Project Partners, will coordinate with the local community in Weehawken regarding the visible elements of the fan plants.
Property Acquisition	• Temporary and permanent surface easements and permanent acquisitions for the rail right-of-way in Secaucus and North Bergen, NJ; possible temporary easements on private properties in Hoboken/Weehawken to accommodate truck routes, depending on which route(s) are selected to avoid other adverse effects.	• Coordination with private property owners regarding access during construction, to minimize adverse impacts on business activities. • Property acquisition in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (the Uniform Act) and all other relevant property acquisition procedures that apply.
Socioeconomic Conditions	• Economic modeling conducted for the Project shows that the Project would result in direct, indirect, and induced economic benefits from construction expenditures, including an estimated total of 55,312 jobs (full-time equivalents (FTEs))—30,650 direct construction jobs (FTE), 9,567 indirect jobs, and 15,095 induced jobs in NJ and NY over the full 11-year construction period. On an annual basis (jobs per year), estimated total of 5,028 jobs in NJ and NY—2,786 direct construction jobs, 870 indirect jobs, and 1,372 induced jobs. • Temporary, short-term disruption to businesses in the Meadowlands near the NEC because of the need to use portions of parking lots for Project construction access (generally 6 to 12 months per property). Depending on the disruptions required, some businesses may need to relocate.	• Coordination with property owners and businesses regarding timing of outages. • Maintaining access to businesses at all times, including use of MPT plans for roadways to minimize disruptions to access. • Property acquisition in accordance with the Uniform Act and all other relevant property acquisition procedures that apply.
Open Space and Recreational Resources	• Construction noise that would exceed FTA noise impact thresholds at three neighborhood parks in Hoboken (1600 Park, future park space at Harborside/ Hoboken Cove Park, and Hudson River Waterfront Walkway) from construction activities during limited period (two months) for pile installation at Willow Ave viaduct over the HBLR.	• Use of pile drilling rather than pile driving to install piles at Willow Ave. • Coordination with the City of Hoboken and Township of Weehawken regarding Willow Ave pile installation to avoid disruption to special events in nearby parks. • Other measures to mitigate noise impacts (see category below).

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts

Historic and Archaeological Resources	• Adverse effects on historic resources that are eligible for the National Register of Historic Places (NRHP):
	  ○ Pennsylvania Railroad NY to Philadelphia Historic District and North River Tunnel.
	• Potential for accidental construction damage to NRHP-Eligible historic architectural resources near construction: Substation No. 3 (North Bergen), Bergen Portal of the North River Tunnel (North Bergen).
	• Potential for archaeological resources to be present in construction zone that could be affected by construction:
	  ○ Historic sea wall in Hoboken.
		• Programmatic Agreement (PA) developed through Section 106 consultation between FRA, NJHPO, NYSHPO, ACHP, FTA, the PANYNJ, and Amtrak and other consulting parties as part of the Section 106 process that sets forth detailed measures to avoid, minimize, and/or mitigate adverse effects on historic properties, including:
		  ○ Documentation of the North River Tunnel to the standards of the Historic American Engineering Record prior to rehabilitation work to supplement existing histories and/or to target a specific audience; interpretive displays about the tunnel to be located in a station along the NEC in NJ and at Moynihan station in NY.
		  ○ Implementation of Construction Protection Plans (CPPs) to protect Substation No. 3 and Bergen Portal. The CPPs will include provisions for vibration monitoring, adherence to vibration limit thresholds, measures to reduce vibration levels, and modification of construction methods if necessary.
		  ○ Archaeological testing and/or monitoring for potential archaeological resources at specific locations in NJ.

Visual and Aesthetic Resources	• Potential visual disruption to surrounding neighborhoods from construction activities at Tonnelle Ave and Hoboken staging areas. • New fan plant in Hoboken adjacent to Shades neighborhood in Weehawken and to a new adjacent residential development in construction on Manhattan Avenue in Union City; to be designed to be compatible with surrounding area.	• Use of construction barricades to block views of construction equipment; construction wall up to 25 feet high at Hoboken staging area. Landscaping in front of the noise wall at the Hoboken staging area. Construction fencing and landscaping to be designed in coordination with the local community. • Fan plant designed to be visually compatible with surrounding neighborhood; consultation with the local community in Weehawken regarding the visible elements of the fan plants. • Construction lighting at staging areas to be designed to minimize light pollution affecting adjacent residential areas. If an up-to 25-foot-high noise wall is constructed at the Hoboken staging area, lighting will be no higher than that temporary barrier.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts

Natural Resources	• Use of viaduct instead of sloped embankment in the Meadowlands to reduce impacts on wetlands.
	• Temporary impacts during construction:
	  ○ Temporary impact to 1.5 acres of emergent wetlands and associated open water areas in the Meadowlands.
	  ○ Potential temporary impacts to water quality and aquatic species in Penhorn Creek in the Meadowlands.
	  ○ Potential impacts to state-listed birds in Penhorn Creek in the Meadowlands.
	  ○ Disturbance to approximately 1.7 acres of upland habitat in NEC right-of-way and potential additional upland habitat for haul route Option 3 in Weehawken.
	• Permanent impacts at Project completion:
	  ○ Permanent impact to 4.4 acres of emergent wetlands and associated open waters in the Meadowlands and Hoboken outside the NYSW mitigation site and 0.09 acres of wetlands within the existing NYSW mitigation wetland being developed near the NEC.
	  ○ Alteration of stormwater flow and wetland hydrology in the Meadowlands.
	• FRA received concurrence from NMFS under Section 7 of the Endangered Species Act that the Preferred Alternative is not likely to adversely affect ESA-listed species and designated critical habitat under NMFS jurisdiction.
		• Coordination with Permittees to comply with the requirements of all permits from the USACE and NJDEP.
		• Minimize impacts through erosion and sediment controls, best management practices (BMPs), restoration of wetland areas after construction.
		• Wetland mitigation developed in consultation with NJDEP and the USACE, including purchase of mitigation credits from approved mitigation bank within the same watershed unit as the Project site.
		• Restoration of disturbed wetlands back to original topography and stabilization with mulch, straw or hay following the completion of construction.
		• Vegetation clearing and fill placement in the Meadowlands to occur only between October 1 and March 14, outside of bird breeding season.
		• Erosion and sediment controls and best management practices near Penhorn Creek.
		• In-water and sediment-generating activities and pile driving near Penhorn Creek to occur only between July 1 and February 28 (i.e., not between March 1 and June 30) to protect anadromous fish species.
		• Addition of a weir downstream of the twin 48-inch culvert to maintain upstream wetland water levels; coordination of weir design with NJDEP and USFWS.
		• Relocation of a portion of a Penhorn Creek tributary to a trapezoidal channel with a natural bottom developed to reflect a natural channel design; new access road above the relocated tributary on a viaduct with open grid steel grating to minimize shading. Collection of soil samples within the footprint of the relocated channel; removal or capping of any contaminated soils encountered.
		• Measures such as sheeting or similar methods, and a grouting program to fill cracks and other voids in the rock mass to minimize groundwater intrusion such that dewatering is minimized to the extent practicable.
		• If the Project contractor uses a below-grade pit at the Tonnelle Avenue staging area to store tunnel spoils, lining or otherwise managing the below-grade area to reduce groundwater inflow into the pit and to minimize the potential for discharge to groundwater.

Noise	• FRA and NJ TRANSIT conducted the analysis of noise using the methodology presented in FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual*, which FRA also uses for assessing non-high-speed rail projects.	• Community outreach program and noise complaint procedure to address community concerns; meetings with affected buildings to identify activities sensitive to noise and schedule construction activities around those where practicable.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Noise (Cont'd)	• Temporary construction noise impacts from on-site construction activities at construction staging areas and along construction truck routes, including the following: o Pile driving along the NEC that would result in overnight noise levels that exceed FTA's residential construction noise impact thresholds for approximately two months for residences on Henry Street at Secaucus Rd in Secaucus, NJ. o Noise impacts from construction traffic on Tonnelle Ave at residences on Tonnelle Ave between 10th St and Secaucus Rd in North Bergen for up to 11 years. o Noise impacts from construction at Tonnelle Ave staging area on residences in North Bergen, on Paterson Plank Rd and on Grand Ave between 19th and 23rd Sts and on Hindu temple on Tonnelle Ave near construction site (3 years for new tunnel construction, 4 years for existing tunnel rehabilitation, including overnight). o Noise impacts along truck routes in Weehawken at residences on Willow and Park Aves between 19th St and the HBLR, and on residences in west-facing apartments at 800 Harbor Blvd, for up to 7 years. o Noise impacts from underpinning Willow Avenue viaduct at nearby parks in Weehawken and Hoboken for up to 2 months. • No permanent noise impacts associated with train operations on surface alignment or in new Hudson River Tunnel. • No noise impacts from Hoboken fan plant, which would operate intermittently and have dampers to reduce noise.	• Use of quieter equipment; use of acoustical noise tents and mufflers for loud equipment as practicable; vehicles routed through staging areas to minimize use of backup alarms. • Implementation of a program to certify that all noise control measures specified in the EIS are being fully and properly implemented. • Development and implementation of a noise monitoring plan during construction. • At staging areas in NJ, ventilation fans to be used during construction of the new Hudson River Tunnel and the rehabilitation of the North River Tunnel to achieve a maximum acceptable sound pressure level from fan operation of 63 dBA at a distance of 50 feet; generators and light plants to achieve a maximum sound pressure level of 70 dBA at a distance of 50 feet; conveyors used to transport tunnel spoils from the tunnel during tunnel mining along with any associated pumps to be enclosed in a structure that would provide approximately 25 dBA attenuation to these pieces of equipment. • At Hoboken construction staging area, provision of a noise barrier and sufficient noise control measures to ensure that exterior noise levels at residences nearest to the construction site would not experience adverse noise impacts according to FTA noise criteria. A wall up to 25 feet high would provide this level of noise mitigation. If the noise wall is lower than 25 feet high, other noise-reducing measures will also be employed so that the same exterior noise levels can be achieved at the nearest residences and adverse noise impacts do not occur (for example, use of quieter equipment, use of noise dampening measures in spoils trucks, placement of the noisiest equipment on the site farther from nearby residences, and use of shields or covers for noise-generating equipment and activities). • At the Hoboken staging area, placement of the grout plant, slurry plant, and compressors within enclosures or buildings capable of providing 25 dBA attenuation (e.g., corrugated steel with spray-on insulation). Any ventilation for such enclosures or buildings would be required to maintain the acoustical performance of the building in the direction of the receptors to the north and west. • At the Hoboken staging area, enclosure of concrete pumps using temporary acoustical curtains or barriers at all times during concrete operations. • No blasting after 6 PM except under special circumstances and only with permission from the relevant regulatory agency (i.e., North Hudson Regional Fire and Rescue); community outreach and notification related to anticipated times of blasting.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Noise (Cont'd)		• Coordination with residents on Henry Street in Secaucus regarding temporary accommodations while pile driving is occurring overnight within 1,000 feet of these residences. • Offer of installation of sound-reducing windows and air conditioning units to maintain closed-window condition for affected residences in North Bergen (along truck routes and above staging area) and Weehawken (near staging area and along truck routes). • Evaluation during final design, in coordination with NJDOT, the potential creation of new signalized intersection on Tonnelle Ave at the staging area driveway to avoid unnecessary construction vehicle movements on Tonnelle Ave, which would eliminate some noise impacts along the route. • Maximum of no more than 8 trucks per hour (cap) in each direction traveling to and from the Hoboken staging area; no trucks on local roads in Weehawken or Hoboken between 10 PM and 7 AM. • Construction of the Hoboken shaft using drilled piles rather than driven piles to the extent practicable, reduce resulting noise levels. • Underpinning of the Willow Ave viaduct in Hoboken using drilled piles rather than driven piles to the extent practicable, to reduce resulting noise levels. • Coordination with the City of Hoboken and Township of Weehawken regarding Willow Ave pile installation to avoid disruption to special events in nearby parks, and to provide advance notification.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Vibration	• FRA and NJ TRANSIT conducted the analysis of vibration using the methodology presented in FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual*, which FRA also uses for assessing non-high-speed rail projects. • Construction vibration levels that would be noticeable, but no vibration impacts. • No permanent vibration impacts associated with train operations on surface alignment or in new Hudson River Tunnel.	• Construction activities to be coordinated with affected municipalities; community outreach program and vibration complaint procedure to address community concerns. • Blasting to be conducted using controlled blasting techniques. • No blasting after 6 PM except under special circumstances and only with permission from the relevant regulatory agency (i.e., North Hudson Regional Fire and Rescue); community outreach and notification related to anticipated times of blasting. • Pre-construction inspection and vibration monitoring program for buildings within area of potential influence of construction. • Construction of the Hoboken shaft and underpinning for the Willow Avenue viaduct using drilled piles rather than driven piles to the extent practicable. • Implementation of CPPs for historic architectural resources located near Project construction sites. The CPPs will include provisions for vibration monitoring, adherence to vibration limit thresholds, measures to reduce vibration levels, and modification of construction methods if necessary. • New Hudson River Tunnel and rehabilitated North River Tunnel would incorporate a low-vibration track system.
Air Quality	• Temporary construction air pollutant emissions. • No exceedances of National Ambient Air Quality Standards (NAAQS). • Consistent with general conformity regulations of Clean Air Act.	• Multi-approach fugitive dust control plan, including watering, covering loose materials, vehicle rinsing, and a continuous perimeter air monitoring program at the staging areas to identify when additional dust management procedures are warranted. • Use of ultra-low sulfur diesel; idling restrictions; Best Available Tailpipe Reduction Technologies for all diesel engines; use of newer equipment.
Greenhouse Gas (GHG) Emissions and Resilience	• GHG emissions associated with construction and Project operation. • Potential vulnerability to severe storms during construction. • Project to be designed to address potential vulnerability to severe storms for permanent Project elements. Flood and storm resilience measures included in the Project such as: o Use of Design Flood Elevation (DFE) for the Project; for the new tunnel all entrances and openings would be above the DFE or any entrances below the DFE would be watertight and any equipment below the DFE would be water-resistant. o Floodgates on each side of the river in the new tunnel and at the new NY portal. o Use of water-resistant cables and conduits in new and existing tunnel. Use of concrete for tunnel walls and bench walls in new tunnel that would withstand salt water.	• Sustainability design guidelines for construction; construction contracts to include provisions related to locally produced, recycled building materials and biodiesel. • Sustainability design guidelines for permanent Project elements; construction contracts to require Energy Star and other high-efficiency building components, efficient lighting and energy systems, use of Building Management Systems for fan plants. • Storm risk management plan for construction sites. • Use of DFE for the Project; incorporate floodgates for new tunnel, and flood resistance and hardening for both new and existing tunnels as well as new fan plants and new surface alignment.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Geology and Soils	• Potential for geological and soil conditions to affect or be affected by construction and result in hazards during construction, including settlement, seismic conditions, instability of slopes, unstable soils. • Potential for encountering naturally occurring hazardous minerals (e.g., serpentinite or other asbestiform minerals).	• Project design reflecting and addressing potential hazards or construction effects. • Safety measures to protect workers and minimize environmental hazards if naturally occurring hazardous minerals encountered. • Erosion and sediment control plans that meet all applicable standards and regulations. • Control measures including ground improvement to stabilize soils, rock mass grouting, installation of waterproof earth retention systems, such as slurry walls or other lateral earth retention in areas of open cut or shaft construction, and underpinning of potentially affected existing structures. • Evaluation of Palisades cliff face for unstable, loosened areas and implementation of vibration monitoring during construction; implementation of best management practices related to landslide prevention to minimize the potential for landslides at the Palisades cliff; use of stabilization measures, such as rock bolting and installation of surface protection. • Investigations in advance of construction in the Weehawken Cove area, where faults are present, to evaluate potential inflow areas. • Implementation of CPPs for historic architectural resources located near Project construction sites. The CPPs will include provisions for vibration monitoring, adherence to vibration limit thresholds, measures to reduce vibration levels, and modification of construction methods if necessary.
Contaminated Materials	• Potential to encounter contaminated soil or groundwater during construction; Project alignment has long history of industrial and railroad use that may have resulted in contamination.	• Additional site investigation soil and groundwater sampling activities, as well as hazardous materials building investigations, at certain locations along the Project site where existing information is insufficient and/or where the potential for contamination exists. • Remedial measures where appropriate based on site investigation, which may include excavation or in-situ treatment of contaminated soil, and disposal or treatment of contaminated groundwater or liquid from dewatering. • Implementation of Project-wide Soils and Materials Management Plan to establish procedures for materials handling during construction, BMPs to be implemented during construction, such as procedures for stockpiled or containerized material and testing procedures for sampling material prior to off-site disposal or on-site reuse. • Development of a site-specific Soil Reuse and Alternative Fill Management Plan for management of contaminated soil • Implementation of a Project-specific Health and Safety Plan (HASP) prior to earth-disturbing activities. • Management of groundwater generated during dewatering activities in accordance with applicable permits.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Contaminated Materials (Cont'd)		• If the Project contractor uses a below-grade pit at the Tonnelle Avenue staging area to store tunnel spoils, lining or otherwise managing the below-grade area to reduce groundwater inflow into the pit and to minimize the potential for discharge to groundwater. • Restoration of all disturbed areas using engineering controls to prevent direct human exposure to contaminated materials. • Proper handling and disposal of all excavated soils and contaminated material encountered during construction in accordance with all applicable laws and regulations. • Preparation of a fugitive dust control plan including a robust watering program as part of contract specifications; proactive controls to reduce the potential for dust generation during site activities; and ambient air quality monitoring around Project staging areas.
Utilities and Energy	• Relocation or support in place for utilities required for construction at Secaucus Rd (at the NEC); at Tonnelle Ave for the new bridge over the new tunnel's surface alignment; and at Willow Ave in Hoboken where ground improvement would occur. Temporary service disruptions could occur.	• Coordination with affected utility providers throughout final engineering design to identify potential issues and prescribe means to resolve them prior to construction. • Agreements with utility providers and government agencies regarding temporary or permanent relocation of utility transmission lines. • Public outreach for any minor, short duration service interruptions. • Mitigation for traffic delays and implementation of rail service plans to reduce transportation delays and associated increases in fuel consumption, as discussed under "Traffic and Pedestrians" and "Transportation Services" of this table.
Safety and Security	• Construction sites, materials, and equipment to be kept secure. • Safety and security measures incorporated into permanent Project elements in accordance with NFPA standards and all appropriate regulations and standards, including all applicable FRA regulations and guidance relative to the operation of railroad infrastructure, including tracks, train signals (including Positive Train Control), and bridges.	• Construction sites to be secured with active and passive security measures; Project contractor to meet all applicable safety and security requirements. • Project design being developed in coordination with emergency responders, including North Hudson Regional Fire and Rescue. • Operational safety and security measures to address natural events (e.g., severe storms, flooding, earthquakes), or emergencies caused by human error, mechanical failure, fire, or intentional or unintentional human intervention.
Public Health and Electromagnetic Fields (EMF)	• Construction noise and air emissions, and potential to encounter contaminated materials during construction to be managed to avoid public health effect. • No potential for EMF impacts during construction or operation.	• Implementation of mitigation measures described above for noise, air quality, and contaminated materials.

Table 22-3 (Cont'd)
Summary of Effects of the Preferred Alternative in New Jersey and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Indirect and Cumulative Effects	• Cumulative resiliency improvement to NEC rail infrastructure with other ongoing resiliency projects. • Potential overlap with construction of other rail system improvements on the NEC. • Potential for concurrent construction with redevelopment projects in NJ: Willow Avenue bridge rehabilitation, Hoboken Rebuild By Design project, and Lincoln Tunnel Helix Replacement Program.	• Coordination of railroad improvements that will affect NEC service to minimize disruptions to service. • Coordination of regional construction projects in NJ; transparent sharing of information with neighboring communities. • Coordination between the Hudson Tunnel Project and other nearby development projects in NJ to minimize conflicts and cumulative impacts during construction. • Coordination between the Hudson Tunnel Project and the Hoboken Rebuild By Design project during continuing design and engineering for each project, to ensure that the two projects do not have conflicting designs.

22.5.1.2 PROJECT IMPACTS ON ENVIRONMENTAL JUSTICE COMMUNITIES

In New Jersey, the Project site—including most of the surface tracks in the Meadowlands; the new Hudson River Tunnel beneath the Palisades, Hoboken, and Weehawken; and the Hoboken staging area and fan plant site—is set within or adjacent to environmental justice communities and therefore any adverse impacts resulting from the construction and operation of the Preferred Alternative in New Jersey would occur to one or more environmental justice communities. In New Jersey, these effects would occur largely to environmental justice communities and not to other communities; therefore, these impacts are borne predominantly by environmental justice communities. As noted earlier, since publication of the DEIS, one block group (Census Tract 182, Block Group 4) that FRA and NJ TRANSIT previously identified as an environmental justice community no longer meets the thresholds for minority or low-income populations based on updated census data. This block group is the area of Weehawken referred to as "the Shades," which would be adjacent to the proposed Hoboken staging area and fan plant site for the Preferred Alternative. To be conservative, FRA and NJ TRANSIT have continued to treat this block group as an environmental justice community for this FEIS. As described above, FRA and NJ TRANSIT, working with the other Project Partners, have identified ways to reduce the impacts of Project construction on local communities near the construction sites in New Jersey, in response to comments made during the public comment period and through extensive coordination with the local communities.

22.5.2 NEW YORK

22.5.2.1 OVERALL PROJECT IMPACTS

In New York, construction of the Preferred Alternative would result in temporary, but long-term adverse impacts on the areas near the construction site at Twelfth Avenue. Construction activities would generally be disruptive to nearby land uses because of the presence of the equipment and the traffic, noise, and dust associated with construction.

Construction activities for the Preferred Alternative would occur predominantly on the western third of the block between West 29th and West 30th Streets, Twelfth Avenue, and Eleventh Avenue (Manhattan Block 675, Lot 1 and a small portion of Lot 12). Construction work would

also occur nearby, including in Hudson River Park, in West 30th Street, and in Tenth Avenue. The construction activities in New York for the Preferred Alternative would last approximately seven years, during which time there would be lane closures, traffic diversions, heavy truck activity, and the use of noisy construction equipment. As with any construction project, construction activities would at times be disruptive to nearby activities. Construction noise impacts would occur at the two new residential buildings now under construction at the east end of Block 675, which will be occupied when construction activities for the Preferred Alternative occurs. In addition, construction activities in Hudson River Park may delay completion of that section of Hudson River Park for approximately 1.5 years, while the construction is under way, and construction activities on Block 675 Lot 1 could delay HRPT's potential sale of development rights to the owner of Block 675, which could in turn result in a delay to funding for the park.

The analysis in the DEIS considered a construction staging approach in New York in which West 30th Street could be completely closed to traffic for up to three years. Based on further engineering and in consideration of comments from the New York City Department of Environmental Protection regarding the Project's potential impacts on a large sewer main located under West 30th Street, Amtrak has revised the construction approach for the tunnel under West 30th Street. With the updated approach, at least one lane of West 30th Street would remain open throughout construction (other than the potential for short-term outages related to sewer relocation).

Once the construction is complete and the Project is in operation, there would be few permanent adverse effects of the Preferred Alternative in New York. The only visible element of the Preferred Alternative in New York would be the Twelfth Avenue fan plant, which would be designed to be visually compatible with the character of the surrounding area. The fans within the fan plant would operate intermittently, as needed to provide cool air to the tunnel below and exhaust hot air, to exhaust smoke in emergencies, and for testing. The fan plant would be equipped with silencers and dampers and this operation would not result in adverse noise or air quality impacts on the adjacent neighborhood.

As detailed in previous chapters of this EIS, the benefits and adverse impacts of the Preferred Alternative on the New York study area evaluated in this EIS and the associated mitigation that the Project Sponsor will implement to address these impacts would include the following. The lead Federal agency will be responsible for ensuring that the Project Sponsor implements the enumerated mitigation measures, which will be identified in the ROD.

Table 22-4
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts

Traffic and Pedestrians	• Disruptions from construction traffic at nearby intersections and on streets used as truck routes during construction in Manhattan (7 years).
	•
	• Near Twelfth Ave staging area, adverse traffic impacts at five locations during peak periods on weekdays:
	  ○ Twelfth Ave at West 29th St (signalized)
	  ○ Eleventh Ave at West 40th St (signalized)
	  ○ Tenth Ave at West 30th St (signalized)
	  ○ Tenth Ave at West 34th St (signalized)
	  ○ Dyer Ave at West 34th St (signalized)
		• Maintenance and Protection of Traffic (MPT) plans for vehicular traffic during construction, including the use of traffic enforcement agents where needed.
		• Coordination with the appropriate local transportation authorities where adverse traffic impacts were identified to implement mitigation measures, as appropriate, including changes to signal timing or phasing, changes to pavement markings, changes to lane designations, and modifications to parking regulations. The costs for these mitigation measures would be Project costs that will be borne by the Project Sponsor rather than the local community.
		• Maintenance, repair, and cleaning of designated truck routes on local streets; reconstruction of any streets damaged by Project trucking activity. Advance or preventive rehabilitation of the proposed truck routes before the onset of construction, as necessary.
		• Strict enforcement of identified Project truck routes; trucks will wait inside construction staging areas rather than in the public right-of-way, to the extent practicable.
		• Maintaining at least one traffic lane on West 30th Street between Eleventh and Twelfth Aves at all times, except for potential short-term closures for utility relocations.
		• Provision of flaggers at the Hudson River Park walkway and Route 9A bikeway where construction trucks access the construction staging area in the West 30th St Heliport.
		• Maintaining sidewalks at least 10 feet wide on both sides of Tenth Avenue between West 31st and West 33rd Sts in New York.

Transportation Services (Passenger and freight rail, mass transit, maritime, and helicopter services)	• Maintenance of full NEC peak-hour rail passenger service (Amtrak and NJ TRANSIT) during rehabilitation of North River Tunnel. • Rehabilitated North River Tunnel that would provide new resiliency against severe weather and redundancy for operational flexibility. • Potential for disruptions to rail passenger service during construction in the vicinity of active passenger rail tracks near PSNY, including PSNY approach tracks and storage tracks to the west of PSNY. • Potential effects on bus service on and near truck routes near the Twelfth Ave staging area because of traffic congestion due to construction trucks. • Potential adverse effects on throughput capacity and volume of helicopter operations at West 30th Street Heliport during 1.5 years of construction at the Manhattan waterfront. • 1.5-year ground improvement operation at the Manhattan waterfront that would require closing the West 30th St Heliport's fueling station and one to two landing pads.	• To the extent practicable, construction work on and near the NEC during nights and weekends to avoid the need for daytime train outages. • Traffic mitigation measures, including an MPT plan, to minimize traffic delays that might affect buses. • Relocation of the heliport fueling station and coordination with the West 30th St Heliport operator and Hudson River Park Trust (HRPT) regarding disruptions to helicopter operations. Project Sponsor would pay for costs associated with the temporary relocation of fueling facilities or landing pads.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Land Use, Zoning, and Public Policy	• Temporary but long-term disruption to nearby activities due to construction traffic, noise, dust; may affect residents, businesses, and park users in Manhattan (7 years). • Disruption to activities at the West 30th Street Heliport during 1.5 years of construction at the Manhattan waterfront. • Potential delay to possible Fire Department of New York (FDNY) Emergency Medical Services (EMS) station or garage because of the use of part of Block 675 Lot 12 (the site of the EMS station or garage) for construction staging for the Preferred Alternative. • Temporary delays for completion of a future development project on Block 675 Lot 1 and related park improvements that could be funded by transfer of development rights from the park to Lot 1. • New permanent above-ground fan plant at Twelfth Ave fan plant site.	• Outreach program to local neighborhood, to include a staffed local neighborhood outreach office near the Twelfth Ave staging site; a dedicated Project liaison; a 24-hour hotline for emergencies and construction complaints; and regular meetings and notifications about construction status and upcoming activities. • Mitigation for traffic, noise, vibration, air quality, contaminated materials, and temporary and permanent property acquisition, as discussed in each respective section of this table. • Noise mitigation including barriers at construction sites. • Lighting at staging areas designed to minimize light pollution affecting adjacent areas. • Coordination with the West 30th Street Heliport operator and HRPT, which receives revenues from the heliport, to minimize disruption to the heliport operation during construction. • Fan plant to be designed to be compatible with adjacent uses; the Project Sponsor, in cooperation with the other Project Partners, will coordinate with the New York City Department of City Planning (NYCDCP) and Community Board 4 in Manhattan regarding the visible elements of the fan plants.
Property Acquisition	• Permanent easements for the below-grade Hudson River Tunnel alignment in Hudson River Park; permanent easements and/or fee acquisitions for the below-grade Hudson River Tunnel alignment and above-grade Twelfth Ave fan plant on Block 675 Lot 1; temporary easements for construction activity on Block 675 Lots 1 and 12.	• Coordination with private property owners regarding access during construction, to minimize adverse impacts on business activities. • Property acquisition in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and all other relevant property acquisition procedures that apply.
Socioeconomic Conditions	• Economic modeling conducted for the Project shows that the Project would result in direct, indirect, and induced economic benefits from construction expenditures, including an estimated total of 55,312 jobs (full-time equivalents (FTEs))—30,650 direct construction jobs (FTE), 9,567 indirect jobs, and 15,095 induced jobs in NJ and NY over the full 11-year construction period. On an annual basis (jobs per year), estimated total of 5,028 jobs in NJ and NY—2,786 direct construction jobs, 870 indirect jobs, and 1,372 induced jobs. • Temporary effects to West 30th St Heliport during ground improvement in NY, requiring relocation of helicopter fueling facilities and rendering one or more of the landing pads inaccessible for 18 months.	• Maintaining access to businesses at all times, including use of MPT plans for roadways to minimize disruptions to access. • Property acquisition in accordance with the Uniform Act and all other relevant property acquisition procedures that apply. • Coordination with the West 30th Street Heliport operator and HRPT, which receives revenues from the heliport, to minimize disruption to the heliport operation during construction; mitigation for the temporary use of a portion of the heliport to comply with the Uniform Act.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Open Space and Recreational Resources	• Temporary construction activities in Hudson River Park for tunnel segment beneath the park (total of 1.5 years) requiring temporary narrowing of park walkway and Route 9A bikeway for about 150-200 linear feet. • Potential inconvenience for recreational boaters at and near Pier 66 boathouse because of in-river construction activities for up to approximately two years that would require boaters to navigate around the construction zone; however, the Project would not limit access to and from the navigation channel. • Construction noise that would exceed FTA noise impact thresholds at the High Line if cut-and-cover excavation with pile driving is performed in West 30th St (seven months).	• Use of underground tunnel mining in Hudson River Park to avoid excavation across the park; Hudson River Park walkway and Route 9A bikeway to be kept open during ground improvement. • During construction in and under Hudson River Park, maintain a minimum 8-foot-wide segment of the Hudson River Park walkway (potentially shifted to the Route 9A bikeway to avoid the construction zone) and a minimum 10-foot-wide segment of the Route 9A bikeway (except possibly for short-term trenching for installation of freeze pipes). • Use of construction barricades to block views of construction equipment at West 30th Street Heliport from Hudson River Park during ground improvement. • Measures to warn maritime traffic, including recreational boaters and other measures to protect boaters' safety during in-water construction in the Hudson River. • Full restoration of all areas of Hudson River Park affected by construction of the Preferred Alternative in coordination with and at no cost to HRPT.

Historic and Archaeological Resources	• Adverse effects on historic architectural resources that are eligible for the National Register of Historic Places (NRHP):
	  ○ NY Improvements and Tunnel Extension of the Pennsylvania Railroad (i.e., North River Tunnel).
	  ○ NY Hudson River Bulkhead.
	• Potential for accidental construction damage to NRHP-Eligible historic architectural resources near construction: High Line and Master Printers Building.
	• Potential for archaeological resources to be present in construction zone that could be affected by construction:
	  ○ Historic piers, wharves, and fill-retaining devices in Hudson River Park, Block 675 Lot 1, and West 30th St.
	  ○ Industrial and manufacturing resources and domestic sites in Block 675 Lot 1.
		• Programmatic Agreement (PA) developed through Section 106 consultation between FRA, NJHPO, NYSHPO, ACHP, FTA, the PANYNJ, and Amtrak and other consulting parties as part of the Section 106 process that sets forth detailed measures to avoid, minimize, and/or mitigate adverse effects on historic properties, including:
		  ○ Documentation of the North River Tunnel to the standards of the Historic American Engineering Record prior to rehabilitation work to supplement existing histories and/or to target a specific audience; interpretive displays about the tunnel to be located in a station along the NEC in NJ and at Moynihan station in NY.
		  ○ Preparation of a report that documents the characteristics of the affected Hudson River Bulkhead location based on information gathered and drawings made in preparation for, and during the construction at, the bulkhead structure.
		  ○ Provisions for the historic interpretation of the Hudson River Bulkhead within Hudson River Park.
		  ○ Implementation of Bulkhead Protection Plan at the bulkhead and associated bulkhead impact area and identification of measures for the long-term maintenance of the bulkhead and associated impact area, in coordination with HRPT and NYSHPO.
		  ○ Implementation of Construction Protection Plans (CPPs) to protect the High Line and Master Printers building. The CPPs will include provisions for vibration monitoring, adherence to vibration limit thresholds, measures to reduce vibration levels, and modification of construction methods if necessary.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Historic and Archaeological Resources (Con'td)		○ Archaeological testing and/or monitoring for potential archaeological resources at specific locations in NY.
Visual and Aesthetic Resources	• Potential visual disruption to surrounding neighborhoods from construction activities at Twelfth Ave staging area. • New fan plant on Block 675 in Manhattan that would be similar in bulk and height to many of the mid-rise buildings that will be present in the surrounding area in the future; to be compatible with the character of the surrounding area.	• Use of construction barricades to block views of construction equipment. • Fan plant designed to be visually compatible with adjacent uses in coordination with NYCDCP. • Construction lighting at staging area to be designed to minimize light pollution affecting adjacent residential areas.
Natural Resources	• Potential removal of approximately 15 street trees in the median of Twelfth Ave.	• Replacement and/or restitution for tree removal in accordance with Local Law 3 and Chapter 5 of Title 56 of the Rules of the City of New York. • All tree work would be carried out under the supervision of a certified arborist, following a tree protection plan approved by New York City Parks' Manhattan Borough Forester.
Noise	• FRA and NJ TRANSIT conducted the analysis of noise using the methodology presented in FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual*, which FRA also uses for assessing non-high-speed rail projects. • Noise impacts from construction activities at the Twelfth Ave staging area on new residential buildings on Block 675 for 2.5 years; potential for an additional year if the EMS facility or garage on Block 675 is delayed and constructed later. These impacts would also constitute noise impacts according to New York City Environmental Quality Review (CEQR) guidelines. However, these buildings have been designed to account for this construction noise, with window/wall attenuation that results in acceptable interior noise levels. • No permanent noise impacts associated with train operations in new Hudson River Tunnel. • No noise impacts from new fan plant, which would operate intermittently and have dampers to reduce noise.	• Community outreach program and noise complaint procedure to address community concerns; meetings with affected buildings to identify activities sensitive to noise and schedule construction activities around those where practicable. • Use of quieter equipment; use of acoustical noise tents and mufflers for loud equipment as practicable; vehicles routed through staging areas to minimize use of backup alarms. • Implementation of a program to certify that all noise control measures specified in the EIS are being fully and properly implemented. • Development and implementation of a noise monitoring plan during construction. • At construction staging areas in Manhattan, provision of sufficient mitigation to meet the New York City Noise Control Code construction noise limit at the exteriors of any adjacent residential properties. Site enclosures or temporary noise barriers (e.g., ¾-inch thick plywood) 15 feet high would provide this level of noise mitigation and would avoid adverse impacts according to FTA noise impact criteria during most construction activities. At excavation locations in New York City streets, barriers will be constructed along the curbline while the lane nearest the curb will remain open to accept equipment to complete the excavation across the street. • No blasting after 7 PM except under special circumstances and only with permission from the relevant regulatory agency (i.e., FDNY); community outreach and notification related to anticipated times of blasting.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Noise (Cont'd)		• Installation of piles for the tunnel alignment between the Manhattan bulkhead and Tenth Avenue, including in Hudson River Park (if needed), at the Twelfth Avenue shaft, and in West 30th Street, if needed and where practicable, using drilled piles rather than driven piles to reduce resulting noise levels.
Vibration	• FRA and NJ TRANSIT conducted the analysis of vibration using the methodology presented in FTA's 2018 *Transit Noise and Vibration Impact Assessment Manual*, which FRA also uses for assessing non-high-speed rail projects. • Construction vibration levels that would be noticeable, but no vibration impacts. • No permanent vibration impacts associated with train operations in new Hudson River Tunnel.	• Construction activities to be coordinated with affected municipalities; community outreach program and vibration complaint procedure to address community concerns. • Blasting to be conducted using controlled blasting techniques. • No blasting after 7 PM except under special circumstances and only with permission from the relevant regulatory agency (i.e., FDNY); community outreach and notification related to anticipated times of blasting. • Pre-construction inspection and vibration monitoring program for buildings within area of potential influence of construction. • Implementation of CPPs for historic architectural resources located near Project construction sites. The CPPs will include provisions for vibration monitoring, adherence to vibration limit thresholds, measures to reduce vibration levels, and modification of construction methods if necessary. • Installation of piles for the tunnel alignment between the Manhattan bulkhead and Tenth Avenue, including in Hudson River Park (if needed), at the Twelfth Avenue shaft, and in West 30th Street, if needed and where practicable, using drilled piles rather than driven piles. • New Hudson River Tunnel and rehabilitated North River Tunnel would incorporate a low-vibration track system.
Air Quality	• Temporary construction air pollutant emissions. • No exceedances of NAAQS. • Consistent with general conformity regulations of Clean Air Act. • Temporary exceedance of CEQR *de minimis* criteria for fine particulates ($PM_{2.5}$) during construction at construction sites in New York City.	• Multi-approach fugitive dust control plan including watering, covering loose materials, vehicle rinsing, and a continuous perimeter air monitoring program at the staging areas to identify when additional dust management procedures are warranted. • Use of ultra-low sulfur diesel; idling restrictions; Best Available Tailpipe Reduction Technologies for all diesel engines; use of newer equipment.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Greenhouse Gas (GHG) Emissions and Resilience	• GHG emissions associated with construction and Project operation. • Potential vulnerability to severe storms during construction. • Project to be designed to address potential vulnerability to severe storms for permanent Project elements. Flood and storm resilience measures included in the Project such as: o Use of Design Flood Elevation (DFE) for the Project; for the new tunnel all entrances and openings would be above the DFE or any entrances below the DFE would be watertight and any equipment below the DFE would be water-resistant. o Floodgates on each side of the river in the new tunnel and at the new NY portal. o Use of water-resistant cables and conduits in new and existing tunnel. Use of concrete for tunnel walls and bench walls in new tunnel that would withstand salt water.	• Sustainability design guidelines for construction; construction contracts to include provisions related to locally produced, recycled building materials and biodiesel. • Sustainability design guidelines for permanent Project elements; construction contracts to require Energy Star and other high-efficiency building components, efficient lighting and energy systems, use of Building Management Systems for fan plants. • Storm risk management plan for construction sites. • Use of DFE for the Project; incorporate floodgates for new tunnel, and flood resistance and hardening for both new and existing tunnels as well as new fan plants and new surface alignment.
Geology and Soils	• Potential for geological and soil conditions to affect or be affected by construction and result in hazards during construction, including settlement, seismic conditions, instability of slopes, unstable soils. • Potential for encountering naturally occurring hazardous minerals (e.g., serpentinite or other asbestiform minerals).	• Project design reflecting and addressing potential hazards or construction effects. • Safety measures to protect workers and minimize environmental hazards if naturally occurring hazardous minerals encountered. • Erosion and sediment control plans that meet all applicable standards and regulations. • Control measures including ground improvement to stabilize soils, rock mass grouting, installation of waterproof earth retention systems, such as slurry walls or other lateral earth retention in areas of open cut or shaft construction. • Implementation of CPPs for historic architectural resources located near Project construction sites. The CPPs will include provisions for vibration monitoring, adherence to vibration limit thresholds, measures to reduce vibration levels, and modification of construction methods if necessary.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Contaminated Materials	• Potential to encounter contaminated soil or groundwater during construction; Project alignment has long history of industrial and railroad use that may have resulted in contamination.	• Additional site investigation soil and groundwater sampling activities, as well as hazardous materials building investigations, at certain locations along the Project site where existing information is insufficient and/or where the potential for contamination exists. • Remedial measures where appropriate based on site investigation, which may include excavation or in-situ treatment of contaminated soil, and disposal or treatment of contaminated groundwater or liquid from dewatering. • Implementation of Project-wide Soils and Materials Management Plan to establish procedures for materials handling during construction, BMPs to be implemented during construction, such as procedures for stockpiled or containerized material and testing procedures for sampling material prior to off-site disposal or on-site reuse. • Development of a site-specific Soil Reuse and Alternative Fill Management Plan for management of contaminated soil. • Implementation of a Project-specific Health and Safety Plan (HASP) prior to earth-disturbing activities. • Management of groundwater generated during dewatering activities in accordance with applicable permits. • Restoration of all disturbed areas using engineering controls to prevent direct human exposure to contaminated materials. • Proper handling and disposal of all excavated soils and contaminated material encountered during construction in accordance with all applicable laws and regulations. • Preparation of a fugitive dust control plan including a robust watering program as part of contract specifications; proactive controls to reduce the potential for dust generation during site activities; and ambient air quality monitoring around Project staging areas.
Utilities and Energy	• Relocation, replacement, or support in place for utilities, sewers, and water mains required for construction in West 30th St and at Tenth Ave, which could result in temporary service disruptions. • Large sewer within Twelfth Ave (Route 9A) in NY to be supported in place where tunnel alignment would cross.	• Coordination with affected utility providers throughout final engineering design to identify potential issues and prescribe means to resolve them prior to construction. • Agreements with utility providers and government agencies regarding temporary or permanent relocation of utility transmission lines. • Public outreach for any minor, short duration service interruptions. • Mitigation for traffic delays and implementation of rail service plans to reduce transportation delays and associated increases in fuel consumption, as discussed under "Traffic and Pedestrians" and "Transportation Services" of this table.

Table 22-4 (Cont'd)
Summary of Effects of the Preferred Alternative in New York and Measures to Avoid, Minimize, or Mitigate Impacts

Environmental Category	Beneficial and Adverse Effects	Measures to Avoid, Minimize, or Mitigate Impacts
Safety and Security	• Construction sites, materials, and equipment to be kept secure. • Safety and security measures incorporated into permanent Project elements in accordance with NFPA standards and all appropriate regulations and standards, including all applicable FRA regulations and guidance relative to the operation of railroad infrastructure, including tracks, train signals (including Positive Train Control), and bridges.	• Construction sites to be secured with active and passive security measures; Project contractor to meet all applicable safety and security requirements. • Project design being developed in coordination with emergency responders, including FDNY. • Operational safety and security measures to address natural events (e.g., severe storms, flooding, earthquakes), or emergencies caused by human error, mechanical failure, fire, or intentional or unintentional human intervention.
Public Health and Electromagnetic Fields (EMF)	• Construction noise and air emissions, and potential to encounter contaminated materials during construction to be managed to avoid public health effect. • No potential for EMF impacts during construction or operation.	• Implementation of mitigation measures described above for noise, air quality, and contaminated materials.
Indirect and Cumulative Effects	• Cumulative resiliency improvement to PSNY and NEC rail infrastructure with other ongoing resiliency projects. • Potential overlap with construction of other rail system improvements in and near PSNY and on the NEC. • Concurrent construction with development projects in the NY study area.	• Coordination of railroad improvements that will affect PSNY operations and NEC service to minimize disruptions to service. • Coordination between the Hudson Tunnel Project and other nearby development projects to minimize conflicts and cumulative impacts during construction. • Coordination with NYCDCP and Manhattan Community Board 4 regarding the visible elements of the Twelfth Avenue fan plant, so that the fan plant is visually compatible with the character of the surrounding area.

22.5.2.2 PROJECT IMPACT ON ENVIRONMENTAL JUSTICE COMMUNITIES

The New York study area includes block groups that are environmental justice communities. These are located east of Tenth Avenue and south of West 30th Street, several blocks from the major construction activities for the Preferred Alternative, which would be focused on the Twelfth Avenue staging site. Construction disruption closest to the identified environmental justice communities would be related to cut-and-cover construction in Tenth Avenue between West 31st and West 33rd Streets to accommodate the tunnel alignment as it crosses the avenue, construction within the building at 450 West 33rd Street (between West 31st and West 33rd Streets on the east side of Tenth Avenue), and traffic impacts on neighborhood streets from construction vehicles. However, most of the adverse construction and operational impacts in the New York study area would not fall on environmental justice communities, although some construction related noise may be experienced in those communities.

The permanent, visible feature of the Preferred Alternative in New York would be the new Twelfth Avenue fan plant. This would not adversely affect environmental justice communities.

22.6 DETERMINATION OF DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS ON ENVIRONMENTAL JUSTICE POPULATIONS

22.6.1 OVERVIEW

The methodology presented in the FTA Circular involves identifying any adverse effects and benefits that may occur to minority and/or low-income populations as a result of a proposed action and then determining whether adverse effects would be disproportionately high and adverse on the environmental justice population. According to the Environmental Justice Circular, if after consideration of the adverse effects and potential benefits of a proposed project, it is determined that the proposed action would have disproportionately high and adverse effects on an environmental justice population, the project sponsor must determine whether further mitigation measures or alternatives are practicable, and any practicable measures must be implemented before moving forward with the proposal.

As defined in the FTA Circular, based on the USDOT Order, a disproportionately high and adverse effect on an environmental justice population is an adverse effect that is predominantly borne by a minority population and/or low-income population, or will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population. Offsetting benefits and mitigation measures are taken into consideration when determining whether a project has disproportionately high and adverse effects on minority and low-income populations.

22.6.2 NEW JERSEY

Because the Preferred Alternative's alignment would be located predominantly in environmental justice communities in New Jersey, the adverse construction effects associated with the Preferred Alternative would fall disproportionately on environmental justice communities. Even considering the mitigation measures described above in Section 22.5.1, Project-related impacts would result in disproportionately high and adverse effects to environmental justice communities. Section 22.7 provides the two-step evaluation required by the USDOT Order when disproportionately high and adverse effects on environmental justice communities are identified.

22.6.3 NEW YORK

In the New York study area, environmental justice communities are located in the portion of the study area east of Tenth Avenue and south of West 30th Street. Adverse construction impacts would occur in this area as described in above in Section 22.5.2, but similar or greater adverse construction impacts would also occur closer to the Twelfth Avenue staging area, which is not within an environmental justice community. Therefore, in the New York study area, the Preferred Alternative would not result in disproportionately high and adverse effects on environmental justice communities.

22.7 ENVIRONMENTAL JUSTICE CONCLUSION

The USDOT Order requires FRA to identify whether its actions may have a disproportionately high and adverse effect on low-income and minority populations, after accounting for mitigation and offsetting benefits. For any actions that are found to have a disproportionately high and adverse effect on minority or low-income populations, these actions will only be carried out if:

(1) Further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable. In determining whether a mitigation measure or alternative is practicable, the social, economic (including cost), and environmental effects of avoiding or mitigating the adverse effects will be taken into account.

(2) A substantial need for the action exists, based on overall public interest, and alternatives that would have less adverse effects on protected populations (and that still satisfy the need for the project) would have other adverse social, economic, environmental, or human health impacts that are severe; or would involve increased costs of extraordinary magnitude.

As described above in Section 22.6.2, since the Preferred Alternative's alignment would be located predominantly in environmental justice communities in New Jersey, the adverse construction effects associated with the Preferred Alternative in New Jersey would fall disproportionately on environmental justice communities. The two steps identified in the USDOT Order are considered in the two sections that follow.

22.7.1 FURTHER MITIGATION MEASURES OR ALTERNATIVES THAT WOULD AVOID OR REDUCE THE DISPROPORTIONATELY HIGH AND ADVERSE EFFECT ARE NOT PRACTICABLE

With regard to alternatives that would avoid or reduce the disproportionally high and adverse effect, as described in Chapter 2, "Project Alternatives and Description of the Preferred Alternative," FRA and NJ TRANSIT conducted a multistep alternatives development and evaluation process to identify practicable alternatives that met the purpose and need for the Project and were feasible and reasonable. The process involved developing a list of preliminary alternatives, comprising many different possible means of providing a Hudson River rail crossing, and conducting a high-level qualitative evaluation to determine which of those alternatives were feasible, reasonable, and met the Proposed Action's purpose and need. That process resulted in a determination that only a single Build Alternative, the Preferred Alternative, would meet the purpose and need for the Project. A detailed description of the alternatives development and evaluation process is provided in the Hudson Tunnel Project Alternatives Development Report, included in **Appendix 2** of this EIS. As detailed in **Appendix 2**, other alternatives that FRA and NJ TRANSIT identified and considered would not meet the purpose and need for the Project or were found not to be reasonable or feasible.

For all adverse impacts that would result from construction or operation of the Preferred Alternative identified in this EIS, including adverse impacts that would occur in environmental justice communities and those that would occur in non-environmental justice communities, FRA and NJ TRANSIT reviewed potential measures to avoid, minimize, or mitigate the impacts. This process included consideration of various approaches for modifying the approach for staging and sequencing construction activities for the new Hudson River Tunnel in New Jersey, in response to comments from residents of the neighborhoods near the proposed Hoboken staging area.

In response to comments from the public during the comment period on the DEIS, FRA and NJ TRANSIT, working with the other Project Partners, conducted an evaluation of construction methods to reduce truck volumes in Weehawken in order to lessen construction impacts to the local residential community near the Hoboken staging area. As a result, the proposed approach for construction of the Preferred Alternative is now revised to reduce the impacts of Project construction on local communities near the construction sites. To develop this revised approach, FRA, NJ TRANSIT, and the other Project Partners evaluated a wide range of potential methods to remove excavated materials from the river tunnel with the goal of reducing the number of trucks on local streets in Weehawken. This included the potential use of different truck routes, barging excavated materials from the Weehawken waterfront, and removing excavated materials

by freight trains operating on the HBLR right-of-way. This evaluation is described in Chapter 3, "Construction Methods and Activities," Section 3.3.4.6, and presented in full in **Appendix 3-1**, "Options for Spoils Removal and Materials Deliveries at the Hoboken Staging Area." Through that process, FRA and NJ TRANSIT, in coordination with the other Project Partners, modified the Project's construction staging approach to shift staging and spoils excavation for the river tunnel from the Hoboken staging area to the Tonnelle Avenue staging area. The modified approach, which is now a Project commitment, is summarized in Section 22.5 of this chapter and described in more detail in Chapter 3, "Construction Methods and Activities," Section 3.3.3.

FRA and NJ TRANSIT did not identify any other practicable mitigation measures to avoid, minimize, or mitigate Project impacts. The Project Sponsor will implement all mitigation measures that FRA and NJ TRANSIT identified, which are summarized in **Table 22-3** and **Table 22-4** of this chapter. The lead Federal agency will be responsible for ensuring that the Project Sponsor implements these measures, which will be identified in the ROD.

22.7.2 A SUBSTANTIAL NEED FOR THE ACTION EXISTS AND LESSER-IMPACT ALTERNATIVES ARE NOT AVAILABLE

As described in Chapter 1, "Purpose and Need," there is a substantial need for the Hudson Tunnel Project. The existing North River Tunnel serves about 500 trains per weekday with over 200,000 passengers along the NEC between New Jersey and PSNY. The tunnel's age in combination with damage resulting from Superstorm Sandy have compromised the reliability of passenger rail service through this tunnel due to the need for frequent maintenance. The Preferred Alternative would 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, and would 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 PSNY. The Preferred Alternative would achieve these improvements while maintaining uninterrupted commuter and intercity rail service and optimizing the use of existing infrastructure.

Without full rehabilitation of the North River Tunnel, the increased instability of rail operations and the potential for eventual full or partial closure of the tunnel would have wide-ranging impacts on travel in the region and on the region's social, economic, and environmental conditions as a result. Based on existing ridership prior to the COVID-19 global health crisis, a full closure of the North River Tunnel would disrupt up to 20,900 daily weekday Amtrak passenger trips (one-way rides) and up to 189,000 daily weekday NJ TRANSIT passenger trips based on existing ridership, on approximately 500 trains per day, as a worst-case scenario. Even if only one tube of the North River Tunnel closes, this would disrupt up to 75 percent of the train service through the tunnel. Because all trans-Hudson transportation routes and services are operating at or near capacity during peak travel hours, public transportation services paralleling the North River Tunnel (PATH trains, commuter buses, and ferries) would experience extreme overcrowding and delays and many passengers might elect not to make the trip or to travel via automobile on the region's congested roadway system. Such a shift from train to auto travel would exacerbate already congested conditions on the Hudson River crossings and major roads on both sides of the river and in the region. The Regional Plan Association's "Fourth Regional Plan" documents these capacity constraints of the trans-Hudson transit services and highlights the inability of these services to absorb substantial numbers of NEC commuters.[2]

Other alternatives that would have less adverse effects on the protected population and would still satisfy the Project purpose and need are not available. The alternatives evaluation

[2] https://rpa.org/work/reports/crossing-the-hudson.

conducted for the Project concluded that only a single Build Alternative, the Preferred Alternative would meet the Project purpose and need. Several alignment options were identified for the Build Alternative and were evaluated in the Alternatives Development Report (provided in **Appendix 2**), but each of these options would have affected environmental justice populations and several of them would have other adverse effects that are more severe.

22.8 PUBLIC PARTICIPATION

As noted in FTA's Environmental Justice Circular, a key component of environmental justice is engaging environmental justice populations as part of the transportation planning process. This allows project sponsors to understand the needs and priorities of environmental justice populations and to balance the benefits of a proposed project against its adverse effects.

Public participation initiatives conducted during the NEPA process for the Hudson Tunnel Project are described in Chapter 25, "Process, Agency Coordination, and Public Involvement," Section 25.4. As discussed there, FRA and NJ TRANSIT conducted a robust outreach effort that included a focused effort to compile a comprehensive mailing list of stakeholders, including elected officials, potentially interested organizations, and owners and residents of properties near the proposed construction staging areas, and to provide multiple forums for those stakeholders to provide input.

The list of stakeholders comprised organizations and individuals included on distribution lists from an earlier trans-Hudson rail project, the Access to the Region's Core (ARC) Project, for areas that would also be affected by the Hudson Tunnel Project; individuals who signed up for the Project mailing list; individuals who attended and provided address information at public scoping sessions (May 2016) and public information open houses (November 2016) for the Project; and addresses along the Project alignment and near the proposed construction staging areas in Secaucus, North Bergen, Union City, Weehawken, Hoboken, and New York City. As the DEIS and FEIS were prepared, the Project mailing list was continually updated to incorporate individuals and organizations who commented or expressed interest in the Project.

Project outreach efforts included:

- A Project website (www.hudsontunnelproject.com) with a library of Project documents for public review, additional information on the Project, and a means for providing comments and requesting further information.
- Fact sheets published at major Project milestones that were made available on the Project website and sent to the Project mailing list. These included Fact Sheet 1 (spring 2016), which provided a Project overview; Fact Sheet 2 (fall 2016) summarizing the scoping process and comments received, Fact Sheet 3 (fall 2016) presenting the Preferred Alternative, and Fact Sheet 4 (summer 2017) providing a Project update, information on construction methodologies, and information about the public comment period and public hearings. These were published in English and in Spanish (due to the presence of large Spanish-speaking communities in the vicinity of the Project area).
- Public meetings during the public scoping period, after announcement of the Preferred Alternative, and during the DEIS comment period (see **Table 22-5**). FRA and NJ TRANSIT used the Project website, meeting flyers, and email notices to the Project mailing list to publicize all public meetings, public hearings, and open houses. The flyers were in English and Spanish (due to the presence of large Spanish-speaking communities in the vicinity of the Project area), and were mailed or emailed to the Project mailing list. FRA and NJ TRANSIT also distributed flyers to libraries and community centers. Flyers and meeting notices were sent out at least two weeks in advance of meetings. In addition, meetings were

advertised in area newspapers (in English, with Spanish ads in corresponding local area papers) and on the Project website.

- Targeted community meetings to provide additional outreach to specifically affected groups, including owners of property near the Project site and residents of neighborhoods close to the construction sites.

In addition, representatives of local communities in New Jersey requested that FRA and NJ TRANSIT coordinate directly with local government agencies and elected officials to reduce the impacts of the Project on their communities. They also requested that the local community be involved in developing mitigation for the Project's impacts. As a result, FRA and NJ TRANSIT met with representatives of the local communities and other stakeholders during development of the DEIS, during the public comment period for the DEIS, and after the comment period during development of the FEIS to clarify their concerns, review the impacts of the Preferred Alternative on those communities, and develop measures to reduce and avoid those impacts (see **Table 22-5**, below). After completion of the DEIS, to address concerns raised by local communities, FRA and NJ TRANSIT, working with the other Project Partners, evaluated alternative methods for constructing the Preferred Alternative and have incorporated modifications to the construction methods into the Project that will reduce the construction impacts to local residents associated with the Project. During coordination meetings, elected officials and members of the public proposed ideas for mitigation of Project impacts on their communities, and FRA and NJ TRANSIT considered these ideas when developing mitigation proposed in the DEIS and the FEIS and incorporated many of them into the Project commitments that will be documented in the ROD.

Table 22-5
Public Involvement Meetings

Meeting	Date
Public Scoping meetings (in New York and New Jersey)	May 17, 2016: NY May 19, 2016: NJ
Public meetings on Preferred Alternative selection (in New York and New Jersey)	November 10, 2016 November 17, 2016
Project briefing with City of Hoboken Mayor and staff	January 10, 2017
Public meetings for owners of properties above tunnel alignment in New Jersey	March 7, 2017 March 9, 2017
Project briefing for Weehawken residents	July 27, 2017
DEIS public hearings (in New York and New Jersey)	August 1, 2017: NY August 3, 2017: NJ August 10, 2017: NJ
Project briefing with Township of Weehawken officials	August 29, 2017
Project briefing with Township of Weehawken officials	October 30, 2017
Project briefing with Township of North Bergen officials	November 8, 2017
Project Briefing with Township of Weehawken Mayor and staff	December 14, 2017
Project Briefing with Township of Weehawken Mayor and staff	January 11, 2018
Project briefing for Weehawken and Hoboken residents	January 18, 2018
Project briefing for North Bergen residents	January 30, 2018

Future outreach in the design and construction phases will continue to involve environmental justice communities in the study area. After completion of the environmental review process, opportunities for community coordination and outreach will continue through the design and

construction phases of the Project. During construction, complaint procedures will be established to promptly address community concerns and implement additional control methods where necessary. At each Project construction site, the Project Sponsor will develop and implement a comprehensive, active and responsive local community outreach program during construction that will include a staffed local neighborhood outreach office close to each of the Project staging areas (in North Bergen and Weehawken in New Jersey and near the Twelfth Avenue staging site in New York); a dedicated Project liaison who will coordinate with the community about construction activities, address concerns, and work with the community to accommodate special events where possible; a 24-hour hotline for emergencies and construction complaints; and regular meetings and notifications about construction status and upcoming activities. ✷