

## 27. Construction Impacts

### 27.1. Chapter Overview

#### 27.1.1. Introduction

This section assesses the potential for construction-related impacts associated with the proposed Northern Branch Build Alternatives. Construction impacts are commonly short-term and temporary in nature; however, they can result in adverse impacts. Construction activities associated with the project include the reconfiguration and installation of new track, bridge replacement, grade crossing improvements, construction of station platforms and parking facilities, and construction of the undergrade bridge at 85<sup>th</sup> Street. All construction assumed to occur under the No Build Alternative would occur independently of the rail project proposed for the Northern Branch Corridor. Therefore, the potential construction-imposed impacts of the No Build Alternative are not discussed in this section. The purpose of this section is to summarize the anticipated impacts to various resources within the Northern Branch Corridor during construction of the Build Alternatives.

#### 27.1.2. Summary of Findings

The nature of the proposed construction is similar for both Build Alternatives; however the extent of the proposed work varies depending on the alternative selected. Light Rail to Tenafly (Preferred Alternative) will require a greater construction effort, as it extends for a greater distance than Light Rail to Englewood Route 4, which terminates in Englewood. By discipline, construction impacts are as follows:

- **Land Use:** Impacts are related to circulation and access during construction. Pedestrian and vehicular access management plans will mitigate the potential impacts.
- **Community Facilities:** Access issues similar to those discussed for Land Use would result during the construction phase. NJ TRANSIT's contractor would develop a construction management plan to ensure that the flow of vehicular and pedestrian traffic remains relatively unimpeded.
- **Parkland, Open Space, and Recreational Resources:** The 9/11 Memorial in Overpeck County Park may be affected by construction noise. This impact would occur under both Build Alternatives. Huyler Park in Tenafly may be affected by construction noise associated with Light Rail to Tenafly (Preferred Alternative). Construction noise can be mitigated through the use of temporary sound walls, alternative construction methods, timing restrictions, and noise-deadening features on construction equipment. Construction activity may temporarily affect traffic circulation in the vicinity of parkland, open space and recreational resources. NJ TRANSIT's contractor would develop a construction management plan to ensure that the flow of vehicular and pedestrian traffic remains relatively unimpeded.
- **Utilities:** No interruption in utility service is anticipated as a result of construction activity associated with either Build Alternative.
- **Traffic and Parking:** Construction activity would affect 23 grade crossings under Light Rail to Tenafly (Preferred Alternative) and 13 grade crossings for Light Rail to Englewood Route 4. Construction and repair at the grade crossings would improve the infrastructure of both rail and road for the listed grade crossings. Construction at these locations would result in the temporary closure of the crossing and necessitate short-term traffic and pedestrian detours. Mitigation measures include coordination between NJ TRANSIT and CSX, NYS&W, NJDOT, and local governments to plan, schedule and stage proposed construction activities in a manner that would minimize temporary delays or stoppage of freight operations and vehicular traffic.
- **Transit and Freight:** Bus routes that currently use roadways proposed for temporary closure during the construction period will be rerouted. Notification of route changes will be published by NJ TRANSIT. Construction activity within the rail right-of-way will result in impacts to

freight service. Mitigation of freight impacts will require coordination between NJ TRANSIT, NYS&W, and CSX.

- **Air Quality:** Emissions from construction vehicles and fugitive dust disturbed during construction constitute construction air quality impacts. The application of moisture (spraying, use of moisture-retaining agents) can mitigate fugitive dust while operational controls and machinery specifications can control emissions from construction vehicles.
- **Noise and Vibration:** Construction noise and vibration impacts are likely to occur in the vicinity of all proposed station sites as well as the rail right-of-way. Noise impacts would be limited to the construction day, which is approximately 7AM to 6PM. Additionally, noise barriers and vibration-reduction construction methods (pre-auguring pavement, use of dampeners on vehicles) can be employed to reduce impacts during the construction period.
- **Water Quality:** Ground-disturbing construction activity near waterways can result in short-term erosion and sedimentation impacts to water quality. Best Management Practices (BMP's) will be implemented to minimize water quality degradation such as use of cofferdams or sheet piling, slope stabilization, turbidity barriers and prohibiting construction during spawning season.
- **Wetlands:** Temporary disturbances to wetlands would result from construction-induced run-off and sedimentation, as well as placement of construction equipment in wetland areas. Erosion and sediment control measures will be implemented throughout the construction duration and all wetlands impacted by construction staging would be restored to pre-construction conditions.
- **Floodplains:** Construction activity would occur within floodplain zones. Mitigation measures would include using structures to cross floodplains instead of filling them, providing adequate flow circulation, reducing grading requirements and preserving natural drainage when possible.
- **Vegetation and Wildlife:** Minimal disturbance to vegetation and wildlife is anticipated. Cautious staging and construction practices would be implemented in areas where mature vegetation and potential fish and wildlife habitats are present.
- **Hazardous Materials:** Construction activity near areas of known hazardous material contamination could unearth contaminated soils. A complete Phase I Environmental Site Assessment (ESA) will be conducted during Final Design and Engineering to verify that the station sites are not contaminated with previously undocumented hazardous materials. Should hazardous materials be identified on-site, remediation efforts will be implemented to remove the hazardous materials.
- **Safety and Security:** Coordination with CSX will minimize impacts to freight operations during construction as well as to ensure construction worker and rail operator safety. Municipal safety services would be contacted prior to the initiation of any activities, and coordination between NJ TRANSIT and local police, fire, and other emergency services would continue through the duration of the construction phase. NJ TRANSIT would coordinate with contractors and personnel to ensure that these safety guidelines are incorporated into their construction plans and procedures. Fencing and signage would be utilized to physically buffer construction sites from public space as well as to provide sufficient warning to the public
- **Historic and Archeological Resources:** Impacts associated with construction noise, vibration and air quality to historic resources would be mitigated with measures such as establishing staging areas away from the resources and establishing truck routes that do not pass by the resource.

A construction impact mitigation plan would be developed prior to the start of any construction. The development of this plan would incorporate input from NJ TRANSIT, the construction contractor, county agencies, local communities, regulatory agencies, and other concerned parties. The plan would incorporate mitigation measures such as the implementation of public outreach efforts to inform local communities of the proposed construction program, the establishment of community construction coordination activities, and custom tailoring of mitigation plans for community specific needs. A schedule of construction segments and sequencing with defined staging areas would also be identified upon identification of alternative segments.

In order to minimize overall adverse impacts during construction, the proposed project would be planned, designed, scheduled and staged to minimize disruption to existing freight operations, roadway traffic, abutting neighborhoods and the environment. To minimize impacts, it is assumed that construction staging areas for construction of the rail alignment would use the proposed station sites. Although some adverse impacts would be unavoidable, the duration and severity of these effects would be minimized by applying BMPs pertaining to construction operations and implementing effective mitigation measures. Upon completion of the Final Design and Engineering, additional and more specific mitigation measures may be expanded to improve those currently developed.

## 27.2. Methodology

Construction activities may affect resource areas that were analyzed for the operational impacts of the Build Alternatives. The analysis of construction related impacts focused on specific resource categories such as land use, community facilities, traffic and parking and air quality. The analysis relies on information gathered for the operational impact analysis. The following sections describe the potential construction impacts and mitigation for each resource category. As existing conditions have already been described in the previous section as part of the operational impact analysis, they are not repeated in this section.

Construction activities included in this analysis are as follows:

- Vehicle base facility – this would include track work, building facilities, mechanical and electrical systems, stormwater management, grading, paving, and foundations.
- At-grade alignment – this would involve track and ballast removal and installation, bridge expansions/replacements, retaining walls.
- Viaducts – between Tonnelle Avenue HBLR Station and VBF and between 69<sup>th</sup> Street and 83<sup>rd</sup> Street to crossover the NYS&W tracks – this would involve multi-span bridge, constructed either of steel or concrete girders spanning between piers supported on foundations.
- 85<sup>th</sup> Street undergrade bridge – this will likely involve excavation with hydraulic impact hammers (hoe rams) or drilling combined with controlled blasting.
- Stations – grading and foundations for platforms, grading and paving for parking facilities (where provided), and stormwater management (where necessary).
- Grade crossing improvements – installation of gates, signals and signage as necessary.

## 27.3. Environmental Review

As construction methods and mitigation are identical in most categories for all Build Alternatives, the environmental review is organized by discipline or resource (land use, wetlands, etc.). Municipal specific impacts are identified for each resource as applicable. When the construction impact is specific for one Build Alternative but not the other within a discipline or resource, that difference is noted. Otherwise, it is to be assumed that the methods and mitigation measures described below apply to both Build Alternatives equally.

### 27.3.1. Land Use

*Impacts* – Areas used for construction staging would be the areas proposed for station parking, as well as the rail right-of-way. Should vacant land be identified during construction, those areas may also be used for staging. These additional areas would be selected to avoid the disruption of adjacent land uses. As the project area is continuously being redeveloped, specific locations cannot be identified at this time. Temporary construction easements may be required. Any impacts would be localized and areas used for staging would return to their initial use and condition once construction has completed.

*Mitigation* – Construction mitigation for land use throughout the corridor would include: pedestrian and vehicular access management plans based on coordination with local agencies and municipalities, the construction and movement of debris during approved time intervals, and the utilization of construction equipment that would attenuate the imposition of noise and air quality impacts to neighboring land uses.

### **27.3.2. Community Facilities**

*Impacts* – Community facilities are only affected by short-term impacts during the construction phase and are confined to temporary road closures and the effect of these closures on the circulation of traffic and user access to existing facilities. Vehicular and pedestrian access to all community facilities would be maintained throughout the construction of the project, but may require temporary detours.

*Mitigation*— NJ TRANSIT’s contractor would develop a construction management plan to ensure that the flow of vehicular and pedestrian traffic remains relatively unimpeded. Emergency providers would be given access to neighborhoods during construction, as well as advanced notice of road closures and detours. Coordination with local school districts impacted by construction would develop safe alternate routes to schools. Construction mitigation for community facilities throughout the corridor would include: pedestrian and vehicular access management plans based on coordination with local agencies and municipalities, the construction and movement of debris during approved time intervals, and the utilization of construction equipment that would attenuate the imposition of noise and air quality impacts to neighboring facilities.

### **27.3.3. Parkland, Open Space, and Recreational Resources**

*Impacts* – Construction activity may temporarily affect traffic circulation in the vicinity of parkland, open space and recreational resources. Vehicular and pedestrian access to all parkland, open space and recreational resources would be maintained throughout the construction of the project, but may require temporary detours of traffic that uses roadways that would be temporarily closed to accommodate construction activity.

The project will likely require relocating a power line in Palisades Park and Leonia and may require the disturbance of a small area of Overpeck Park. The disruption will be temporary and will not affect any active use areas of the park. Following the completion of construction, disturbed park areas will be restored to their pre-construction condition (Refer to Section 27.3.4 – Utilities). No other physical impacts to parkland during the construction phase of the Northern Branch project would occur. Temporary noise impacts to noise-sensitive uses may result. There are two noise-sensitive uses within parkland adjacent to the rail right-of-way including the 9/11 World Trade Center Memorial site within the Henry Hoeble Area of Overpeck Park in Leonia and Huyler Park in Tenafly. Although the Memorial site is located approximately 500 feet from the proposed construction site for the Leonia Station parking deck on Willow Tree Road, some minor noise impacts may occur during construction. Huyler Park in Tenafly is a noise-sensitive use as well and is located close to the right-of-way.

*Mitigation* - NJ TRANSIT’s contractor would develop a construction management plan to ensure that the flow of vehicular and pedestrian traffic remains relatively unimpeded. PSE&G is responsible for securing permits and developing construction and mitigation plans should the relocation of the power line disturb parkland, open space and recreational resources. Construction noise can be mitigated through the use of temporary sound walls, alternative construction methods, timing restrictions, and noise-deadening features on construction equipment (i.e.: baffles on generators) described in the noise section below.

#### **27.3.4. Utilities**

*Impacts* – Right-of-way improvements will require the relocation of an existing high voltage underground transmission line owned by PSE&G. The transmission line is located along the west side of the right-of-way from just north of Route 46 in Palisades Park to just south of Fort Lee Road in Leonia, a distance of about three miles. The transmission line is an oil-static line presently located in a concrete conduit accessed by manholes.

The transmission line will be moved about 50 feet west of its current location and installed in a new concrete underground conduit. The relocation of the transmission line is identified by the Northern Branch design team, but the final location of the relocated line is left to the discretion of PSE&G. PSE&G has not yet proposed an alignment for the transmission line, but the relocation of the utility within 50 feet of its current location indicates that any impacts associated with the reconstruction of the line will likely be confined to some road construction and some potential disruption to parkland in Overpeck Park, which runs along the west side of the rail right-of-way in Palisades Park and Leonia. No residential uses will be disrupted as a result of the relocation.

*Mitigation* – PSE&G is responsible for securing permits and developing construction and mitigation plans should the relocation disrupt community facilities or circulation. Residential properties will not be affected by the construction work associated with the relocation. The relocated power line will likely require the disturbance of a small area of Overpeck Park in Palisades Park and Leonia. The area to be disturbed is adjacent to the rail right-of-way and not incorporated in active use areas of the park. No historic resources have been identified in this area; although the area just south of Fort Lee Road, west of the alignment in Overpeck Park has been identified as having prehistoric sensitivity. The area east of the alignment in Station Park is the former location of the 1859 Fort Lee Station; however no above ground resources have been identified. In the event previously non-recorded archaeological resources are encountered during construction, all such activities will halt in the subject area pending investigation and review by the accredited project archaeologist. Upon the archaeologist's consultation with SHPO construction activities may resume as modified by the results of such consultation.

Following the completion of construction, disturbed park areas will be restored to their pre-construction condition. Additionally, the concrete conduit reconstructed for the relocated transmission line will shield the surrounding environment from any EMF produced by the transmission line. No mitigation for EMF exposure is required.

#### **27.3.5. Traffic and Parking**

*Impacts* - Construction of the Build Alternatives would temporarily affect local traffic and pedestrian movement, as well as on-street parking at specific locations along the corridor. While most construction activity called for under the Build Alternatives would occur within the Northern Branch rail right-of-way and have little or no impact on nearby roadways, aside from deliveries and removal of soil and debris. The trucks would access the nearest truck routes, such as Route 1/9, Broad Avenue, and Grand Avenue, to minimize impact on the local roadway system.

Construction would be required at several grade crossings between the southern and northern limits of this proposed project. There are 23 grade crossings for Light Rail to Tenafly (Preferred Alternative), as well as an additional 11 grade crossings north of Tenafly that would require safety improvements. Light Rail to Englewood Route 4 would have 13 grade crossings that would require track and safety improvements, and another 21 grade crossings north of Route 4 that would require just safety improvements. Table 27-1 lists these crossings and the proposed improvements.

**Table 27-1: Northern Branch At-Grade Crossings Requiring Modification**

Location	Municipality	Safety Improvement
<b>Light Rail to Englewood (Preferred Alternative) and Light Rail to Englewood Route 4</b>		
(1a) 83 <sup>rd</sup> Street	North Bergen	Close
(1b) 85 <sup>th</sup> Street (New Crossing)	North Bergen	Crossing gates
(2) 91 <sup>st</sup> Street	North Bergen	Crossing gates
(3) Fairview Avenue/95 <sup>th</sup> Street	North Bergen	Crossing gates
(4) Driveway (near Wolf Creek)	Ridgefield	Crossing gates
(5) Linden Avenue	Ridgefield	Four-quadrant gates and flashers
(6) West Ruby Avenue	Palisades Park	Four-quadrant gates and flashers
(7) Roosevelt Place	Palisades Park	Four-quadrant gates and flashers
(8) West Central Boulevard	Palisades Park	Four-quadrant gates and flashers
(9) Fort Lee Road	Leonia	Four-quadrant gates and cantilevered mounted flashers
(10) <i>Pedestrian Crossing at Leonia High School</i>	Leonia	Pedestrian gates, flashers, fencing, and removal of vegetation
(11) Brookside Lane	Englewood	Four-quadrant gates and flashers
(12) West Forest Avenue	Englewood	Four-quadrant gates and flashers
(13) Englewood Avenue	Englewood	Four-quadrant gates and flashers
<b>Light Rail to Englewood (Preferred Alternative) continued</b>		
(14) Palisade Avenue	Englewood	Four-quadrant gates, flashers, and pedestrian gates
(15) Demarest Avenue	Englewood	Four-quadrant gates and flashers
(16) Hamilton Avenue	Englewood	Four-quadrant gates and flashers
(17) Hudson Avenue	Englewood	Four-quadrant gates and flashers
(18) Ivy Lane	Englewood	Four-quadrant gates and flashers
(19) Westervelt Avenue	Tenafly	Four-quadrant gates and flashers
(20) West/East Clinton Avenue	Tenafly	Four-quadrant gates, pedestrian gates, and cantilevered mounted flashers
(21) Washington Street	Tenafly	Four-quadrant gates and flashers
(22) Riveredge Road/Jay Street	Tenafly	Four-quadrant gates and flashers
(23) Central Avenue	Tenafly	Four-quadrant gates and flashers
<b>Areas North of Tenafly</b>		
(24) Madison Avenue	Cresskill	Four-quadrant gates and cantilevered mounted flashers
(25) Union Avenue	Cresskill	Four-quadrant gates and cantilevered mounted flashers
(26) <i>Pedestrian Crossing at West Morningside</i>	Cresskill	Pedestrian gates, flashers, fencing, and removal of vegetation
(27) Hardenburgh Avenue	Demarest	Four-quadrant gates and flashers
(28) Demarest Avenue	Closter	Four-quadrant gates and flashers
(29) High Street	Closter	Four-quadrant gates and flashers
(30) Closter Dock Road	Closter	Four-quadrant gates, flashers, and close secondary driveway
(31) Blanche Avenue	Closter	Four-quadrant gates and flashers
(32) Broadway Avenue	Norwood	Four-quadrant gates and flashers
(33) Paris Avenue	Northvale	Four-quadrant gates and flashers
(34) Pierron Street	Northvale	Four-quadrant gates and flashers

Source: Jacobs, 2009.

Construction and repair at the grade crossings would improve the infrastructure of both rail and road for the listed grade crossings. Construction at these locations would result in the temporary closure of the crossing and necessitate short-term traffic and pedestrian detours. Several of these temporary detours would likely generate traffic delays that would cease following the reopening of the roadway.

The construction of the proposed station areas may temporarily impact traffic movements and on-street parking on adjacent roadways. Station platforms would be constructed within the railroad right-of-way. In many instances, the railroad right-of-way abuts the adjacent roadway right-of-way. Areas outside of the rail right-of-way would be temporarily utilized for equipment staging and storage, as well as necessary construction activities, and may temporarily affect traffic circulation as a result. Additionally, pedestrian traffic on sidewalks lining the sites of the two town center stations may be briefly impeded as a result of construction activity. For example, construction of the platform at the proposed Englewood Town Center Station may temporarily impact parking, and other community facilities as well as vehicle and pedestrian flow along adjacent streets. Temporary impacts to traffic movement would potentially result from the construction of the passenger drop-off area and parking areas at the proposed station areas and intersection improvements, possibly resulting in the temporary closure of roadway and sidewalk segments, as well as the short-term displacement of on-street parking. Short-term traffic delays would likely be an effect associated with the closure of roadway segments. These delays would cease with the reopening of the roadway segment following the completion of construction in the area.

*Mitigation* - Mitigation measures to minimize or eliminate construction-induced impacts on specific grade crossings and freight operations, as well as the potential construction effects on station area vehicular and pedestrian circulation and on-street parking, would be comprised of several components. Initially, extensive coordination would need to occur between NJ TRANSIT and CSX, NYS&W, the NJ Department of Transportation (NJDOT) and local governments to plan, schedule and stage proposed construction activities in a manner that would minimize temporary delays or stoppage of freight operations and vehicular traffic. A Maintenance and Protection of Traffic (MPT) plan would be developed and implemented by NJ TRANSIT through considerable consultation with NJDOT, the counties, and the municipalities that are to be impacted. The action plan would list measures that would be utilized during the construction stages of the proposed project expected to result in temporary grade crossing and roadway lane closures. These measures include, but would not be limited to, construction during off-peak hours, when viable, public notification of future closures and detour routes, the use of well-positioned closure and detour warning signs and the appropriate scheduling and coordination of all construction activities that would occur at the same grade crossing or within the same area.

### **27.3.6. Transit and Freight Rail**

*Impacts* – Impacts to passenger transit would be confined to temporary detours of bus service for those routes that use roadways that would be temporarily closed to accommodate construction activity at the proposed station sites. Construction activity within the rail right-of-way would result in disruption of freight service. Construction activities will also likely result in temporary impacts to sidings used by freight customers, which will likely result in impacts to deliveries to freight customers.

*Mitigation* – NJ TRANSIT would publish route and schedule changes in paper format and distribute this information for any affected bus routes. Additional notification will be published on NJ TRANSIT's website. A considerable amount of coordination is necessary between NJ TRANSIT, NYS&W and CSX to minimize the temporary, construction-related impacts that would affect rail freight operations under the Build Alternatives. This coordination would entail discussions pertaining to construction scheduling and staging for the relocation of freight track, replacement of bridges and the construction of parking areas located at certain station areas. Each of these construction activities would occur during the early stages of project construction to reduce the duration of time that construction would impact freight operations.

### 27.3.7. Air Quality

*Impacts* - Air quality impacts during construction would be limited to short-term, increased fugitive dust and mobile source emissions. These impacts would cease with the conclusion of construction.

Fugitive dust is airborne particulate matter, generally of a relatively large particulate size. Construction-related fugitive dust is generated by concrete demolition, haul trucks, concrete trucks, delivery trucks and earth-moving vehicles operating around the project corridor. Construction activities cause particulate matter to become resuspended (“kicked-up”) as a consequence of various activities including vehicle movement over paved and unpaved surfaces, dirt tracked onto paved surfaces from unpaved areas at access points, and material blown from areas of exposed soils. Generally, the distance particles drift from their sources depends on their size, emission, height, and wind speed. Small particles (30- to 100-micron range) can travel several hundred feet before settling to the ground, depending upon wind speed. Most fugitive dust, however, is made up of relatively large particles (i.e., particles greater than 100 microns in diameter). Given their relatively large size, these particles tend to settle within 20 to 30 feet of their source.

Carbon Monoxide is the principal pollutant of concern when considering localized construction-induced air quality impacts of vehicles. While the presence of construction trucks and equipment would slightly increase CO levels in the area, these emissions would not be significant compared with the emissions from roadway vehicle traffic. FTA expects a commitment to retrofitting diesel construction equipment with catalytic converters and to the use of ultra-low sulfur diesel fuel when a project is located, as this one is, in a populated area.

*Mitigation* - A number of mitigation measures would be utilized to minimize or eliminate temporary air quality impacts created during the construction phase of the proposed project. The application of various control measures during construction activities would be employed, particularly near historic resources, to minimize the amount of construction dust generated, through measures including application of water or other soluble moisture-retaining agents to dirt areas; cleaning construction equipment and adjacent paved areas that may be covered with dirt or dust; covering haul trucks carrying loose materials to and from construction sites; use of clean fuels in construction equipment; deployment of clean diesel construction equipment (new, retrofit, rebuilt or repowered), and the implementation of anti-idling practices at construction sites.

### 27.3.8. Noise

*Impacts* - Construction activities required by implementation of the Build Alternatives would have short-term noise impacts on receptors in the immediate vicinity of the construction sites. Noise levels during construction would include noise from construction and delivery vehicles traveling to and from the site and noise from operating construction equipment. The extent of impact from these sources would depend on the nature of the construction (laying of track versus structure), the noise characteristics of the equipment operated and their duration of utilization, the construction schedule and the distance to the noise-sensitive receptors from the construction site boundary.

Short-term construction noise impacts are expected in the immediate vicinity of construction sites, but are temporary in nature. In general, construction typically occurs during the daytime working hours of 7 AM to 6 PM. The majority of the equipment likely to be employed in the project area would be earth-moving equipment (backhoe and dump truck), groundbreaking equipment, and pile drivers for structures. Average noise levels measured in dBA at 50 feet for this equipment would range between 72 and 101 dBA (see Table 27-2). Based on typical usage factors of 0.3 (i.e., equipment is operated 30 percent of the time), a typical scenario of a crew operating one backhoe, one bull dozer and one dump truck can expect an hourly  $L_{eq}$  of 85 dBA at a distance of 50 feet. Based upon a 6-dBA drop-off rate per doubling of

distance, short-term construction noise levels associated with this operation would be approximately 73 dBA at a distance of 200 feet from the point of construction. With the addition of a pile driver, the sound level at 200 feet would increase to 96 dBA.

**Table 27-2: Typical Construction Equipment Noise Emission Levels**

Equipment Item	Noise Level (dBA at 50 Feet)
Air Compressor	81
Asphalt Spreader (Paver)	89
Asphalt Truck	88
Backhoe	85
Compactor	80
Concrete Spreader	89
Concrete Mixer	85
Concrete Vibrator	76
Crane (derrick)	88
Dozer	87
Dump	88
Front End Loader	84
Gas-Driven (Vibro-compactor)	76
Generator	76
Hoist	76
Jackhammer (Paving Breaker)	88
Motor Crane	83
Pick-up Truck (light)	72
Pile Driver / Extractor	101
Pneumatic Tools	76
Pump	76
Rock Drill	98
Roller	80
Scraper	88
Shovel	82
Truck (Medium and Heavy)	84

Source: Harris, C.M. "Handbook of Noise Control," Second Ed. McGraw Hill, New York, 1979

To extend 85th Street to Westside Avenue construction will likely involve excavation with hydraulic impact hammers (hoe rams) or drilling combined with controlled blasting. Drill and blast minimizes noise and ground-borne vibration. However, since the nearest residence is 1,600 feet from the proposed blasting area, noise impacts from blasting would be minimal.

*Mitigation* - The magnitude of construction-generated noise impacts along the Northern Branch Corridor would be reduced or eliminated by utilizing a number of mitigation measures, including:

- Temporary sound walls;
- Alternative construction methods such as vibration or hydraulic insertion instead of traditional pile driving;
- Baffled diesel generators or use of electric generators instead of diesel;
- Specifying adequate muffler systems on construction equipment that requires combustion engines, and requiring that vehicles and equipment are properly maintained and operators trained;

- Modifying equipment with dampeners to reduce noise as a result of vibration; and,
- Aprons (sound absorptive mats that are hung from equipment)

Specific guidance and contract specifications would be developed prior to project implementation to address construction actions. If necessary, special construction methods would be specified as part of the construction contract documents. A basic set of construction noise abatement measures would be included in the construction specifications. All equipment would have sound control devices and would comply with pertinent equipment noise standards of the U.S. Environmental Protection Agency (USEPA) and the Occupational Safety and Health Administration (OSHA).

### **27.3.9. Vibration**

*Impacts* - Activities to construct the second track and the catenary may include pile driving, sheeting, excavation, and compaction. Typical vibration levels for equipment likely to be used for this project are 0.035 inch/second (79 VdB) for a jackhammer, 0.089 inch/second (87 VdB) for a large bulldozer, and 0.170 to 1.518 inches per second (93 to 112 VdB) for a pile driver at a distance of 25 feet from construction. The criterion for construction vibration damage ranges from 0.12 to 0.5 inch/second (90 to 102 VdB) depending upon the type of building construction. At a distance of 350 feet, the highest peak period velocity of an impact pile driver would be below the construction damage criteria. With a sonic pile driver, this distance would be reduced to 160 feet. While areas further than these distances may experience vibration annoyance, there would be no risk of building damage.

To extend 85th Street to Westside Avenue construction will likely involve excavation with hydraulic impact hammers (hoe rams) or drilling combined with controlled blasting. Drill and blast minimizes noise and ground-borne vibration. If drill and blast are used, the contractor would monitor the peak particle velocity during construction to ensure that the rock removal would not cause damage to nearby structures. However, since the nearest residence is 1,600 feet from the proposed blasting area, ground-borne vibration impacts from blasting would be minimal.

*Mitigation* - Compliance with industry practices and FTA guidelines for historic structures should provide adequate protection to buildings in the corridor and their occupants from vibration effects. Noise mitigation measures are often vibration mitigation measures, as vibration is both a physical feature that is felt as well as a source of noise. As a consequence, vibration mitigation can take the form of any of the following, which also apply to noise mitigation:

- Pre-auguring and pre-cutting pavement prior to pile driving
- Alternate pile driving methods including hydraulic insertion
- Use of dampeners on machinery that typically vibrates

Field vibration monitoring gauges would be installed prior to the initiation of construction activities that are likely to result in vibration impacts, particularly in areas near historic resources. The monitors would be used to verify that actual vibration levels would remain below the damage threshold of 2.0 inches/second for buildings and 0.5 inch/second for historic structures. If construction vibration is found to be in excess of these thresholds, construction activity would cease until modifications to equipment were made to reduce frequency of vibration.

### **27.3.10. Water Quality**

#### *27.3.10.1. Surface Water*

*Impacts* - Potential construction-induced impacts to water quality would likely be soil erosion and sedimentation resulting from excavation and grading activities necessary for the construction of rail

infrastructure including proposed platform areas and parking facilities. Exposed soils from these activities, as well as soil stockpiled during construction, could erode during rainfall events and be transported to the stormwater and/or surface water systems within the project corridor. These impacts would be temporary and expected to cease with the completion of construction associated with the particular project elements. The magnitude of these potential impacts would be site specific and dependant upon soil type, weather conditions and underlying topography.

Construction activities related to infrastructure improvements for the Build Alternatives, including the removal and installation of tracks, placement of the ballast and subballast, installation of catenary poles, and construction of drainage ditches and/or underdrains, are not expected to directly impact water quality.

Improvements to the rail right-of-way will result in construction activity at existing rail crossings of streams within the study area. Construction at the rail crossings over Bellmans Creek, Wolf Creek, and Overpeck Creek tributaries would result in short-term erosion and sedimentation impacts to water quality. It should be noted that these impacts are temporary and BMPs would be employed to prevent water quality degradation. BMPs include sheet piling and small cofferdams to contain fill materials and prevent excavated soils from entering the water column.

Pursuant to requirements developed for the New Jersey Pollutant Discharge Elimination System (NJPDES) Program administered through the New Jersey Department of Environmental Protection (NJDEP) and the National Pollutant Discharge Elimination System (NPDES) Program administered through the United States Environmental Protection Agency (USEPA), construction of the proposed project would require the issuance of Construction Activities General Stormwater Permits. These permits are required for all construction projects disturbing more than five cumulative acres. A Stormwater Pollution Prevention Plan (SWPPP) would be required under the NJPDES program. While all other appropriate Federal, state, county and local water quality regulations would be adhered to, additional permits would be obtained prior to construction.

*Mitigation* – Mitigation measures are largely established by the regulatory and permitting agencies, and expressed in terms of regulatory requirements and BMPs. BMPs include both techniques and technologies developed by the regulatory agencies with the intent of offering sound guidelines for managing environmental resources. BMPs are often context-sensitive as there are separate BMPs for surface water treatment and construction work that must occur within existing surface water bodies.

BMPs intended to minimize the potential for degradation in water quality associated with rail right-of-way improvements may include the construction of cofferdams and/or sheet piling to contain fill materials and to prevent excavated soils from entering the water column if necessary. Cofferdams, if required for Northern Branch improvements, will be small in size and used for a short period of time, effectively reducing the potential for undesirable impacts on the biological communities or flow of the affected waterbody.

During construction activities, a number of techniques may be used to prevent siltation of area waterways and preserve habitat for aquatic species. These methods include, but are not limited to:

- Stabilization of slopes, channels, swales and embankments after construction activities are completed;
- Excavation activities would be conducted to minimize the amount of land disturbance;
- Installation of turbidity barriers around the area of construction to confine turbidity to a limited area and not discourage the upstream or downstream passage of migratory or other fish species;
- Phasing construction of project elements located within surface waters so at all times a portion of the watercourse not less than one-third its total size will be left unobstructed; and,
- Prohibiting construction within waterways during anadromous fish spawning/migration activities.

### 27.3.10.2. Groundwater

*Impacts* - Construction-related impacts to groundwater in the Northern Branch Corridor would be minor and temporary in nature. While the presence of existing structures and impervious surfaces at many of these proposed locations would make it unlikely that construction activities would affect groundwater in most portions of the corridor, it is possible that excavation activities would impact groundwater. In addition, potential contamination of groundwater could possibly occur as a result of leaking construction equipment and/or temporary on-site sanitary storage facilities.

*Mitigation* - Several mitigation measures would be implemented to minimize or eliminate impacts to groundwater during the construction phase of the proposed Northern Branch Corridor project. During excavation, any groundwater that is encountered would be pumped from excavated soils, filtered to remove suspended sediments and discharged to the storm water discharge system or to on-site infiltration ditches. This process would be temporary and would cease with the completion of excavation. Permits that would be required to undertake this dewatering process would be acquired from NJDEP. Proper maintenance procedures on the construction site would avoid most leaks and mishaps associated with construction equipment. Any spills (oil, gasoline, diesel, brake fluid, transmission fluid, etc.) would be contained immediately and disposed of properly, off-site in accordance with NJDEP procedures.

### 27.3.11. Wetlands

*Impacts* - As discussed in Chapter 15: Wetlands, there are two types of impacts that may occur to wetlands in the project area. “Temporary disturbances” are construction-related impacts that occur as a result of regulated activities within the wetlands. These disturbances must be permanently discontinued within six months of initiation, and since they are associated with regulated activities, are reversible. An example of a temporary disturbance would be the placement of machinery in a wetland for the purposes of constructing a retaining wall. When construction is complete, the machinery is removed and the wetland is restored to pre-construction conditions, which may involve grading and vegetative restoration. Construction activities could result in temporary deterioration of wetlands through runoff and sedimentation. “Permanent impacts” are not reversible and represent definitive changes to wetland acreage. Permanent impacts and mitigation measures are addressed in Chapter 15: Wetlands.

*Mitigation* – Temporary signs and fences, such as orange snow fencing, may be used to limit unnecessary direct construction impacts to wetlands. Erosion and sediment control measures consisting of silt fences, hay bales, mats or temporary drainage systems would be used to ensure that indirect construction activity encroachment on wetlands is avoided. Implementation of spill prevention plans designed first to avoid spills and second to provide direction for the efficient and successful removal of spills would minimize or alleviate adverse impacts. Construction staging areas would be selected to avoid wetlands and their associated adjacent areas. Restricting washing activities to areas distant from wetlands and other sensitive resources would minimize or alleviate adverse impacts to these resources.

Temporary impacts to wetland resources resulting from unavoidable interference with the wetland resource will be mitigated such that the wetland is returned to pre-construction conditions at the end of the construction period, or six months, whichever is sooner. As a result, wetlands will not incur long-term impacts from temporary construction activities conducted in accordance with applicable regulations.

### 27.3.12. Floodplains

*Impacts* - Elements of the proposed project would be located within areas considered to be within the 100-year floodplain, as delineated by the Federal Emergency Management Agency (FEMA). The existing freight rail line and structures contained on most of the station area sites make it unlikely that construction of the proposed project would have significant effects on floodplain areas within the study

area. A temporary disturbance of floodplain areas is possible during replacement or rehabilitation activities of rail crossings over streams along the corridor.

*Mitigation* - Mitigation measures would include using structures to cross floodplains instead of filling them, providing adequate flow circulation, reducing grading requirements and preserving natural drainage where possible. During Final Design and Engineering, the project will be designed with the intent to meet the zero net fill rule by not filling more than 20 percent of the existing floodplain storage on a site and for providing off-site storage areas within the same flood hazard area and watershed. All fill will be placed so as not to adversely affect overland drainage flow and shall be compacted and stabilized in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey". Excess runoff associated with the project will be mitigated through the use of wet ponds, storm water infiltration or detention facilities and bio-retention. In addition, a Flood Hazard Area (FHA) Permit would be obtained from NJDEP if needed.

### **27.3.13. Vegetation and Wildlife/Threatened and Endangered Species**

*Impacts* - The construction impacts to vegetative and wildlife resources that would be expected under the Build Alternatives of the proposed project would be temporary in nature. Negligible, short-term effects would result from construction activity associated with the replacement of several rail bridges along the corridor. The construction of two-track single-span bridges would be required over Bellmans Creek on the North Bergen and Fairview border and at Wolf Creek on the border shared by Fairview and Ridgefield. Any two-track single-span bridges crossing tributaries of Overpeck Creek would necessitate construction activities including demolition, excavation, filling, building of bridge structures (foundations and spans) and potentially dredging. This construction activity would possibly disturb or destroy minimal areas of vegetation, including wetlands. The magnitude of this potential disturbance would not represent a significant impact. Additional disturbance to vegetation associated with the Build Alternatives would be minimal. The rail corridor is currently utilized for active freight service and is generally maintained without significant vegetation in the right-of-way. The proposed Ridgefield, Palisades Park, Englewood Route 4, Englewood Town Center, Tenafly Town Center and portions of the Tenafly North Station Area sites have been disturbed and contain structures. Nominal areas of vegetation may be disturbed during the construction of the Leonia, Englewood Hospital and Tenafly North Station Areas, as vegetation lines the Northern Branch right-of-way in these areas. Construction-related impacts to vegetation would potentially occur at construction staging areas. These areas would be located carefully to avoid loss of mature vegetation.

As a result of the densely developed character of the corridor and the limited nesting and feeding habitats associated with such disturbed environments, construction activities related to this proposed project would affect minimal amounts of wildlife habitat. Short-term construction impacts would also result from the temporary increase of both noise and dust. These impacts would be minor and could temporarily affect fish and wildlife in the project area. It is expected that any fish or wildlife that may be displaced as a result of the construction activity associated with this proposed project would return once construction ceased or would relocate to another suitable habitat.

*Mitigation* - Mitigation measures to minimize potential construction-related effects on vegetation and wildlife would include cautious staging and construction practices in areas where mature vegetation and potential fish and wildlife habitats are present.

In addition, the USFWS recommends seasonal restrictions on tree clearing between April 1 and September 30 for potential Indiana bat summer roosting areas. Seasonal restrictions on tree clearing would be implemented in connection with any tree removal associated with the project.

### 27.3.14. Hazardous Materials

*Impacts* – The study area corridor, as a result of its industrial history, contains several known contaminated sites with ongoing remediation (Refer to Chapter 19: Hazardous Materials). It is assumed that work within the rail right-of-way is likely to disturb contaminated materials accumulated on the ballast and subsoil as a consequence of more than a century of rail corridor use.

With the exception of Englewood Route 4 Station and Englewood VBF option and Palisades Park Station, none of the proposed station site locations are located on known contaminated sites. Englewood Route 4 Station and Palisades Park Station are located adjacent to known USEPA CERCLIS sites. Several contamination events have been reported for the site proposed for the Englewood VBF option. Contamination, if present, could be encountered during demolition and construction activities.

Construction activities associated with the proposed project would not result in new contamination of the soils, surface waters, groundwater, or air along the corridor, at the station sites, or in the surrounding areas.

*Mitigation* – There is no notable difference between the two Build Alternatives in terms of the potential for construction activities to result in exposure to, or disturbance of, hazardous materials. A complete Phase I Environmental Site Assessment (ESA) will be conducted during Final Design and Engineering to verify that the station sites are not contaminated with previously undocumented hazardous materials. This would potentially be followed up by Phase II testing, where necessary, to confirm the presence or absence of hazardous materials. Should hazardous materials be identified on-site, remediation efforts will be implemented to remove the hazardous materials.

BMPs will also be implemented and typically include preventative measures to ensure that hazardous materials do not migrate from a construction site, and may include spraying down excavated soil to prevent fugitive dust, use of tarps or silt screens to prevent the erosion of known or suspected hazardous materials from the site, use of grates to remove soil from the tires of construction vehicles leaving the site, and use of appropriate protective gear for on-site personnel. BMPs may be implemented in those instances where hazardous materials are not identified on-site as precautionary measures.

### 27.3.15. Safety and Security

*Impacts* - Temporary construction impacts associated with personal safety and security relating to coordination and safety and security plans surrounding the rail right-of-way are described in Chapter 22: Safety and Security. The majority of the project construction would not involve unusual or dangerous construction types, procedures or locations that would pose significant safety or security adverse impacts. However, adjacent personal property, pedestrian areas and adjacent roadways could experience short-term, temporary impacts related to the operation of construction equipment, delivery of materials and construction site activity.

Construction activity for the station platform is expected to be confined primarily to the existing Northern Branch right-of-way, which will require careful coordination with CSX to minimize impacts to freight operations during construction as well as to ensure construction worker and rail operator safety. The extent and intensity of construction activities for parking areas for the Build Alternatives would be dependent on the current use of existing sites proposed for parking. Additionally, the implementation of the Build Alternatives would introduce overhead catenary, an additional construction element which is currently absent from the existing Northern Branch infrastructure. Overhead catenary wires and electrical substations will be installed along the existing right-of-way from North Bergen to either Light Rail to Tenafly (Preferred Alternative) or Light Rail to Englewood Route 4. The installation of catenary would be carefully coordinated with CSX.

*Mitigation* - Prior to the commencement of construction, contractors would conform to safety training requirements of the respective rail operators including Conrail, NYS&W, CSX and HBLR and would abide by the appropriate Occupational Safety and Health Administration standards (OSHA). Municipal life safety services would be contacted prior to the initiation of any activities, and coordination between NJ TRANSIT and locale police, fire, and other emergency services would continue through the duration of the construction phase. NJ TRANSIT would coordinate with contractors and personnel to ensure that these safety guidelines are incorporated into their construction plans and procedures. Should the drill and blast method be used for construction of the 85<sup>th</sup> Street extension, NJ TRANSIT would develop a construction blasting plan to ensure public safety. NJ TRANSIT would coordinate with CSX, the contractors, and the local police, fire, and emergency services.

Fencing and signage would be utilized to physically buffer construction sites from public space as well as to provide sufficient warning to the public. In addition, the vulnerability of construction sites would be minimized through the use of fencing which would act as a deterrent to vandalism and trespassing.

### **27.3.16. Historic and Archaeological Resources**

*Impacts* - Construction-related impacts would potentially affect historic resources within the Northern Branch Corridor. The major impacts considered would be short-term, intermittent, construction-generated noise, vibration and fugitive dust.

Construction activity is not expected to impact known archaeological resources, as the Phase I Analysis indicated that little remained of the resources and the New Jersey State Historic Preservation Officer (SHPO) determined that the resources identified were not eligible for listing on the State or National Registers of Historic Places. These findings were identical for both Light Rail to Tenafly (Preferred Alternative) and Light Rail to Englewood Route 4. However, the potential exists for buried portions of known resources and previously undocumented resources to be discovered during the development of either Build Alternative. Further investigation of archeologically sensitive areas would be performed once Final Design and Engineering is completed for the project. At that time, limits of construction disturbance would be established in order to minimize or avoid potential impacts to intact archeological resources, if any are determined to exist.

During construction, right-of-way improvements will require the relocation of an existing high voltage underground transmission line owned by PSE&G. The transmission line is located along the west side of the right-of-way from just north of Route 46 in Palisades Park to just south of Fort Lee Road in Leonia. The transmission line is an oil-static line presently located in a concrete conduit accessed by manholes. The transmission line will be moved about 50 feet west of its current location and installed in a new concrete underground conduit. The relocated power line will likely require the disturbance of a small area of Overpeck Park in Palisades Park and Leonia. No historic resources have been identified in this area; although the area just south of Fort Lee Road, west of the alignment in Overpeck Park has been identified as having prehistoric sensitivity, and the area east of the alignment in Station Park is the former location of the 1859 Fort Lee Station; however, no above ground resources have been identified.

*Mitigation* – The possible adverse effects from noise, vibration and air quality during construction would be mitigated through the use of specific equipment, including concrete cutters rather than pavement breakers; proper maintenance of construction equipment mufflers installation of temporary noise barriers; and rerouting of heavy equipment and truck movements, where practical and necessary. Additional vibration mitigation could include the use of pre-auguring and pre-cutting pavement prior to pile driving, alternate pile driving methods including hydraulic insertion, use of dampeners on machinery that typically vibrates, and field monitoring of vibration levels during construction near vibration sensitive buildings.

The application of various control measures during construction activities would be employed to minimize the amount of construction dust generated, such as applying water or other soluble moisture-retaining agents to dirt areas, cleaning construction equipment and adjacent paved areas that may be covered with dirt or dust, covering haul trucks carrying loose materials to and from construction sites and treating materials likely to become airborne and contribute to air pollution if left untreated.

In the event the previously non-recorded archaeological resources are encountered during construction, all such activities will halt in the subject area pending investigation and review by the accredited project archaeologist. Upon the archaeologist's consultation with SHPO construction activities may resume as modified by the results of such consultation.

#### **27.4. Summary of Potential Environmental Impacts**

Light Rail to Tenafly (Preferred Alternative) and Light Rail to Englewood Route 4 would result in similar construction impacts as the nature of the construction activity is similar through the corridor; however, the extent of the construction impacts would be greater for the Light Rail to Tenafly (Preferred Alternative) due to the greatest linear distance of construction activity. Construction activities would result in short term impacts that will cease with the completion of the activity. Various mitigation measures will be implemented depending on the impact category to minimize any adverse impacts. The magnitude of the construction impacts for each municipality depends on the extent of proposed improvements and sensitivity of surrounding land uses or resources.