ENVIRONMENTAL ASSESSMENT

Long Island Rail Road

September 2013

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This document is the Final Environmental Assessment for the Long Island Rail Road Double Track Project.

LIRR initially posted the Environmental Assessment for the Double Track Project on its website for public comment on July 12, 2013. An electronic copy of the Environmental Assessment was also sent to involved agencies. LIRR accepted comments on the Environmental Assessment for a period of 30 days. The comment period closed on August 12, 2013. This Final Environmental Assessment responds to comments made during the public comment period and also reflects additional refinements made to the project. Added text is shown underlined. Deleted text is shown in ~~strikeout~~ (but not underlined). At the bottom of pages where modifications were incorporated, footers have been updated to September 2013. In cases where modified text resulted in changes to figures, only the final text is shown in the figures in order to avoid potential confusion.

A new Appendix L, *Response to Comments*, has also been added.

1 INTRODUCTION

This Environmental Assessment (EA), for the Long Island Rail Road (LIRR) Double Track Project, has been prepared following the procedures contained in the New York State Environmental Quality Review Act (SEQRA), codified at Article 8 of the New York Environmental Conservation Law, and the regulations issued under SEQRA, which are found at 6 N.Y.C.R.R. Part 617. Generally, SEQRA requires all state and local government agencies to consider environmental impacts along with social and economic factors during discretionary decision-making.

One exception to the general mandate under SEQRA has been established by Section 1266(11) of the New York Public Authorities Law (PAL) for projects sponsored by the Metropolitan Transportation Authority (MTA) and its subsidiaries, including the LIRR. This provision exempts a project and all related activities from certain sections of the New York Environmental Conservation Law if the project will be constructed on property used for a transportation purpose, or an insubstantial and contiguous addition to that property, which will not change the general character of the prior transportation use in a material respect. The PAL provision exempts projects falling within its scope from SEQRA and New York State Department of Environmental Conservation permitting programs involving air pollution, freshwater wetlands and tidal wetlands. In the course of preparing this EA, the consultant has conducted a thorough inspection of the right-of-way (ROW) within which the proposed action would be constructed, and is compiling a description of conditions within the ROW in a separate document. LIRR will consider the facts set forth in that document, along with other relevant factors, in making a determination as to the applicability of the PAL exemption to the proposed action. Notwithstanding the potential applicability of the PAL exemption, LIRR has followed the procedures developed under SEQRA in performing an environmental review of the proposed action and would adhere to applicable New York State Department of Environmental Quality freshwater wetland requirements.

An initial step in the SEQRA process is to systematically consider in an environmental assessment the environmental factors associated with the proposed action and to make a reasoned determination regarding whether the action may cause a significant adverse impact on the environment. The initial SEQRA tool used to make this determination is the environmental assessment form (EAF). If, upon completion of the initial environmental assessment, an action is determined not to have one or more significant adverse environmental impacts, a determination of non-significance (also known as a Negative Declaration) is issued. If it is determined that an action might have potentially significant adverse environmental impacts (a Positive Declaration), an Environmental Impact Statement (EIS) would then be prepared, which would be used to examine ways to avoid or reduce identified adverse environmental impacts related to a proposed action.

LIRR, the agency principally responsible for carrying out, funding, and approving the proposed action, has assumed the role of Lead Agency for the environmental review of the proposed action, and with the assistance of its consultant has prepared this environmental assessment, including completion of an EAF. A coordinated review is being conducted with all involved agencies.

This EA is comprised of three parts: EAF Part 1, EAF Part 2, and Part 3. EAF Part 1 is used to initiate the environmental review process and to assist in identifying the appropriate lead agency. EAF Part 2 is used to help identify the technical analyses required for evaluating potential impacts associated with the proposed action. Part 3 provides the technical analysis and findings related to substantive issues with the potential to cause significant adverse impacts. It also identifies improvements that could be incorporated into the proposed action in order to ameliorate any potentially significant adverse impacts.

Following the Executive Summary, the body of the EA includes two main chapters: Introduction and Evaluation of Potential Impacts. The Introduction begins with the Project Purpose and Need, followed by a description of the LIRR right-of-way and surrounding land uses, a description of the proposed action, a discussion of applicable permits and approvals, and a summary of on-going agency and public involvement activities for the project. The Evaluation of Potential Impacts includes technical analysis and results of the following subjects: land use and zoning, visual impacts, natural resources, parklands, cultural resources, contaminated materials, noise and vibration, traffic and transportation, air quality, construction impacts, and environmental justice.

A series of appendices providing additional details for many of the technical analyses undertaken for the proposed action follows the main body of the EA:

- Appendix A – EAF Part 1
- Appendix B – EAF Part 2
- Appendix C – Noise and Vibration Technical Report
- Appendix D – Traffic Impact Analysis
- Appendix E – Project Related Correspondence
- Appendix F – Environmental Justice Communities within the Study Area
- Appendix G – Contaminated Materials
- Appendix H – Cultural Resources Technical Report
- Appendix I – Natural Resources Technical Report
- Appendix J – Visual Impacts Analysis
- Appendix K – Retaining Wall Heights and Lengths
- Appendix L – Response to Comments

1.1 PROJECT PURPOSE AND NEED

The purpose of the Double Track Project is to complete the construction of a continuous electrified second track on the Ronkonkoma Branch, entirely within the existing LIRR right-of-way (ROW), which is owned by LIRR. In addition to installation of the12.6 miles of second track within the 17.9-mile Main Line, related infrastructure improvements would include: two short side-platforms at Pinelawn Station (replacing the existing side-platform), one full-length side-platform at Wyandanch Station (opposite the existing side-platform to remain), upgrades to existing electrical power substations, relocation of utilities (where necessitated by construction), and other ancillary facilities. The proposed action would also include retaining walls in certain areas in order to ensure that the proposed action remains entirely within existing LIRR ROW.

In connection with the proposed action, improvements would be incorporated at intersections and other locations warranted by technical analysis completed according to standard professional practice in order to ensure safe implementation and operation of the project, and to minimize the effects of the project on the surrounding areas.

1.1.1 Problem Statement

The 17.9-mile LIRR Main Line between Ronkonkoma and Farmingdale consists predominantly of a single electrified track, with limited passing tracks. The existing single-track sections comprise 12.6 miles, while 5.3 miles of the Main Line already have two electrified tracks. As a result, rail service on the Ronkonkoma Branch suffers constrained service due to limited flexibility. In addition, operational delays on the single-track Ronkonkoma Branch can more easily cascade to the point where operations on the Ronkonkoma Branch, as well as other branches are negatively affected.

For decades, a continuous second track between Ronkonkoma and Farmingdale has been part of the LIRR's and the region's vision. In 1987, the LIRR extended electrification along the Main Line from Hicksville east to Ronkonkoma. That project included planning for a two-track configuration throughout the ROW; however, construction was limited to 5.3 miles, as a result of funding limitations, primarily serving station areas.

Ridership demand that materialized with electric service has been beyond forecasts or expectations and LIRR has increased scheduled trains substantially since opening day. Completing a continuous second track between Ronkonkoma and Farmingdale would allow for greater service reliability and scheduling flexibility, as originally envisioned for the ROW, and supported by current ridership and demand along the branch. The economy of the Long Island area would also benefit from the completion of the Double Track Project.

1.1.2 Project Benefits

The Double Track Project between Ronkonkoma and Farmingdale would provide several key benefits for LIRR operations and customers.

Improve Service Reliability and On-Time Performance. Scheduled service along the Ronkonkoma Branch includes planned meeting times when a train in one direction must wait at a particular

location for an opposing train to pass before this train can continue further along single-track territory. While the Ronkonkoma Branch is almost 18 miles long, the entire route from Penn Station to Ronkonkoma is 60 miles in length. Any amount of delay anywhere along the 60-mile route from Ronkonkoma to Penn Station has the potential to extend these scheduled meets, posing a risk to service reliability and on-time performance. Construction of the continuous second track would eliminate this risk by eliminating the need for these scheduled meeting times.

Improve Recovery from Severe Service Disruptions. Currently, disabled trains or other incidents on single-track sections of the Main Line halt train service in both directions, due to the inability to reroute trains around problem areas. As a result of extremely severe delays, LIRR's ability to operate trains across the network can also be affected, due to a lack of available train equipment.

Reduce Cascading Delays From Late Trains. Trains in one direction must wait in station areas or passing tracks for late trains in the opposing direction to arrive before continuing. This results in cascading delays to multiple trains and negatively impacts on-time performance.

Provide Better Scheduling of Maintenance. At present, track or other infrastructure maintenance projects may require cancellation of train service along segments of the branch, which results in inconvenience and additional travel time for customers, as well as increased operating costs associated with the provision of alternative bus service.

Improve Mobility; Increase Bi-Directional Off-Peak and Intra-Island Service. Commuting to work locations in Nassau and Suffolk Counties and off-peak travel within Long Island continues to increase, reflecting suburban commuting trends throughout the New York metropolitan region. Completing the Double Track Project would significantly improve mobility throughout the Ronkonkoma Branch, particularly for those customers whose destination is not Manhattan, and for customers traveling in reverse-peak directions.

Provide Reverse Service in Peak Hours. The Double Track Project supports opportunities for reverse service in both the morning and evening peak periods (currently there is no reverse service along the entire ROW between 6:37-8:59 AM and 4:48-7:13 PM).

Provide Reliable Rail Service for Projected Local and Regional Economic Growth. The Double Track Project would provide more reliable commuting options, increased off-peak and reverse-peak service, and better accessibility and connections overall to the Ronkonkoma Branch, such as to Long Island MacArthur Airport which is near Ronkonkoma Station. The transit infrastructure improvements would support public investments that have already been approved for State funding and are included in the Long Island Regional Economic Development Council strategic planning documents, as well as on-going transit-oriented development (TOD) projects in Farmingdale, Wyandanch, Deer Park, and Ronkonkoma.

Support Opportunity for Additional Rail Service in the Future. Long-range population and employment forecasts for Long Island and New York City project ridership growth on the Ronkonkoma Branch. The Double Track Project would support service increases over time to meet passenger growth into and beyond 2030. While future East Side Access (ESA) operations do not

depend on the Double Track Project, the additional trains bound for Grand Central Terminal would further strain the single-track operational capabilities of the Main Line.

Enhance Long Island South Shore Resiliency: The four LIRR branches (Babylon/Montauk, Long Beach, Far Rockaway, and West Hempstead) that serve South Shore communities carry over ⅓ of all daily LIRR customer trips. As evidenced during Superstorm Sandy in October 2012, these four branches are vulnerable to damage caused by flooding and hurricane storm surge, whereas the Main Line is not. LIRR's Main Line was the first train service east of Jamaica to resume following the pre-Sandy service shutdown. However, because the Main Line between Ronkonkoma and Farmingdale is a single-track operation with limited passing sidings, its daily operations are quite fragile. In the event of a future failure of the South Shore branches, with a full double track in place, the Main Line would be able to add train service to accommodate a surge in South Shore customers who would migrate to the Main Line for LIRR service. With a full double track on the Main Line, the LIRR would have greater reliability and resiliency to accommodate customers' needs after extreme storm events such as Superstorm Sandy.

While predictive surge maps (SLOSH), FEMA flood zone maps (DFIRM), and inundation data from Super Storm Sandy show flooding impacting the Babylon/Montauk and other LIRR South Shore Branches, the maps also demonstrate that the Main Line remains out of any potential flood zone areas. As a result, the Main Line would remain in service. The South Shore customer population would be able to use Main Line stations as a viable transportation alternative, if the LIRR was able to provide enhanced Main Line service. These Main Line service capacity improvements can only be accomplished with installation of a full second track from Ronkonkoma to Farmingdale.

Long Island MacArthur Airport, just east of Ronkonkoma Station, is a potential medical supply location in the event that airlifted supplies are required for the region as a result of a major disaster. While the airport would allow the medical supplies to be brought to Long Island, a full double track between Ronkonkoma and Farmingdale would be required in order to distribute the supplies to various communities across Long Island, as freight trains operated on the LIRR network would provide an intermodal connection for distribution of critical supplies.

Potential New Republic Station. A potential new Republic Station could serve as a hub, providing a strategic gateway to the State Route 110 corridor, a major employment concentration on Long Island, not directly served by existing stations on the Ronkonkoma Branch. With the continuous second track on the Ronkonkoma Branch, LIRR could serve this potential new station without adversely impacting existing service. However, a new Republic Station, which would have independent utility, is not addressed in this EA and would proceed as a separate project with its own environmental review, to the extent required under SEQRA and/or other statutes, if it were to be pursued in the future.

1.2 DESCRIPTION OF THE RIGHT-OF-WAY AND SURROUNDING LAND USE

This section presents a detailed description of existing conditions in the project study area, covering the railroad ROW and the land uses to the north and south (see Figure 1-1, *Project Area*). For purposes of this EA, the ROW is defined as the LIRR-owned property through which the railroad operates. The LIRR is the oldest railroad in the United States still operating under its original name and charter, having been in continuous operation since 1834. The Ronkonkoma-Farmingdale stretch of railroad is one of the oldest sections of the LIRR network, and is part of the original Main Line connecting Brooklyn with Greenport. The LIRR has been providing train service through this corridor for over 170 years. Farmingdale Station opened in 1841 and Ronkonkoma Station opened in 1843. The LIRR ROW was electrified between Ronkonkoma and Farmingdale in 1987. In general, the ROW measures 66-feet in width the entire length between Ronkonkoma and Farmingdale. However, at certain grade-crossings it is narrower and in certain locations (e.g., at electrical substations) it is wider.

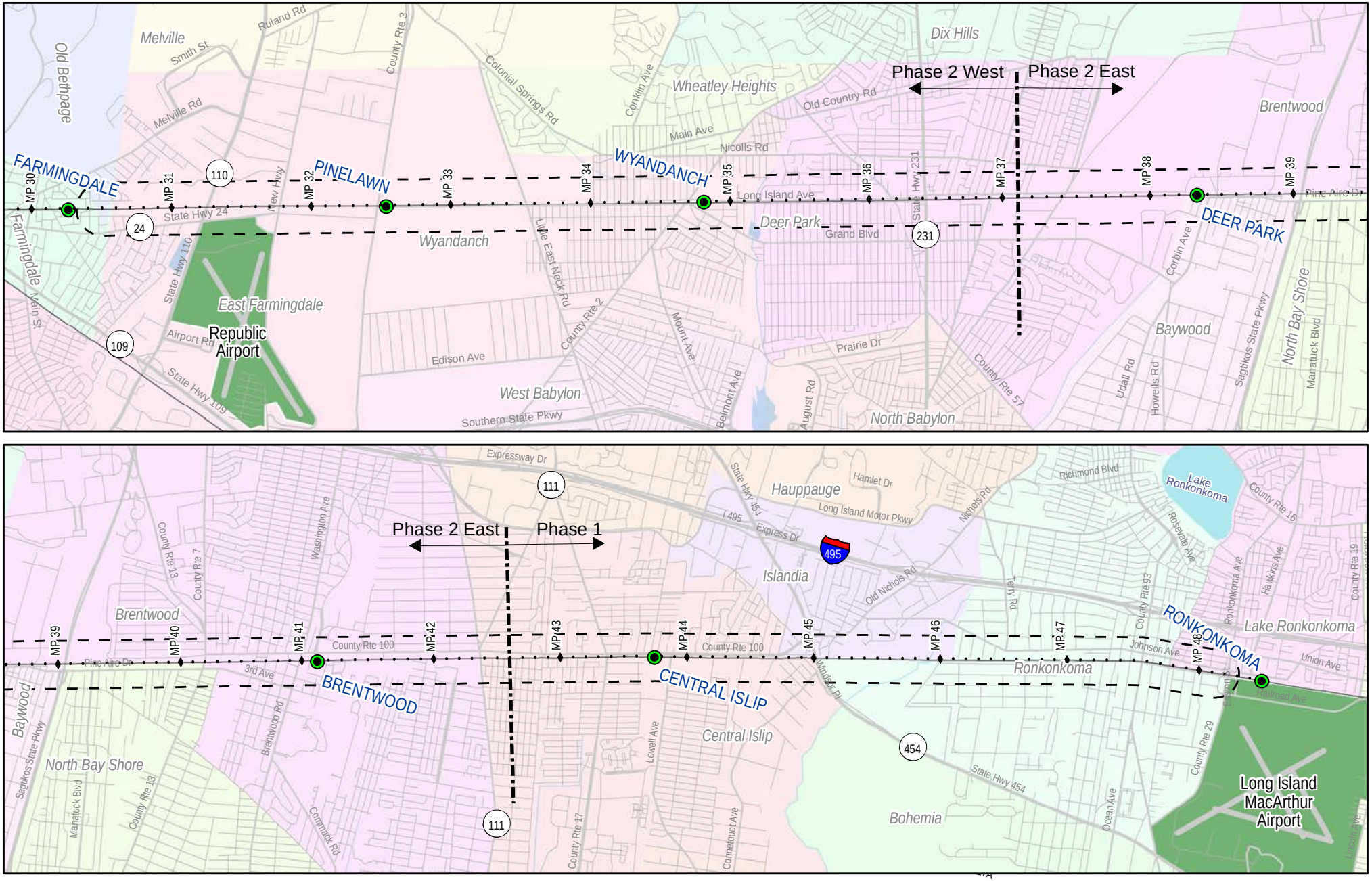
The land use study area for the proposed action extends out 1,320 feet (1/4 mile) to the north and south of the approximate centerline of the ROW, encompassing the ROW itself and other land uses within this area. As described in Chapter 2, for various disciplines the definition of study area is modified, depending on the specific technical analysis under discussion.

In various locations, unimproved roadway runs parallel to the existing track, on one side or the other, within the existing LIRR ROW, to support on-going maintenance operations. Much of the ROW is fenced on both sides, although the fencing does not necessarily coincide with the LIRR property boundary; fencing was simply placed in many areas in the most easily constructed location. Adjoining property owners have also encroached into the ROW in certain locations. Other transportation uses within the ROW include a line(s) of utility poles carrying overhead utilities.

As described in Section 1.3, *Description of the Proposed Action*, LIRR proposes to begin construction of the Double Track Project at the eastern end of the study area in Ronkonkoma and then proceed west. Therefore, for consistency, the ROW has been subdivided into the following sections (by station), beginning at Ronkonkoma Station:

- Ronkonkoma to Central Islip.
- Central Islip to Brentwood.
- Brentwood to Deer Park.
- Deer Park to Wyandanch.
- Wyandanch to Pinelawn.
- Pinelawn to Farmingdale.

A relatively small number of roadways cross the rail ROW, limiting the ability to describe features along the rail ROW in reference to existing geographic features, like roads. Therefore, in order to describe features along the ROW more accurately and for EA readers to locate them more easily, descriptions in the following sections refer to LIRR mileposts (MP). As an aid in following along the detailed descriptions, Figure 1-1, *Project Area*, illustrates mileposts along the ROW, in addition to roads and certain other geographic features.



Rail Station
LIRR Track (Milepost)
Interstate
County Route
1,320' Radius Study Area

LIRR Double Track Project
Ronkonkoma to Farmingdale

Project Area

Figure 1-1

0 1 2
Miles

1.2.1 Ronkonkoma to Central Islip

Right-Of-Way

The project area begins approximately 1,100 feet west of the LIRR Ronkonkoma Station platforms, where the Main Line presently has two tracks, on the west side of the bridge carrying Ronkonkoma Avenue/Smithtown Avenue (County Road [CR] 29) over the alignment. At this location, the Main Line has two electrified tracks.

About 300 feet west of the Ronkonkoma Avenue/Smithtown Avenue (CR 29) bridge, an electrified secondary track branches off to the north side of the Main Line, running parallel. About 400 feet east of the Pond Road grade-crossing, the Main Line returns to a single-track configuration. The electrified secondary track rejoins the Main Line about 200 feet west, still east of Pond Road. From this point, the Main Line remains single-track until a point about 1,500 feet east of Central Islip Station.

Half a mile west of Ocean Avenue (CR 93), there is a pedestrian bridge over the alignment, providing access between the neighborhoods to the north of the alignment and Ronkonkoma Middle School to the south (see Section 1.3.1 for additional detail regarding the need to modify this pedestrian bridge). At the western end of Easton Street, on the south side of the ROW, lies the eastern boundary of Connetquot River State Park Preserve. North of the ROW in this area lies Lakeland County Park. There is a pedestrian underpass toward the east side of the parks connecting between the north and south sides of the ROW. Between the parks on the north and south sides of the ROW, the Connetquot River flows under the ROW in a 48-inch culvert. Surrounding the Connetquot River, there are wetlands on both the north and south sides of the ROW (see Section 2.3.2 for additional information on these wetland areas).

Just west of the Powell Avenue/Suffolk Avenue (CR 100) intersection, the alignment returns to a two-track configuration. Central Islip Station has side platforms with a bridge providing pedestrian access between the north and south sides.

Beginning at the parking area west of Ronkonkoma Avenue/Smithtown Avenue (CR 29), there is a line of utility poles running roughly parallel to the north side of the existing track, inside the LIRR ROW. This line of poles continues the entire way to Central Islip Station.

North of the Right-Of-Way

Between the alignment and Johnson Avenue to the north, land use consists primarily of station-oriented vehicular parking for about 600 feet west of Ronkonkoma Avenue/Smithtown Avenue (CR 29). Beyond the parking area, the area in between the north side of the alignment and Johnson Avenue is generally vacant, with some scrub and a few trees, west to LIRR Substation G-35. North of Johnson Avenue in this area, land use is generally single-family residential.

Between Substation G-35 and Pine Avenue, west of Ocean Avenue (CR 93), land use is predominantly light-industrial/commercial closer to the alignment and single family residential further north. West of Pine Avenue, single-family homes predominate, up to the boundary of Lakeland County Park at LIRR milepost (MP) 46.1. In the vicinity of the ROW, Lakeland County Park consists of improved and unimproved nature trails and elevated boardwalks for access to

Honeysuckle Pond (see Section 2.4 for more information on Lakeland County Park). LIRR Substation G-34 sits about 200 feet east of MP 46.6, with access from Johnson Avenue.

Within the project area north of the alignment and north of Lakeland County Park, single family homes are found along Sampson Avenue from approximately MP 45.7 to MP 45.5. At approximately MP 45.4, there are agricultural land uses with low density residential land uses and the Lakeland County Park. LIRR Substation G-33 sits north of the alignment at MP 45.1, just west of the Lakeland County Park boundary with multi-family housing to the north. North of Old Nichols Road to Veterans Highway (State Route 454) is predominantly single family residential land use.

In between LIRR Substation G-33 and the Veterans Memorial Highway (State Route 454) overpass, neighborhood tennis court and swimming pool facilities have access from Sutton Place. From Veterans Memorial Highway (State Route 454) to LIRR MP 44.7, where Suffolk Avenue (CR 100) turns parallel to the alignment, land use is predominantly light-industrial/commercial.

Suffolk Avenue (CR 100) remains parallel to the north side of the alignment west to the Lowell Avenue grade-crossing and then to the Central Islip Station, with a narrow open strip of land in between with some trees and grassy areas. North of Suffolk Avenue, the predominant land use is single family residential with Mulligan Intermediate School on Broadway Avenue. North of Suffolk Avenue near the Central Islip Station is a small commercial area and single family residences.

South of the Right-Of-Way

Easton Street runs generally parallel to the alignment for approximately two miles. To the south side of Easton Street, between Marion Street and Raynor Street, a few houses remain, but most of the land use appears to be light-industrial. South of the light industrial uses and east of Raynor, there are heavier industrial land uses. Between Elm Avenue and the Pond Road grade-crossing, adjacent land use south of Easton Street is mostly single-family homes, with some commercial land uses along Elm Avenue. Between Pond Road and the grade-crossing at Ocean Avenue (CR 93), land use includes some commercial/light-industrial uses and also a few single-family residences.

West of Ocean Avenue (CR 93), south of Easton Street, land use remains primarily single-family homes up to the 1st Street intersection at Ronkonkoma Middle School. At the pedestrian bridge close to LIRR MP 47.0, Easton Street bends to the south and then remains basically parallel to the alignment until it ends at Connetquot River State Park Preserve close to LIRR MP 46.0. The Preserve provides approximately 50 miles of unimproved trails for horseback riding, hiking, bird watching, and cross country skiing. At its northern boundary, the Preserve abuts the railroad ROW for approximately 5,320 feet (see Section 2.4 for more information on Connetquot River State Park Preserve). West of the middle school, between the alignment and Easton Street to the eastern park boundary, there are single-family homes. The western park boundary lies in the vicinity of Veterans Memorial Highway (State Route 454).

There is a forested area on the west side of Veterans Memorial Highway (State Route 454) that narrows considerably where Windsor Place begins to parallel the alignment. South of Windsor Place, but without direct access, there is a neighborhood of single-family homes, ending at a large commercial development with some light industrial land uses where Windsor Place turns south, away from the alignment.

Between Windsor Place and Lowell Avenue, land use is predominantly large-scale commercial. In between these large-scale developments, there is also a small residential area with access from Pinewood Avenue. A small drainage basin sits in between the Gibbs Road and Powell Avenue intersections with Suffolk Avenue (CR 100) with large industrial development surrounding. Station-oriented parking lies south of Central Islip Station with vehicular access from Lowell Avenue. O'Neill Elementary School and Central Islip Recreation Village Park are located south of the station parking area.

1.2.2 Central Islip to Brentwood

Right-Of-Way

About 1,000 feet west of the end of the platforms at Central Islip Station, in the vicinity of the Suffolk Avenue (CR 100)/Church Street intersection, the Main Line transitions from two tracks back to a single-track configuration. About 500 feet east of Islip Avenue (State Route 111), a short rail spur branches off on the north side of the alignment, remaining parallel to the Main Line and ending before Islip Avenue (State Route 111). The alignment again branches into a two-track configuration about 650 feet east of Brentwood Station. There is a pedestrian bridge providing access between the north and south sides of the alignment, close to the eastern end of the station side-platforms.

Beginning about 150 feet east of LIRR MP 43.2, an unimproved maintenance access road runs along and within the north side of the LIRR ROW, extending 1.9 miles west.

About 100 feet east of LIRR MP 41.7, there is a pedestrian bridge across the alignment, providing access via walkways between the East Middle School and East Kindergarten Complex and the residential area north of Suffolk Avenue (CR 100). This pedestrian overpass was constructed to accommodate a future track south of the existing track.

The line of utility poles running roughly parallel to the north side of the existing track, inside the LIRR ROW beginning in Ronkonkoma, continues the entire way to Brentwood Station.

North of the Right-Of-Way

Between the alignment and Suffolk Avenue (CR 100) to the north, from Central Islip Station to the Carleton Avenue (CR 17) grade-crossing, there is a narrow strip of grass and trees. North of Suffolk Avenue (CR 100) in this area, land use is a mix of single-family residential and commercial.

West of Carleton Avenue (CR 17) as far as LIRR MP 42.8, Suffolk Avenue (CR 100) is further removed from the alignment, with predominantly commercial/light industrial uses adjacent to the alignment, although the occasional house and vacant parcel remain. North of Suffolk Avenue (CR 100) in this area is mixed commercial, industrial, single family residential, and multifamily residential land use.

West of the North Peters Boulevard grade-crossing, just south of the Applegate Drive/Suffolk Avenue (CR 100) intersection, a small drainage basin lies about 100 feet north of the alignment. Further to the west, beyond this basin, commercial/light industrial uses predominate, past the Islip Avenue (State Route 111) grade-crossing as far as LIRR MP 41.8. About 200 feet east of MP 41.8, there is another drainage basin about 100 feet north of the alignment. Throughout this stretch,

commercial and industrial land uses dominate between the alignment and Suffolk Avenue (CR 100). North of Suffolk Avenue (CR 100), single family residential land uses dominate.

From about LIRR MP 41.8 to about 150 feet west of MP 41.4, there is a strip of shrubs and trees on the north side of the alignment varying in width between 75 and 125 feet wide, ending at the large parking lot for the LIRR Brentwood Station. North of the strip of vegetation, land uses continue to be commercial and industrial south of Suffolk Avenue (CR 100) and single family residential north of Suffolk Avenue (CR 100).

Access to Brentwood Station parking lot is provided from both from Suffolk Avenue (CR 100) and, via a long driveway parallel to the alignment, from Brentwood Road. Land use remains predominantly commercial from the station parking lot west past the Brentwood Station. North of Suffolk Avenue (CR 100) near the Brentwood Station is agricultural, institutional, and single family residential land use.

South of the Right-Of-Way

Between Central Islip Station and Carleton Avenue (CR 17), there are single-family homes. Where this neighborhood ends, land use changes to commercial leading up to Carleton Avenue (CR 17). Directly adjacent to the west side of Carleton Avenue (CR 17) there is a large parking lot and a single-family home with access from Railroad Avenue. Further west, all the way to about 200 feet west of LIRR MP 42.0, commercial/light industrial uses predominate close to the alignment. From Carleton Avenue (CR 17) to Islip Avenue (State Route 111), single family residential land uses predominate south of Brightside Avenue. West of Islip Avenue (State Route 111) to MP 42 is a large industrial area.

West of LIRR MP 42.0 by about 200 feet, commercial/light industrial uses end at an open area largely treed, with dirt access paths from Grand Boulevard and Broadway. A single family residential area is located south of this open area. West of this area, sit the buildings and play fields of the East Middle School and East Kindergarten Complex with single family residences to the south. Further west beyond the school complex, there is a large residential townhouse development with access from 8th Street. West of 8th Street, there is a large commercial development and then Ross Memorial Park leading up to Brentwood Road. South of the commercial and multifamily land uses is a neighborhood with a mix of single family residential and commercial land uses.

1.2.3 Brentwood to Deer Park

Right-Of-Way

West of Brentwood Station, the Main Line continues in a two-track configuration beyond the Brentwood Road grade-crossing. At about LIRR MP 39.6, a secondary track branches off to the north, remaining parallel to the two Main Line tracks. From this secondary track, a freight spur branches off at MP 39.3, skirting the edge of the parkland east of the Sagtikos Parkway. The alignment continues west in a two-track configuration underneath the Sagtikos Parkway bridge. The secondary track ends just east of MP 38.8, where another freight spur, skirting the western edge of the parkland west of the Sagtikos Parkway, joins the Main Line from the north. The alignment then remains in a two-track configuration west into Deer Park Station.

Deer Park Station has side-platforms with a pedestrian bridge providing access between the north and south sides of the alignment near the middle of the station.

The line of utility poles running roughly parallel to the north side of the existing track, inside the LIRR ROW beginning in Ronkonkoma, continues the entire way to Deer Park Station.

North of the Right-Of-Way

In the short stretch between the western end of Brentwood Station and Brentwood Road, land use is commercial. Land use remains predominantly commercial south of Suffolk Avenue (CR 100) from Brentwood Road, past the 4th Street, and 2nd Street grade-crossings. North of Suffolk Avenue (CR 100) in this area there are some commercial developments, but the area is mainly single family residential. South of Suffolk Avenue (CR 100), between 2nd Street and Lukens Avenue, there a few single-family homes. Continuing west, land use returns to commercial/light-industrial as far as 300 feet west of Wicks Road (CR 13). At this point, single-family homes predominate, with access from Suffolk Avenue (CR 100) to the north, until about 150 feet west of the Eisenhower Avenue/ Suffolk Avenue (CR 100) intersection. Between this point and the forested area east of the Sagtikos Parkway, there is a large industrial facility. In this area north of Suffolk Avenue, single family residential land uses predominate, except for a forested area between Adams and Grant Avenues and commercial development along Wicks Road.

West of Sagtikos Parkway, the forested area continues until the end of the secondary track, where another freight spur joins the alignment (from the north), just east of MP 38.8. Between MP 38.8 and the Executive Drive grade-crossing lies Heartland Golf Park. North of the golf park is an industrial complex.

West of Executive Drive, north of the station, are commuter parking lots with access from Long Island Avenue adjacent to the alignment and an empty forested lot north of long Island Avenue.

South of the Right-Of-Way

Ross Memorial Park fills the short stretch between the western end of Brentwood Station and Brentwood Road. Continuing west to 3rd Street, land use remains commercial. The block between 3rd and 2nd Street has a few single-family homes and an area covered by trees adjacent to the alignment. South of 2nd Avenue is a neighborhood of single family homes.

Just west of 2nd Street, a light-industrial facility remains between the ROW and 2nd Avenue. South of 2nd Avenue lie the ball fields of Gil Hodges Park and south of 3rd Avenue is single family residential. Across 1st Street to the west, the Brentwood Recreational Center/Brentwood Little League ball fields sit, with access from 3rd Avenue. Beyond the fields north of 3rd Avenue/Pine Aire Drive, land use returns to a mix of commercial/light-industrial, which continues across the Wicks Road (CR 13) grade-crossing, all the way to the narrow forested area surrounding the Sagtikos Parkway. South of Pine Aire Drive, land use is single family residential from Stein Drive to Savoy Avenue, where there is a narrow stretch of trees. Single family residential land uses again predominate west of the treed area to west of Princess Avenue where there is another narrow stretch of trees, then an industrial area followed by more single family residential development to the Sagtikos Parkway.

South of the alignment and west of the parkway, land use is commercial/industrial with access from Pine Aire Drive. South of Pine Aire Drive between the parkway and west of North Thompson Drive is a residential neighborhood, then industrial land uses. In the vicinity of Lincoln Avenue, Pine Aire Drive curves closer and parallel to the south side of the alignment. Land use south of Pine Aire Drive is predominantly commercial/light-industrial continuing past Deer Park Station.

1.2.4 Deer Park to Wyandanch

Right-Of-Way

West of Deer Park Station, the alignment continues in a two-track configuration. A freight siding branches off to the south about 200 feet east of LIRR MP 38.0. At MP 37.9, the Main Line returns to a single electrified track.

About 150 feet west of the Commack Road (CR 4) grade-crossing, a freight siding branches off steeply to the south, into the PC Richards site. Another 700 feet further west, a secondary track branches off to the south, remaining parallel to the Main Line. This double-track configuration continues all the way to about 100 feet west of LIRR MP 36.3. Between a point about 100 feet west of MP 37.1 and about 250 feet east of the Carlls Path grade-crossing, an additional parallel secondary track branches off to the south of the longer secondary track adjacent to the Main Line. In between the end of the shorter secondary track and a point about 75 feet east of Carlls Path, another short freight siding branches off to the southeast, curving around an electrical substation.

Continuing west from the rail bridge over Deer Park Avenue (State Route 231), the alignment continues in a two-track configuration until the vicinity of the Acorn Street/N. 1st Street intersection, where the alignment again reverts to a single track.

Beginning just west of LIRR MP 38.0, an unimproved access road runs along the north side of the ROW, extending 1.4 miles west to a point about 100 feet west of MP 36.6.

Adjacent to the Long Island Avenue/W. 7th Street intersection, there is a pedestrian tunnel across the alignment. At the Long Island Avenue/W. 13th Street intersection, a pedestrian bridge also crosses the alignment. Between the Adams Street and Richbern Court intersections with Acorn Street, the Carlls River traverses in a single, continuous culvert under Acorn Street, the LIRR ROW, and Long Island Avenue.

Wyandanch Station has a single, side-platform on the north side of the alignment. About 200 feet east of the station, a pedestrian bridge provides access between Acorn Street to the north of the alignment and Long Island Avenue to the south of the alignment. This pedestrian overpass was constructed to accommodate a future track south of the existing track.

The line of utility poles running roughly parallel to the north side of the existing track, inside the LIRR ROW beginning in Ronkonkoma, continues the entire way to Wyandanch Station.

North of the Right-Of-Way

North of the alignment, there is an open area with some shrubs and trees between the station parking fields and Long Island Avenue as it curves to the southwest and then becomes parallel with

the alignment. North of Long Island Avenue lies the Edgewood Oak Brush Plains Preserve, a New York State conservation area. Between Long Island Avenue and the alignment is a linear area covered in shrubs and trees. East of the Commack Road (CR 4) grade-crossing, land use becomes commercial/light-industrial. Between Commack Road (CR 4) and the Carlls Path grade-crossing, further to the west, land use is commercial/light-industrial/industrial, albeit on a smaller scale compared to that on the south side of the alignment.

Between Carlls Path and the rail bridge over Deer Park Avenue (State Route 231), land use north of the alignment is predominantly commercial/light-industrial. And single family residential north of Long Island Avenue. There is a baseball field north of Long Island Avenue just before the Deer Park Avenue (State Route 231) intersection.

Acorn Street moves in close to the north side of the alignment just west of Deer Park Avenue (State Route 231). In between the alignment and Acorn Street, a narrow strip of scrub and occasional trees runs from Deer Park Avenue (State Route 231) to Wyandanch Station. As part of the Wyandanch Rising project, Acorn Avenue is proposed to be reconfigured immediately north of the existing station area, therefore any such reconfiguration is not part of the Double Track project.

North of Acorn Street, between Deer Park Avenue (State Route 231) and Half Hollow Road, land use is predominantly commercial. On the west side of Half Hollow Road is the State Trooper Fabio Buttitta Memorial Park recreational facility with outdoor basketball and tennis courts, a roller hockey rink, and other facilities. Further west, beyond Eastern Avenue, land use is predominantly commercial, industrial and light-industrial all the way to the Straight Path (CR 2) grade-crossing. North of Adams Street is single family residential.

In this same area, between Adams Street and Richbern Court, there is a pond fed by the Carlls River and open space covered with trees and scrub. Just before reaching Straight Path (CR 2), the parking fields for Wyandanch Station have access both from Acorn Street and Straight Path (CR 2).

South of the Right-Of-Way

Land use in this area is large-scale industrial/commercial. Further to the west, about 300 feet beyond MP 37.9, lies the Tanger outlet, a large-scale retail development surrounded by extensive parking lots. Large commercial development fills the remaining area between the Tanger site and the grade-crossing at Commack Road (CR 4). Adjacent to the west side of Commack Road (CR 4) lies the PC Richards site. West of PC Richards, as far as Carlls Path, land use remains commercial/light-industrial.

There is a commercial facility adjacent to and west of Carlls Path, then land use changes to a residential apartment development with access primarily from Golden Avenue. At the western end of Golden Avenue there are a couple of industrial/commercial uses adjacent to the alignment, then the large John F Kennedy Intermediate School campus. In the short distance between the school campus and Deer Park Avenue (State Route 231), land use is again commercial/light-industrial. South of Lake Avenue is a residential neighborhood until the final block before Deer Park Avenue, (State Route 231) where the land is again commercial.

In this same area, there is commercial development adjacent to Deer Park Avenue (State Route 231), after which Long Island Avenue also moves in close to the alignment on the south. Beyond that site, a narrow strip of scrub and occasional trees extends all the way to the Straight Path (CR 2) grade-crossing, just beyond the western end of Wyandanch Station. South of Long Island Avenue, land use is predominantly single family residential up to Geiger Memorial Park. West of the park, land use is largely commercial/light-industrial the remaining distance to Wyandanch Station at Straight Path (CR 2).

1.2.5 Wyandanch to Pinelawn

Right-Of-Way

About 100 feet west of Wyandanch Station, the alignment crosses Straight Path (CR 2) in a single-track configuration and, almost immediately, a secondary track branches off to the north, remaining parallel to the Main Line. This secondary track continues west to the vicinity of 24th Street. Freight sidings branch off to the north of this secondary track near the Merritt Avenue intersections with 17th Street and with 19th Street.

Beginning about 250 feet east of LIRR MP 34.2, an unimproved access road runs along the north side of the ROW, extending west about 0.6 miles to Little East Neck Road North (CR 95).

Adjacent to the Long Island Avenue/27th Street intersection, there is a pedestrian bridge across the alignment. This pedestrian bridge was constructed to accommodate a future track south of the existing track.

Pinelawn Station consists of a single side-platform 250 feet east of Wellwood Avenue (CR 3). The platform, about 180 feet in length, sits on the south side of the Main Line, accommodating access to two passenger railcars.

The line of utility poles running roughly parallel to the north side of the existing track, inside the LIRR ROW beginning in Ronkonkoma, continues to the west side of Little East Neck Road North (CR 95), where it crosses to the south side of the ROW, remaining on LIRR property as far as New Highway. About 400 feet east of New Highway, a second line of utility poles begins paralleling the existing inside the north boundary of the ROW. After crossing New Highway, both lines of utility poles continue west to Broad Hollow Road (State Route 110).

North of the Right-Of-Way

From Straight Path (CR 2), Merritt Avenue parallels the alignment in relatively close proximity. Between Straight Path (CR 2) and the 18th Street grade-crossing, there is a strip of station-oriented parking. West of 18th Street, there is a small paved area, used informally as parking for large trucks and cars. Beyond this area, there is a narrow strip of scrub and trees extending to 27th Street. North of Merritt Avenue are a mix of commercial, industrial, residential, and institutional land uses from Straight Path to North 21st Street. North of Washington Avenue is single family residential land use.

West of 21st Street, as far as 28th Street, land use is predominantly single-family residential. West of 28th Street, as far as the Little East Neck Road North (CR 95) grade-crossing, there is a large open area extending north from the alignment variously covered with grasslands, scrub, and trees.

Adjacent to the alignment on the north, west of Little East Neck Road North (CR 95), there are extensive cemetery grounds of the Pinelawn Memorial Park and Gardens Mausoleums, extending beyond the Pinelawn Station to the Wellwood Avenue (CR 3) grade-crossing.

South of the Right-Of-Way

From Straight Path (CR 2) west, Long Island Avenue parallels the alignment in relatively close proximity. Between Straight Path (CR 2) and the 18th Street grade-crossing, there is a strip of station-oriented parking. West of 18th Street, there is a small unpaved area, used informally as parking. Beyond these areas, there is a narrow strip of scrub and trees extending to 27th Street.

Between Straight Path (CR 2) and 23rd Street, on the south side of Long Island Avenue, land use is predominantly commercial/light-industrial north of Garden City Avenue. South of Garden City Avenue from South 19th Street is single family residential. West of 23rd Street, as far as Little East Neck Road North (CR 95), most blocks are residential, although a few have commercial uses fronting on Long Island Avenue with residential behind, accessed via the numbered streets. West of South 32nd Street and south of Garden City Avenue are the Olive Middle School and Wyandanch Memorial High School and athletic fields.

West of Little East Neck Road North (CR 95), Long Island Avenue runs parallel and close to the alignment. The Colonial Springs Golf Club lies adjacent to the south side of Long Island Avenue, ending at additional cemetery grounds before reaching Wellwood Avenue (CR 3).

1.2.6 Pinelawn to Farmingdale

Right-Of-Way

West of Pinelawn Station, the alignment continues in a single-track configuration, crossing Wellwood Avenue (CR 3), where Long Island Avenue ends. Just west of LIRR MP 32.4, a secondary track branches off to the north, remaining parallel to the Main Line. About 550 feet east of the New Highway grade-crossing, a siding branches off to the north, passing through an industrial facility before ending in a rail yard parallel to New Highway. About 200 feet and 600 feet west of the New Highway grade-crossing, two other short sidings branch off the secondary track to the northeast. About 450 feet further west of the second siding, the secondary track rejoins the single-track Main Line. At LIRR MP 31.5 [approximately 1,250 feet east of Broad Hollow Road (State Route 110)], the Main Line branches into a two-track configuration. The western end of the study area is at LIRR MP 30.5, about 800 feet east of the platforms at Farmingdale Station.

Beginning at New Highway, an unimproved access road runs along the south side of the ROW, extending 0.3 miles to a point about 200 feet west of MP 31.5.

North of the Right-Of-Way

Between Wellwood Avenue (CR 3) and the industrial facility fronting on New Highway, cemetery/mausoleum uses continue to the north. Further west, between New Highway and MP 30.8, land use is commercial/light-industrial/industrial. Also in this area, about 200 feet west of LIRR MP 31.6, there is a small drainage basin adjacent to the alignment in an industrial site. There is another drainage basin adjacent to the ROW on the east side of a multi-family residential area with

access from Jervis Avenue. North of Jervis Avenue is a neighborhood of single family homes. At the west end of this residential development, the study area ends.

South of the Right-Of-Way

West of Wellwood Avenue (CR 3), Conklin Street runs parallel to the alignment, about 300 feet to the south. Between Wellwood Avenue (CR 3) and New Highway, this strip of open land is variously covered in grassland, scrub, and trees. Just east of New Highway, there is a large paved area, used informally as a parking lot. On the south side of Conklin Street in this area, land use is again cemetery related. West of New Highway, between the alignment and Conklin Street, land use is industrial. The northern end of Republic Airport abuts the south side of Conklin Street in this area. Between the airport and the end of the study area, land use is commercial along the south side of Conklin Street up to Broad Hollow Road (State Route 110).

From Broad Hollow Road (State Route 110) to Vogel Way, in between the ROW and Conklin Street (State Route 24) to the south, land use is commercial/light-industrial/industrial. South of Conklin Street is an empty lot adjacent to Broad Hollow Road, then commercial land uses. From Birch Avenue to the end of the study area south of Conklin Street is single family residential land use.

West of the Vogel Way/Eastern Parkway intersection, land use adjacent to the south side of the ROW is light-industrial/industrial. South of Eastern Parkway in this area, some residential areas mix in with this light-industrial/industrial land use. Just west of the Eastern Parkway/Denton Place intersection, the study area ends.

1.3 DESCRIPTION OF THE PROPOSED ACTION

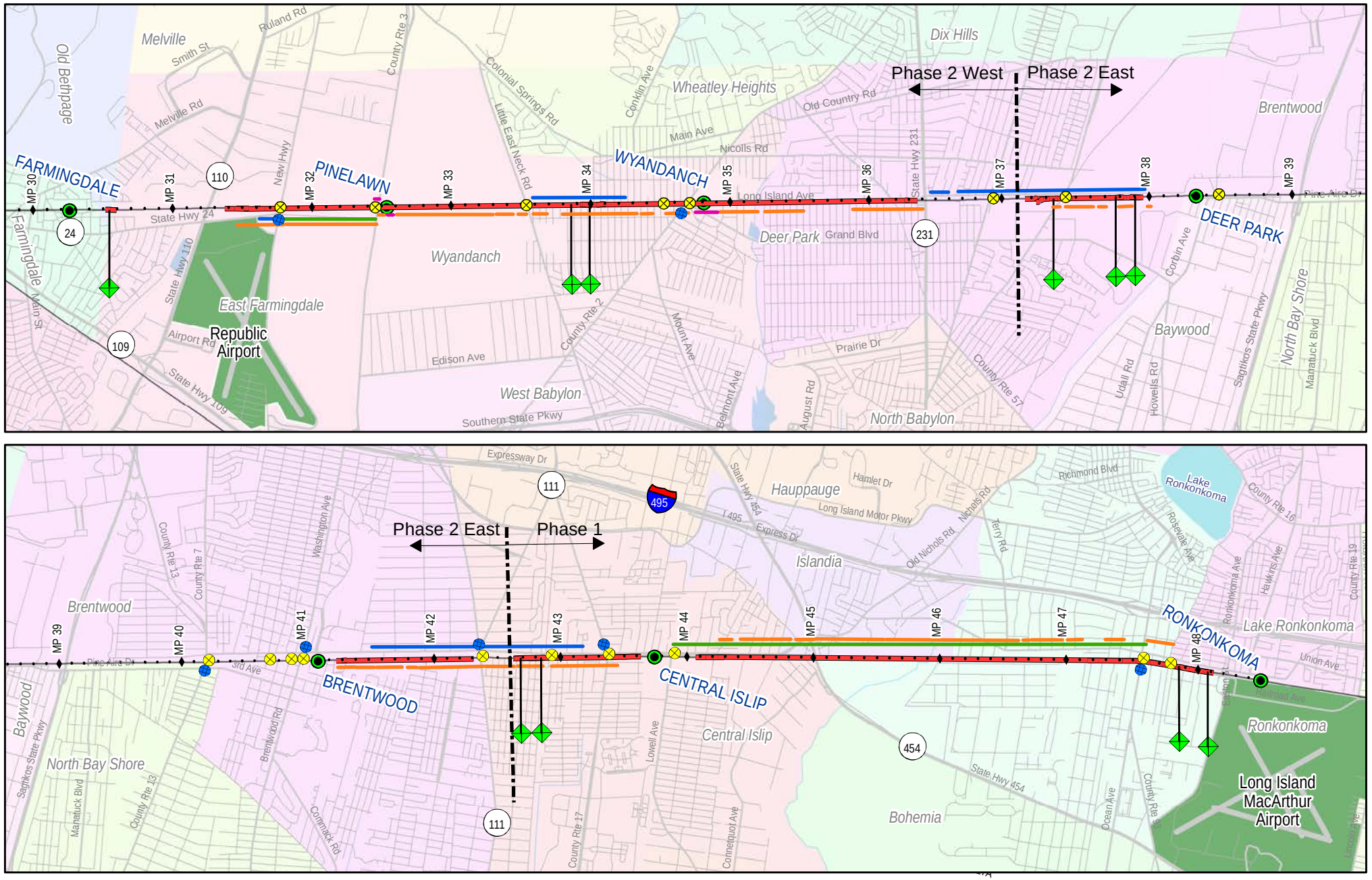
The proposed action, shown in Figure 1-2, *Proposed Action*[1] includes the addition of a second track in specific segments of the project ROW between Ronkonkoma and Farmingdale, where the current configuration of the Main Line has a single track. With the potential exception of minor temporary work during construction (refer to Section 2.9.2 regarding potential temporary access roads), the construction of the second track can be accommodated entirely within LIRR ROW, owned/used by LIRR for rail transportation use since 1834. The proposed action would be constructed in two phases:

- Phase 1 – West of Ronkonkoma Station (MP 48.05) to east of Islip Avenue (State Route 111) (MP 42.50).
- Phase 2 – East of Islip Avenue (State Route 111) (MP 42.50) to east of Farmingdale Station (MP 30.52).

The second track would be located north of the existing single track from Ronkonkoma Station to Central Islip Station and south of the existing track from Central Islip Station to Farmingdale Station. The project is currently planned to be built from the easternmost portion, just west of Ronkonkoma Station, towards the west, just east of Farmingdale Station. New maintenance access roads alongside the new track within the existing ROW are proposed between the Ronkonkoma and Central Islip Stations, the area east of the Wyandanch Station, and again west of the Pinelawn Station. Three new side-platforms are proposed, one at Wyandanch Station and two at Pinelawn Station. New retaining walls are proposed in locations through much of the ROW, from west of the Ronkonkoma Station to west of the Wyandanch Station (see the subsection on Retaining Walls in Section 2.9.2 for photographs of typical retaining walls and Appendix K to ascertain the height and length of retaining walls along the ROW).

Phase 1 is scheduled for construction beginning in the Spring of 2014 through the end of 2016. Phase 2 would be constructed 2016 – 2018. This sequential approach is a result of a number of factors, including availability of funding and railroad support personnel. A single civil construction contract would likely be awarded for each of the two phases, however, based on economic benefit, different ways of packaging civil work may be considered. Supplemental construction packages would be developed, as needed. These construction packages could include, but are not limited to railroad system equipment procurement, specialty track fabrication, work to be performed by railroad personnel, and early lead construction, such as utility adjustment.

[1] Figure 1-2 presents a graphical depiction of the different elements of the proposed action. Because of the 17.9-mile length of the project, these elements could not be presented to scale, inside the ROW. However, all elements of the proposed action would be constructed within existing LIRR ROW.



Rail Station
LIRR Track (Milepost)
Interstate
County Route
Grade-Crossing
Intersection Improvement

Crossover and Other Special Track Features
Track Being Added / Sidings Being Relocated
New Platforms
Existing Access Road
New Access Road
Retaining Walls

LIRR Double Track Project
Ronkonkoma to Farmingdale

Proposed Action

Figure 1-2

0 1 2
Miles

Consistent with Section 1.2, *Description of the Existing Right-of-Way and Surrounding Land Use*, the ROW is subdivided into the following sections between LIRR stations:

- Ronkonkoma to Central Islip (Phase 1).
- Central Islip to Brentwood (Phase 1/Phase 2).
- Brentwood to Deer Park (Phase 2).
- Deer Park to Wyandanch (Phase 2).
- Wyandanch to Pinelawn (Phase 2).
- Pinelawn to Farmingdale (Phase 2).

1.3.1 Ronkonkoma to Central Islip

Proceeding west from Ronkonkoma Station, project construction would begin between MP 48.1 and 48.2, where the Main Line already has two tracks. Between this location and where the existing double-track section begins east of Central Islip Station, the new second track would be constructed north of the existing track. At the Pond Road grade-crossing, addition of the second track would necessitate raising the profile of the southbound roadway approach to the grade-crossing and relocation of the crossing gate and crossing signal on the north side of the ROW. At the Ocean Avenue (CR 93) grade-crossing, addition of the second track would necessitate relocation of the crossing gate and crossing signal on the north side of the ROW. To facilitate safe, smooth roadway vehicle operations traversing this grade-crossing, the existing track in this vicinity also needs to be reconstructed, in order to reduce the track super-elevation (the tilt of the tracks).

West of Ocean Avenue (CR 93), an unpaved maintenance access road within LIRR ROW would be created north of the new second track, extending to Lowell Avenue, just east of Central Islip Station. No work would be required at the Lowell Avenue grade-crossing. Adjacent to Ronkonkoma Middle School on Easton Street, construction of the proposed second track would necessitate modification of the existing pedestrian bridge.

The proposed action incorporates retaining walls, where required due to change in elevation between track level and the surrounding area, in this section of the ROW (see Appendix K for wall heights and lengths by location). Adjacent to Lakeland County Park, where the Connetquot River flows under the ROW in a culvert, the proposed action necessitates the permanent loss of approximately 0.15-acre of freshwater wetlands, within the LIRR ROW, in order to construct the necessary retaining fill wall and second track.

In order to shorten the duration of construction in this area, a project alternative involving the construction of a temporary access road across the southernmost part of Lakeland County Park, where the park abuts the LIRR ROW, is also being analyzed. As discussed in Section 1.4.1, *Applicable Permits and Approvals*, the southeastern portion of the park, owned by Suffolk County, is a Section 6(f) resource, since certain park improvements in that area of the park were funded through Section 6(f) of the federal Land and Water Conservation Fund Act [Section 6(f)]. The portion of the park covered under Section 6(f) extends approximately 2,084 feet along the ROW from the eastern boundary of the park. The southwestern portion of the park is owned by the Town of Islip, and extends an additional 3,082 feet along the ROW, but is not a mapped Section 6(f) resource. This temporary access road would temporarily impact less than 0.35-acres of freshwater wetlands during

construction of the proposed action. See the subsections on Temporary Access Roads and Drainage in Section 2.9.2, *Construction Impacts* and Section 2.3, *Natural Resources*, for additional details.

1.3.2 Central Islip to Brentwood

The existing double track from west of the Central Islip Station parking lot approximately 200 feet east of MP 43.6 to just east of MP 43.4 would be reconstructed to tie in the new second track and to improve rail operations. Beginning just east of MP 43.4 [east of the Carleton Avenue (CR 17) grade-crossing] to the existing double-track section east of Brentwood Station, a new second track would be constructed south of the existing track. The boundary between construction Phase 1 and Phase 2 occurs at MP 42.5. At the Carleton Avenue (CR 17), North Peters Boulevard, and Islip Avenue (State Route 111) grade-crossings, relocation of the crossing gates and crossing signals on the south side of the ROW would be required. Relocation of a traffic signal post/arm would also be required at the Islip Avenue (State Route 111) grade-crossing on the south side of the ROW.

The proposed action incorporates retaining walls, where required due to change in elevation between track level and surrounding area, in this section of the ROW (see Appendix K, *Retaining Wall Heights and Lengths* for wall heights and lengths by location).

About 650 feet east of Brentwood Station, where the current alignment branches into a two-track configuration, the existing track would be rebuilt to tie in the new second track.

1.3.3 Brentwood to Deer Park

Between Brentwood and Deer Park stations, the ROW currently has two tracks. Therefore, the proposed action does not include any rail construction in this section. However, there would be minor modifications at the Wicks Road (CR 13)/Suffolk Avenue (CR 100) intersection in order to improve traffic operations (see Appendix D, *Traffic and Transportation Technical Report*). No work would be required at the Brentwood Road, 4th Street, 2nd Street, Wicks Road (CR 13), and Executive Drive grade-crossings.

1.3.4 Deer Park to Wyandanch

From approximately MP 38.0 to the vicinity of MP 37.2 west of Commack Road (CR 4), a new second track would be constructed south of the existing track.

At Commack Road (CR 4), relocation of a traffic signal post/arm, the crossing gate, and the crossing signal on the south side of the ROW would be required. West of Commack Road (CR 4), the proposed action includes the reconstruction and relocation of the siding into the PC Richards site, south of the ROW, due to the addition of the new second track south of the existing Main Line track. No work would be required at the Carlls Path grade-crossing.

About 450 feet west of Deer Park Avenue (State Route 231), a new second track would be constructed south of the existing track, extending approximately 4.9 miles, well beyond Wyandanch Station. Just west of MP 36.3, where the mainline presently returns to a single-track configuration, the existing track would be reconstructed to remove the existing switch.

At Wyandanch Station, the side-platform on the north side of the existing track would remain. A new side-platform would be constructed south of the proposed second track, opposite the existing platform, adjacent to Long Island Avenue.

The proposed action incorporates retaining walls, where required due to change in elevation between track level and surrounding area, in this section of the ROW (see Appendix K for wall heights and lengths by location).

1.3.5 Wyandanch to Pinelawn

The new second track, south of the existing track, would continue west of Wyandanch Station beyond Pinelawn Station. At the Straight Path (CR 2), 18th Street grade-crossings, and Little East Neck Road North grade-crossings, relocation of the crossing gates and crossing signals on the south side of the ROW would be required.

The proposed action incorporates retaining walls, where required due to change in elevation between track level and surrounding area, in this section of the ROW (see Appendix K for wall heights and lengths by location).

At Pinelawn Station, a new westbound platform, north of the existing track, would be constructed on the west side of Wellwood Avenue (CR 3). A new eastbound platform, south of the new second track, would be constructed in the vicinity of the existing platform, east of Wellwood Avenue (CR 3). The existing platform would also be removed as part of the proposed action.

1.3.6 Pinelawn to Farmingdale

South of the existing track, the new second track would continue west of Pinelawn Station to a point about 150 feet west of MP 31.4. At the Wellwood Avenue (CR 3) grade-crossing, relocation of a traffic signal post/arm, the crossing gate, and the crossing signal on the south side of the ROW would be required. Beginning at Wellwood Avenue (CR 3), a new unimproved maintenance access road would run along the south side of the ROW to New Highway. At the New Highway grade-crossing, relocation of the crossing gate and crossing signal on the south side of the ROW would be required.

In the vicinity of MP 31.6, approximately 250 feet of the existing track would be reconstructed in order to accommodate the new second track and to improve rail operations. About 200 feet further west, where the existing Main Line track branches into a two-track configuration, another 500 feet of existing track would be reconstructed in order to eliminate the existing switch and to accommodate the potential future re-opening of a Republic Station (not part of this project).

1.3.7 Daily Rail Operations

Passenger Operations

There are currently 74 revenue and non-revenue passenger trains operating through the ROW on an average weekday. Due to the single-track operation along the corridor, which limits the ability to

cycle trains between Ronkonkoma and Farmingdale, LIRR typically operates trains in one direction during the heavy demand morning and evening peak periods.

During the morning peak period, the majority of trains begins in Ronkonkoma and travel toward the Farmingdale end of the ROW (continuing into NYC). During the evening peak period, the majority of trains travel toward Ronkonkoma (originating in NYC). There is virtually no reverse peak service during the AM and PM Peak periods because of the high one-way passenger volumes and the necessity of operating the existing single track in one direction only during heavy demand periods.

After the Double Track Project is completed, LIRR will have greater operational flexibility along the Ronkonkoma Branch, and will be able to provide more robust off-peak service [half-hourly service along the branch in each direction (two trains per hour in each direction)] as well as reverse peak service. The additional off-peak service together with improvements in the reverse peak direction would add 22 additional trains, for a total of 96 trains through the Ronkonkoma Branch on a daily basis.[2]

Freight Operations

New York and Atlantic Railway (NYA) is the independent contractor that provides freight operations throughout the LIRR network, including the Main Line between Ronkonkoma and Farmingdale, as well as locations east of Ronkonkoma. NYA currently serves customers through the existing single track corridor using freight trains that operate during off-peak periods.

Even with an anticipated increase in freight operations, the second track is not required to accommodate that growth. LIRR estimates that the existing capacity for freight train movements within LIRR's operating schedule is approximately 4,000 average eastbound carloads monthly (or 8,000 eastbound carloads with a westbound return), based on three round trips per day plus weekend movements (see Section 2.8.2). Annualized, this would allow the movement of approximately 48,000 eastbound car loads (or 96,000 east-bound carloads with westbound returns). In 2012, NYA delivered approximately 10,305 freight cars to customers east of Farmingdale Station, which totaled 20,610 carloads when including empty cars returned. These represent less than 25 percent of the operating capacity available for freight movement.

In addition, LIRR analyzed all eastbound freight moves that occurred in January 2013, accounting for 925 carloads, or approximately 25 percent of eastbound carload capacity through the corridor. Therefore, based on both an annual and monthly analysis, the current freight schedule is operating at approximately 25 percent of carload capacity through the corridor. As a result, ample capacity is available to serve future growth in freight carload demand without the Double Track project.

[2] The East Side Access Project will result in additional train traffic along the Ronkonkoma Branch. The potential impacts of this project are discussed in the Final Environmental Impact Statement for the project dated March 2001.

1.4 PERMITS AND APPROVALS

The following federal, state, county, and local permits and approvals would be secured in connection with construction of the proposed action.

1.4.1 Applicable Permits and Approvals

Federal

United States Army Corps of Engineers (USACE) Section 404 Permit. This permit is required for placement of fill material and/or mechanized land clearing, ditching, draining, channelization, or other excavation activities into waters of the United States, including wetlands adjacent to those waters. In New York, USACE jurisdiction includes all tidal and navigable waters of the United States, and freshwater wetlands that are not isolated. As the proposed action would require disturbance within non-isolated wetlands, a USACE Section 404 permit would be required.

Under the USACE Section 404 permit program, the proposed action is being designed to meet all conditions of Nationwide Permit (NWP) 14 for Linear Transportation Projects, including the condition that the project cannot impact more than ½ acre of waters of the United States.

National Park Service (NPS) approval under Section 6(f). This approval is required for temporary use of parkland that has received funding under the Land and Water Conservation Fund Act [Section 6(f)]. The eastern portion of Lakeland County Park is a Section 6(f) resource. In the event a possible alternative involving the construction of a temporary access road along the LIRR ROW in the eastern portion of Lakeland County Park is pursued, NPS approval would be necessary. The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) has the responsibility for coordinating NPS review and approval under Section 6(f) and would need to concur with Section 6(f) findings.

State

NYSDEC Freshwater Wetlands Permit. The proposed action would require construction which would alter freshwater wetlands and adjacent areas associated with the Connetquot River. Therefore, the project may require a NYSDEC Freshwater Wetlands Permit, subject to the statutory exception in the PAL for certain transportation projects. Notwithstanding the potential applicability of the PAL exemption, LIRR would adhere to applicable NYSDEC freshwater wetland requirements.

~~**NYSDEC Protection of Waters Permit.** The Protection of Waters permit program regulates activities that occur in or near protected waters which are navigable or have been identified and mapped. Generally, regulated activities include any alteration or excavation of the bed or banks of a protected waterway (river, stream, canal) or any excavation or fill in a protected body of water or watercourse. A watercourse is the area of land upon which the flow of water is ordinarily confined due to the contour of the land. The Connetquot River is a protected watercourse. Implementation of the proposed action would require construction in the Connetquot River. Therefore, the project would require a Protection of Waters permit.~~

NYSDEC Section 401 Water Quality Certification (WQC). Section 401 of the Clean Water Act requires applicants for a federal permit to obtain a WQC indicating that the proposed project will not violate water quality standards. WQC is required for placing fill in waters of the United States

NYSDOT Approval to work in roadway right-of-way. The NYS Department of Transportation oversees the operations and maintenance of the state highway system. Implementation of the proposed action would require construction within state highway ROW for improvements at certain grade-crossings and adjacent roadways. Therefore, the project would require NYSDOT approval to work in roadway ROW.

NYSDOT Approval of Physical Alterations to Grade-Crossings. The NYS Department of Transportation must approve physical alterations of railroad grade-crossings. Implementation of the proposed action would require reconstruction or modification of ~~12~~ certain grade-crossings along the ROW. NYSDOT approval would be required prior to making certain of these physical alterations.

New York State Office of Parks, Recreation and Historic Preservation (OPRHP) concurrence under Section 6(f). This concurrence is required for temporary use of parkland that has received funding under the Land and Water Conservation Act [Section 6(f)]. The eastern portion of Lakeland County Park is a Section 6(f) resource. In the event a possible alternative involving the construction of a temporary access road along the LIRR ROW in the eastern portion of Lakeland County Park is pursued, OPRHP has the responsibility for coordinating NPS review and approval under Section 6(f) and would need to concur with Section 6(f) findings.

County

Suffolk County Department of Public Works. The Suffolk County Department of Public Works oversees the operations and maintenance of the county roadway system. Implementation of the proposed action would require construction within county roadway ROW for improvements at certain grade-crossings and adjacent roadways. Therefore, the project would require Suffolk County Department of Public Works approval to work in roadway ROW. LIRR would work with Suffolk County DPW to implement signal changes and other measures to assure the safe and efficient flow of traffic at grade-crossings of county roads affected by the proposed action.

Suffolk County Department of Parks, Recreation and Conservation. Suffolk County owns the eastern portion of Lakeland County Park and the Suffolk County Department of Parks, Recreation and Conservation (SCDPRC) has jurisdiction over this portion of the Park. In the event a possible alternative involving the construction of a temporary access road along the LIRR ROW in the eastern portion of Lakeland Park is pursued, this element of the project would require coordination with and approval from SCDPRC.

Suffolk County Soil and Water Conservation District. Implementation of the proposed action would require certification of a Soil Erosion and Sediment Control Plan by the Suffolk County Soil and Water Conservation District.

Local

Town of Brookhaven Highway Department. The Town of Brookhaven Highway Department oversees the operations and maintenance of the local roadway system within the town. Implementation of the proposed action would require construction within local roadway ROW for improvements at certain grade-crossings and adjacent roadways. LIRR would work with the town to

implement signal changes and other measures to assure the safe and efficient flow of traffic at ROW grade-crossings of municipal roads affected by the proposed action.

Town of Islip. The Town of Islip owns the western portion of Lakeland County Park and has jurisdiction over this portion of the Park. In the event a possible alternative involving the construction of a temporary access road along in the LIRR ROW in the western portion of Lakeland Park is pursued, this element of the project would require coordination with and approval from the Town of Islip.

Town of Islip Department of Public Works. The Town of Islip Department of Public Works oversees the operations and maintenance of the local roadway system within the town. Implementation of the proposed action would require construction within local roadway ROW for improvements at certain grade-crossings and adjacent roadways. LIRR would work with the town to implement signal changes, limited parking restrictions, and other measures to assure the safe and efficient flow of traffic at ROW grade-crossings of municipal roads affected by the proposed action.

Town of Babylon Department of Public Works. The Town of Babylon Public Works Department oversees the operations and maintenance of the local roadway system within the town. Implementation of the proposed action would require construction within local roadway ROW for improvements at certain grade-crossings and adjacent roadways. LIRR would work with the town to implement signal changes and other measures to assure the safe and efficient flow of traffic at ROW grade-crossings of municipal roads affected by the proposed action.

1.5 AGENCY AND PUBLIC INVOLVEMENT

The Double Track Project between Ronkonkoma and Farmingdale is about creating jobs, protecting the region's economy, and ensuring that the LIRR transportation system can meet the needs of the future. To create an infrastructure that will support the needs of the future requires that LIRR include the community in the process, understand their concerns, and be responsive to their issues and questions. This inclusive yet fundamental principle is why there continues to be a comprehensive effort to connect with the various individuals, homeowners, user groups, associations, private companies, and public agencies that are touched in some way by this crucial transportation infrastructure proposal.

To Listen and Explain

The first step to the Double Track public outreach strategy was to brief key stakeholders and elected officials whose districts are directly involved along the project route. In December 2012, the LIRR began public outreach for the Double Track Project with a series of project briefings with State, County, and Town elected officials along the project corridor. Suffolk County Executive Steve Bellone agreed to host meetings for a number of other elected officials in whose districts the Double Track project is located. This allowed the LIRR to brief elected officials directly and at the same time, hear their concerns and answer questions directly. LIRR asked each elected official to provide constituent groups that they wanted us to include in the outreach effort. In January 2013, LIRR also held briefings with state and county agencies that offered additional interested parties for the team to reach out to. In January and February 2013, LIRR met with business, civic, chamber, and user groups from Lakeland County Park, Connetquot State Park, and the South Shore Estuary Reserve Council. LIRR continues to communicate with these stakeholders and have scheduled follow up meetings, as required. LIRR Government Affairs staff has also fielded dozens of follow up requests for information from elected officials, staying in close contact with their offices to answer any and all questions as they arose.

Meeting with Homeowners

The next phase was to engage residents directly affected by the project. The goal was to meet with each homeowner that lives adjacent to the track at their home. The team explained the project and its impacts, listened to their concerns and when invited, walked the property with the homeowner. The team mapped out residences along the north side of the track from Lakeland County Park to Ocean Avenue. A mailing to these homeowners was done and a walk around to each home was also performed on a Saturday to ensure the mailings had been received. Homeowners that were home were handed another copy of the original letter and some were spoken to at that time if convenient. Others LIRR returned to after making appointments with them. Where no homeowner was present, LIRR left a copy of the original letter in an envelope under the mat at the front door. LIRR has now met with all of the homeowners that responded to the letters meeting with them at their convenience during evenings, mornings, days, and weekends.

In addition, as an outgrowth of a presentation to the Ronkonkoma Civic Association, a list of residents who live on the south side of the Ronkonkoma project corridor on Easton Street and adjoining roads requested meetings and additional information regarding the project. All were contacted via letter, email, or phone and residents that asked for additional information, some of a very personal nature due to familial concerns, were met with by a team that offered expertise to

discuss the residents' unique issues. These meetings are continuing with additional follow-up and contact will be maintained throughout the entire process.

There are a few households that have not replied. LIRR will continue to try to communicate with these homeowners and meet with them as needed through the environmental assessment process, the procurement process, and during the construction process. LIRR will continue to communicate with the homeowners and local groups LIRR has met with to keep them informed and respond to any questions.

Public Information Centers

The last step to date was to introduce the project to the general public. The LIRR opened information centers at the Farmingdale and Ronkonkoma stations. These innovative information centers were open for four days at each station to answer questions about the project. The centers were open for a total of 68 hours making staff and information available to all interested members of the public. To build awareness for the information centers LIRR held a kickoff press briefing at each location. At the Ronkonkoma event, more than a dozen officials, including elected representatives from the federal, state, county, and town levels, as well as local business and labor leaders attended and spoke in favor of the project. This media briefing received broad coverage from local television, cable, and print media throughout the region. A kickoff press briefing in Farmingdale also was well attended by local officials and local media. A video explaining the project was produced by the LIRR and displayed at each Information center, as well as on YouTube and at key LIRR stations. LIRR also advertised in weekly newspapers in the project area, created a project website and Facebook page, sent e-mail alerts to commuters, and published a story in Train Talk, a LIRR-produced customer newsletter that is distributed monthly onboard all LIRR trains. Some 90,000 copies of Train Talk were printed. A mailing about the two information centers with hours and locations was sent to all property owners within 100 feet of the LIRR tracks between Ronkonkoma and Farmingdale. Additionally a mailing was done to inform the community about the open house at the Ronkonkoma Station. This mailing included homes on Easton, along Johnson Avenue, and all the homes on the streets that dead end at the tracks along the route between Lakeland County Park and Ocean Avenue. Many residents from the community came into the open house forums. Some that LIRR had met with at their homes also came to the open house for more information.

Project Materials

- Double Track website
- Double Track brochure
- Double Track video
- Double Track press release
- Double Track weekly ad
- Double Track Facebook page
- Double Track comment cards
- Double Track e-mail alerts
- Train Talk customer newsletter seat drop

Meeting with the Media

In addition to the two kickoff press briefings at the Information Centers, the LIRR management team, led by LIRR President Helena E. Williams, presented the facts behind the Double Track

proposal to a number of key reporters and editors in one-on-one meetings throughout the Long Island media market between December and March. These outlets included but are not limited to the Newsday editorial board, Newsday editors and reporters, the Cablevision editorial board, the dozen editors of the Anton community weekly newspaper chain, the Herald Community Newspaper chain, the Long Island Press, Long Island Business News, other local weeklies, and those who cover transportation in the region. In each case, President Williams and her team took questions and engaged in extended conversations after each briefing. The MTA Press Office also has fielded dozens of queries about the project as follow up stories were being researched, filmed, and written.

These efforts ensured that journalists, publishers, columnists, and other opinion makers had the facts not just behind the proposal but were aware of the LIRR's efforts to connect with the spectrum of stakeholders important to this process.

Summary

Throughout the environmental process, LIRR presented information to elected officials, residents, civic groups, the media, business community, and commuters requesting public input so that the Project could be designed to meet the transportation needs of the Long Island region while addressing the concerns of the local community. Customers were able to submit comments in writing, via phone, via e-mail, and by posting on Facebook. The various outreach methods employed by LIRR are summarized in Table 1-1, *Public Outreach Summary*.

TABLE 1-1: PUBLIC OUTREACH SUMMARY

Letters to Ronkonkoma residents	18
Meetings with Ronkonkoma residents	15
Meetings with business, civic, labor, and other constituent groups	18
Mailing to property owners within 100 feet of ROW	945
Information Center visitors	127
Information Center cumulative hours	68
Media briefings	7

This comprehensive effort reflects a deep commitment by the LIRR to go far beyond the letter of the law in outreach, disclosure, and explanation of a major project. It reflects the firmly held belief that the LIRR must work closely in partnership with its various stakeholders if it is to maintain its role as a strategic transportation and economic asset for the region. Only through this effort can the LIRR meet the challenge of providing a 21st Century transportation system to a vibrant and dynamic region of 2.7 million people.

Project correspondence is included in Appendix E, *Project Related Correspondence*.

2 EVALUATION OF POTENTIAL IMPACTS

2.1 LAND USE AND ZONING

The LIRR ROW has been in continuous operation since the early 1840s, during which time the surrounding area has grown and developed around the railroad. Available long-range land use plans and zoning maps were reviewed for all study area municipalities.

The municipalities within the study area all have approved municipal long-range planning documents; some recently adopted and others dating back to the 1970s, 1980s, and 1990s. Generally, the local municipalities recognize the importance of the railroad, and land use plans and zoning regulations reflect local support for continued railroad use through the existing corridor. In addition, regional reports such as *Long Island's Future Economy: A New Beginning for Nassau and Suffolk Counties* issued by The Long Island Regional Economic Development Council in 2011 *(Strategic LI Plan),* the *Suffolk County Comprehensive Plan 2035* issued by Suffolk County in 2011 *(Suffolk County Comprehensive Plan)*, and the 2013 Long Island Index Special Analysis entitled *How the Long Island Rail Road Could Shape the Next Economy* issued by the Regional Plan Association, all cite the need for improved rail service. The *Strategic LI Plan* cites the many benefits Long Island communities receive from being home to the largest commuter railroad in the country.

Sustainable Strategies for Long Island 2035, issued by the Long Island Regional Planning Council in December 2010, recommends that the counties of Nassau and Suffolk "[a]dvocate for … [the] second track from Farmingdale to Farmingdale …." In addition, the *Strategic LI Plan* recognizes the need for the second track, identifying it as a "Project of Regional Significance," and stating that "improvements are needed to ensure the quality of services that [currently] exist. The LIRR's main line consists of a single electrified track between Ronkonkoma and Farmingdale, with few passing sidings. The total corridor is 17.9 miles with single track segments totaling 12.6 miles. This magnifies the effects of service interruption and greatly compromises on-time performance."

Study area land use plans also support expanded railroad-supported development including recommendations for transit-oriented development (TOD) in proximity to the rail corridor. The *Strategic LI Plan* recognizes TODs as an opportunity to revitalize downtowns by developing the currently un- or underdeveloped land and surface parking lots in and immediately around downtown centers. The *Suffolk County Comprehensive Plan* notes that Suffolk County has traffic and transportation problems similar to those of many post-war suburbs nearing saturation development conditions and that many of the roads in Suffolk County are regularly included on the lists of the nation's "most congested" roads. In light of the strains on the transportation system, as well as other benefits, the Suffolk County Comprehensive Plan specifically identifies the need for higher

density, apartment housing clustered around rail stations in order to meet the needs of expected population growth.

While the proposed action would increase the number of daily trains through the corridor (11 trains in each direction), this increase over existing service (see Section 1.3.7, *Daily Rail Operations*) would not be expected to stimulate significant new secondary development in the study area. It would, however, enhance mobility throughout the study area, including between those stations at which TOD projects are already occurring independent of the proposed action. The proposed action would support on-going development at Ronkonkoma Branch train stations and other town centers.

2.1.1 Existing Conditions

The project ROW consists of the existing 17.9-mile stretch from west of Ronkonkoma Station to east of Farmingdale Station. The land use study area for the proposed action extends out 1,320 feet to the north and the same amount to the south from the approximate centerline of the ROW. As a result, the land use study area comprises approximately 9.2 square miles (5,856 acres). The existing LIRR ROW includes 143.2 acres (2.86 percent of the overall study area).

Current zoning maps and available comprehensive/long-range planning documents were requested and reviewed for all municipalities in the study area (in Suffolk County, the Towns of Brookhaven, Islip, and Babylon, and the Village of Islandia, and in Nassau County, the Town of Oyster Bay and Village of Farmingdale). Generally, the land use plans and implementing zoning ordinances support the continued use of the rail corridor for transit purposes. Adjacent uses are identified as mixed-use centers with residential and retail use in the downtown station areas. The Village of Farmingdale's Downtown Master Plan supports mixed-use, transit oriented development in the downtown area in the vicinity of the train station. The Town of Islip's Comprehensive Plan, last updated in the 1970s/early 1980s, supports a variety of housing types with commercial and higher density residential development in downtown areas, including station areas. Babylon's 1996 Comprehensive Plan led to a transit oriented development plan for the Wyandanch Station, currently under development. The Town of Brookhaven developed a draft plan in 2009, which has not yet been formally adopted; that plan supports transit oriented development at several key nodes including Ronkonkoma Station.

A detailed description of existing land use in the study area is presented in Section 1.2, *Description of the Right-Of-Way and Surrounding Land Use*.

2.1.2 Future Conditions without the Proposed Action

The population and employment in Suffolk County is predicted to increase between now and 2018, the expected build year for the proposed action, regardless of whether or not the proposed action is constructed. In January 2013, the New York Metropolitan Transportation Council (NYMTC) approved demographic and socioeconomic forecasts for each county in the greater New York Metropolitan area. These data project that the population of Suffolk County will increase from 1,493,400 in 2010, to 1,538,200 in 2015, to 1,567,100 in 2020, and up to 1,788,200 in 2040. NYMTC also forecasts an increase in Suffolk County employment from 793,200 in 2010, to 848,400 in 2015, to 893,200 in

2020, and up to 1,057,400 in 2040. LIRR expects that without the proposed action, consistent with the forecasted increase in population and employment, there will be an increase in ridership.

As a result of the projected population and employment growth, LIRR ridership forecasts indicate an average annual growth factor of 1.69% through 2018. As a result, ridership between Ronkonkoma and Farmingdale is expected to increase by 10.6 percent between 2012 and 2018 (1.69% growth compounded over six years).

In order to accommodate this projected increase in population, many of the regional plans note the need for strategies revitalizing downtowns and commercial centers, creating new housing opportunities, and improving transit connections to living wage employment centers. Long Island, with its many natural assets, access to mega employment centers, and population of highly educated and civic-minded individuals has been, according to a recent *Newsday* article, "battling the high cost of housing, energy and property taxes." The projects summarized below, along with many other projects on Long Island in various stages of development, attempt to address the rising costs of housing and energy, while simultaneously providing the types of housing currently in demand. The 2011 *Strategic LI Plan* cites a growing demand across the country for "condo and/or townhouse housing in a walkable downtown community."

Three large-scale TOD projects address the need for more transit-friendly sustainable and compact development: Wyandanch Rising in Babylon, Bartone Plaza in Farmingdale, and a proposed TOD project at Ronkonkoma Station in Brookhaven.

Wyandanch Rising, supported by the Town of Babylon, is the farthest along with initial site work underway. It is the recipient of federal, state, and local grants in excess of $9,000,000. The largest single grant was $4,225,106 from FTA, given in part for the ability of the project to support increased transit use on Long Island. Wyandanch Rising, on the north side of the ROW adjacent to Wyandanch Station, will include approximately 200 residential units and 50,000 square feet of retail, in addition to a 2,000 space parking garage for use largely by rail passengers. Construction is anticipated to begin in 2014.

Bartone Plaza, a proposed mixed-use development in Farmingdale, includes 115 apartment units with additional retail space. It received final approval in April 2013 and includes redevelopment of an entire block adjacent to Farmingdale Station.

The 50-acre, mixed-use Ronkonkoma TOD project, while not as far along in the planning stages as Wyandanch Rising or Bartone Plaza, also enjoys local support. The Town of Brookhaven completed the Generic Environmental Impact Statement for the project, rezoned the project site adjacent to the station, and hired a master developer for the project.

Farmingdale, Wyandanch, and Ronkonkoma currently enjoy good rail service and local stakeholders recognize that the existing rail service is an amenity that makes the land around the station valuable and attractive for real estate investment. The Double Track Project would enhance the amenities that the existing projects enjoy today, and would provide increased opportunities for off-peak and reverse-peak travel throughout the corridor when the Double Track Project is completed.

There are other projects in the preliminary planning stages, including: the Heartland Town Square, the Route 110 Corridor Hub, and the expansion of the Broad Hollow Bioscience Center. Heartland Town Square is proposed for the former Pilgrim State Psychiatric Hospital in Brentwood, NY. The developer proposes to turn the 460-acre site into a walkable community clustering residential units near the village center, with its shops and restaurants, parks, multiplex movie theater, civic center, and three million square feet of office space. The plan also calls for the development to be tied into Suffolk County Transit bus routes, as well as for the implementation of a shuttle network that would circulate within the development and provide service to the Deer Park station. The developer submitted a Draft Generic Environmental Impact Statement to the Town in 2009, however, the environmental process has stalled and no permits or approvals have been issued by the Town.

The State Route 110 corridor houses Suffolk County's largest concentration of employers. The Route 110 Corridor Hub plan would tie several transit-oriented development projects, commercial areas, and downtowns together through the creation of north-south rapid-transit bus routes. Future planning between LIRR and the Town of Babylon could create the opportunity for a new Republic Hub Station that would connect the State Route 110 corridor to the LIRR Ronkonkoma Branch. The Broad Hollow Bioscience Center is an example of new development in this corridor.

2.1.3 Potential Impacts and Improvements with the Proposed Action

Projects within the ROW, owned by MTA, are not subject to local zoning ordinances pursuant to Section 1266(8) of the New York Public Authorities Law. Given that the rail ROW has been in existence since the 1840s, and that surrounding municipalities largely grew up around the rail ROW, it is apparent that existing zoning and land use are compatible with continued use of the ROW for transportation purposes. Implementation of the proposed action does not require any changes in zoning in any of the study area municipalities and would be consistent with existing land use patterns and policies.

In addition to the existing commercial and residential uses that abut the ROW, as noted previously, there have been a number of new development projects proposed for the study area including Wyandanch Rising, Ronkonkoma TOD, Heartland Town Square, and others (see Section 2.1.2). These projects recognize the value that LIRR provides to residents throughout the corridor by connecting them to employment centers across Long Island and NYC and providing them with an alternative mode of travel instead of the automobile. The proposed action is consistent with the existing mobility benefits that LIRR provides, and the Double Track Project would further enhance off-peak and reverse-peak service, increasing intra-island mobility (see also Section 1.1, *Project Purpose and Need*). There are no anticipated negative impacts from the proposed action on any of these development projects. By improving service and reliability, the proposed action would also support local and regional plans to concentrate future growth in downtown areas served by LIRR to help revitalize these existing downtown station areas. Increased patronage on the LIRR could support land uses around local train stations and focus development on town centers, promoting a more efficient and centered land use pattern.

For these reasons, the proposed action is not expected to have significant adverse direct, secondary or cumulative impacts on land use and zoning. Any such effects on land use would be expected to

generally be beneficial, since the proposed action would help serve the forecasted increase in population and employment, while promoting “smart growth” on Long Island.

2.2 VISUAL IMPACTS

Visual impacts resulting from implementation of the proposed action would be limited to the second track and concrete retaining walls, where necessary, which would replace the existing earthen embankments and associated vegetation visible in places today. The Ronkonkoma Branch rail ROW has existed through the project area for over 170 years as an active rail corridor. The Double Track Project will not change the existing railroad use. On-going daily rail operations include both passenger and freight rail trains. Once project construction is completed, the rail ROW would look much the same as it does presently, with the exception of the placement of retaining walls of varying heights/depths in a number of places along the ROW. Illustrations of examples of possible finishes for retaining walls are shown in Section 2.9.2.

The methodology for assessing potential visual impacts resulting from implementation of the proposed action is based on the program policy issued July 31, 2000 by the New York State Department of Environmental Conservation (NYSDEC) entitled *Assessing and Mitigating Visual Impacts*. Major steps in the process include: development of the inventory of aesthetic resources, identification of sensitive receptors (particular land uses sensitive to changes in viewshed), and assessment of potential changes in aesthetics. Potential changes in aesthetics have been assessed using a simple line-of-sight technique, focusing on changes in the viewshed from sensitive receptors related to implementation of the proposed action. The entire set of sight-line diagrams prepared as part of the visual impact analysis is included in Appendix J, *Visual Impacts Analysis*, while three representative sight-line diagrams are included in Figure 2-1 below.

2.2.1 Inventory of Existing Aesthetic Resources

Scenic and aesthetic resources adjacent to or in the vicinity of the ROW include the 11 parklands adjacent to or nearby the LIRR ROW:

- Lakeland County Park
- Connetquot River State Park
- Central Islip Recreation Center
- Ross Memorial Park
- Brentwood Recreation Center
- Modern Times Park
- Gil Hodges Park
- Sagtikos Parkway
- Edgewood Oak Brush Plains Preserve
- State Trooper Fabio Buttitta Memorial Park
- Geiger Lake Memorial Park

See Section 2.4, *Parklands* for detailed descriptions of each of these facilities.

Walking trails and properties on or eligible for inclusion on the National or State Register of Historic Places are also considered scenic and aesthetic resources. The following resources are within, adjacent to, or nearby the LIRR ROW:

- Long Island Greenbelt Trail
- Southside Sportsmens Club District (contiguous with Connetquot River State Park Preserve)
- Modern Times School (on the site of the Brentwood Public Schools Administration Center)
- LIRR Station at Farmingdale

The Long Island Greenbelt Trail through Lakeland County Park is discussed in Section 2.4, *Parklands*. The other three aesthetic resources are discussed in Section 2.5, *Cultural Resources*.

2.2.2 Sensitive Receptors to Changes in Aesthetics

Residential neighborhoods that have a viewshed including one of the scenic/aesthetic resources identified above have been examined for potential changes in aesthetics associated with implementation of the proposed action. In addition, parklands that have a viewshed including one of the scenic/aesthetic resources have been examined for potential changes in aesthetics. The program policy also covers several additional types of sensitive receptors, none of which are found in the vicinity of the proposed action. Residential areas and parkland resources deemed sensitive receptors to changes in aesthetics are shown in Table 2-1, *Viewshed of Sensitive Receptors*.

TABLE 2-1: VIEWSHED OF SENSITIVE RECEPTORS

Sensitive Receptor	Viewshed Description
Garden Court, north of ROW, east of Lakeland County Park	View directly west and southwest into forested section of Lakeland County Park. View to the southwest of Connetquot River State Park Preserve is blocked by forest, railroad embankment, and residential area to the south.
Western end of Easton Street, south of ROW, east of Connetquot River State Park Preserve	View directly west into forested section of Connetquot River State Park Preserve. Houses at the very end of Easton Street also view limited sections of the Long Island Greenbelt Trail. Limited view north and northwest, across the LIRR ROW, into Lakeland County Park in vicinity of Long Island Greenbelt Trail, especially in winter. View limited by railroad embankment, existing fencing, and trees.
Lakeland County Park	Limited view south into Connetquot River State Park Preserve. Close to ROW, view limited by existing rail embankment. Further north, away from ROW, seasonal views from certain locations along the Long Island Greenbelt Trail would be limited to treetops in Connetquot River State Park Preserve.
Connetquot River State Park Preserve	Limited view north into Lakeland County Park. Close to ROW, view limited by existing rail embankment. Seasonal views from certain locations along unimproved trails in Connetquot River State Park Preserve would be limited to the upper portions of trees in certain parts of Lakeland County Park.
Sampson Avenue, 500+ feet north of ROW, north of Lakeland County Park (on the western side)	View south and southeast into forested section of Lakeland County Park. View further south into Connetquot River State Park Preserve entirely blocked by Lakeland County Park forest.

Sensitive Receptor	Viewshed Description
Sutton Place/Beekman Place/Erhardt Way (east of Route 454), north of ROW	View east into Lakeland County Park. Limited view south from some homes, across the LIRR ROW, into Connetquot River State Park Preserve, especially in winter. View is substantially limited by existing forest and other trees, LIRR substation G-33, and other intervening structures.
Quinn Place (between 2nd Street and Lukens Avenue), north of ROW	Limited view south and southwest, across the LIRR ROW, toward Brentwood Recreation Center and Gil Hodges Park. Existing fencing and trees somewhat limit the park view.
South of Pine Aire Drive (between Manatuck Boulevard and Taylor Avenue), south of ROW	View north, across Pine Aire Drive, to forested areas surrounding Sagtikos Parkway. A limited number of homes view the forest south of the LIRR ROW. More homes view forest north of the LIRR ROW, although this view is substantially screened by intervening commercial and industrial development, trees, and the elevated parkway structure.
South of Long Island Avenue (between Half Hollow Road and West 9th Street), south of ROW	Limited view north, across Long Island Avenue and LIRR ROW, toward State Trooper Fabio Buttitta Memorial Park. Existing railroad embankment and trees substantially limit view.

2.2.3 Future Conditions without the Proposed Action

Analysis of 2018 visual impacts without the proposed action, called 2018 No-Build conditions, serves as the baseline for comparison to future conditions with the proposed action in place. In terms of visual impacts, 2018 No-Build analysis would include any other projects to be implemented by LIRR or others that might cause a visual impact to one or more of the listed aesthetic resources. However, in the case of visual impacts, there are no other known projects to be implemented by 2018 that might impact any of the listed aesthetic resources. Therefore, 2018 No-Build conditions are expected to remain the same as existing conditions.

2.2.4 Potential Changes and Improvements with the Project

Potential changes to the viewshed of sensitive receptors that could occur with the proposed action are presented in Table 2-2, *Potential Changes in Viewshed*. The table also indicates specific design measures incorporated into the proposed action in order to obviate these potential changes. Development of these measures would be coordinated with affected property owners. Sightline diagrams developed for Build Conditions are included in Appendix J, *Visual Impacts Analysis*.

TABLE 2-2: POTENTIAL CHANGES IN VIEWSHED

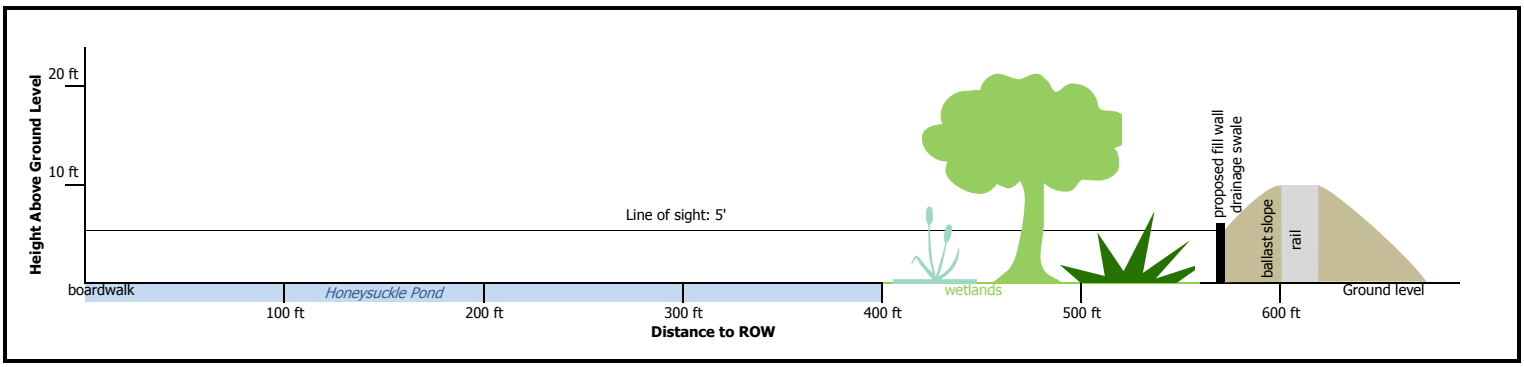
Sensitive Receptor	Proposed Action	Potential Changes in Viewshed	Proposed Action: Design and Coordination
Garden Court, north of ROW, east of Lakeland County Park	Retaining wall (2-4 feet in height) and second track north of existing.	View west would not change. In winter, perhaps three or four houses might see retaining wall looking southwest.	LIRR would work with Lakeland County Park to plant appropriate vegetation adjacent to retaining wall to screen view.
Western end of Easton	Second track north of	View directly west would	LIRR would take care not

Sensitive Receptor	Proposed Action	Potential Changes in Viewshed	Proposed Action: Design and Coordination
Street, south of ROW, east of Connetquot River State Park Preserve	existing. No work on south side of existing track.	not change. View from upper stories of four or five houses might include second track, but would not otherwise change view of Lakeland County Park or Greenbelt Trail.	to limit view into Lakeland County Park.
Lakeland County Park * (See Figures 2-1a and 2-1b for Sight Line Diagrams illustrating views from Lakeland County Park to the proposed action).	Second track north of existing. Retaining wall (1-12 feet in height) across most of the park, with limited gaps. Tallest segments in western portion of park.	Viewshed south from portions of the Long Island Greenbelt Trail boardwalk on Honeysuckle Pond, 400+ feet north of the ROW, might include fill wall, especially during the winter. This area includes a small portion of freshwater wetland on LIRR ROW which, as described in Section 2.3.2, would be permanently altered as part of the proposed action. However, given the distance from the Greenbelt Trail to the ROW, wetland restoration work in this area would return the view to pre-construction conditions. The view into upper portions of trees in Connetquot River State Park Preserve would otherwise not change. Other trails in the southwestern portion of the park lie 100+ feet to the north of the ROW in forested areas. In winter, view south toward Connetquot River State Park Preserve might include retaining wall, but would not change the viewshed into	LIRR would work with Lakeland County Park to plant appropriate vegetation to screen retaining wall. LIRR would take care not to further limit view of treetops in Connetquot River State Park Preserve.

Sensitive Receptor	Proposed Action	Potential Changes in Viewshed	Proposed Action: Design and Coordination
		the upper portions of trees in Connetquot River State Park Preserve.	
Connetquot River State Park Preserve (See Figure 2-1c for Sight Line Diagram illustrating the view from Connetquot River Park to the proposed action).	Second track north of existing. No work on south side of existing track.	A trail in the northwestern portion of the park lies 50+ feet to the south of the ROW in a forested area. In very limited places, view north might include second track, but would not otherwise change the viewshed into Lakeland County Park.	LIRR would take care not to limit view into Lakeland County Park.
Sutton Place/Beekman Place/Erhardt Way (east of Route 454), north of ROW	Second track north of existing. East of LIRR substation G-33, retaining wall (1-12 feet in height). West of G-33, retaining wall (1-7 feet in height).	Due to existing forest, substation G-33, and other structures, three homes on Erhardt Way would have a limited view of retaining wall. For residences on Sutton Place, viewshed would not change, due to elevation above cut wall area. Some residences on Beekman Place would have a limited view of retaining wall and second track.	LIRR would work with homeowners on Erhardt Way and Beekman Place to plant appropriate vegetation adjacent to retaining wall to screen view.
South of Long Island Avenue (between Half Hollow Road and West 9th Street), south of ROW	Retaining wall (4-6 feet in height) and second track south of existing.	Retaining wall will be shorter than existing embankment. Therefore, viewshed will not change, unless existing vegetation is removed during construction.	Prior to completion of construction, LIRR would replant appropriate vegetation.
Note: * Section 2.9, *Construction Impacts*, discusses potential temporary visual impacts related to proposed action construction in a small wetland area adjacent to the LIRR ROW within Lakeland County Park.			

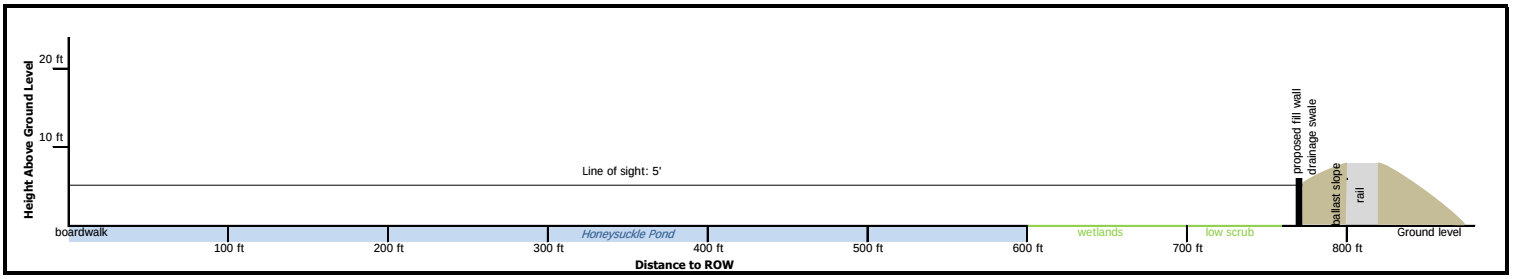
Table 2-2 only lists those sensitive receptors where the viewshed might potentially change with implementation of the proposed action. Since there are already two tracks in the ROW near the Quinn Place and South of Pine Aire Drive residential areas, the viewshed would not change. Forest south of Sampson Avenue precludes any view of the LIRR ROW, so the viewshed would not change. Therefore, these residential areas were not included in Table 2-2.

With the design measures listed in Table 2-2 incorporated, the proposed action would not diminish the public enjoyment and appreciation of any of the inventoried aesthetic resources in the study area. Therefore, no significant adverse impacts to aesthetic resources would result from implementation of the proposed action. Figure 2-1, *Sight Line Diagrams*, shows some sample sight lines along the project corridor. As noted above, additional sight line diagrams are presented in Appendix J, *Visual Impacts Analysis*.



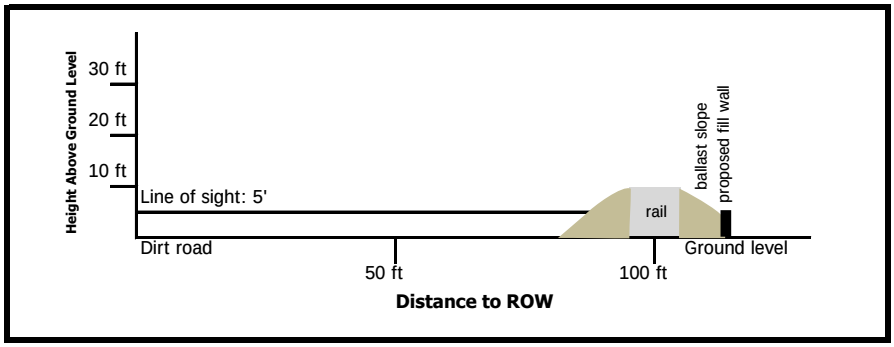
X scale 1:10 Y scale 1:2		Double Track on Main Line Project **Visual Impact Analysis**

Figure 2-1a



X scale 1:10 Y scale 1:2		Double Track on Main Line Project **Visual Impact Analysis**

Figure 2-1b



X scale 1:5 Y scale 1:5		Double Track on Main Line Project **Visual Impact Analysis**

Figure 2-1c

LIRR Double Track Project
Ronkonkoma to Farmingdale

Sample Sight Line Diagrams

Figure 2-1

2.3 NATURAL RESOURCES

Investigation of natural resources focuses primarily on the LIRR ROW and adjacent areas in order to develop an understanding of potential impacts resulting from implementation of the proposed action. Natural resources examined for this project include soils, groundwater resources, surface water resources, floodplains, freshwater wetlands, vegetation communities and habitats, and threatened and endangered species. These resources were inventoried using publicly-available resources, supported by on-site reconnaissance and observations. However, for some resources, such as freshwater wetlands and surface waters, these resources are discussed within the context of a larger study area (i.e., contributing watershed).

Publicly-available natural resource inventories that were consulted in the preparation of this assessment included:

- Soils - Natural Resources Conservation Service, United States Department of Agriculture Web Soil Survey for Suffolk County
- Groundwater – *Water Table Contours and Locations of Observed Wells in Suffolk County, NY,* Suffolk County Department of Health Services, Division of Environmental Quality
- Floodplains - Federal Emergency Management Agency (FEMA) Floodplain Maps
- Wetlands - *National Wetlands Inventory (NWI) Map* and *NYSDEC Freshwater Wetlands Map*
- Endangered and Threatened Species - NYSDEC "Environmental Resource Mapper" (ERM).

Following review of available mapping, wetland delineations were conducted in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual.* A *Wetland Delineation Report* was prepared for the project in January 2013 (see Appendix I, *Natural Resources Technical Report*). In addition to the literature review and field reconnaissance, letters were sent to the United States Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), and the NYSDEC (Local and Regional) Natural Heritage Program (NHP), requesting available information for endangered and/or threatened species, critical or proposed critical habitats, anadromous/catadromous fisheries and essential fish habitat, wetlands, national wildlife refuges, wilderness areas, and wild and scenic rivers.

Using the resources previously described, as well as field reconnaissance, mapping was developed to characterize the nature and extent of potential impacts to these resources related to construction of the proposed action. Within the existing LIRR ROW, approximately 0.15 acres of regulated emergent and scrub-shrub freshwater wetlands would be permanently impacted by the proposed action. Adjacent to the north side of the ROW, within Town of Islip property and Lakeland County Park, an alternative is being investigated that includes the creation of a temporary access roadway to facilitate construction of the proposed action which would involve temporary impacts to less than 0.35-acres of freshwater wetlands. This area would be restored to pre-existing conditions prior to the end of construction (see Sections 2.3.2 and 2.9). LIRR will continue to work with NYSDEC to develop measures to offset these permanent and temporary impacts. A field visit was conducted

with NYSDEC on April 19, 2013 in which freshwater wetland limits were confirmed and preliminary wetland replacement options and strategies were explored. As a result, the proposed action would result in no significant permanent impacts to natural resources within the study area.

2.3.1 Existing Conditions

Existing environmental resources have been examined within the LIRR ROW, as well as the surrounding study area (a band extending approximately 1,320 feet both north and south of the ROW).

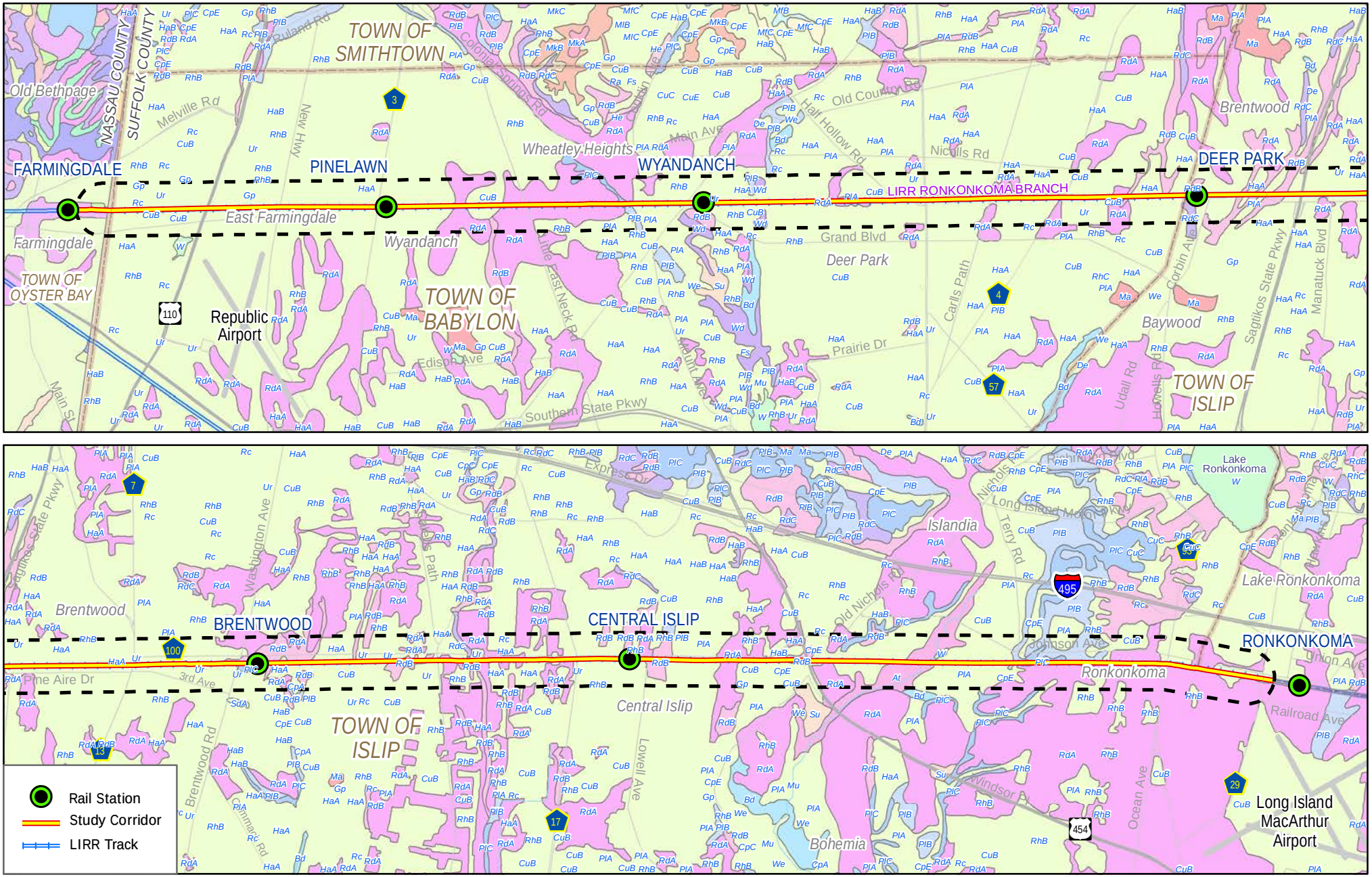
Soils

The Natural Resources Conservation Service, United States Department of Agriculture Web Soil Survey for Suffolk County, NY was reviewed to determine soil types in the study area to identify potential hydric qualities. The soil survey of Suffolk County shows 10 soil series throughout the study area. Identified soil types are shown on the soils map (see Figure 2-2, *Web Soil Survey Map*) and general characteristics of each identified soil type are presented in Table 2-3, *Project Area Soils*.

The majority of the mapped soil types are well-drained soils suitable for railroad development. Atsion soils are identified as hydric soils, located in the area of Connetquot River and adjacent mapped and delineated freshwater wetlands.

TABLE 2-3: PROJECT AREA SOILS

Map Symbol	Soil Unit	Drainage Classification	Depth to Seasonal High Water Table	Hydric Soil
At	Atsion sand	Poorly drained	0-12’	Yes
CuB	Cut and Fill Land	N/A	N/A	No
HaA	Haven loam; 0 to 2 percent slopes	Well drained	>80”	No
PIA	Plymouth loamy sand; 0 to 3 percent slopes	Excessively drained	>80”	No
PIB	Plymouth loamy sand; 3 to 8 percent slopes	Excessively drained	>80”	No
PIC	Plymouth loamy sand; 8 to 15 percent slopes	Excessively drained	>80”	No
RdA	Riverhead sandy loam; 0 to 3 percent slopes	Well drained	>80”	No
RdB	Riverhead sandy loam; 3 to 8 percent slopes	Well drained	>80”	No
RhB	Riverhead and Haven soils, graded; 0 to 8 percent slopes	Well drained	>80”	No
Ur/Ug	Urban Land	N/A	N/A	No



0 1
Miles

Source: U.S. Department of Agriculture
Natural Resources Conservation Service
Web Soil Survey (WSS)

Soil Types

At	EnA	Ip	MfB	MkB	PlB	RdB	SdA	UdA	Ug	UnC	UpD	Us	Wa		
Bc	EnB	Ma	MfC	Pa	PlC	RdC	SdB	UdE	Uh	UpA	UrA	Uu	Wd		
Bd	Fr	Mc	MfD	Pg	PrD	RdD	Su	Ue	Um	UpB	UrB	Uw			
Du	He	MfA	MkA	Pk	RdA	Sc	Ua	Uf	UnB	UpC	UrC	W			

LIRR Double Track Project
Ronkonkoma to Farmingdale

Web Soil Survey Map

Figure 2-2

Groundwater Resources

The ROW sits over a sole source aquifer, defined as an aquifer providing the sole or principal source of drinking water to at least 50% of its service area. The sole source aquifer in Long Island, the Nassau-Suffolk Aquifer System, is the primary source of groundwater for Long Island as a whole. As a result, contamination of this aquifer would create a significant public health hazard. For the quality of its water to be maintained, the aquifer must be adequately recharged to maintain water supply.

According to the Suffolk County Department of Health Services, Division of Environmental Quality "*Water Table Contours and Locations of Observed Wells in Suffolk County, New York*," the depth to groundwater underlying the study area has been measured in several locations in close proximity to the LIRR ROW. Groundwater ranges from 27 to 33 feet below ground level surface between Farmingdale and Wyandanch, from 38 to 42 feet below ground level surface at Sagtikos Parkway, from 23 to 30 feet below ground level surface near Brentwood, from 28 to 34 feet below ground level surface near Central Islip, and from 45 to 52 feet below ground level surface near Ronkonkoma. As would be expected with surface waters, the areas surrounding Connetquot River have groundwater levels closer to the surface.

Surface Water Resources

Surface water resources within the LIRR ROW consist of Connetquot River and associated freshwater wetlands (NYSDEC Wetland C-3) in the eastern portion of the project area between Central Islip and Ronkonkoma in both Lakeland County Park and Connetquot River State Park Preserve. Honeysuckle Pond is located within Lakeland County Park, just north of the ROW. The portion of the ROW between Lakeland County Park and Connetquot River State Park Preserve is near the headwaters of Connetquot River, located within Lakeland County Park.

NYSDEC has designated Connetquot River as Classification C, which identifies fishing as the best use for the stream. NYSDEC has also designated the watercourse as trout waters (but not trout spawning waters). It is noted that the portion of Connetquot River crossed by the LIRR appears to have intermittent flow during dry periods of the year, as the stream was observed to be dry during several site inspections in late summer and early fall. It is noted that the Connetquot Fish Hatchery within the Connetquot River State Park Preserve has been closed by NYSDEC since 2006, due to Infectious Pancreatic Necrosis (IPN), a virus affecting juvenile trout. NYSDEC is working with the State Park and local groups to eliminate IPN from the trout in the Preserve. One of the primary local groups involved in this effort is The Friends of Connetquot, a nonprofit organization dedicated to the preservation, conservation and continuation for future generations of the Connetquot River State Park Preserve. Their efforts toward reopening the hatchery are ongoing. The NYSDEC has given the organization permission to begin raising trout from eggs and utilizing existing raceways for their growth. Pending is the issuance of permits to drill a new well and install a pump to provide fresh groundwater for the hatch house. It is noted that these activities are located downstream of the LIRR project.

Floodplains

Floodplains are areas of low-level ground present along a river or stream channel subject to periodic or infrequent inundation from elevated water levels due to rain or melting snow. The risk of flooding is dependent on topography relative to the flood hazard elevation, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by the Federal Emergency Management Agency (FEMA), which delineates floodplain boundaries for 100-

year and 500-year flood events (see Figure 2-3, *FEMA Floodplain Map*). The majority of the ROW lies within Zone X, outside the 500-year floodplain (an area with a 0.2 percent annual probability of flooding). A 100-year floodplain (an area with a 1.0 percent annual probability of flooding) is identified immediately adjacent to Connetquot River.

Freshwater Wetlands

Wetland areas within and adjacent to the LIRR ROW consist of NYSDEC-mapped wetland (C-3), on both the north side of the ROW in Lakeland County Park and on the south side of the railroad in Connetquot River State Park Preserve, including its attendant Adjacent Area (AA). Wetlands within the site were mapped and classified by NYSDEC as freshwater wetlands under Environmental Conservation Law, Article 24. The National Wetland Inventory (NWI) Map is shown on Figure 2-4, *National Wetlands Inventory Map*. The NYSDEC Freshwater Wetlands Inventory Map is shown on Figures 2-5a and 2-5b, *NYSDEC Wetlands Map*. Figure 2-6, *Wetlands Delineation Map* provides the most accurate survey of the on-site wetlands. These wetlands are also considered Waters of the United States (which includes wetlands), regulated by the United States Army Corps of Engineers.

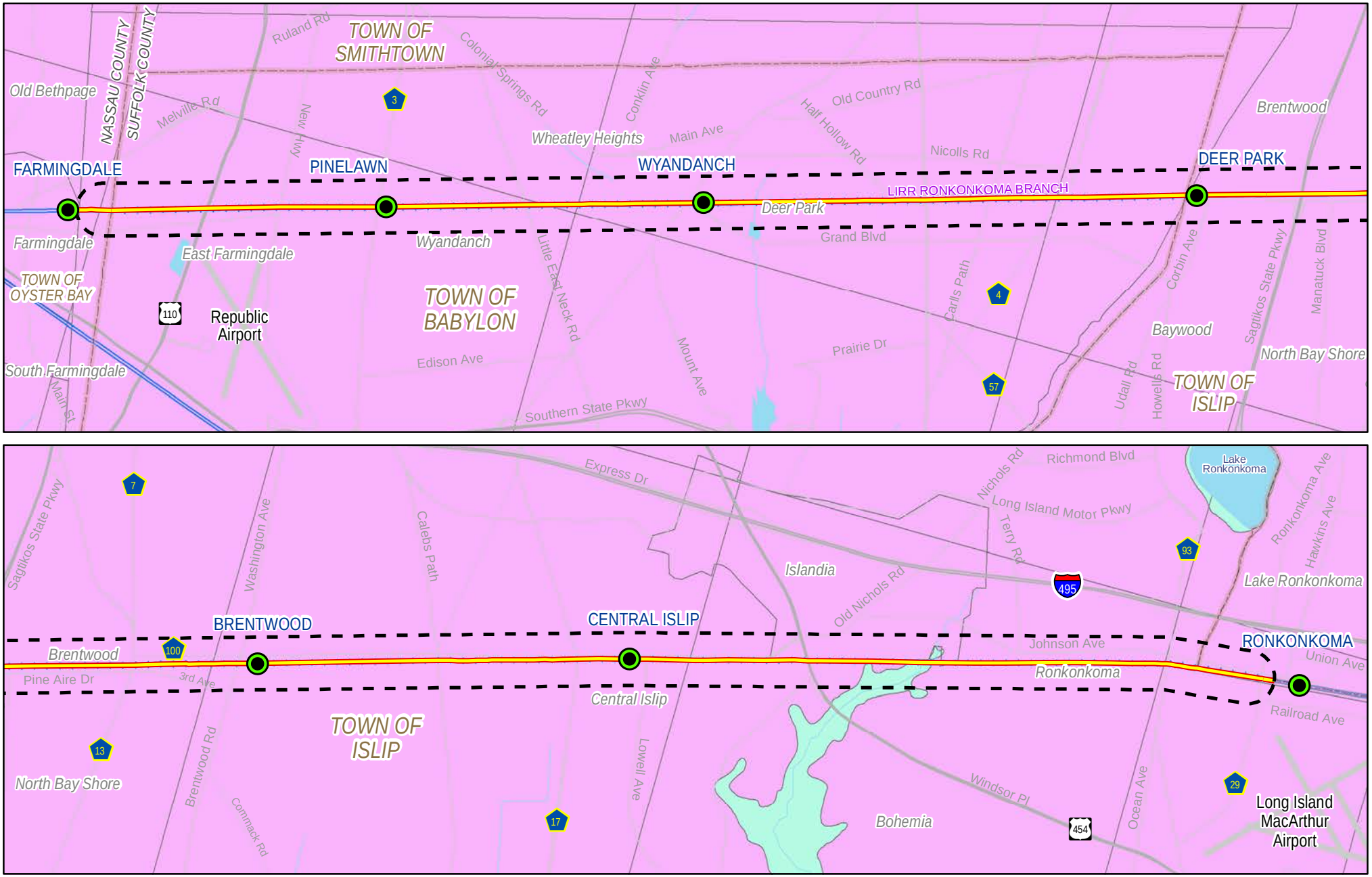
According to NYSDEC, wetlands in this area are mapped as Class I Freshwater Wetland (of Classes I-IV). The New York Freshwater Wetland Act requires NYSDEC to rank wetlands ranging from Class I, the most beneficial and most restrictive, subject to stringent permit requirements, to Class IV, the least restrictive.

According to NWI Maps, wetlands in the vicinity include:

- **PEM1Fh**: Palustrine Emergent, Persistent, Semi-permanently Flooded, Diked/Impounded.
- **PFO1E**: Palustrine Forested, Broad-leaved Deciduous, Seasonally Flooded, Saturated.
- **PFO4B**: Palustrine Forested, Needle-leaved Evergreen, Saturated.
- **PFO4/1B**: Palustrine Forested, Needle-leaved Evergreen/Broad-leaved Deciduous, Saturated.

On September 24 and 28, 2012, field investigation was conducted to delineate wetlands within and directly adjacent to the ROW. On April 19, 2013 field verification of the wetland boundary was made by NYSDEC staff, resulting in a revision to the wetland boundary as illustrated on Figure 2-6. Wetland communities observed and/or delineated include NYSDEC Wetland C-3 and an isolated, palustrine emergent wetland, just east of Substation G-33.

The recent delineation of Wetland C-3 indicated that this wetland is associated with the Connetquot River and confirms the location as mapped by NYSDEC. The majority of the wetland on the north side of the railroad is comprised of emergent and scrub-shrub vegetation with a limited amount of forested vegetation. Predominantly herbaceous vegetative species dominate this wetland, including: sweet pepperbush (*clethra alnifolia*), American Pussy Willow (salix discolor), arrow-leaved earthumb (*polygonum sagittatum*), soft rush (*juncus effusus*), pennsylvania smartweed (*polygonum pensylvanicum*), greenbriar (*smilax rotundifolia*), wool grass (*scirpus cyperinus*), blue Flag iris (*iris versicolor*), giant reed grass (*phragmites australis*), and sphagnum moss (*sphagnacea*).



0 1 Miles

Source: Federal Emergency Management Agency

Rail Station
Study Corridor
LIRR Track

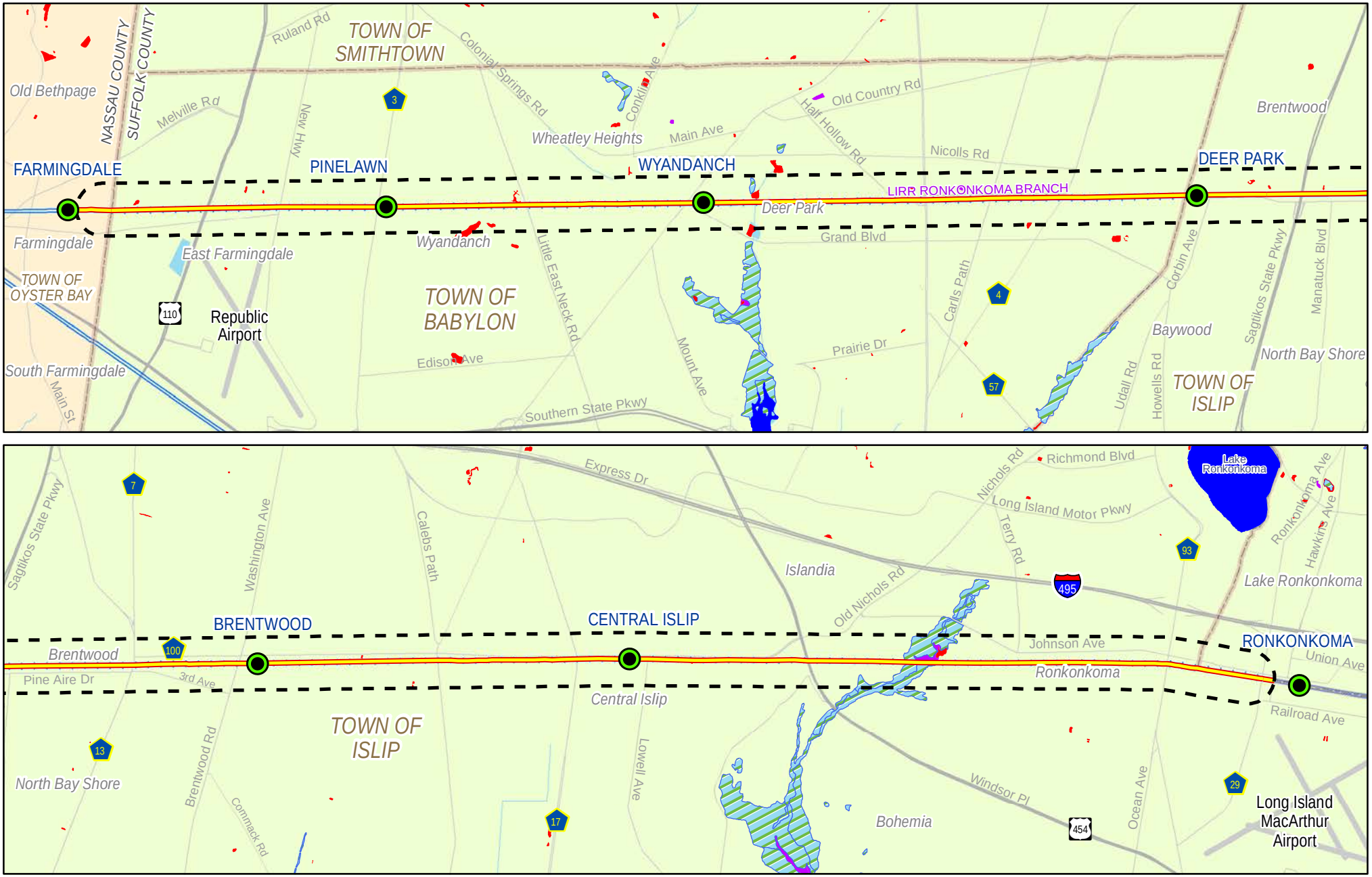
Flood Zone

A ANI VE X500
AE UNDES X

LIRR Double Track Project
Ronkonkoma to Farmingdale

FEMA Floodplain Map

Figure 2-3



0 1
Miles

Source: U.S. Fish and Wildlife Service, National Wetlands Inventory

Rail Station
Study Corridor
LIRR Track

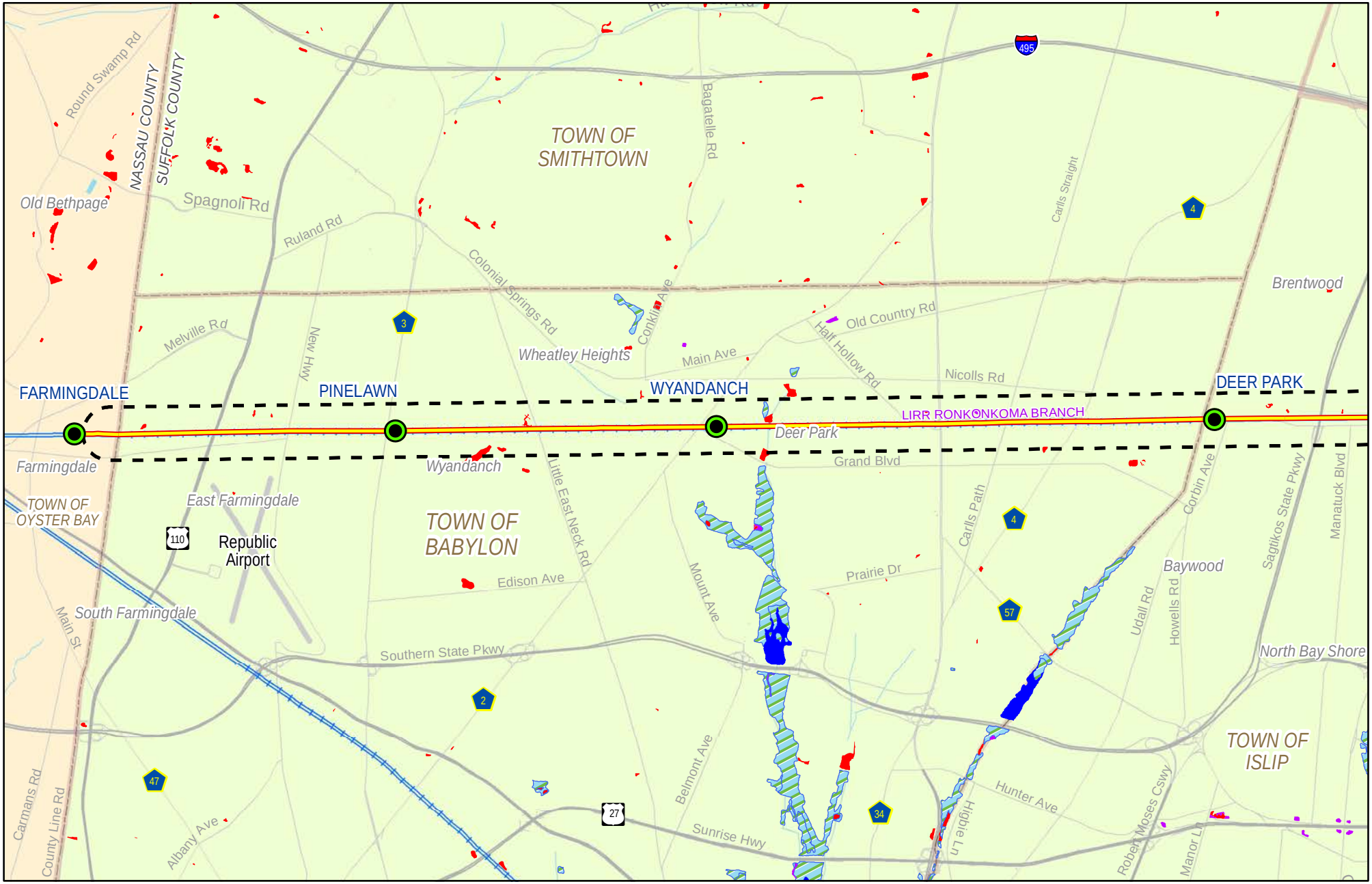
WETLAND TYPES

Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake

LIRR Double Track Project
Ronkonkoma to Farmingdale

National Wetlands Inventory Map

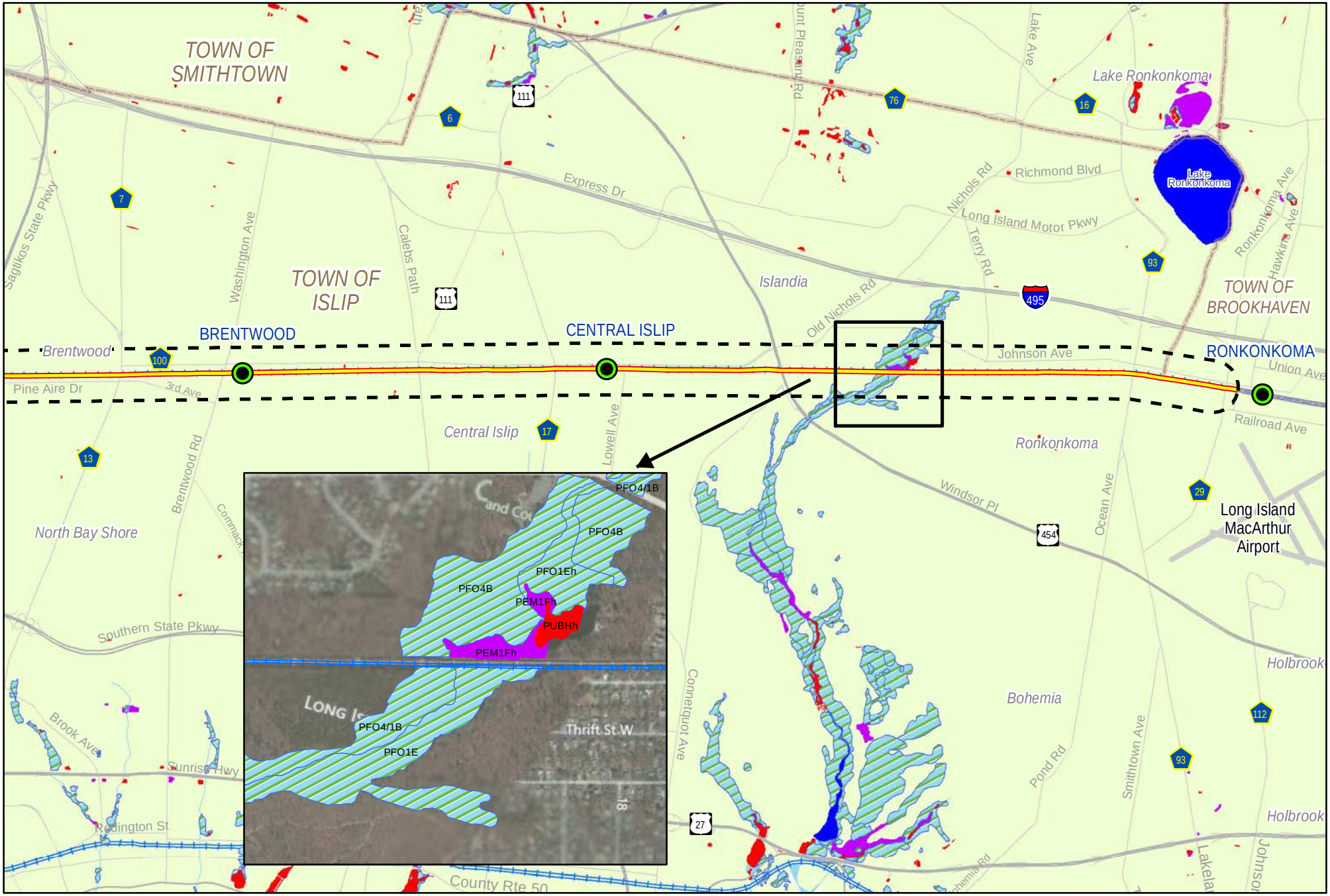
Figure 2-4

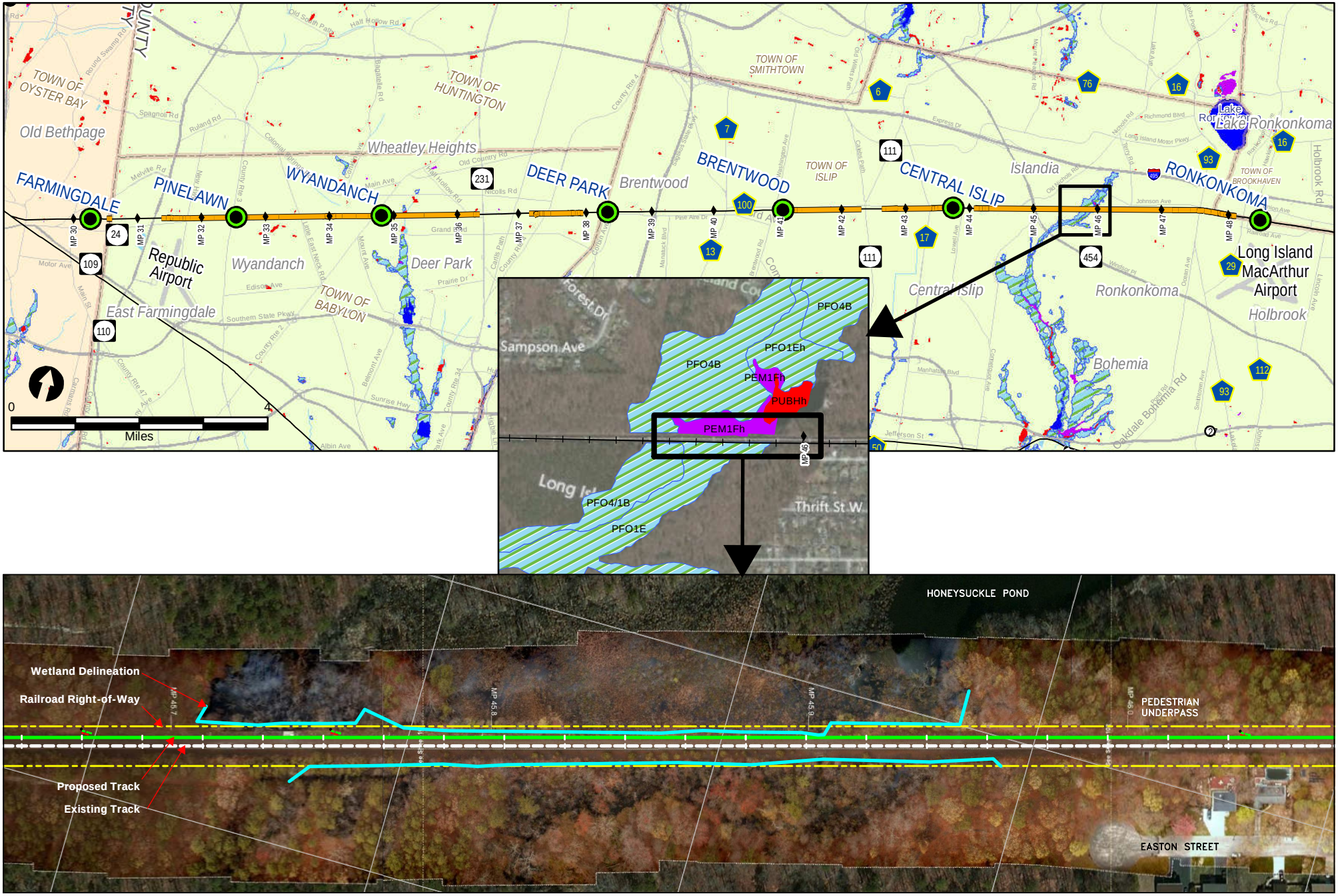


LIRR Double Track Project
Ronkonkoma to Farmingdale

NYSDEC Wetlands Map

Figure 2-5a


TOWN OF SMITHTOWN
TOWN OF ISLIP
TOWN OF BROOKHAVEN
BRENTWOOD
CENTRAL ISLIP
RONKONKOMA
Brentwood
Islandia
Central Islip
Ronkonkoma
North Bay Shore
Bohemia
Holbrook
Lake Ronkonkoma
Long Island MacArthur Airport
Express Dr
Long Island Motor Pkwy
Richmond Blvd
Johnson Ave
Railroad Ave
Union Ave
Windsor Pl
Southern State Pkwy
Sunrise Hwy
Pine Aire Dr
3rd Ave
Brentwood Rd
Lowell Ave
Ocean Ave
Connetquot Ave
Pond Rd
Smithtown Ave
Old Nichols Rd
Nichols Rd
Terry Rd
Lake Ave
Ronkonkoma Ave
Hawkins Ave
Washington Ave
Caleb's Path
Sagtikos State Pkwy
Brook Ave
Redington St
Thrift St W
County Rte 50
PFO4/1B
PFO4B
PFO1Eh
PEM1Fh
PUBHh
PFO1E
Rail Station
Study Corridor
LIRR Track
WETLAND TYPES
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
0
1
Miles
Source: U.S. Fish and Wildlife Service, National Wetlands Inventory
LIRR Double Track Project
Ronkonkoma to Farmingdale
NYSDEC Wetlands Map
Figure 2-5b



Source: U.S. Fish and Wildlife Service, National Wetlands Inventory

Rail Station
LIRR Track
Track Being Added / Sidings Being Relocated

WETLAND TYPES
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake

Interstate
State Highway
County Route

LIRR Double Track Project
Ronkonkoma to Farmingdale

Wetland Survey

Figure 2-6

The majority of the wetland on the south side of the railroad is comprised of forested vegetation. Forested wetlands are considered more ecologically valuable than emergent or scrub-shrub wetlands. Dominant vegetative species in this wetland (also NYSDEC Wetland C-3) include: red maple (*acer rubrum*), sweetgum (*liquidambar styraciflua*), sweet pepperbush, skunk cabbage (*symplocarpus foetidus*), and sphagnum moss.

Vegetation in the unmapped isolated wetland area just east of LIRR Substation G-33 includes red maple, soft rush, and giant reed grass. Soils sampled in this area consisted of silty-sand. It is likely that this depressional area is seasonally to semi-permanently saturated, with periods of inundation confined to fall and winter months.

Vegetation Communities and Habitats

According to the NYSDEC "Environmental Resource Mapper" (ERM), which documents NY Natural Heritage Program data, the areas within the project study area on either side of the ROW support rare plants and animals. However, there is an absence of significant natural communities within the ROW, due to its continued transportation use.

Plant Communities. Outside of the ROW, the majority of the study area is developed with residential and commercial uses, as well as adjacent and intersecting roadways. Ornamental and landscaped vegetation are dominant in the developed areas. Small patches of naturally vegetated areas exist along the ROW. Large natural areas are limited to those within Lakeland County Park and Connetquot River State Park Preserve along the eastern portion of the ROW.

In addition to the wetland areas previously described, upland forest habitat exists on either side of the delineated wetlands, where dominant vegetation consists of pitch pine (*pinus rigida*), black cherry (*prunus serotina*), sassafras (*sassafras albida*), gray birch (*betula populifolia*), and greenbriar.

Animal Communities. On-site habitat provides foraging habitat and ground cover for common wildlife species indigenous to this part of Long Island. Avian, mammalian, amphibian, reptile, and fish species include, but are not limited to those listed in Tables 2-4 through 2-7, *Avian Species*, *Mammalian Species, Amphibian and Reptile Species, and Fish Species*, respectively.

TABLE 2-4: AVIAN SPECIES

Canada Goose (*Branta canadensis*)	American Crow (*Coruus brachyrhynchos*)
Mallard (*Anas platyrhynchos*)	Blue Jay (*Cyanocitta cristata*)
Mourning Dove (*Zenaida macroura*)	House Wren (*Troglodytes aedon*)
Rock Dove (*Columba livia*)	Killdeer (*Charadrius vociferous*)
Common Flicker (*Colaptes auratus*)	Gray Catbird (*Dumetella carolinensis*)
Northern Cardinal (*Cardinalis cardinalis*)	Brant (*Branta bernicla*)
Swamp Sparrow (*Melospiza georgiana*)	Song Sparrow (*Melospiza melodia*)
Great Blue Heron (*Ardea herodias*)	American Robin (*Turdus migratorius*)
Killdeer (*Charadrius vociferous*)	Red-winged Blackbird (*Agelaius phoeniceus*)
Common Grackle (*Quiscalus quiscula*)	Brown-headed Cowbird (*Molothrus ater*)
European Starling (*Sturnus vulgaris*)	

Source: USFWS Survey Reports, 1997.

TABLE 2-5: MAMMALIAN SPECIES

Meadow Vole (*Microtus pennsylvanicus*)	House Mouse (*Mus musculus*)
Little Brown Myotis (*Myotis lucifugus*)	Meadow Jumping Mouse (*Zapus hudsonius*)
Eastern Chipmunk (*Tamias striatus*)	Woodchuck (*Marmota monax*)
Striped Skunk (*Mephitus mephitus*)	Gray Squirrel (*Sciurus carolinensis*)
Muskrat (*Ondatra zibethicus*)	Eastern Cottontail (*Sylvilagus floridanus*)
Opossum (*Didelphis virginiana*)	White-footed Mouse (*Peromyscus leucopus*)
Raccoon (*Procyon lotor*)	Norway Rat (*Rattus norvegicus*)
Short-Tailed Shrew (*Blarina brevicauda*)	Red Squirrel (*Tamiasciurus hudsonicus*)
Whitetail Deer (*Odocoileus virginianus*)	

Source: USFWS Survey Reports, 1997.

TABLE 2-6: AMPHIBIAN AND REPTILE SPECIES

American Toad (*Bufo americanus*)	Fowler's Toad (*Bufo woodhousii fowleri*)
No. Spring Peeper (*Pseudacris crucifer*)	Bull Frog (*Rana catesbeiana*)
Green Frog (*Rana clamitans melanota*)	Pickerel Frog (*Rana palustris*)
Northern Leopard Frog (*Rana pipiens*)	Northern Water Snake (*Nerodia sipedon*)
Smooth Green Snake (*Opheodrys vernalis*)	Eastern Garter Snake (*Thamnophis sirtalis*)
Northern Black Racer (*Coluber constrictor*)	Black Rat Snake (*Elaphe obsolata*)
Eastern Box Turtle (*Terrapene Carolina*)	Eastern Painted Turtle (*Chrysemys picta*)

Source: USFWS Survey Reports, 1997.

Fish species, although not observed at the time of site investigations, are reported downstream of the ROW within Connetquot River State Park Preserve (see Table 2-7, *Fish Species*).

TABLE 2-7: FISH SPECIES

Brook Trout (*Salvelinus fontinalis*)	Largemouth Bass (*Micropterus salmoides*)
Brown Trout (*Salmo trutta*)	Rainbow Trout (*Oncorhynchus mykiss*)

Source: Friends of Connetquot River, 2013.

Threatened & Endangered Species

The ERM can be used to identify some of New York State's natural resources and environmental features which are state-protected or of conservational concern. Resources tracked by the ERM include freshwater wetlands regulated by the State of New York (outside the Adirondack Park); streams, rivers, lakes, and ponds, and water quality classifications; animals and plants rare in New York, including the general locations of those listed as endangered or threatened, as of December 2012.

The ERM did not yield any records of endangered or threatened species specific to the ROW.

In addition to querying the ERM database, letters have been sent to the USFWS National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), and the NYSDEC (local and regional) Natural Heritage Program (NHP), requesting available information for

endangered and/or threatened species, critical or proposed critical habitats, anadromous/catadromous fisheries and essential fish habitat, wetlands, national wildlife refuges, wilderness areas, wild and scenic river corridors, heritage trust reserves, and/or national and state parks, which may occur on or within the vicinity of the study area.

By letter dated January 23, 2013, the USFWS determined that pursuant to the Endangered Species Act of 1973 (ESA), the proposed action warrants a "no effect" determination and that no further ESA coordination or consultation is required (see attached letter in Appendix E, *Project Correspondence*).

The NY-NHP database for significant natural communities and wetlands, which documents old or potential records of rare plants and animals, was also consulted. The following rare plants have been documented along the railroad where it passes through Connetquot River State Park Preserve: barratt's sedge (*carex barratti*), bead pinweed (*lechea pulchella var. moniliformis*), orange milkwort (*polygala lutea*), and showy aster (*eurybia spectabilis*). In a letter from the New York Natural Heritage Program dated November 5, 2012 (see Appendix E, *Project Related Correspondence*), documentation of these sightings and historical observations indicate that these observations of rare plants were made to the south side of the ROW, along an old sand fire-break road.

The following rare butterflies and moths have been documented in the general vicinity of the ROW: edwards' hairstreak (*satyrium edwardsii*), a rare butterfly observed in Connetquot River State Park and Pinelawn Cemetery. Rare moths observed in Edgewood Oak Brush Plains Preserve (see Figure 2-7, *Parklands* in Section 2.4, *Parklands*) include: a noctuid moth (*chytonix sensilis*), coastal barrens buckmoth (*hemileuca maia*), and fringed dart moth (*Eucoptocnemis fimbriaris*).

2.3.2 Future Conditions without the Proposed Action

Estimation of the condition of natural resources in 2018 without the proposed action, called 2018 No-Build conditions, serves as the baseline for comparison to future conditions with the proposed action in place. In terms of natural resources, 2018 No-Build analysis would include any other projects to be implemented by LIRR or others that might cause a significant negative impact to any of the natural resources in the project study area. However, in the case of natural resources, there are no other known projects to be implemented by 2018 that might impact any of these resources. Therefore, 2018 No-Build conditions are expected to remain the same as existing conditions.

2.3.3 Potential Impacts and Improvements with the Proposed Action

The proposed action would have no significant permanent impacts on soils, groundwater, surface water resources, floodplains, or plant and animal habitats. For these resources, potential impacts would be minor, temporary, and construction-related in nature, associated with the installation of retaining walls and associated backfill through Lakeland County Park. A *Soil Erosion and Sediment Control Plan Certification* would be issued by the Suffolk County Soil and Water Conservation District and would hold the contractor to a series of best management practices to minimize soil erosion during construction. Similarly ~~NYSDEC freshwater wetland and protection of water permits~~ contract specifications would ~~include permit conditions~~ require the contractor to minimize turbidity and sedimentation in the Connetquot River. Details regarding the measures to be taken to protect the stream flowing intermittently through the project site are discussed in Section 2.9, *Construction*.

While there are documented endangered and threatened species and habitat in proximity to the ROW, all are located on the south side of the ROW, away from any construction activities associated with the proposed action. The proposed action would therefore have no significant impact on any threatened or endangered species of plants or animals. As noted above, this finding is confirmed by the USFWS "no effect" determination dated January 23, 2013.

Wetlands and Surface Waters

Approximately 0.15 acres of regulated freshwater wetlands within the LIRR ROW would be permanently impacted in order to construct retaining wall and backfill along the northern side of the ROW associated with installation of the new second track. These impacts would affect a narrow, sliver wetland area within the ROW for a distance of approximately 1,200 linear feet. Where the proposed new second track would cross the Connetquot River, the existing culvert would be extended to the north by approximately 15 feet.

It is important to note that freshwater wetlands impacted by the proposed action on the north side of the ROW are classified as emergent and scrub-shrub wetlands – a wetland type considered less valuable than the predominately forested wetlands located on the south side of the ROW. Part of the rationale in locating the proposed action on the north side of the ROW in this area, as opposed to the south, involved the desire to avoid impacts to the more ecologically valuable wetlands on the south side of the ROW.

In addition to the limited permanent freshwater wetland impacts, approximately 0.35 acres of temporary wetland impact would be associated with an alternative that includes the construction of a temporary access road adjacent to the north edge of the ROW. Under this alternative, the roadway would be in place for no more than six months, and prior to the completion of construction, this area would be restored to its pre-existing condition. Section 2.9 describes and analyzes this alternative in more detail in terms of potential impacts, cost savings and schedule reduction as well as measures required for carrying the potential temporary access roadway over Connetquot River.

Wetland creation, restoration, and enhancement opportunities within the affected watershed will be explored with NYSDEC and included in construction contracts for the proposed action, upon agency concurrence. NYSDEC has indicated that wetlands replacement and/or enhancement at a 3:1 ratio would be appropriate in order to address any permanent wetland impacts. Based on a preliminary estimate of 0.15 acre of permanent impact, the replacement/enhancement area would be 0.45 acre. NYSDEC requested that design revisions be explored to achieve this result.

A field visit was conducted with NYSDEC on April 19, 2013 in which freshwater wetland limits were confirmed and preliminary wetland replacement/enhancement options and strategies were explored. NYSDEC indicated that partial credit towards the .45 acre goal would be given if the pussy willow saplings at the toe of the existing embankment were relocated to the adjacent wetlands during installation of the construction access road.

Opportunities for wetland replacement/enhancement are being explored in the general vicinity of the project improvements within Lakeland County Park. NYSDEC has indicated that it would not entertain any proposal that would involve the removal of existing wooded/natural areas. NYSDEC

suggested that previously disturbed areas be researched for restoration and conversion into wetlands as well as improvement of degraded drainage conditions. Although NYSDEC prefers replacement/enhancement measures to be provided as close to the affected wetland as possible, if adjacent opportunities are not feasible, it would entertain mitigation elsewhere in the watershed.

Design and construction of the proposed action in consultation with NYSDEC would result in no significant impacts to these natural resources. The project team will continue to coordinate with NYSDEC ~~during the permitting process~~ to achieve this goal.

2.4 PARKLANDS

To assess the potential for permanent impacts to parklands as a result of the proposed project, the steps taken included: inventory parklands adjacent to and in the vicinity of the proposed action, describe existing conditions at each park resource, specify elements of the proposed action at each park resource, and assess potential impacts. Based on this process, there would be no permanent significant impacts to parklands as a result of the implementation of the proposed action. Potential temporary impacts at various park resources related to implementation of the proposed action are discussed in Section 2.9, *Construction Impacts*.

2.4.1 Existing Conditions

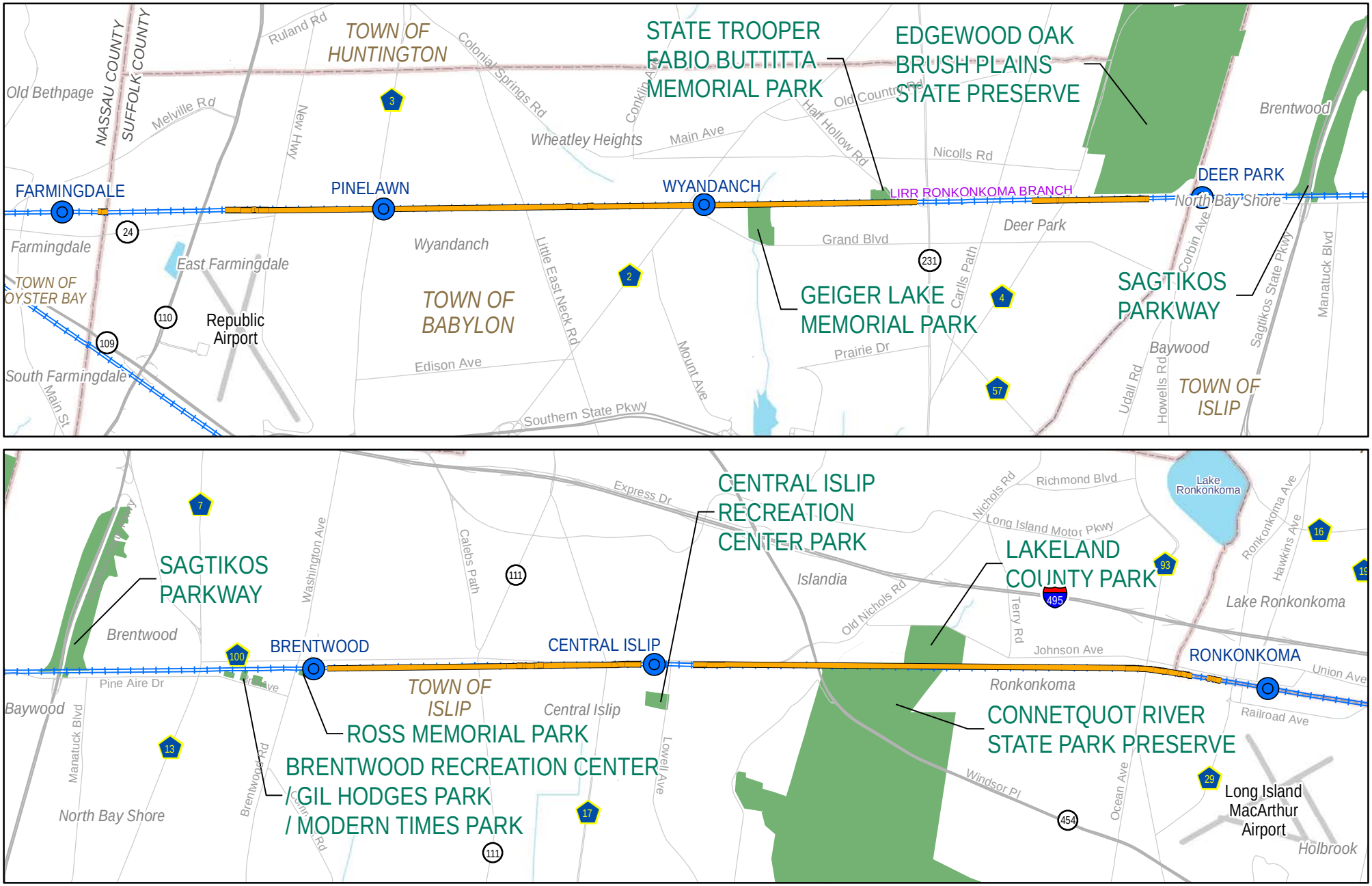
The following 11 local, county, and state parks have been identified adjacent or proximate to the rail ROW (see Figure 2-7, *Parklands*).

Lakeland County Park

Lakeland County Park, on the north side of the LIRR ROW, is in the Incorporated Village of Islandia in the Town of Islip. The park provides active recreational facilities for basketball, shuffleboard, and a playground with picnic area and restroom facilities in the northeastern portion of the park adjacent to the Johnson Avenue entrance. The southwestern portion of the park is almost entirely wooded, with a number of unimproved nature trails. The southeastern portion of the park consists of improved and unimproved nature trails and elevated boardwalks for access to Honeysuckle Pond. The park is part of the Long Island Greenbelt Trail, a federally-designated National Recreational Trail, which extends for approximately 33 miles from Sunken Meadow State Park on the north shore of Long Island to Hecksher State Park on the south shore.

The southern boundary of the park is contiguous with the LIRR ROW. As discussed in Section 1.4.1, *Applicable Permits and Approvals*, the eastern portion of the park, owned by Suffolk County, is a Section 6(f) resource, since certain park improvements in that area of the park were funded through Section 6(f) of the federal Land and Water Conservation Fund Act [Section 6(f)]. The portion of the park covered under Section 6(f) extends approximately 2,084 feet along the ROW from the eastern boundary of the park. The western portion of the park is owned by the Town of Islip, and extends an additional 3,082 feet along the ROW but is not a mapped Section 6(f) resource.

The Long Island Greenbelt Trail runs south through the park from Johnson Avenue, circling around the north and east sides of Honeysuckle Pond on boardwalk (about 400 feet north of the ROW), then approaching the ROW toward the eastern edge of the park. A pedestrian underpass connects the trail underneath the ROW between Lakeland County Park and Connetquot River State Park Preserve to the south.



LIRR Double Track Project
Ronkonkoma to Farmingdale

Parklands

Figure 2-7

Connetquot River State Park Preserve

Connetquot River State Park Preserve (formerly the Southside Sportsmens Club District), approximately 3,473 acres, is in the Town of Islip. The preserve does not provide any active recreational facilities; it does provide approximately 50 miles of unimproved trails for horseback riding, hiking, bird watching, and cross country skiing. Vehicle access is from Route 27 (Sunrise Highway) at its southern border. Fly fishing (by permit only) is available at various locations along the Connetquot River, as well as around the perimeter of the lake. The park contains a museum and visitor center in the historic Southside Sportsmens Club District facility, south of the LIRR rail ROW (see Section 2.5, *Cultural Resources*, for additional information on this historic district).

The park incorporates a fish hatchery for the propagation of various species of trout. However, the hatchery lost its NYSDEC operating permit in 2008, due to the presence of infectious pancreatic necrosis which affects young trout. NYSDEC required several years of quarantine to ensure the disease was eliminated from the river and hatchery facility. The NYSDEC and the Friends of Connetquot are working on a plan to reopen the hatchery.

The northern boundary of the park is contiguous with the LIRR ROW for approximately 5,320 feet (just over a mile). The Long Island Greenbelt Trail emerges from a pedestrian underpass connecting to Lakeland County Park on the north side of the ROW, toward the eastern side of the preserve, and continues south through the preserve.

Central Islip Recreation Center

A 15-acre facility about 1,000 feet south of the LIRR Central Islip Station west of Lowell Avenue on Clayton Street. The facility provides various active recreational venues consisting of baseball, basketball, handball, and tennis, as well as a playground and restroom facilities.

Ross Memorial Park

Ross Memorial Park is a 1.7-acre facility, south of Brentwood Station, lying adjacent to the LIRR ROW for 460 feet. No recreational facilities are provided at this memorial park. The park consists of wooded and landscaped walkways.

Brentwood Recreation Center

Brentwood Recreation Center is a 4.6-acre facility about 300 feet south of the LIRR ROW at Third Avenue, on the east side of 1st Street. The facility provides various active recreational venues consisting of softball and basketball, a boxing ring, as well as a playground, picnic area, and restroom facilities.

Gil Hodges Park

Gil Hodges Park, a 2.7-acre facility with two baseball fields, sits a block west of Brentwood Recreation Center, also between the ROW and the north side of Third Avenue. The park lies adjacent to the ROW for about 250 feet.

Modern Times Park

Modern Times Park is a 2.4-acre facility on Third Avenue in Brentwood, south of the ROW and just west of Gil Hodges Park, providing facilities for baseball in the summer and football in the winter. The northwest corner of the park lies adjacent to the ROW for about 60 feet.

Sagtikos Parkway

Sagtikos Parkway was constructed by the Long Island State Park Commission as a limited access highway for non-commercial vehicles. Considered a "ribbon park" due to its aesthetic features and landscaping, it connects the Northern and Southern State Parkways, the Sunken Meadow Parkway, and other county roads and state highways. Forested portions of the parkway lie adjacent to the north side of the ROW for approximately 2,000 feet and adjacent to south side for approximately 450 feet.

Oak Brush Plains Preserve at Edgewood

Located across Long Island Avenue about 150 feet north the ROW, the Oak Brush Plains State Preserve at Edgewood is an 813-acre area in the Towns of Babylon, Huntington, and Islip. Recreational activities including hiking, biking, bird watching, nature study and appreciation, picnicking, dog training, and falconry are permitted at the Preserve. Hunting is not allowed. A model airplane flying field that existed at the time the land was transferred to NYSDEC is still operating, maintained by the Edgewood Flyers, one of the volunteer stewards.

Access to the Preserve is by permit only. The property is open year round from sunrise to sunset. CR 4 provides vehicular access to the Preserve.

State Trooper Fabio Buttitta Memorial Park

Located across Acorn Street from the north side of the ROW in Deer Park, the facility provides various active recreational venues consisting of swimming pools, roller hockey, basketball, tennis courts, as well as a playground, picnic area, and restroom facilities. The residential community south of the ROW has access to Acorn Street south of the park facility via a handicap-accessible pedestrian underpass.

Geiger Lake Memorial Park

Geiger Lake Memorial Park lies on the south side of Long Island Avenue, about 50 feet south of the ROW. The park is currently under renovation by the Town of Babylon and is not open to the public. A "water spray" facility portion of the park should be opened by Summer 2013, while the remaining facilities are anticipated to be completed by 2015.

2.4.2 Future Conditions without the Proposed Action

Analysis of the condition of parklands in 2018 without the proposed action, called 2018 No-Build conditions, serves as the baseline for comparison to future conditions with the proposed action in place. In terms of parklands, 2018 No-Build analysis would include any other projects to be implemented by LIRR or others that might cause a significant negative impact to one or more of the identified parkland resources. However, in the case of parklands, there are no other known projects to be implemented by 2018 that might impact any of the listed parkland resources. Therefore, 2018 No-Build conditions are expected to remain the same as existing conditions.

2.4.3 Potential Impacts and Improvements with the Proposed Action

Five of the parks (Central Islip Recreation Center, Brentwood Recreation Center, Oak Brush Plains Preserve at Edgewood, State Trooper Fabio Buttitta Memorial Park, and Geiger Lake Memorial Park)

are physically removed from the ROW. Four of the parks (Ross Memorial Park, Gil Hodges Park, Modern Times Park, and Sagtikos Parkway), while adjacent to the ROW, would be located away from any areas of major construction associated with the proposed action. Connetquot River State Park Preserve lies adjacent to the south side of the ROW, in an area where all proposed action construction would be on the north side of the ROW. Lakeland County Park lies on the north side of the ROW, opposite Connetquot River State Park Preserve. While there would be temporary construction-related impacts to Lakeland County Park if an alternative construction method featuring a temporary access road were to be pursued as part of the proposed action, this area would be restored to pre-existing conditions upon completion of construction. See the discussion in Section 2.9.2 for further details regarding these temporary construction impacts.

Since the proposed action would involve constructing a second track immediately adjacent to an existing track in operation for more than 170 years, no significant contextual impacts would result to parklands. As a result, there would be no permanent impacts to parklands as a result of the implementation of the proposed action.

Potential visual impacts to parklands are discussed in Section 2.2, *Visual Impacts;* potential impacts to natural resources present in the parklands are discussed in Section 2.3, *Natural Resources*; potential impacts to cultural resources within parklands are discussed in Section 2.5, *Cultural Resources*; and potential impacts due to operational noise and vibration are discussed in Section 2.7, *Noise and Vibration*. Section 2.9, *Construction Impacts* presents a discussion of potential temporary impacts at a number of the parks, related to construction of the proposed action.

2.5 CULTURAL RESOURCES

A Preliminary Cultural Resources Assessment for the project was completed to determine if there were archaeological or historic architectural resources present within an Area of Potential Effects (APE), that are listed in, eligible for listing in the New York State Register of Historic Places (SRHP) or National Register of Historic Places (NRHP) (together, S/NRHP) and that may be potentially affected by the proposed action. To meet this goal, the effort included background research, a site visit, delineation of possible APEs, analysis, and report preparation. This investigation was conducted by qualified professionals that meet the qualifications set forth in the Secretary of the Interior's Professional Qualification Standards (36 CFR 61).

Cultural resources investigations completed for the proposed action determined that there are no resources listed in or eligible for listing in the S/NRHP within the APE for archaeology or historic architecture. Six resources over 50 years of age were identified in the APE for historic architecture and four recommended not eligible for listing in the S/NRHP (see Table 2-9). Several conversations about the project have been held with the New York State Historic Preservation Office (NYSHPO), prior to the submission of the Preliminary Cultural Resources Assessment on February 6, 2013. By letter dated March 11, 2013, NYSHPO issued an opinion that the proposed action "will have No Adverse Effect on the (cultural) resources, on condition that a construction protection plan (CPP) is developed to avoid damage to certain structures."

Because project improvements are limited to the addition of a second track, crossovers, station platforms, and unimproved access roads where these features already exist, the APEs for archaeology and historic architecture are confined to LIRR ROW limits. All laydown areas for this project, to be used during construction only, would be located within current LIRR ROW. The APE for archaeology has been extensively disturbed by past construction activities related to the transportation use of the corridor, which have greatly affected the preservation of potentially intact archaeological resources. Therefore, it is anticipated that the proposed action would cause no effects to any archaeological resources. Likewise, since no S/NRHP-listed or eligible historic architectural resources were identified in the APE for historic architecture and since, with implementation of an appropriate CPP, potentially eligible resources and resources adjacent to the APE would not be impacted by the proposed action, it is anticipated that the proposed action would cause no effects to historic architectural resources. As a result, no further cultural resources work is recommended.

2.5.1 Existing Conditions

Archaeology

Research gathered from NYSHPO indicates that there are no previously identified archeological sites within the APE for archaeology. However, the APE does traverse two areas of archaeological sensitivity according to NYSHPO SPHINX database and are identified as Sensitivity Areas 1 and 2 (see Figure 2-8, *Historical Architectural Resources and Areas of Archaeological Sensitivity*). Sensitivity Area 1 is centered at the corner of Conklin Street and Broad Hollow Road. Current aerials of the project area within Sensitivity Area 1 display an area within the western half of the Republic Airport surrounded by dense residential and commercial development. Sensitivity Area 2 is just west of Wyandanch, centered on the intersections of South 27th Street and Garden Avenue in the south and Norwood Place and Ridge Road in the north. Aerial images of the project area in Sensitivity Area 2 show dense commercial and residential development surrounding the Pinelawn Memorial

Cemetery. Prior construction activities associated with the LIRR have significantly altered the landscape within the portions of the archaeological APE located within Sensitivity Areas 1 and 2. Grading, cutting, and filling associated with these activities leave little chance for an intact surface containing prehistoric resources within the APE and the potential for prehistoric resources is considered to be low.

Historic map research indicated that 13 former structures, dating from the late 19th and early 20th century, were once located within the archaeological APE. These structures, which are no longer present, were either small ancillary buildings or station platforms associated with the LIRR that would leave little-to-no footprint on the landscape. All of these structures were associated with the LIRR and are no longer extant. Previous construction activities within the archaeological APE, most notably those in 1987 associated with track electrification, would have significantly affected the preservation of historic features such as foundation ruins. Except for the two former passenger station locations (no longer extant) within Deer Park and Brentwood, these structures were small ancillary buildings associated with the LIRR that would leave little-to-no footprint on the landscape. These buildings served as electrician shops, tool houses, bunk houses, water towers, signal houses, freight station platforms, and storage houses. Remnants of the Deer Park and Brentwood stations may exist within the APE, but they would include only the northern edges of the station platforms within the archaeological APE. The remnants of the station structures would offer limited information on their overall layout and offer little research value to archaeologists.

Historic Architectural Resources

Research gathered from NYSHPO revealed that there are no historic properties listed in or eligible for listing in the S/NRHP within the APE for historic architecture; however, there are two S/NRHP-listed properties immediately adjacent to the APE for historic architecture. Based on the limited nature of the proposed improvements, and likelihood that these two properties would not be impacted, they were excluded from the APE for historic architecture. These S/NRHP-listed properties are the LIRR Station at Farmingdale and the Southside Sportsmens Club District (see Table 2-8, *S/NRHP-Listed Properties Adjacent to the APE for Historic Architecture* and Figure 2-8, *Historical Architectural Resources and Areas of Archaeological Sensitivity*). LIRR will continue to consult with NYSHPO with respect to the development and implementation of a CPP, as and to the extent necessary to avoid damage to these or other cultural resources. See the Cultural Resources Technical Memorandum in Appendix H for additional details and locations of these resources.

TABLE 2-8: NRHP-LISTED PROPERTIES ADJACENT TO THE APE FOR HISTORIC ARCHITECTURE

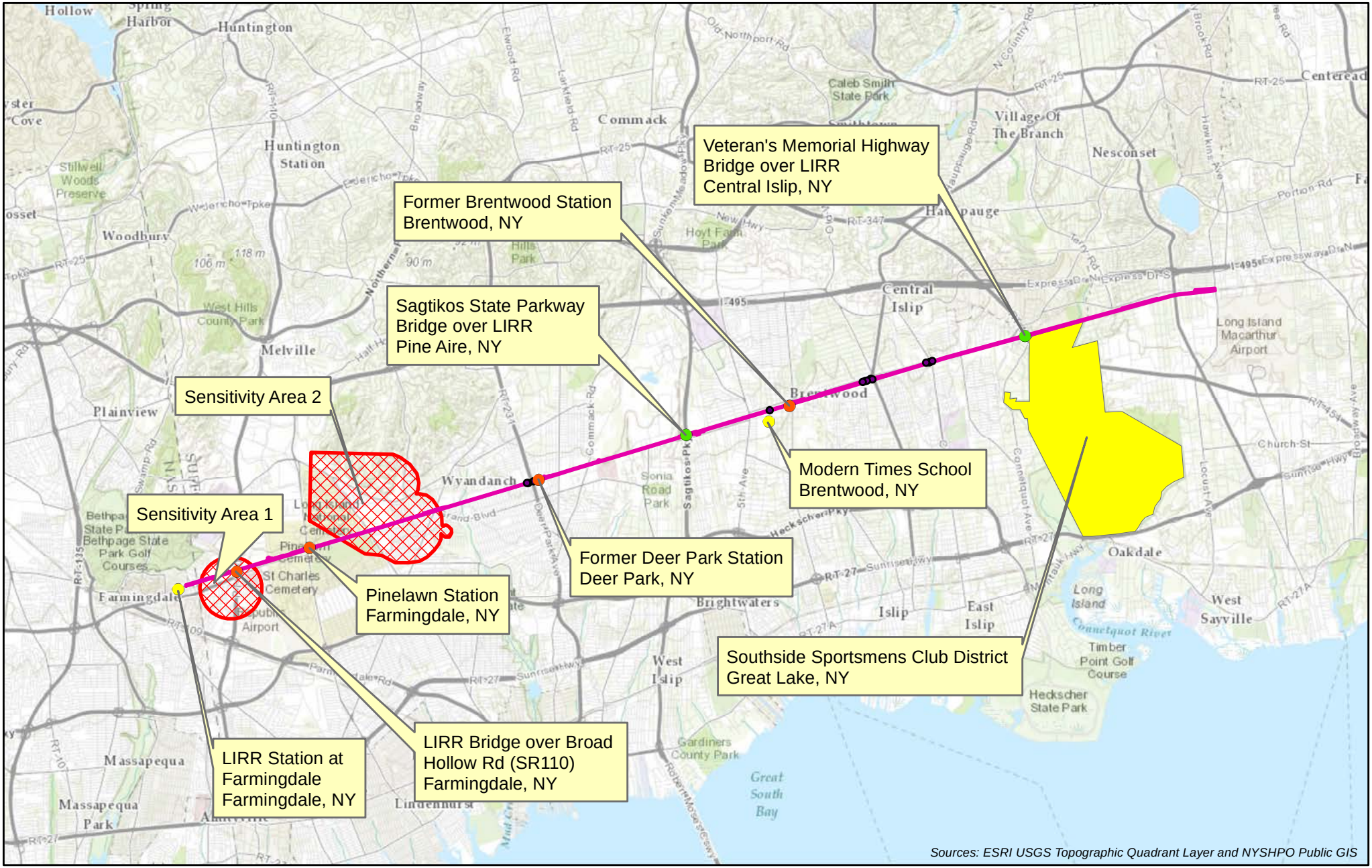
Photograph Number (Appendix H)	Name/Location	Type of Resource	NRHP Number and Date Listed	Period of Significance	NRHP Criteria*	Proximity to Project Area
1	LIRR Station at Farmingdale, Oyster Bay, Nassau County	Building	91NR0000; 9/30/1991	c. 1896-1941	A, C	800 feet west of project area
No Image	Southside Sportsmens Club District, Great River, Suffolk County	Historic District	90NR0186; 6/25/1973	19th century	A, C	Immediately adjacent

Source: *NYSHPO SPHINX Database and NRHP website.*

*Both historic properties are significant under Criteria A and C as outlined in the National Park Service's (1995) *National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation*. Historic properties significant under Criterion A are those properties that are associated with events that have made a significant contribution to the broad patterns of our history. Properties significant under Criterion C are those properties that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master; or that possess high artistic values; or that represent a significant and distinguishable entity whose components may lack individual distinction. See the descriptions in the paragraphs below for a more detailed description of each of the criteria.

LIRR Station at Farmingdale. The LIRR Station at Farmingdale sits outside of the western terminus of the project area, between Farmingdale and Forest Avenues in Farmingdale, Town of Oyster Bay, Nassau County. The LIRR Station at Farmingdale is located on a 70-ft by 300-ft parcel of land, which is within the LIRR ROW but approximately 800 feet outside of the project boundary and the historic architectural APE for purposes of this EA. The building is composed of the original 1896 one-story brick passenger depot and a 1910 two-and-a-half story brick tower (Bonafide). With the exception of the elevated track platform and interior remodeling that has taken place within portions of the station, the 1896 station construction is largely intact. The building continues to operate as a rail station along the LIRR. The building is significant under Criterion A for its association with the development and the expansion of the Long Island Railroad's interurban and rail transportation systems on Long Island. It is also significant under Criterion C as unusual example of a late nineteenth century LIRR station that was adapted for dual use as a passenger trolley station and electric power station during the early twentieth century.

The proposed project's closest boundary is approximately 800 feet east of the Farmingdale Station and therefore, this station is excluded from the APE for historic architecture. The work proposed approximately ¼-mile east of the station consists of a small section of new track to accommodate a crossover. Given the distance and limited nature of the proposed work, it is unlikely that the project has the potential to affect the characteristics that make the station significant for the S/NRHP.



Legend

- Project Location
- SPHINX Areas of Archaeological Sensitivity
- NR Listed Historic Resources
- Historic Resources Recommended Not Eligible
- Historic Resource No Impact / No Eligibility Recommendation
- Former Structure Location

LIRR Double Track Project
Ronkonkoma to Farmingdale

Historical Architecture Resources and Areas of Archaeological Sensitivity

Figure 2-8

0 1 2 4 Miles

Southside Sportsmens Club District. The Southside Sportsmens Club District, a 3,528-acre parcel that forms a corridor-like tract along the Connetquot River, is encompassed within the Connetquot River State Park Preserve, just east of Central Islip. The district is considered significant under Criterion A as it illustrates an important phase of social history on Long Island during the late-19th century. Additionally, the club is significant under Criterion C as a landmark in the settlement of Islip as the wealthy entrepreneurs who created the club built the large neighboring estates which historically and architecturally have characterized Islip development (Weaver). Travelers stayed at Snedicor's Inn, a tavern and hotel that began operation in 1820 and then served as the Sportsmens Club from 1866 to 1973. While the boundaries of the Southside Sportsmens Club District immediately abut the ROW, the historic building and associated structures are 3.5-miles south of the project area in the southern part of the park.

The Southside Sportsmens Club District abuts the southern edge of the recommended APE for historic architecture (see Appendix H, Preliminary Cultural Resources Assessment). In this area, a second track and a retaining wall are proposed on the north side of the alignment, but no work is proposed on the south side of the alignment where the district is located. The portion of the district on the south side of the alignment is heavily wooded with several trails that run along the alignment and then turn south to the interior of the park. The Connetquot River also crosses under the alignment in a culvert and flows south through the district. These natural features are contributing to the district, which is significant for accommodating wealthy travelers and sportsmen from New York City. There are no buildings, structures, or objects in the vicinity of the proposed action and none of the natural features would be physically or visually impacted by the proposed project.

Previously Undocumented Historic Architectural Resources. Following a review of the documentary evidence a qualified architectural historian conducted a field survey of the project area on October 24-26, 2012 that consisted of a vehicular survey and photographic documentation (see Appendix H, *Cultural Resources Technical Memorandum*) of previously undocumented historic architectural resources more than 50 years old within the APE for historic architecture. Field reconnaissance and background research revealed that there are six historic architectural resources more than 50 years of age in the APE (see Table 2-9, *Previously Undocumented Historic Architectural Resources over 50 Years of Age* in the APE for further detail).

TABLE 2-9: PREVIOUSLY UNDOCUMENTED POTENTIAL HISTORIC ARCHITECTURAL RESOURCES OVER 50 YEARS OF AGE in the APE

Photo No. (Appendix H)	Name/ Location	County	Type of Resource	Date of Construction	Proximity to Project ROW	NRHP Eligibility Recommendation Made to NYSHPO
2	LIRR Bridge over Broad Hollow Road (SR 110) Farmingdale	Nassau	Bridge	1953-1966**	Within	Recommended Not Eligible
3	Pinelawn Station Long Island Ave. & Wellwood Ave., Wyandanch	Suffolk	Building	c. 1915; alterations	Within	Recommended Not Eligible
4	Former Deer Park Station Long Island Ave., Deer Park	Suffolk	Building	c. 1936	Within	Recommended Not Eligible
No Image	Sagtikos State Parkway Bridge over the LIRR Bay Shore	Suffolk	Bridge	c. 1952	Within	Unevaluated*
5	Former Brentwood Station 1st Ave. & Brentwood Rd.,Brentwood	Suffolk	Building	c. 1903	Within	Recommended Not Eligible
No Image	Suffolk County Veteran's Memorial Highway Bridge over the LIRR Central Islip	Suffolk	Bridge	c. 1950	Within	Unevaluated*

* These resources were not accessible during the survey, so details on the construction and materials are unknown. While inaccessibility prevented the analysis of the bridge integrity, it is unlikely that the project would have an effect on either the bridge or highway, given the limited nature of the proposed work.
** Approximate construction dates from www.historicaerials.com.

LIRR Bridge over Broad Hollow Road

The LIRR Bridge over Broad Hollow Road (SR 110) is an exposed steel riveted girder railroad bridge with reinforced concrete center piers and abutments, constructed between 1953 and 1966 (see *Cultural Resource Technical Memorandum*, Photograph 9), at the time Broad Hollow Road was widened. The abutments have decorative horizontal scoring in the concrete and the center piers are battered with a decorative raised panel on the north and south sides. The bridge carries two tracks over 8-lanes of traffic.

While the bridge appears relatively unaltered, it is an unremarkable example of an exposed steel riveted girder railroad bridge from the mid-20th century. As a result, it is recommended not eligible for listing in the S/NRHP.

Pinelawn Station

Pinelawn Station is a one-story, 3-bay frame railroad station on the south side of the LIRR on Long Island Avenue near its intersection with Wellwood Avenue (see Cultural Resource Technical Memorandum, Photograph 10). The current building was constructed in 1915 replacing an earlier station built in 1898. The side-gable roof is covered in asphalt shingles, has a full cornice return at the gable ends, and a shed-roof dormer on the south slope. The exterior is currently clad in unpainted T-111 siding that replaced the original clapboard siding. The fenestration was altered to contain double and triple aluminum sash windows with fixed panes. The windows replaced the original two-over-two double-hung sash windows. The foundation appears to be poured concrete. On the west end is a steel and wood canopy. The track-side of the building also features a brick walkway.

The current building was originally constructed on the north side of the tracks, but was moved to the south side of the tracks and east of Wellwood Avenue in 1925. The building was modernized to its current condition (including the canopy and brick walkway) in June 1979 (Huneke).

While this building may be significant for its association with the LIRR and early development of Long Island, the extensive alterations have compromised its integrity. As a result, it is recommended not eligible for listing in the S/NRHP. Proposed work in this vicinity includes a second track on the south side of the existing track and replacement platforms (see Appendix A, Segment 3, Sheet 3 of Appendix H, *Cultural Resources Technical Report*).

Former Deer Park Station

The existing building that formerly served as the LIRR Deer Park Station is a one-story, 5-6-bay, frame railroad station constructed in 1936 (Huneke). The hipped roof is covered in asphalt shingles and has a very wide, open eave (*Cultural Resource Technical Memorandum*, Photograph 11). The exterior is clad in vertical wood board or T-111 siding that replaced the original wood clapboard siding. The exterior is painted white on the upper half and blue on the lower. Only the rear of the building was accessible and has an asymmetrical fenestration. Windows contain one-over-one sash windows of an indeterminable material and have metal protective grates on the exterior. Near the east end of the rear façade is an original wood, cargo entrance and on the west end, a hollow-core steel replacement door. The building is currently used as a LIRR maintenance facility.

While this building may be significant for its association with the LIRR and early development of Long Island, the extensive alterations have compromised its integrity. As a result, it is recommended not eligible for listing in the S/NRHP. Proposed work in this vicinity includes a potential lay down area that encompasses the entire station property, but the station would not be demolished or altered (see Appendix H, *Cultural Resources Technical Report*).

The Sagtikos State Parkway Bridge over the LIRR

The Sagtikos State Parkway is a 5.14-mile north-south artery completed in 1952 as a connection between the Northern State Parkway and the Southern State Parkway (Anderson). The bridge is

reinforced concrete and carries four lanes of traffic over the LIRR. The bridge railings consist of 3-ft steel posts supporting 4-parallel rails running between two rusticated stone parapets. The bridge was inaccessible, so further detail on the construction and materials are unknown.

Engineering plans show no proposed alterations to the LIRR in this vicinity and no construction would occur in the vicinity of the bridge (see Appendix H).

Former Brentwood Station

The existing building that formerly served as the LIRR Brentwood Station is a one-story, five-bay, brick railroad station constructed in 1903 with additions constructed on either end in about 1987 (Wikipedia). The building is currently vacant and the window and door openings are boarded up. The building has a hipped roof clad in asphalt shingles and a very wide, open eave supported by large, timber braces (Cultural Resource Technical Memorandum, Photographs 12 and 13). The window openings have stone sills. The façade has symmetrically arranged fenestration, but all openings are boarded up. The additions have a mansard roof with asphalt shingles and T-111 siding painted cream. An open pergola that appears to be frame is located to the southeast of the building.

A station called "Modern Times" was first constructed on this site in 1870, but burned in 1903 and the current structure was built the same year as a replacement. The station served as the Brentwood Station until 1987, when a new station was constructed at the southeast corner of Suffolk Avenue and Brentwood Road. The former station was subsequently converted into a restaurant shortly after the new station was built. As part of the conversion, two, one-story frame additions were constructed on either end where the platform canopies were once located.

While this building may be significant for its association with the LIRR and early development of Long Island, the extensive alterations have compromised its integrity. As a result, it is recommended not eligible for listing in the S/NRHP. No work is proposed in the vicinity of the building (see Appendix H, *Cultural Resources Technical Report*, Appendix A, Segment 2, Sheet 4).

Suffolk County Veteran's Memorial Highway Bridge over the LIRR

The Suffolk County Veteran's Memorial Highway is a 13.67-mile east-west artery completed by the Suffolk County Department of Public Works in 1950. The bridge carries four lanes of traffic over the LIRR and contains poured concrete Jersey barriers on the north, south, and center of the bridge. The bridge was inaccessible, so further detail on the construction and materials are unknown.

Proposed alterations to the LIRR in this vicinity include a second track and an employee access road on the north side of the LIRR ROW (see Cultural Resource Technical Memorandum, Appendix A, Segment 1, Sheet 3). While inaccessibility prevented the analysis of the integrity of bridge, it is unlikely that the project would have an effect on the bridge or highway, given the limited nature of the proposed work.

2.5.2 Future Conditions without the Proposed Action

Analysis of condition of cultural resources in 2018 without the proposed action, called 2018 No-Build conditions, serves as the baseline for comparison to future conditions with the proposed action in place. In terms of cultural resources, 2018 No-Build analysis would include any other

projects to be implemented by LIRR or others that might cause a significant negative impact to one or more of the identified cultural resources. However, in the case of cultural resources, there are no other known projects to be implemented by 2018 that might impact any of the identified cultural resources. Therefore, 2018 No-Build conditions are expected to remain the same as existing conditions.

2.5.3 Potential Impacts and Improvements with the Proposed Action

Archaeology

Prior construction activities associated with the LIRR have significantly altered the landscape within the archaeological APE. Grading, cutting, and filling associated with these activities leave little chance for an intact surface containing prehistoric resources within the APE and the potential for prehistoric resources is considered to be low. Almost half of the soils mapped within the APE are classified as man-made or cut-and-fill soils.

Portions of the SPHINX identified Sensitivity Areas 1 and 2 located within the archaeological APE would have suffered the same grading, cutting and filling disturbances that are present within the rest of the APE. The potential for prehistoric or historic archaeological resources within Sensitivity Areas 1 and 2 is considered to be low.

Historic map research identified 11 structures within the archaeological APE on late-19th and early to mid-20th century Sanborn maps and three former structures on the 1873 Beers Atlas of Long Island. All of these structures are associated with the LIRR and are no longer extant. Previous construction activities within the archaeological APE, most notably those in 1987, would have significantly affected the preservation of historic features such as foundation ruins. Regardless, except for the two passenger station locations within Deer Park and Brentwood, these structures were small ancillary buildings associated with the LIRR that would leave little-to-no footprint on the landscape. Remnants of these stations may exist within the APE, but they would include only the northern edges of the station platforms adjacent to the LIRR. These station remnants would offer limited information on the overall layout of the stations themselves and little research value.

As a result of these findings, it is anticipated that the proposed action would have no effect on S/NRHP-listed, eligible, or potentially eligible resources in the APE for archaeology.

These findings were submitted to the NYSHPO on February 6, 2013. In a response letter dated March 11, 2013, NYSHPO stated that the project will have No Adverse Effect on cultural resources, on condition that a CPP is developed to avoid damage to certain structures. NYSHPO also requested that if any archaeological deposits are uncovered during the work, NYSHPO should be contacted to determine how to proceed.

Historic Architectural Resources

There are no historic properties listed in, eligible for listing in, or recommended eligible for listing in the S/NRHP within the APE for historic architecture. As previously mentioned, there are two S/NRHP-listed historic properties that are just outside the historic architectural APE. Proposed work in the vicinity of the LIRR Station at Farmingdale (outside the APE) is over 800 feet east of the station and includes construction of a small piece of crossover track. Since the station falls outside the APE,

the proposed project would cause no effects to the LIRR Station at Farmingdale. Proposed work in the vicinity of the Southside Sportsmens Club District includes construction of a second track and a retaining wall, both on the north side of the ROW. The district abuts the south side of the LIRR ROW. Since the district falls outside the APE, the proposed project would cause no effects to the Southside Sportsmens Club District. In addition, no significant construction-related effects would result to this resource, and contextual effects would not result from construction or operation of a second track adjacent to a rail line that has operated along the boundary of the Southside Sportsmen's Club District for more than 100 years.

There are six potential historic architectural resources within the APE that were previously undocumented. Four of those resources are recommended not eligible based on loss of integrity. Two resources were inaccessible and thus were not evaluated, but given the limited nature of the project activities (addition of a second track), and the fact that both bridges are elevated and would not be physically impacted, it is likely that the proposed action would cause no effects to those resources (see Appendix H, *Cultural Resources Technical Report*, Figures 1 through 8).

As a result of these findings, it is anticipated that the proposed action would have no effect on S/NRHP-listed, eligible, or potentially eligible resources in the APE for historic architecture.

These findings were submitted to the NYSHPO on February 6, 2013. In a response letter dated March 11, 2013, NYSHPO stated that the project will have No Adverse Effect on cultural resources with the condition that a construction protection plan is developed for the remaining historic stations, bridges, and the Southside Sportsmens Club Historic District. NYSHPO stated that precautions should be taken with respect to vibration, noise, and other potential hazards. LIRR will continue to consult with NYSHPO with respect to the development and implementation of a CPP, as and to the extent necessary to avoid damage to relevant cultural resources.

2.6 CONTAMINATED MATERIALS

A review was performed of Sanborn Fire Insurance Maps and regulatory databases to identify any potentially contaminated sites within 200-feet of the LIRR ROW. The type and extent of contamination falls into one of the following two categories: residual contamination or contamination associated with industrial/commercial uses.

Residual contamination associated with railroad operations may be found within the ROW along the length of the area where the proposed action would be implemented. The most commonly reported contaminants along rail ROWs include arsenic (used as a herbicide to control weeds), metals, constituents of oil and fuel (which may have dripped from rail cars), creosote (used to preserve wood ties), coal ash from engines, polynuclear aromatic hydrocarbons (PAHs) from diesel exhausts, fill material used during placement of railroad tracks, and polychlorinated biphenyls (PCBs) found within transformers and capacitors associated with train engines and rail cars.

Contaminated materials can remain undetected for many years and pose no threat to receptors, including but not limited to, nearby workers, residents, and passersby. However, intrusive construction activities like excavation, earthmoving, and dewatering could expose contaminants, thereby providing a potential exposure pathway for construction workers, residents, and passersby who might come in contact with the contaminants if disturbed soil and groundwater are not properly managed. Even then, for this to be problematic, contaminants would have to be present at concentrations that constitute sufficient dose to produce adverse health effects among the construction workers and other receptors.

For these reasons, detailed specifications relating to the management of non-hazardous and hazardous materials (soil, construction debris, and groundwater) would be incorporated into a Construction Environment Protection Program (CEPP) for the project in order to govern activities in known or potentially contaminated areas.

Potential areas of contamination associated with industrial/commercial uses adjacent to the ROW were based on the identification of current and historic industrial/commercial operations.

2.6.1 Existing Conditions

The memorandum documenting findings regarding contaminated materials is attached in Appendix G, *Contaminated Materials Technical Report*, and summarized herein.

Sanborn Map Summary

Historical information for the properties located within 200-feet of the LIRR ROW was obtained by review of available Sanborn Fire Insurance Maps. These maps were available only for limited sections of the study area, near the Farmingdale and Central Islip train stations. Since the historical Sanborn maps were only available for a small portion of the rail ROW, the historical information about the remaining project corridor was obtained from the review of relevant governmental databases (see following section). Certain operations on surrounding properties within 200-feet of the LIRR ROW were identified on Sanborn maps that had the potential to impact the soil and groundwater adjacent to the LIRR ROW. The locations and types of these operations that could potentially impact the soil and groundwater within the LIRR ROW are identified below.

- Atlantic Avenue between Depot Avenue and Oakview Avenue
  - Gasoline tanks, a machine shop, and a truck repair shop
- Eastern Parkway between Oakview Avenue and Denton Place
  - Bausch Picture Frame & Moulding Co site (resin melting kettle, enameling, gilding & brushing, air compressor, coal storage)
  - A.H. Hews & Co. site (paint shop, boiler room, fuel tanks, and transformer vaults)
  - Seeley & Co. Inc property (boiler room, alcohol storage area, distilling department, laboratory)
  - J. Leopold & Sons, Inc. (boiler rooms)
  - Village Water Works
  - Plastic Calendering Corporation properties
  - Glen Cove Welding & Iron Works (paint spraying, acetylene generator, boiler room, machine shop and press room)
  - B.H. Aircraft Co Inc
- 3/4-mile East of the Farmingdale LIRR Station
  - Silk Dying Co Inc property (dye house, soap shed, carpenter, chemical tanks, boiler room, stock room)
- Suffolk Avenue between Carleton Avenue and Raleigh Avenue
  - Store front with three gasoline tanks
  - Auto repair shop with four gasoline tanks
- Suffolk Avenue between Pineville Avenue and William Street
  - Auto repair shop
  - Advertising banner manufacturing operation
- Suffolk Avenue between Peters Boulevard and Allyn Lane
  - Food packaging with fuel oil tank
  - Hendrickson Fuels with an oil warehouse

Database and Record Review Summary

A search of various governmental databases was conducted by Environmental Data Resources, Inc. (EDR). A site specific environmental database report prepared by EDR, covering the full extent of the LIRR rail ROW, was reviewed to determine the potential for environmental impacts along the LIRR ROW from on-site and/or off-site sources of concern. Based on the regulatory status (e.g., violations, open spill cases, tank test failures, etc.) of the cases, the following sites have been identified with a potential to impact soil and groundwater within the study area:

- Old Gas Station - 1 Railroad Avenue, Ronkonkoma, NY
- Cars by Stavros - 1 Railroad Avenue, Ronkonkoma, NY
- Tom Kenney - Easton Street/Elm Avenue, Ronkonkoma, NY
- Beval Engine & Machine Co Inc - 403 Suffolk Ave, Central Islip, NY
- Mackenzie Chemical - 1 Cordello Avenue, Central Islip, NY
- Contract Cosmetics - 1599 Ferndale Boulevard, Central Islip, NY
- Perrier Car Wash & Express Lube - 120 West Suffolk Avenue, Central Islip, NY
- Jet Line Products - 395 Eastern Pkwy, Farmingdale, NY
- Chemical Mgt - 361 Eastern Parkway, Farmingdale, NY
- Unknown - 345 Eastern Parkway, Farmingdale, NY
- 7-11 - 150 North Main Street, Farmingdale, NY

- Weld Built Body Co Inc - 276 Long Island Avenue, Wyandanch, NY
- D Engine Rebuilders Inc - 188 Long Island Avenue, Wyandanch, NY
- Liberty Industrial Refinishing Corp – 550 Suffolk Avenue, Brentwood, NY
- Texaco S/S - 785 Suffolk Avenue, Brentwood, NY
- Recharge Basin - Suffolk Avenue/Washington, Brentwood, NY
- Cohen Rental Property - 724 Long Island Avenue, Deer Park, NY
- Modern Packaging Services - 515 Acorn Street, Deer Park, NY

Appendix G, *Contaminated Materials* contains a memorandum summarizing the results of the Sanborn map review and the regulatory database review.

Limited Soil Sampling Program

A limited soil sampling program was conducted to assess current environmental conditions and to characterize subsurface soils along the proposed development area. All soil sampling was conducted in accordance with the procedures set forth in the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010. The limited soil sampling program was performed on February 28 and March 3, 2013 for three representative boring locations along Phase 1 (Segment 1) (Boring ID's: B1-02, B1-06 and B1-15). Soil samples were analyzed for the following parameters:

- Target Compound List (TCL) and CP-51-Listed VOCs plus 10
- TCL and CP-51-Listed Semi-Volatile Organic Compounds (SVOCs) plus 15
- TAL Metals (less aluminum, calcium, iron, magnesium, potassium and sodium)
- TCL Pesticides and Herbicides
- TCL Poly-Chlorinated Biphenyls (PCBs)
- Cyanide
- Mercury
- Total Petroleum Hydrocarbons (TPH), Diesel Range Organics/Gasoline Range Organics (DRO/GRO)
- Hexavalent Chromium

The samples were collected and containerized in accordance with NYSDEC/United States Environmental Protection Agency (USEPA) protocols. Laboratory analytical results were compared to the Unrestricted Use Soil Cleanup Objectives (SCOs) and the Restricted-Residential SCOs found in 6 NYCRR 375-6. Additionally, the Supplemental Soil Cleanup Objectives (SSCOs) outlined in Table 1 of the Commissioner Policy 51 (CP-51), "Soil Cleanup Guidance", dated October 21, 2010 were used to evaluate the soils data. A review of the soil sample analytical results indicates that no VOCs, PCBs, metals, pesticides or herbicides were detected in any of the samples at concentrations exceeding their respective Unrestricted Use SCOs, Restricted Residential SCOs, or SSCOs from CP-51. Several SVOCs were detected in one sample (sample ID: B1-02 [0-5]) at concentrations slightly exceeding their respective Unrestricted Use SCO and Restricted Residential SCO. These SVOC concentrations are likely associated with random shallow fill material located at the surface of the site.

2.6.2 Future Conditions without the Proposed Action

Without the proposed project, the potential presence of hazardous materials, described previously, would be expected to continue to exist in their current state.

2.6.3 Potential Impacts and Improvements with the Proposed Action

Residual contamination is expected to be encountered within the ROW along the length of the area where the proposed action would be implemented. As evidenced by the limited soil sampling conducted in February/March 2013, while no VOCs, PCBs, metals, pesticides or herbicides were detected in any of the samples at concentrations exceeding their respective Unrestricted Use SCOs, Restricted Residential SCOs, or SSCOs from CP-51, several SVOCs were detected in one sample at concentrations slightly exceeding their respective Unrestricted Use SCO and Restricted Residential SCO.

Any potential impact from or exposure to contaminated materials would occur during project construction when excavation and the movement of soils would take place. As such, these impacts are identified and addressed in Section 2.9, *Construction Impacts* of this EA. As noted in that section, with the procedures LIRR would incorporate into the construction contracts for the proposed action, no significant impacts associated with contaminated materials are likely to occur during the period of construction. In terms of post-construction impacts from or exposure to contaminated materials during operation of the second track, the operation of additional trains and routine maintenance associated with those operations would not pose significant impacts with the implementation of appropriate health and safety procedures, as is currently the case.

2.7 NOISE AND VIBRATION

Potential noise and vibration effects resulting from implementation of the proposed action include both long-term changes in the noise and vibration environment for the project ROW, based on the operation of existing and future commuter rail service, and short-term effects resulting from the construction of proposed improvements (described in Section 2.9.5). This section addresses operational noise and vibration, based on the methodology and findings described within the *LIRR Double Track Project – Noise and Vibration Technical Report* (see Appendix C, *Noise and Vibration Technical Report*). This noise and vibration analysis evaluates the potential impact of: 1) the addition of a second track along segments of the LIRR Ronkonkoma Branch line; and, 2) increase in train service as a result of the proposed action.

The noise and vibration analyses were conducted in accordance with the Federal Transit Administration (FTA) guidance document, *Transit Noise and Vibration Impact Assessment (2006)* (FTA Manual). The procedures in the FTA Manual were specifically developed by FTA to predict and assess noise and vibration impacts from proposed fixed-rail transit projects. As a result, the FTA Manual provides an appropriate framework for guiding the assessment of noise and vibration impacts that could result from the operation of the proposed project.

Results of the noise and vibration general assessment indicate that there would be no significant increases in operational noise or vibration levels at nearby sensitive noise receptors as a result of the project. Therefore, the proposed action would not result in noise or vibration impacts, in accordance with the criteria set forth in the FTA Manual.

2.7.1 Noise

Noise Methodology

The assessment of noise conducted for the proposed action followed the procedures outlined in the FTA Manual. Based on the procedures in that guidance document, the noise evaluation involved the following steps:

1. Representative noise-sensitive receptors (consisting of existing residential and institutional uses) were identified in close proximity to the project ROW.
2. Long-term (24-hour) and short-term (1-hour) noise monitoring was conducted to determine local ambient noise conditions. Monitored noise levels were adjusted for individual receptors, based on their distance from the existing track.
3. In accordance with the noise distance screening procedures in the FTA Manual, if noise-sensitive receptors were determined to be too distant from the corridor to experience impacts from the project, they were not considered for assessment purposes.
4. For selected representative receptors, general noise assessment procedures for conventional trains were used to predict future noise levels resulting from operation of the proposed action.
5. To determine potential noise impact, project-related noise resulting from increased service (comprised of 22 additional trains) on a double-track configuration (i.e., project-related combined total noise exposure) was compared to the combination of the existing noise environment and the impact threshold levels set forth in the FTA Manual (i.e., the allowable combined total noise exposure). Also considered was the shifting of

existing LIRR and freight trains towards sensitive receptors. Overall, impact is deemed to occur if project-related combined total noise exposure exceeds the allowable combined total noise exposure set forth in the FTA Manual.

Fundamentals of Noise

Noise, referred to as unwanted sound, is measured using a logarithmic unit called a decibel (dB). Noises contain sound energy at different frequencies (or pitch) whose range depends on the individual noise source. To replicate the response of the human ear to noise, noise levels at different frequencies are adjusted using a process referred to as A-weighting, commonly expressed as dBA.

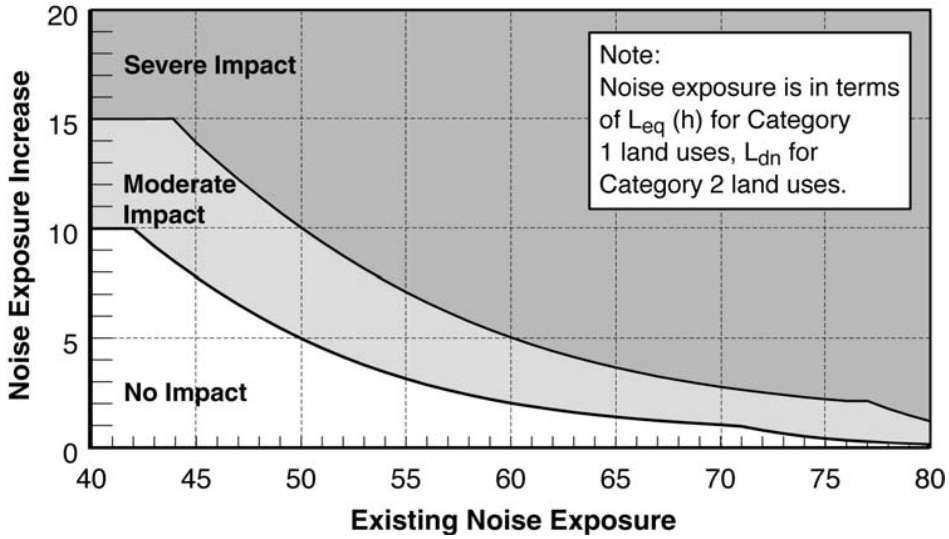
At sensitive receptors where sleep is essential, such as residences and hospitals, the descriptor most often used in noise analyses is the day-night average sound level or Ldn. For institutional uses where primary occupation is for daytime use, the Leq or 1-hour equivalent noise level is used as a descriptor. Equivalent Sound Level is considered to be directly related to the effects of sound on people, since it expresses the equivalent magnitude of the sound as a function of frequency of occurrence and time.

The Ldn is the cumulative 24-hour day-night Leq noise level that adds more weight to noises made during late night hours as people tend to be more sensitive to noises during these hours. According to the FTA Manual, typical Ldn levels for community noise range from a high of 85dBA in a "downtown city" environment to a low of 45 dBA in a "small town residential area."

Noise Sources. Rail noise is affected by several factors, including the distance between the noise source and the receptor and the terrain between a receptor and a noise source. For the proposed action, noise would be generated from the wheel-rail interaction of trains, train horn noise, and grade-crossing bells.

Noise Impact Criteria. With respect to conventional rail noise, the criteria used to assess potential impacts of transit projects as set forth in the FTA Manual are shown on Figure 2-9, *Allowable Transit Noise Increases*.

FIGURE 2-9: ALLOWABLE TRANSIT NOISE INCREASES (in decibels)



Source: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

These criteria group noise-sensitive land uses into the following three categories:

Category 1 – Buildings or parks where quiet is an essential element of their intended purpose.

Category 2 – Residences and buildings where people normally sleep.

Category 3 – Institutional land uses with primarily daytime and evening use (schools, churches, etc).

For land use Categories 1 and 3, the 1-hour Leq noise descriptor is used, while land use Category 2 properties are assessed using the Ldn descriptor to account for nighttime sensitivity. Noise impacts, as defined within the FTA Manual, are categorized as being either "moderate impacts" or "severe impacts." However, for heavily used corridors, such as the proposed action, even moderate impacts are identified as severe by the FTA Manual.

Because the proposed action includes both the addition of a second track and increased rail service, the future impact determination involves a comparison of project-related combined total noise exposure and allowable combined total noise exposure under the FTA Manual. According to the FTA Manual, and as demonstrated in Table 2-10, *Examples of Noise Impact Criteria for Transit Projects Effect on Cumulative Noise Exposure* the justification for this lies in the fact that people typically exposed to high levels of ambient noise should be expected to tolerate only a small increase in community noise, as the result of a new rail project. Alternatively, when existing community noise levels are low, application of the criteria from the FTA Manual allows for a greater increase in noise from a new project.

TABLE 2-10: EXAMPLES OF NOISE IMPACT CRITERIA FOR TRANSIT PROJECTS EFFECT ON CUMULATIVE NOISE EXPOSURE (L_{dn} or L_{eq} in dBA)

Existing Noise Level*	Project Noise Exposure*	Allowable Combined Total Noise Exposure Level	Allowable Noise Exposure Level Increase
45	51	52	7
50	53	55	5
55	55	58	3
60	57	62	2
65	60	66	1
70	64	71	1
75	65	75	0

Source: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.
*Existing Noise Level and Project Noise Exposure data are illustrative examples only. They do not represent measurements or projections for the Double Track Project.

Existing Conditions

Existing noise sensitive land uses were identified by screening GIS data for buildings with residential or institutional uses near the project ROW. This review was supplemented by field work to confirm the existence of these sensitive uses and their proximity to the ROW. Differing land uses, including commercial, industrial, and residential were observed along the entire length of the project ROW. While some areas do not contain any sensitive building receptors, others have numerous properties which could be affected by the proposed action. Some of these noise-sensitive properties are currently located as close as approximately 50 feet from the centerline of the existing tracks.

Train noise is clearly audible near homes abutting the ROW. At some locations, the contribution to ambient noise levels from local vehicular traffic on the highways and arterial roadways is significant. In addition, two airports exist at the western and eastern terminus of the project ROW (Republic Airport and Long Island MacArthur Airport). Although the associated airplane flyovers to and from these airports may contribute to overall ambient noise levels at a small number of locations, they do not represent a significant component of those noise levels.

Noise Data Collection. For purposes of conducting the noise assessment for the proposed action, a noise monitoring program was conducted during the months of November and December 2012 and February 2013. Existing ambient noise levels were monitored at several LIRR property locations along the ROW. These monitoring locations were selected following an evaluation of several factors, the most important of which was their ability to adequately represent residential or other land use sensitivity to project-related changes in noise levels. All of the selected monitoring locations were representative of groups of larger sensitive land use receptor clusters. Based on where noise monitoring equipment was located relative to the track centerline, adjustments of measured noise levels were made to reflect actual distance from representative receptors to the track centerline.

Long-term (24-hour) monitoring was conducted at selected locations. Short-term (1-hour) noise levels were subsequently extracted from the individual 1-hour noise measurements that make up the 24-hour monitoring results. To properly assess existing conditions for all locations along the project ROW, noise monitoring was also conducted at one additional non-LIRR location (Brentwood Elementary School). This additional location was monitored for long-term noise. Noise monitoring locations are shown graphically on Figure 2-10, *Noise Monitoring Locations*.

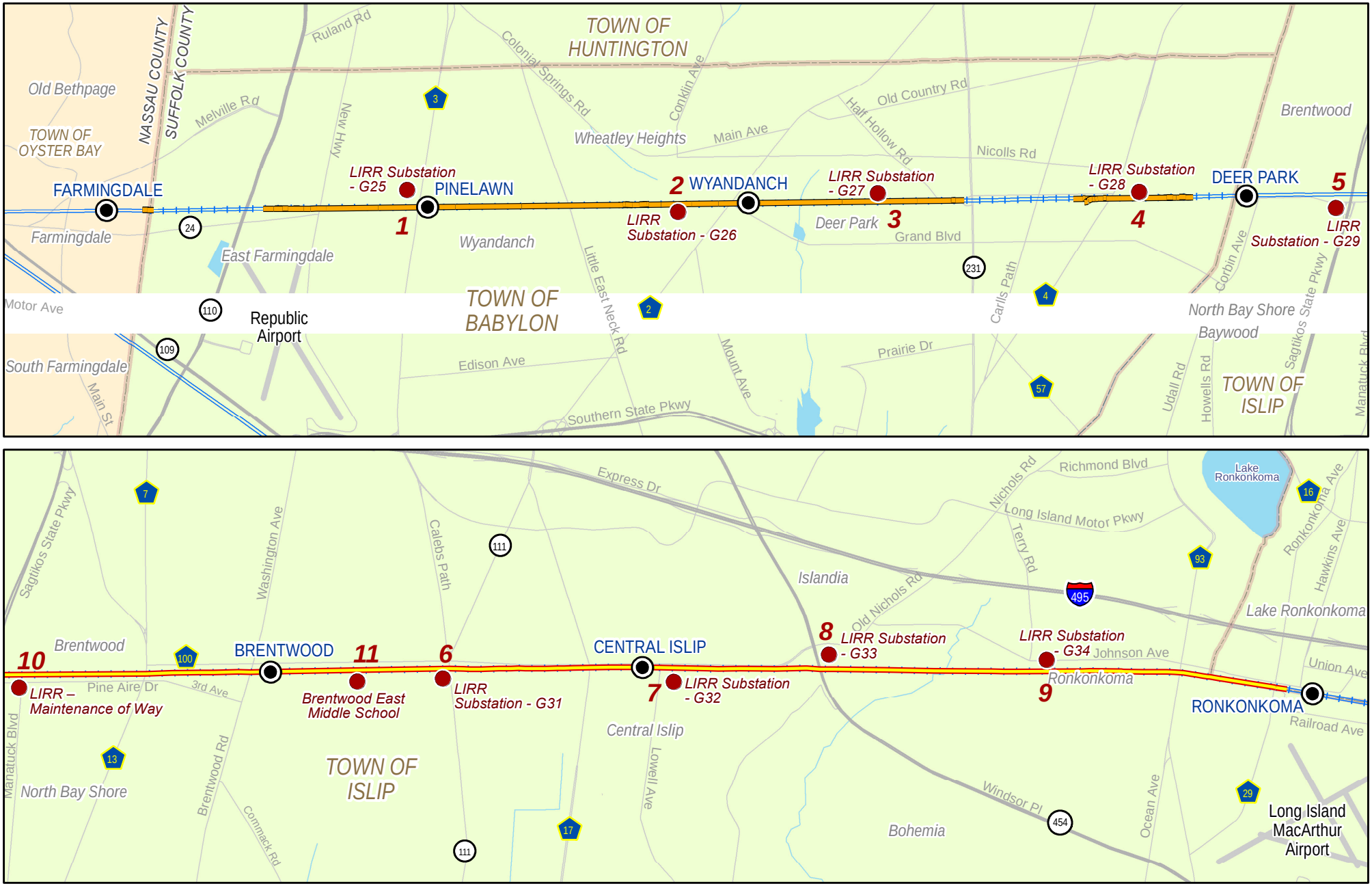
For sensitive locations where the monitored sites would not adequately represent the existing noise environment, noise levels were derived using recommendations in the FTA Manual. A more detailed explanation of noise monitoring procedures and methodology are contained in the *LIRR Double Track Project - Noise and Vibration Technical Report*.

Tabulations of existing noise levels are provided in Table 2-11, *2013 Long-Term Noise Monitoring Levels*.

TABLE 2-11: 2013 LONG-TERM NOISE MONITORING LEVELS

Monitoring Site Number	Monitoring Location Description	Date	Distance to Existing Track Centerline (Feet)	Duration (Hours)	Existing Noise Exposure (dBA)
					L_{dn}
1	LIRR Substation - G25	11/19/2012	55	24	80.5
2	LIRR Substation - G26	11/20/2012	150	24	72.1
3	LIRR Substation - G27	11/19/2012	95	24	77.6
4	LIRR Substation - G28	11/28/2012	42	24	75.3
5	LIRR Substation - G29	11/29/2012	46	24	76.4
6	LIRR Substation - G31	11/28/2012	50	24	79.1
7	LIRR Substation - G32	12/6/2012	53	24	76.5
8	LIRR Substation - G33	11/29/2012	50	24	78.9
9	LIRR Substation - G34	12/7/2012	31	24	80.3
10	LIRR - Maintenance of Way	11/19/2012	40	24	79.7
11	Brentwood East Middle School	2/7/2013	53	24	76.2

As shown in Table 2-11, measured noise levels along the immediate edge of the project corridor are quite high. This is not unexpected since the monitored locations were very close to the track centerline of a heavily used rail corridor. However, noise levels representative of the studied sensitive receptors were generally projected to be less since the distances from the track centerline for these properties would be greater.



LIRR Double Track Project
Ronkonkoma to Farmingdale

Noise Monitoring Locations

Figure 2-10

Potential Impacts and Improvements

Once potentially impacted receptors are identified, prediction of noise impacts involves a determination of project-related noise levels at representative noise sensitive locations. This determination accounts for both the increased project-related train volume along the ROW and the project-related shift in the rail tracks which effectively bring trains closer to certain receptors. Predicted levels are then assessed using applicable noise criteria from the FTA Manual. For the proposed action, these assessment locations include Category 2 land uses, such as single-family residences, and Category 3 land uses, such as schools and churches (there are no Category 1 land uses in the study area). Table 2-12*, Noise Impact General Assessment (2013) Category 2 Land Uses* shows the resulting impact determination assessment performed for Category 2 land uses. Table 2-13, *Noise Impact General Assessment (2013) Category 3 Land Uses* shows the resulting impact determination assessment performed for the Category 3 land uses.

Each of the noise sensitive receptors examined would either be individually affected by the proposed action or is representative of a cluster of potentially affected noise sensitive properties. Both Tables 2-12 and 2-13 present the level of impact as a function of the distance between the receptor and the track, the existing noise level, and the combined total noise exposure level allowable under the criteria set forth in the FTA Manual.

As shown in Table 2-12, the noise assessment reveals that as a result of the proposed action, no significant operational noise impacts would occur at Category 2 land use locations. Similarly, as shown in Table 2-13, the noise assessment reveals that no significant project-related operational noise impacts would occur at any Category 3 land uses. Locations at which noise impact determinations were made, listed in Tables 2-12 and 2-13, are illustrated in Figure 2-11, *Noise Receptor Locations*.

Although Table 2-12 shows that no significant project-related operational noise impacts would occur for Category 2 land uses, at certain locations, project-related train operations would result in a slight increase in noise level above the existing ambient. However, none of these increases would be greater than 1 dB. Based on elementary noise principals, an increase of 3 dB is normally the smallest change in sound level perceptible to the human ear. Therefore, although ambient noise levels along the majority of the rail corridor are already quite high, since the maximum project-related increase in noise level for Category 2 land uses would range from 0 to 1dB, it is unlikely that most residents would be able to perceive the difference.

While no noise impacts to Category 3 land uses were predicted to occur under the FTA Manual criteria (see Table 2-13), at several of the studied locations project-related operations would result in noise levels increasing by more than 3 dB above the ambient. However, unlike Category 2 land uses, Category 3 land uses are not as sensitive to noise and thus can accommodate a greater increase in noise level. In addition, the ambient 1-hour L_{eq} noise levels used for the Category 3 property assessments are lower relative to the generally higher L_{dn} noise levels used for the Category 2 assessment and therefore, based on the FTA Manual, it is reasonable to allow for a greater change in the community noise for these properties.

TABLE 2-12: NOISE IMPACT GENERAL ASSESSMENT (2013) CATEGORY 2 LAND USES

Site Number	Representative Receptor Description [1]	Land Use	Existing L_{dn} Noise Level [2]	Distance to Future Track Centerline (feet)	Project-Related Combined Total Noise Exposure Level (dBA)	Allowable Combined Total Noise Exposure Level (dBA)	Allowable Increase in Noise Level Over Existing (dB)	Noise Impact?
1LT	64 Long Island Avenue	SFR	73	125	73	74	1	No
2LT	142 Long Island Avenue	SFR	74	120	74	75	1	No
3LT	168 Merritt Avenue	SFR	75	123	75	75	0	No
4LT	740 Long Island Avenue	SFR	76	100	76	76	0	No
5LT	1749 N Thompson Drive	SFR	60	362	61	62	2	No
6LT	122 Suffolk Avenue	SFR	69	110	69	70	1	No
7LT	186 Suffolk Avenue	SFR	68	143	68	69	1	No
8LT	20 Pine Aire Drive	SFR	65	298	66	66	1	No
9LT	6 Quinn Place	SFR	72	100	72	73	1	No
10LT	Leroy Avenue	SFR	71	105	72	72	1	No
11LT	Lincoln Road	SFR	71	82	72	72	1	No
12LT	26 Meadowbrook Drive	SFR	55	500	56	58	3	No
13LT	970-976 Suffolk Avenue	SFR	65	195	65	66	1	No
14LT	103 Ames Street	SFR	60	230	61	62	2	No
15LT	4 East End Avenue	SFR	73	77	74	74	1	No
16LT	5 Railroad Avenue	SFR	70	90	71	71	1	No
17LT	6 1st Avenue	SFR	66	126	67	67	1	No
18LT	5 Weeks Avenue	SFR	65	185	66	66	1	No
19LT	N/E corner of Dovecote Lane & Suffolk Avenue	SFR	65	215	66	66	1	No
20LT	4 Pinewood Avenue	SFR	73	95	73	74	1	No
21LT	276 E Suffolk Avenue	SFR	65	180	66	66	1	No
22LT	25 Windsor Place	SFR	67	162	68	68	1	No
23LT	29 May Court	SFR	74	46	75	75	1	No
24LT	409 Easton Street	SFR	74	63	74	75	1	No
25LT	2419 Sycamore Avenue	SFR	68	105	69	69	1	No
26LT	742 Easton Street	SFR	70	80	71	71	1	No
27LT	Penny Circle @ Golden Avenue	SFR	71	65	72	72	1	No

Source: STV Incorporated, 2013.

SFR = Single-family Residential, MFR = Multi-family Residential,

[1] Site addresses are approximate.

[2] 24-hour Ldn levels were either derived from monitoring data shown in Technical Report, Table 2.7-1 or by using conservative noise levels in the FTA Manual (the assessment sites for which the conservative FTA noise levels were used are noted in the *Noise and Vibration Technical Report*, Appendix C).

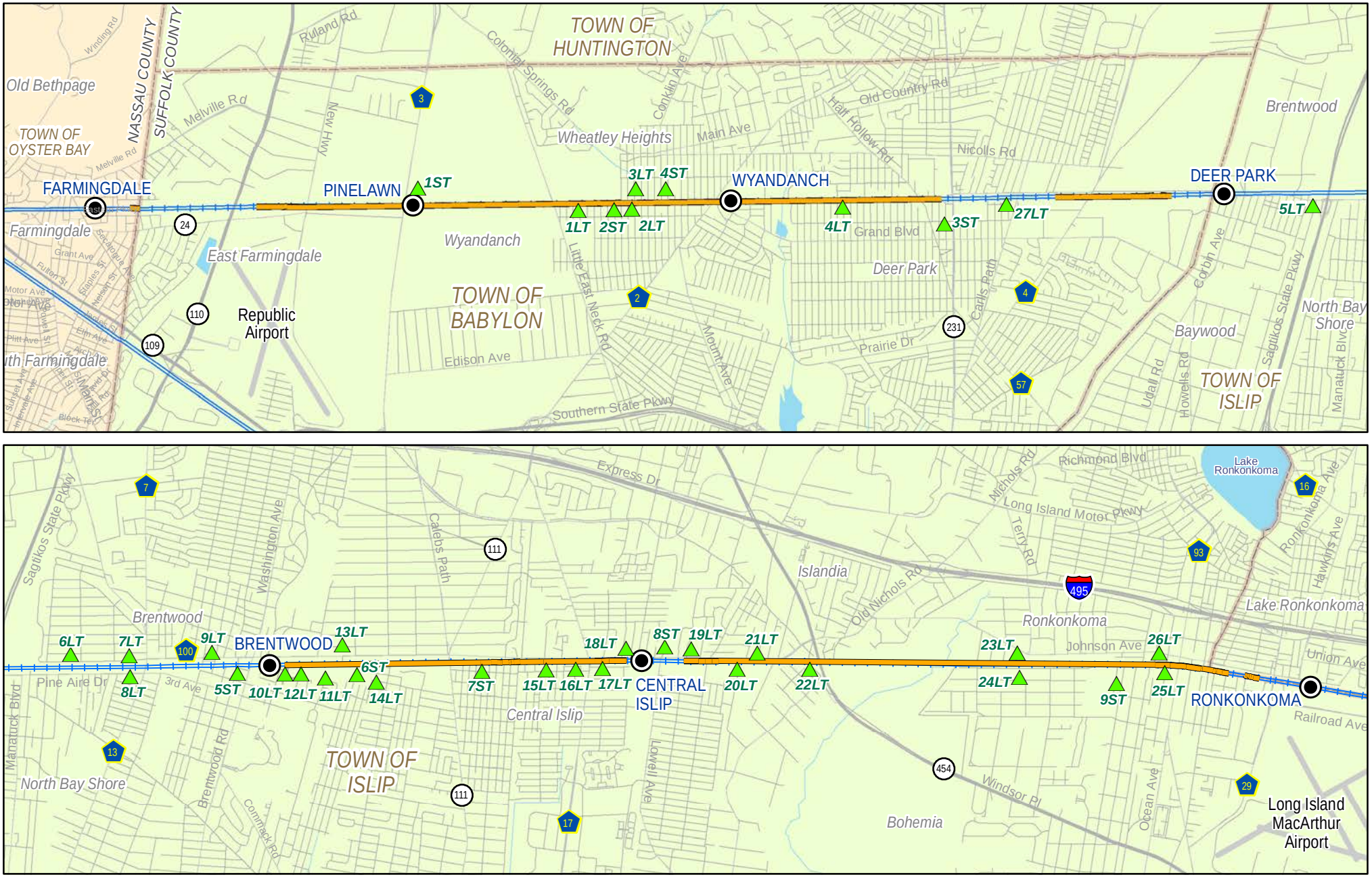
TABLE 2-13: NOISE IMPACT GENERAL ASSESSMENT (2013) CATEGORY 3 LAND USES

Site Number	Representative Receptor Description [1]	Land Use	Existing L_{eq} Noise Level [2]	Distance to Future Track Centerline (feet)	Project-Related Combined Total Noise Exposure Level (dBA)	Allowable Combined Total Noise Exposure Level (dBA)	Allowable Increase in Noise Level Over Existing (dB)	Noise Impact?
1ST	2030 Wellwood Avenue	Pinelawn Cemetary	71	55	74	74	3	No
2ST	114 Long Island Avenue	Church of God By Faith	69	125	70	72	3	No
3ST	101 Lake Avenue	John F. Kennedy Intermediate School	60	330	61	65	5	No
4ST	221 Merritt Avenue	New Shiloh Baptist Church	70	123	71	73	3	No
5ST	2 1st Avenue	Church of Living God	63	140	67	67	4	No
6ST	70 Hilltop Drive	Brentwood School	65	70	68	69	4	No
7ST	111 Brightside Avenue	Bible Way Church	64	118	67	68	4	No
8ST	1 Broadway Avenue	Charles A. Mulligan Intermediate School	55	533	60	61	6	No
9ST	600 1st Street	Helen B. Duffield Elementary School	55	460	59	61	6	No

Source: STV Incorporated, 2013.

[1] Site addresses are approximate.

[2] 1-hour Leq levels were either taken from the 24-hour monitoring data shown in Technical Report, Table 2.7-1 or by using conservative existing noise level tables in the FTA Manual (the assessment sites for which the conservative FTA noise levels were used are noted in the *Noise and Vibration Technical Report*, Appendix C).



0 1 Miles

Rail Station
LIRR Track
Track Being Added / Sidings Being Relocated
Noise Receptor Location

LIRR Double Track Project
Ronkonkoma to Farmingdale

Noise Receptor Locations

Figure 2-11

2.7.2 Vibration

Vibration Evaluation Methodology

The assessment of vibration conducted for the proposed action followed the procedures outlined in the FTA Manual. Based on these procedures, the vibration evaluation methodology included the following steps:

1. Representative vibration-sensitive receptors (consisting of existing residential and institutional uses) were identified in close proximity to the project ROW.
2. In accordance with vibration distance screening procedures as set forth in the FTA Manual, if vibration-sensitive receptors were determined to be too distant from the ROW to experience impacts from the project, they were not considered for assessment purposes.
3. For selected representative receptors, general vibration assessment procedures for conventional trains were used to predict future vibration levels resulting from operation of the proposed action.
4. To determine potential vibration impacts, generalized ground-borne vibration curves provided in the FTA Manual were used.
5. Prediction results were compared to applicable impact thresholds set forth in the FTA Manual to identify potential impacts.

Fundamentals of Vibration

An important consideration for rail transit projects is the vibration transmitted from rail movement on the tracks through the ground to adjacent vibration-sensitive buildings. Vibration is caused by the interaction of the wheels and rails and may be perceived by building occupants as “feelable." For the purposes of this report, ground-borne vibration is measured in decibel units. To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. Typical vibration levels from commonly observed sources range from below 50 to 100 VdB.

Vibration Sources. For a rail project, sources of vibration would be mostly limited to the interaction of train wheels on the track. Other temporary sources of vibration could come from **c**onstruction equipment, depending on the activity involved.

Vibration Impact Criteria. Vibration criteria set forth in the FTA Manual are based on the maximum ground vibration caused by a rail vehicle pass-by and the frequency of those pass-by events. Noise levels greater than the defined criteria levels result in significantly increasing the degree of human annoyance and discomfort. Similar to noise criteria set forth in the FTA Manual, the vibration criteria in that guidance document are based on three land use categories, with the only distinction being that outdoor spaces are not included as a category for vibration analysis.

Table 2-14, *Ground-Borne Vibration (GBV) and Ground-Borne Noise (GBN) Impact Criteria for General Assessment,* shows the impact criteria from the FTA Manual for ground-borne vibration from conventional rail transit systems. Under the proposed action, the occurrence of vibration events is considered to be frequent. Therefore, for residential buildings (Category 2), the threshold applicable to the proposed action is 72 VdB. The applicable threshold for institutional uses (Category 3) is 75 VdB. No Category 1 land uses were identified along the project ROW. Table 2-14 also

includes separate criteria from the FTA Manual for ground-borne noise, or the "rumble" that can be radiated from the motion of room surfaces in buildings due to ground-borne vibration. However, because airborne noise often masks ground-borne noise for above ground (i.e. at-grade or elevated) transit systems, ground-borne noise criteria are primarily applied to subway operations or other rail tunnels and are thus not applicable to the proposed action.

TABLE 2-14: GROUND-BORNE VIBRATION (GBV) AND GROUND-BORNE NOISE (GBN) IMPACT CRITERIA FOR GENERAL ASSESSMENT

Land Use Category	GBV Impact Levels (VdB re: 1 micro-inch / sec)			GBN Impact Levels (dB re: 20 micro Pascals / sec)		
	Frequent Events [1]	Occasional Events [2]	Infrequent Events [3]	Frequent Events [2]	Occasional Events [3]	Infrequent Events [4]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB	65 VdB	65 VdB	NA [4]	NA [4]	NA [4]
Category 2: Residences and buildings where people normally sleep	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primary daytime use	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.
[1] "Frequent Events" is defined as more than 70 vibration events per day.
[2] "Occasional Events" is defined as between 30 and 70 vibration events per day.
[3] "Infrequent Events" is defined as less than 30 vibration events per day.
[4] NA means "not applicable." Vibration-sensitive equipment is not sensitive to ground-borne noise.

Because the proposed action includes both the addition of a second track and an increase in rail service, future impact determination would take into consideration whether existing vibration conditions would exceed the impact criteria from the FTA Manual. Accordingly, based on the methodology in the FTA Manual, vibration assessments were conducted for both existing and future scenarios. If the results of the vibration assessment for existing conditions indicated that a vibration impact currently exists, then vibration impacts related to the proposed action would only occur if the predicted future vibration level is greater than the existing vibration level by more than 3 VdB. Otherwise, the project impact is determined based on a direct comparison of the project vibration level to the relevant vibration impact criteria for conventional vehicles. Using Table 2-14, for residential buildings (Category 2), the threshold applicable to this project is 72 VdB for conventional trains under the frequent events category. The applicable threshold for schools and churches (Category 3) is 75 VdB for conventional trains under the frequent events category. If any of these criteria are exceeded, a vibration impact would occur.

Existing Conditions

Vibration-sensitive land uses were identified by screening GIS data for buildings with residential or institutional uses near the project ROW. This review was supplemented by field work to confirm the existence of these sensitive uses and their proximity to the ROW. Differing land uses, including commercial, industrial and residential were observed along the entire length of the project ROW. While some areas do not contain any sensitive building receptors, others have numerous properties which could be affected by the proposed action. Some of these, vibration-sensitive properties are located as close as approximately 50 feet from the centerline of the existing track.

Along the project ROW, train-related vibration can also be felt at many of these sensitive locations. However, because locomotives create the most vibration, the worse vibration is likely caused by the movement of existing freight service. Existing LIRR passenger service along the project ROW includes an insignificant number of trains using locomotives.

Vibration Data Collection. The monitoring of existing vibration levels is sometimes useful in the determination of vibration impacts. This is particularly true when extremely sensitive receptors (such as research laboratories or recording studios with vibration-sensitive equipment) are located within a project study area. However, there are no such uses in the study area for the proposed action. Sensitive receptors along the corridor are predominantly residential and institutional in nature.

Therefore, the general assessment procedures contained within the FTA Manual were applied for this analysis. As a result, the monitoring of baseline vibration levels was not performed, since this information is not a required input for vibration prediction procedure under the FTA Manual. It is expected that existing vibration levels near sensitive receptors in the project study area would primarily be the result of existing rail activity from LIRR service and freight trains. Typical vibration levels would be within the range of 50 to 85VdB, depending on the specific event causing vibration.

Potential Impacts and Improvements

Vibration levels were predicted using the methodology in the FTA Manual. Accordingly, because the proposed action would be located within a heavily used rail corridor, separate assessments were provided for both the existing and future scenarios. Existing conditions were assessed to determine whether or not vibration impacts currently exist. For instances where existing levels of vibration are found to be above the impact levels set forth in the FTA Manual, future project vibration would result in an impact only if the incremental increase in vibration level would be greater than 3 VdB. Conversely, if increases in future vibration levels result in an incremental increase of less than 3 VdB, no impact would be predicted to occur.

A typical receptor would only notice the difference between an existing and future vibration level if the number of project-related events (or train pass-bys) were to increase significantly or a substantial decrease in the track to receptor distance were to occur. According to FTA Manual guidance, this would require that the project would have to either: 1) more than double the existing number of trains in the future 2) move the rail tracks substantially closer to a receptor or, 3) have some combination of both these scenarios such that the resulting increased vibration would be greater than 3 VdB. For locations where existing conditions do not result in a vibration impact,

project impact is determined based on a direct comparison of the project vibration level to the relevant vibration impact criteria for conventional rail vehicles.

Predictions are presented for locations of both Category 2 and 3 (for vibration) land uses. Sensitive receptors on the opposite side of the proposed second track and those in areas that are already double tracked, were not considered in this vibration assessment since implementation of the proposed action would either move train traffic farther away from these receptors or would not significantly change the existing condition (project-related service increase would not more than double existing train volumes). Assessment results are shown in Table 2-15, *Vibration Impact General Assessment (2013) Category 2 Land Uses* and Table 2-16, *Vibration Impact General Assessment (2013) Category 3 Land Uses.* As shown in these tables, there would be no vibration impacts at any of the studied locations along the project ROW as a result of proposed action train operations.

TABLE 2-15: VIBRATION IMPACT GENERAL ASSESSMENT (2013) CATEGORY 2 LAND USES

Site #	Representative Receptor Description [1]	Train Speed (mph)	Existing Distance To Track Centerline (feet)	Future Distance To Track Centerline (feet)	FTA Manual Threshold Criteria Level (VdB) [2]	Predicted Existing Vibration Level (VdB)	Predicted Future Vibration Level (VdB)	Currently Existing Vibration Impact?	Future and Existing Vibration Level Delta (VdB)		Project Vibration Impact?
									Allowable[3]	Actual	
1LT	64 Long Island Avenue	80	132.5	125	72	69	70	No	NA	NA	No
2LT	142 Long Island Avenue	80	127.5	120	72	69	70	No	NA	NA	No
4LT	740 Long Island Avenue	80	107.5	100	72	71	72	No	NA	NA	No
7LT	186 Suffolk Avenue	80	143	143	72	68	68	No	NA	NA	No
15LT	4 East End Avenue	80	84.5	77	72	73	74	Yes	3	1	No
17LT	6 1st Avenue	80	133.5	126	72	69	70	No	NA	NA	No
18LT	5 Weeks Avenue	80	185	185	72	65	65	No	NA	NA	No
21LT	276 E Suffolk Avenue	80	187.5	180	72	65	65	No	NA	NA	No
23LT	29 May Court	80	53.5	46	72	77	78	Yes	3	1	No
25LT	2419 Sycamore Avenue	80	112.5	105	72	70	71	No	NA	NA	No

Source: STV Incorporated, 2013.

[1] Site addresses are approximate.

[2] Criteria level not to be exceeded.

[3] Difference in vibration level of less than 3VdB would not be considered significant.

TABLE 2-16: VIBRATION IMPACT GENERAL ASSESSMENT (2013) CATEGORY 3 LAND USES

Site #	Representative Receptor Description [1]	Train Speed (mph)	Existing Distance To Track Centerline (feet)	Future Distance To Track Centerline (feet)	FTA Manual Threshold Criteria Level (VdB)	Predicted Existing Vibration Level (VdB)	Predicted Future Vibration Level (VdB)	Currently Existing Vibration Impact?	Future and Existing Vibration Delta(VdB)		Project Vibration Impact?
									Allowable[2]	Actual	
6ST	Brentwood East Jr. High School [3]	80	77.5	70	75	70	71	No	NA	NA	No
7ST	Bible Way Church	80	125.5	118	75	70	70	No	NA	NA	No

Source: STV Incorporated, 2013.

[1] Site addresses are approximate.

[2] Difference in vibration level of less than 3VdB would not be considered significant.

[3] The vibration levels predicted for the Brentwood School include adjustment factors as described in the LIRR Noise and Vibration Technical Report. As the school is a large masonry structure, it has a lower response to ground vibration and would result in a greater coupling loss than typical residential structures.

The vibration assessment results for Category 2 and 3 land uses indicate that there would be no significant operational impacts related to the proposed Double Track Project at any of the studied receptor locations along the ROW. While Sites 15LT and 23LT represent receptor locations that have high existing vibration levels, the incremental vibration caused by the project would not exceed 3 VdB, the FTA Manual impact criteria threshold.

2.7.3 East Side Access Project

The East Side Access (ESA) project, currently under construction, is expected to be completed subsequent to the 2018 build year for the proposed action. Once it goes into operation, ESA (which is a project having utility independent of the proposed action) will result in an increase in train service throughout LIRR's entire network, including in the study area. A comprehensive environmental impact statement (EIS) was prepared for the ESA project under the National Environmental Policy Act. The analyses contained in that EIS, including the noise and vibration analyses, assumed that the Double Track Project would be complete when ESA became operational. Noise impacts were identified in the ESA EIS and discussed in FTA's Record of Decision for the ESA project.

In the EIS for the ESA project, LIRR identified the need for additional train storage yards to serve its network, including one on the Ronkonkoma branch. Adequate storage capacity currently exists for the additional trains that would operate under the proposed action, so the new yard would be built to accommodate the ESA project and LIRR's expanded fleet, rather than to serve the proposed action. Accordingly, the storage yard has utility independent of the proposed action. LIRR expects to undertake a separate environmental review for this storage yard, so that it will be in service by the time ESA opens.

2.8 TRAFFIC AND TRANSPORTATION

This section summarizes: 1) the methodology used for evaluating changes in traffic operations due to increased gate-down events at railroad grade-crossings; 2) level of service (LOS), delay, and queuing information for 20 key study intersections adjacent to railroad grade-crossings; and 3) the effect of additional gate-down events on emergency vehicle response times.

2.8.1 Traffic Analysis Methodology

Analysis of traffic in the study area focuses on three conditions: Existing, Future No-Build, and Future Build. The existing condition documents traffic operations currently, while the No-Build and Build conditions assess projections of traffic operations in 2018, the year that the proposed action is expected to finish construction and begin operation.

The proposed action would result in additional gate closures at railroad grade-crossings and, in certain cases, the length of time of gate closures would be somewhat longer. The preferred method for evaluating and analyzing potential traffic impacts associated with this type of intersection operation is through the use of the VISSIM traffic simulation software tool. VISSIM is a microscopic, time-step-and-behavior traffic model that can be used to simulate multimodal traffic flows, including automobiles, trucks, buses, trains, and pedestrians. Its flexible network structure allows for detailed representation and modeling of any roadway geometry, including railroad grade-crossings and it has the capability to modify lane-changing and car-following behavior for separate vehicles within a network.

One of the key analytical benefits of using VISSIM to model railroad crossings is that train operations can be scheduled into the model so that the effects of railroad pre-emption on traffic signal operations at adjacent intersections (i.e., traffic clearance and gate-down phases) can be incorporated into the model and evaluated. Similarly, the regulation that buses must stop at all grade-crossings before proceeding has been included in the traffic models and the associated delays caused by these movements are incorporated into the analysis.

Highway Capacity Manual 2010 (HCM2010) definitions were used to determine levels of service (LOS) for each of the analysis intersections in the traffic study area. For a signalized intersection, levels of service are determined for the intersection, as a whole, and its individual lane groups for each roadway approach. LOSs are defined in terms of the average control delays experienced by all vehicles arriving in the analysis period, including delays incurred beyond the analysis period when the intersection or lane group is saturated. For both signalized and unsignalized intersections, LOS A, B, C, and D are generally considered acceptable, while LOS E and F are considered unacceptable according to general NYSDOT criteria.

2.8.2 Existing Conditions

Roadway Network

The project study area includes 18 grade-crossings:

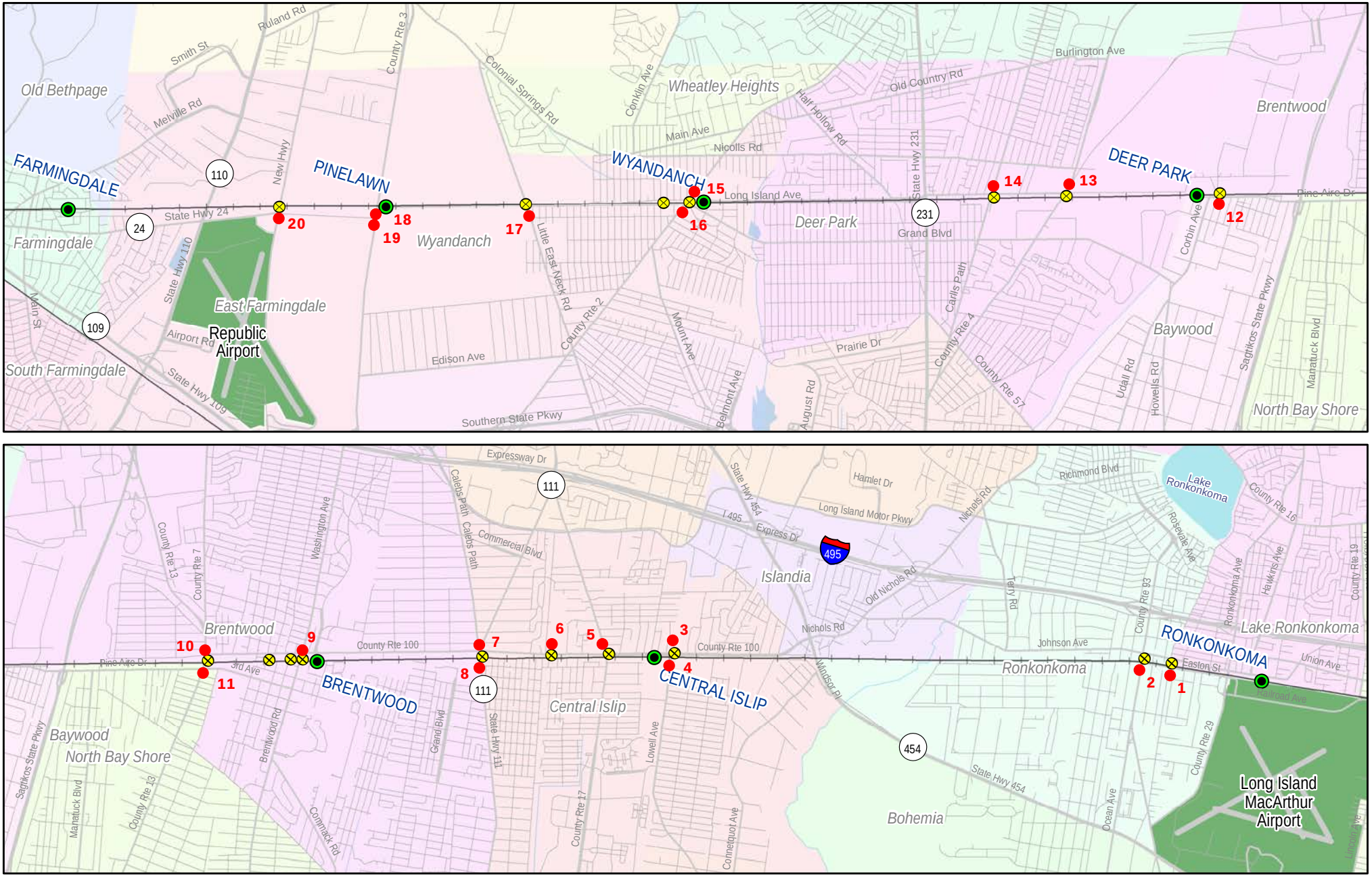
- Pond Road
- Ocean Avenue (CR 93)
- Lowell Avenue (Central Islip Station)*
- Carleton Avenue (CR 17)
- North Peters Boulevard
- Islip Avenue (State Route 111)
- Brentwood Road (Brentwood Station)*
- Fourth Street*
- Second Street*
- Fifth Avenue*
- Executive Drive (Deer Park Station)*
- Commack Road (CR 4)
- Carlls Straight Path*
- Straight Path (CR 2) (Wyandanch Station)
- Eighteenth Street**
- Little East Neck Road (CR 95)
- Wellwood Avenue (CR 3) (Pinelawn Station)
- New Highway**

* At these ~~six~~ seven grade-crossings, existing track configuration includes two sets of tracks. Nine grade-crossings have a single track.

** The New Highway and 18th Street ~~and Carlls Straight Path~~ grade-crossings currently have two sets of tracks, which will increase to three tracks with the addition of the double track.

The proposed action would result in additional gate-down events, which could increase traffic delays at adjacent intersections. Traffic analyses focus on weekday AM, midday, and PM peak hour operations at 20 key intersections located near LIRR grade-crossings along the Ronkonkoma Branch (see Figure 2-12, *Traffic Study Intersections*). Study intersections include:

1. Pond Road at Easton Street
2. Ocean Avenue (CR 93) at Easton Street
3. Lowell Avenue at Suffolk Avenue (CR 100)
4. Lowell Avenue at Central Islip Station Driveway/Spruce Street
5. Carleton Avenue/Wheeler Road (CR 17) at Suffolk Avenue (CR 100)
6. North Peters Boulevard at Suffolk Avenue (CR 100)
7. Islip Avenue (State Route 111) at Suffolk Avenue (CR 100)
8. Islip Avenue (State Route 111) at Brightside Avenue
9. Brentwood Road at Suffolk Avenue (CR 100)
10. Fifth Avenue (CR 13) at Suffolk Avenue (CR 100)
11. Fifth Avenue (CR 13) at Pine Aire Drive
12. Executive Drive at Pine Aire Drive
13. Commack Road (CR 4) at Long Island Avenue
14. Carlls Straight Path at Long Island Avenue
15. Straight Path (CR 2) at Acorn Street
16. Straight Path (CR 2) at Long Island Avenue
17. Little East Neck Road (CR 95) at Long Island Avenue
18. Wellwood Avenue/Pinelawn Road (CR 3) at Long Island Avenue
19. Wellwood Avenue/Pinelawn Road (CR 3) at Conklin Street
20. New Highway at Conklin Street



Rail Station
LIRR Track
Interstate
County Route
Grade-Crossing
X Study Intersection

LIRR Double Track Project
Ronkonkoma to Farmingdale
Traffic Study Intersections

Figure 2-12

0 1 2
Miles

Traffic Data Collection

Turning movement/vehicle classification, pedestrian and bicycle counts were performed at each of the 20 intersections during the weekday 7-9 AM, 12-2 PM, and 4-6 PM peak periods. All turning movement data were collected on Wednesday, September 19, 2012, and Tuesday, October 2, 2012. Given that Saturday traffic volumes may equal or exceed weekday AM and PM peak hour traffic volumes at locations in close proximity to major retail trip destinations, the Commack Road (CR 4) intersection (Number 13 in the previous list) was selected as a worst case location to analyze for a Saturday peak hour. As a result, the Commack Road (CR 4) intersection was also counted during the Saturday (September 22nd) 11 AM – 3 PM period.

Turning movement data summaries for each intersection are provided in Appendix D. Automatic Traffic Recorder (ATR) counts recorded continuous 24-hour, seven-day traffic data at all study area grade-crossings.

ATR data were summarized to provide average weekday daily and peak hour volumes and one day Saturday traffic volumes (see Table 2-17, *Summary of Traffic Volumes at Grade-Crossings*). The summary indicated that the three crossings with the highest daily traffic volumes were Fifth Avenue (36,100), Ocean Avenue (32,000), and Islip Avenue (31,800). These three crossings also had the highest Saturday daily volumes. For several grade-crossings, Saturday daily traffic volumes were nearly equivalent to weekday volumes. The highest hourly traffic volumes occurred at Wellwood Avenue (CR 3), which recorded north and southbound peak hour volumes of 2,090 and 1,950 vehicles, respectively. Generally, Saturday peak hour traffic volumes are equivalent to or less than the weekday peak hour volumes. Consequently, weekday traffic analysis findings would govern and Saturday traffic analyses were screened out from detailed study, except for the intersection adjacent to the Commack Road (CR 4) intersection, which was examined for the Saturday peak hour as a representative intersection due to the density of retail land uses nearby. Saturday traffic volumes at the Fifth Avenue grade-crossing are equivalent to the weekday traffic volumes. Therefore, weekday traffic operational findings are assumed to be similar to Saturday traffic conditions and additional traffic analyses are not necessary at this intersection.

TABLE 2-17: SUMMARY OF TRAFFIC VOLUMES AT GRADE-CROSSINGS

Grade-Crossing	Average Weekday Daily Volumes			Saturday Daily Volumes			Highest Average Weekday (Saturday) Peak Hour Volume	
	NB	SB	Total	NB	SB	Total	NB	SB
1. Pond Road	2,000	2,900	4,900	1,100	1,400	2,500	350 (100)	430 (110)
2. Ocean Avenue (CR 93)	17,200	14,800	32,000	13,000	12,500	25,500	1,690 (1,100)	1,160 (940)
3. Lowell Avenue	10,500	10,200	20,700	6,600	8,400	15,000	870 (570)	840 (480)
4. Carleton Avenue (CR 17)	11,600	12,400	24,000	10,600	11,500	22,100	850 (770)	1,040 (890)

Grade-Crossing	Average Weekday Daily Volumes			Saturday Daily Volumes			Highest Average Weekday (Saturday) Peak Hour Volume	
	NB	SB	Total	NB	SB	Total	NB	SB
5. North Peters Boulevard	3,500	3,500	7,000	3,400	3,800	7,200	290 (240)	350 (340)
6. Islip Avenue (State Route 111)	15,500	16,300	31,800	15,300	15,700	31,000	1,190 (960)	1,440 (1,090)
7. Brentwood Road	12,200	11,700	23,900	12,700	11,900	24,600	830 (770)	950 (880)
8. 4th Street	3,100	2,500	5,600	3,300	2,700	6,000	250 (290)	270 (280)
9. 2nd Street	5,300	5,400	10,700	4,200	4,400	8,600	520 (330)	610 (380)
10. 5th Avenue	18,100	18,000	36,100	16,200	18,600	34,800	1,350 (1,330)	1,360 (1,350)
11. Executive Drive	8,800	9,300	18,100	4,600	5,200	9,800	990 (330)	910 (370)
12. Commack Road (CR 4)	12,600	13,400	26,000	12,000	13,000	25,000	920 (980)	1,230 (1,100)
13. Carlls Straight Path	3,700	4,300	8,000	3,000	3,400	6,400	320 (310)	460 (270)
14. Straight Path (CR 2)	8,600	6,900	15,500	8,000	7,000	15,000	630 (540)	650 (480)
15. 18th Street	5,500	4,700	10,200	5,300	4,200	9,500	430 (400)	450 (310)
16. Little East Neck Road (CR 95)	5,400	4,900	10,300	3,400	3,100	6,500	800 (220)	730 (260)
17. Wellwood Avenue (CR 3)	13,500	13,900	27,400	7,000	7,500	14,500	2,090 (590)	1,950 (610)
18. New Highway	3,900	5,500	9,400	3,000	3,500	6,500	350 (250)	800 (350)

Network Traffic Volumes

Manual and ATR count data were reviewed and compared to ensure that traffic volumes for a representative day are reflected in the traffic analyses. Weekday AM, midday, and PM peak hour traffic volumes were identified for each traffic analysis intersection.

A review of traffic data determined that counts for the Straight Path (CR 2) intersections at Acorn Street and Long Island Avenue were not representative of typical traffic operations, due to an ongoing construction project in this area. Therefore, traffic volumes for these two intersections

were taken from the 2009 *Wyandanch Intermodal Transit Facility Feasibility Study* and then adjusted to 2012 Existing conditions by applying an annual growth factor of 1.06 percent (as per NYSDOT Planning) in order to account for background growth between 2009 and 2012.

Traffic counts were balanced for locations where data were collected at adjacent intersections, including Wellwood Avenue (CR 3) intersections at Conklin Street and Long Island Avenue, Fifth Avenue intersections at Pine Aire Drive and Suffolk Avenue (CR 100), Islip Avenue (State Route 111) intersections at Suffolk and Brightside Avenues, and Lowell Avenue intersections at Suffolk Avenue (CR 100) and Spruce Street.

VISSIM Model Development

As previously discussed, the preferred method for evaluating and analyzing potential traffic impacts associated with railroad grade-crossing operations is through the use of the VISSIM traffic simulation software tool.

The three main building blocks of the VISSIM model consist of:

- Network – Represent the physical infrastructure for the roadway and rail network
- Traffic – Define vehicular and train movements on the network
- Controls – Determine how traffic behaves in the case of conflicting movements (i.e., traffic signal and rail pre-emption timing/phasing)

The following inputs are defined during model development of the roadway network:

- Roadway segment lengths, operating speeds, and number of travel lanes
- Intersection locations and configurations (i.e., four-way, T-intersection, etc.)
- Lane-use designations, such as turn-only lanes or turn restrictions

The length and curvature of study area roadways were based on Google Earth aerial images. The number of travel lanes, lane widths, and lane uses were developed based on physical inventories in the field.

Model Validation

An important, standard step in the modeling process is the validation of results in order to determine the accuracy of model inputs/outputs. Validation for this study was achieved through visual and quantitative assessment of model outputs. Specifically, methods used to review the model included: visual assessment of the simulation to identify unexpected traffic congestion or movement behaviors, compared to observation of existing traffic operations, and quantitative evaluation of the population within the model (i.e., whether or not intersections are processing input traffic volumes), signal timings during both normal and railroad pre-emption conditions, and queue lengths for all approaches at study area intersections. Maximum queue lengths observed in the field during railroad pre-emption were used as the benchmark for validating model results. Various adjustments were made to model networks, such as refining lane uses, right-of-way rules, etc., to ensure that models represent observed traffic conditions in the study area as closely as possible.

Traffic/Train Controls

Existing intersection traffic signal timings and phasings were entered into the traffic model based on signal phasing/timing plans obtained from Suffolk County Department of Public Works, Town of Babylon Department of Planning and Development, and New York State Department of Transportation, then verified during field reconnaissance.

Train crossing times, frequencies, and gate-down times were based on a combination of: 1) existing LIRR train schedules, plus a September 19, 2012 LIRR report of weekday gate-down events at each grade-crossing during that 24-hour period, and 2) observations of available 24-hour video recordings obtained at selected grade-crossings. Gate-down times at each grade-crossing were calculated, and then averaged for each peak hour (based on the number of trains passing in both eastbound and westbound directions). Gate-down times were calculated separately by train direction at grade-crossing locations near stations, where gate-down time is substantially longer for one direction versus the other.

Average gate-down time at most grade-crossings generally ranges between 50 and 70 seconds. At grade-crossings near a station, gate-down time generally ranges between 2.5 and 3 minutes (where the gate remains down during train dwell time at the station). A summary of train crossing events is provided in Appendix D.11.

Existing Traffic Conditions

Level of service at each of the 20 intersections was analyzed in terms of the capacity of each intersection to accommodate existing traffic volumes. *Highway Capacity Manual 2010 (HCM2010)* definitions were used to determine levels of service for each of the analysis intersections in the traffic study area. For a signalized intersection, levels of service are determined for the intersection, as a whole, and its individual lane groups. LOS is defined in terms of the average control delays experienced by all vehicles arriving in the analysis period, including delays incurred beyond the analysis period when the intersection or lane group is saturated.

Delay levels for signalized intersections are:

- **LOS A** describes operations with very low delay, i.e., up to 10 seconds per vehicle. This occurs when signal progression is extremely favorable and most vehicles arrive during the green phase, without stopping at all.
- **LOS B** describes operations with delay in the range of 10 to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles do not stop at the intersection.
- **LOS C** describes operations with delay in the range of 20 to 35 seconds per vehicle. These higher delays may result only from fair progression and/or longer cycle lengths. The number of vehicles stopping at an intersection is significant at this level, although many still pass through without stopping.
- **LOS D** describes operations with delay in the range of 35 to 55 seconds per vehicle. At this LOS, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high volume-to-capacity (v/c) ratios. Many vehicles stop and the proportion of vehicles that do not stop declines.

- **LOS E** describes operations with delay in the range of 55 to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios.
- **LOS F** describes operations with delay in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios with cycle failures. Poor progression and long cycle lengths may also contribute to such delays. Often, vehicles do not pass through the intersection in one signal cycle.

LOS thresholds for unsignalized intersections differ slightly from those for signalized intersections. Delay levels for unsignalized intersections are:

- **LOS A** describes operations with very low delay, i.e., up to 10 seconds per vehicle. This generally occurs when little or no delay is experienced at the intersection.
- **LOS B** describes operations with delay in the range of 10 to 15 seconds per vehicle. This generally occurs when short traffic delays are experienced at the intersection.
- **LOS C** describes operations with delay in the range of 15 to 25 seconds per vehicle. This generally occurs when average traffic delays are experienced at the intersection.
- **LOS D** describes operations with delay in the range of 25 to 35 seconds per vehicle. At this LOS, the influence of congestion becomes more noticeable and longer traffic delays are experienced.
- **LOS E** describes operations with delay in the range of 35 to 50 seconds per vehicle. At this LOS, there is obvious congestion and very long traffic delays are experienced at the intersection.
- **LOS F** describes operations with delay greater than 50 seconds per vehicle. At this LOS, there is heavy congestion and excessive traffic delays are experienced at the intersection.

For both signalized and unsignalized intersections, LOS A, B, C, and D are generally considered acceptable, while LOS E and F are considered unacceptable.

Analyses indicated that most of the intersections in the project study area operate at LOS D or better during the weekday AM, midday, and PM peak hour analyses (see Table 2-18, *Existing Conditions Traffic LOS Summary*), although some individual movements may operate at slightly worse LOS.

TABLE 2-18: EXISTING CONDITIONS TRAFFIC LOS SUMMARY

Intersection	Peak Hour Overall Intersection LOS		
	AM	Midday	PM
1. Pond Road at Easton Street	C	B	C
2. Ocean Avenue (CR 93) at Easton Street	B	B	D
3. Lowell Avenue at Suffolk Avenue (CR 100)	C	C	C
4. Lowell Avenue at Spruce Street/Central Islip Station	A	A	A
5. Carleton Avenue (CR 17)/ Wheeler Road at Suffolk Avenue (CR 100)	D	D	D
6. North Peters Boulevard at Suffolk Avenue (CR 100)	B	A	A
7. Islip Avenue(State Route 111) at Suffolk Avenue (CR 100)	D	C	D
8. Islip Avenue (State Route 111) at Brightside Avenue	E	C	E
9. Brentwood Road at Suffolk Avenue (CR 100)	D	C	C
10. 5th Avenue at Suffolk Avenue (CR 100)	C	C	C
11. 5th Avenue at Pine Aire Drive	D	C	D
12. Executive Drive at Pine Aire Drive	D	C	D
13. Commack Road (CR 4) at Long Island Avenue	C	B (B)[1]	C
14. Carlls Straight Path at Long Island Avenue	C	B	C
15. Straight Path (CR 2) at Acorn Street	C	-[2]	C
16. Straight Path (CR 2) at Long Island Avenue	D	-[2]	C
17. Little East Neck Road (CR 95) at Long Island Avenue	C	B	C
18. Wellwood Avenue (CR 3) at Long Island Avenue	C	C	C
19. Wellwood Avenue (CR 3) at Conklin Street	C	B	B
20. New Highway at Conklin Street	C	C	C

Notes:

1. x (x) indicates overall weekday midday (Saturday midday) intersection LOS.
2. As previously noted, existing traffic data could not be collected at the Straight Path (CR 2) intersections due to construction activity. Consequently, capacity analyses were based on those performed for the July 2010 *Wyandanch Intermodal Facility Environmental Assessment*, which did not examine a weekday midday peak hour for traffic.

Eight intersections have approaches operating at LOS E or F during one or more analysis periods:

Ocean Avenue (CR 93) at Easton Street (Intersection 2) – Southbound Ocean Avenue (CR 93) has a relatively high right-turn volume of 290 vehicles during the PM peak hour. This southbound right-turn to Easton Street is a slow turning maneuver because of the narrow width of Easton Street. The combination of high turn volume and slow turn speed results in the southbound Ocean Avenue (CR 93) curb lane operating frequently as a *de facto* right-turn lane. Consequently, all through traffic (nearly 900 vehicles in PM peak hour) primarily uses only one southbound travel lane, thereby resulting in poor LOS conditions.

Islip Avenue (State Route 111) at Suffolk Avenue (CR 100) and **Brightside Avenue (Intersections 7 and 8) – Northbound Islip Avenue (State Route 111)** operates at LOS E due to high traffic volumes and six gate-down events during the AM peak hour. The southbound Islip Avenue (State Route 111) left-turn movement at the unsignalized intersection of Brightside Avenue operates at unacceptable LOS E (AM) and F (PM) conditions during the peak hours as motorists must wait for an acceptable gap to turn within the high-volume northbound traffic flows along Islip Avenue (State Route 111).

Brentwood Road at Suffolk Avenue (CR 100) (Intersection 9) – Southbound Brentwood Road operates at LOS E conditions during the AM peak hour. This approach is stopped during six long gate-down intervals (i.e., nearly three minutes) when a westbound train dwells in the Brentwood station during the AM peak hour.

Fifth Avenue at Pine Aire Drive (Intersection 11) – Westbound Pine Aire Drive operates at LOS E conditions during the midday and PM peak hours. This poor LOS condition is primarily the result of this approach receiving a relatively small percentage of the cycle green time (generally 12 seconds within the 90-second cycle length).

Executive Drive at Pine Aire Drive intersection (Intersection 12) – Westbound Pine Aire Drive operates at LOS E condition during the AM peak hour. This is due to the high Pine Aire Drive westbound right-turn volumes (800 vehicles in the peak hour) for a single-turn lane, and eight peak-hour gate-down events at the grade-crossing, which result in poor conditions and long queues.

Straight Path (CR 2) at Long Island Avenue (Intersection 16) – Northbound Straight Path (CR 2) and westbound Long Island Avenue operate at LOS E during the AM peak hour, primarily due to the northbound through and westbound right-turn conflicts with grade-crossing gate-down events. During the AM peak hour, the average gate-down time for the three westbound trains stopping at the station is more than three minutes per train.

Wellwood Avenue (CR 3) at Long Island Avenue (Intersection 18) – Westbound Long Island Avenue receives a relatively small percentage of the cycle green time, resulting in poor LOS E and F conditions during all weekday peak hours.

Saturday traffic analysis for Commack Road (CR 4) and Long Island Avenue indicated acceptable LOS conditions for all approaches.

Station Parking Utilization

Parking data from the LIRR 2009 Parking Database indicates that parking utilization at nearly all station parking lots on the Ronkonkoma Branch are at or near capacity (see Table 2-19, *Existing Station Parking Utilization*). The majority of parking, owned by Suffolk County, is free and unrestricted. The combined parking utilization rate for the six stations is 95 percent.

TABLE 2-19: EXISTING STATION PARKING UTILIZATION

Station	Total Spaces	Municipal and Other Owned Spaces	LIRR Owned Spaces	Overall Parking Utilization (Spaces Available)	Parking Restrictions
Ronkonkoma	5,802	3,209 Suffolk County, 350 private	2,243	95% (290)	Majority of parking free and unrestricted; parking garage has daily ($5/day) and month ($54/month) fee. Private lot available; requires $4/day fee
Central Islip	903	903 Suffolk County	0	100% (0)	No parking restrictions; all station parking free of charge
Brentwood	754	754 Suffolk County	0	63% (280)	No parking restrictions; all station parking free of charge
Deer Park	1,496	1,447 Suffolk County	49	100% (0)	No parking restrictions; all station parking free of charge
Wyandanch	982	982 Town of Babylon	0	99% (10)	No parking restrictions; all station parking free of charge
Farmingdale	686	420 Village of Farmingdale	266	84% (110)	Village permit required for residents ($75/year) and non-residents ($225/year)
Total	**10,623**	**-**	**2,558**	**94% (690)**	**-**

Freight Rail Operations

The New York and Atlantic Railway (NYA) handled approximately 10,000 loaded freight cars on the Ronkonkoma Branch in 2010 (20,000 total freight-car moves, including empties). Principal commodities handled were construction and demolition debris, flour, food products, liquefied propane gas, bio-diesel, stone, aggregates, and lumber.

Based upon observations of NYA freight movements between January-April, 2013, NYA operations consist of three round-trip freight train movements within the Project area on a typical weekday. There is one round-trip freight train that operates between the Pine Aire siding (east of LIRR's Deer Park Station) and Ronkonkoma, and there are two trains that operate between the Pine Aire siding and Queens. On the weekend, NYA operates one roundtrip freight train each day between Queens and Pine Aire. The average car length for trains west of Pine Aire was 23 cars, for trains east of Pine

Aire it was 10. Typically, an eastbound freight train arrived at Pine Aire at approximately 9:30 PM and 2:30 AM. Westbound trains departed at approximately 8:45 PM and 1:00 AM. For trains departing eastbound from Pine Aire, the typical time was approximately 10:30 AM and it returned at approximately 2:00 PM.

While historical freight data are not available for the Ronkonkoma Branch, LIRR has experienced a substantial decrease in freight traffic system-wide. Over 238,000 carloads of freight were handled by LIRR system-wide in 1941. This decreased to 114,000 carloads by 1966, to 35,000 carloads by 1980, and to approximately 10,000 carloads in 2012.

For traffic analysis purposes, freight trains were not included, since they do not operate during the AM and PM peak hours. No freight trains were modeled in the midday traffic analysis, since no freight-related gate-down events were observed during the midday peak roadway traffic hours.

2.8.3 Future No-Build Conditions

Future No-Build Traffic Analysis

Analysis of future traffic conditions without the proposed action, called future No-Build conditions, serves as the baseline for comparison to future Build conditions. Future No-Build analysis includes traffic volume increases expected due to an overall growth in background traffic through and within the study area and growth associated with major real-estate developments and LIRR service improvements. No-Build analysis also includes roadway system changes expected to be implemented by the 2018 Build Year.

An annual background traffic growth rate of 1.06 percent was applied to the following intersections in the Town of Babylon, per NYSDOT growth rate projections:

- Commack Road (CR 4) at Long Island Avenue
- Carlls Straight Path at Long Island Avenue
- Straight Path (CR 2) at Long Island Avenue
- Straight Path (CR 2) at Acorn Street
- Little East Neck Road (CR 95) at Long Island Avenue
- Wellwood Avenue (CR 3)/Pinelawn Road at Long Island Avenue
- Wellwood Avenue (CR 3) at Conklin Street
- New Highway at Conklin Street

All other study area intersections are in the Town of Islip and an annual background traffic growth rate of 1.17 percent was applied, per NYSDOT *Long Island Transportation Plan 2000* study. Overall, these annual growth rates equate to total traffic volume increases of approximately seven percent in the Towns of Babylon and Islip between 2012 and 2018.

Ridership on the Ronkonkoma Branch is expected to be higher in the 2018 No-Build year, due to land-use development and population trends along the corridor. LIRR ridership forecasts indicate annual growth factor of 1.69 percent over the next couple of years. Accordingly, AM and PM peak hour vehicle trips to each of the stations were increased by 10.6 percent in the No-Build condition (1.69% growth compounded over six years), to reflect the corresponding increased ridership

between 2012 and 2018. These vehicle trips were assigned to the roadway network based on existing roadway travel patterns and assume that vehicle occupancy rates remain the same.

There are no planned LIRR service changes in the 2018 No-Build condition; therefore, the number train crossings during the AM and PM peak hours have been assumed to remain the same as existing conditions. Similarly, grade-crossing signal operations during the No-Build condition were assumed to remain the same as existing conditions. Therefore, the average time that the railroad crossing gates would be down in the No-Build condition would remain the same as existing conditions.

Suffolk County is planning to reconfigure the intersections of Wellwood Avenue (CR 3) with Long Island Avenue and Conklin Street. Currently, these two T-intersections are approximately 400 feet apart, operating inefficiently as a single large intersection. The proposed reconfiguration would realign the roadways to create a standard four-way intersection with additional turn lanes on all approaches (see Appendix D, *Traffic and Transportation Technical Report*). This reconfiguration has been incorporated into the traffic analysis.

The Wyandanch Intermodal Transit Facility project includes construction of a 1,000-vehicle parking garage with the ability to expand to 1,500 at a later date and a new street network adjacent to the Wyandanch train station, along with streetscape improvements enhancing connectivity between different transit modes and serving as a central transportation hub (see Appendix D.10). Street-network changes proposed as part of the Wyandanch Intermodal project (see the July 2010 *Wyandanch Intermodal Transit Facility Environmental Assessment*) and traffic volume increments were incorporated into the 2018 No-Build traffic analysis for the LIRR proposed action.

The Ronkonkoma Hub Transit-Oriented Development (TOD) project is centered just north of Ronkonkoma Station in the Town of Brookhaven. The closest study area intersection to this development is Pond Road at Easton Street, more than half-mile to the west. The Ronkonkoma Hub Draft Generic Environmental Impact Statement (DGEIS) did not indicate that any project-generated traffic would travel through this study intersection. Therefore, no Ronkonkoma Hub development traffic was included in the future traffic analysis for the proposed action.

The Heartland Town Square project is a proposed 475-acre, mixed-use, "smart-growth" redevelopment on a portion of the Pilgrim State Psychiatric Center property in the Town of Islip, north of the Deer Park Station and Executive Drive grade-crossing. The anticipated Build year for Heartland is 2021 according to the 2003 DGEIS. This build year is well after the 2018 Build year for the proposed action. Therefore, no Heartland project-generated trips were included in the traffic analysis for the proposed action.

Other potential No-Build projects that were examined, but not incorporated into the No-Build traffic include:

- Broad Hollow Bioscience Park, on the campus of Farmingdale State College on Broad Hollow Road (State Route 110) at the west end of the project study area, has received state legislation allowing for expansion. However, there are no detailed plans available at this time.

- Route 110 Corridor Hub Project would likely include reopening of the LIRR Republic Station, just east of Broad Hollow Road (State Route 110) on Conklin Street. However, reopening of the Republic Station would require a separate environmental process, and the project is not expected to begin the environmental review until after the completion of the proposed action.
- A Route 110 Bus Rapid Transit System has been proposed to serve the extensive development along the Broad Hollow Road (State Route 110) corridor. However, this project is still in the planning stages, and not anticipated to open until after the completion of the proposed action.

No-Build Traffic Conditions

Most study area intersections experienced increased traffic delays in the 2018 No-Build condition because of increased traffic volumes and/or decreased green time due to additional train crossings and corresponding increased gate-down time (see Table 2-20, *No-Build Conditions Traffic LOS Summary*).

TABLE 2-20: NO-BUILD CONDITIONS TRAFFIC LOS SUMMARY

Intersection	Peak Hour Overall Intersection LOS		
	AM	Midday	PM
1. Pond Road at Easton Street	C	B	C
2. Ocean Avenue (CR 93) at Easton Street	C	C	E
3. Lowell Avenue at Suffolk Avenue (CR 100)	C	C	C
4. Lowell Avenue at Spruce Street/Central Islip Station	A	A	B
5. Carleton Avenue/Wheeler Road (CR 17) at Suffolk Avenue (CR 100)	D	D	D
6. North Peters Boulevard at Suffolk Avenue (CR 100)	B	A	B
7. Islip Avenue (State Route 111) at Suffolk Avenue (CR 100)	E	C	D
8. Islip Avenue (State Route 111) at Brightside Avenue	F	C	E
9. Brentwood Road at Suffolk Avenue (CR 100)	D	D	C
10. 5th Avenue at Suffolk Avenue (CR 100)	C	C	C
11. 5th Avenue at Pine Aire Drive	D	C	D
12. Executive Drive at Pine Aire Drive	E	C	D
13. Commack Road (CR 4) at Long Island Avenue	C	C (C)[1]	C
14. Carlls Straight Path at Long Island Avenue	C	B	C

Intersection	Peak Hour Overall Intersection LOS		
	AM	Midday	PM
15. Straight Path (CR 2) at Acorn Street[2]	D	-	B
16. Straight Path (CR 2) at Long Island Avenue[2]	E	-	C
17. Little East Neck Road (CR 95) at Long Island Avenue	C	B	C
18./19. Wellwood Avenue (CR 3) at Conklin Street/ Long Island Avenue	C	B	C
20. New Highway at Conklin Street	C	C	E

Notes:
1. x (x) indicates overall weekday midday (Saturday midday) intersection LOS.
2. As previously noted, existing traffic data could not be collected at the Straight Path (CR 2) intersections due to construction activity. Consequently, capacity analyses were based on those performed for the July 2010 *Wyandanch Intermodal Transit Facility Environmental Assessment*, which did not examine a weekday midday peak hour for traffic.

Intersections that experienced deterioration in the No-Build Condition to unacceptable LOS conditions or a substantial worsening within an unacceptable LOS condition in the No-Build year include:

- Ocean Avenue (CR 93) at Easton Street (Intersection 2) – Overall intersection operation would deteriorate to a LOS E condition and northbound Ocean Avenue (CR 93) would operate at LOS F during the PM peak hour.
- Lowell Avenue and Suffolk Avenue (CR 100) (Intersection 3) – Southbound approach, a low-volume school driveway, would operate at LOS E during the midday peak hour.
- Carleton Avenue (CR 17) at Suffolk Avenue (CR 100) (Intersection 5) – Northbound approach during the AM peak hour would operate at LOS E conditions.
- Islip Avenue (State Route 111) at Suffolk Avenue (CR 100) (Intersection 7) – Northbound approach would worsen to LOS F during the AM peak hour and southbound Islip Avenue (State Route 111) would deteriorate to LOS E in the PM peak hour.
- Islip Avenue (State Route 111) at Brightside Avenue (Intersection 8) – The southbound left-turn to Brightside Avenue would operate at LOS F in the AM and PM peak hours and eastbound Brightside Avenue would operate at LOS E during the AM peak hour only.
- Brentwood Road at Suffolk Avenue (CR 100) (Intersection 9) – North and southbound approaches would operate at LOS E during the AM peak hour.
- Fifth Avenue at Pine Aire Drive (Intersection 11) – East and westbound Pine Aire Drive approaches would operate at LOS E and F, respectively in the PM peak hour.
- Pine Aire Drive at Executive Drive (Intersection 12) – Westbound approach would worsen within LOS E during the AM peak hour.
- Straight Path (CR 2) at Long Island Avenue (Intersection 16) – Northbound approach would operate at LOS F during the AM peak hour and overall intersection would operate at LOS E.

- New Highway at Conklin Street (Intersection 20) – Southbound approach would worsen to LOS F in the PM peak hour.
- Traffic operations at the intersection of Wellwood Avenue (CR 3) with Conklin Street/Long Island Avenue improved to LOS D or better conditions with the proposed intersection reconfiguration.

No-Build Parking Conditions

Demand for parking in the 2018 No-Build is expected to increase due to increased ridership associated with population growth along the branch. This increased ridership is associated with new development patterns, such as transit-oriented development (TOD), which results in higher population densities within walking distance of train stations (e.g., Ronkonkoma Hub TOD), and household turnover as retired seniors downsize and sell their homes to families with one or two daily commuters.

At many LIRR stations today along the Ronkonkoma Branch, customers already encounter a parking shortage. Communities and villages have grown around LIRR stations, and there is insufficient undeveloped land around the stations to allow the provision of a parking space for each driving LIRR customer who seeks one. Several station parking lots would experience a parking shortfall in the No-Build condition assuming that mode choice for travel to the stations remains the same (see Table 2-21, *No-Build Station Parking Utilization*). Similar to today's conditions, future customers will likely find alternative ways to access LIRR stations (i.e., kiss-and-rides, buses, bicycles, walking) due to the lack of parking availability.

LIRR has funded a parking program aimed at stations where land, design opportunities, and local development plans support expanded parking options. LIRR will work with towns and villages to expand station parking on a case-by-case basis. LIRR is currently collaborating with the Town of Babylon on a new 1,000-space parking facility at Wyandanch Station, with the ability to expand to 1,500 at a later date. LIRR will also continue to support opportunities that result in greater use of connecting transportation services, such as better pedestrian access, provision of bicycling facilities, expanded bus service, and improved pick-up and drop-off facilities.

TABLE 2-21: NO-BUILD STATION PARKING UTILIZATION

Station	Total Spaces	2018 Parking Demand*	2018 Parking Utilization (%)
Ronkonkoma	5,802	6,095	105
Central Islip	903	1,000	111
Brentwood	754	525	70
Deer Park	1,496	1,655	111
Wyandanch**	1,482	1,075	73
Farmingdale	686	635	93
Total	**11,123**	**10,985**	**99**

* Assumes 1.69 percent annual LIRR ridership growth and the same travel mode choice as existing conditions.

**Wyandanch garage is currently scheduled to be completed in 2015, which will yield approximately 500 new parking spaces above what currently exists.

No-Build Freight Operations

There are two economic development projects, east of Ronkonkoma, which have the potential to increase freight carloads on the Ronkonkoma Branch: the Brookhaven Rail Terminal (BRT) and Calverton Rail Spur. BRT is a privately-funded 25-acre rail terminal, which estimates generating 5,000 annual carloads at full build-out, with 3,000 annual carloads beginning in 2013. BRT has entered into a final contract to purchase additional land to expand the facility to its ultimate build-out of just over 325 acres. However, no master plan with a forecasted increase in freight carload estimate has been completed at this time.

The Calverton Rail Spur was constructed in 2011 and two businesses (Eastern Fence and Metrofuels) began their rail connections to the spur in 2012. New freight movements to these businesses are anticipated to be approximately 1,000 annual carloads beginning in 2013. Other businesses in Calverton Enterprise Park have expressed interest in connecting to the spur, but have not yet begun planning for construction of those connections.

A third project is the recently-opened Posillico freight siding, located near New Highway, which is projected to receive approximately 1,000 carloads of freight annually beginning in 2013.

Overall, the annual 10,000 freight carloads (20,000 including empties) operated in and through the Ronkonkoma Branch could reach 17,000 (34,000 including empties) by 2015. Based upon conversations with NYA regarding potential future freight carload increases, the conclusion was that NYA would likely continue to operate the same number of trains through the corridor; however, the length of the trains would increase to meet future demand. Based upon estimates of future

potential freight carload increases that could occur along the corridor, LIRR estimated that trains west of Pine Aire siding (east of Deer Park Station) may increase from 23 cars to 36 cars, on average, and that trains east of Pine Aire may increase from 10 cars to 33 cars, on average. NYA can accommodate car lengths greater than 36 cars today, so it has the ability to accommodate potential growth in freight traffic without the second track.

Given that the number of freight train movements would not increase, no additional freight train movements were incorporated into the grade-crossing traffic analysis for the No-Build condition. Assuming a train travel speed of 30 mph and an average freight car length of 50 feet, the addition of up to 23 cars on a freight train consist would extend the gate-down time by approximately 25 seconds per crossing event during the off-peak periods.

2.8.4 Future Build Conditions

Future Build Traffic Analysis

The addition of a second track on the Ronkonkoma Branch would allow LIRR to increase off-peak train frequency from hourly service to half-hourly service. Most of this new service would occur during the midday (10 AM to 4 PM) and evening/night (7 PM to 12 AM) periods.

The off-peak midday train service increase from one train per direction per hour to two trains per direction per hour would likely increase midday ridership to a certain degree.

LIRR ridership counts collected on the Port Washington Branch in 2011 indicated a 17 percent increase in off-peak midday ridership, largely due to the increase of midday service from hourly to half-hourly. Therefore, based on this historical data, future No-Build midday trip generation to all Ronkonkoma Branch stations was increased by 17 percent in defining the Build condition. Given the relatively low volume of No-Build midday train trips, this increase generally results in a vehicle trip increment of up to five vehicles entering and five vehicles exiting the parking lot at each station during the midday peak hour. These additional vehicle trips were assigned to the roadway network for the Build traffic analysis.

At the Pinelawn Station, the proposed action includes two new side platforms [the eastbound platform would be east of Wellwood Avenue (CR 3), the westbound platform would be west of Wellwood Avenue]. As a result, when an eastbound or westbound train stops at the station, crossing gates would not need to remain down during the time the train sits at the station (dwell time). This would reduce gate-down time for westbound trains stopping at Pinelawn, compared to existing conditions. This change has been incorporated into the Build traffic analysis.

Build Traffic Conditions

As noted above, the proposed action would not result in the addition of significant volumes of new vehicles to the roadway network near rail stations and expanded commuter rail service would likely reduce vehicle trips in the study area. Most study area intersection approaches in the Build condition would continue to operate at an acceptable LOS, often at the same LOS as in the No-Build condition (see Table 2-22, *LOS Summary of No-Build and Build with Improvements Conditions Traffic).*

For the proposed action, standard traffic LOS thresholds were used in assessing traffic operations at study area intersections. Specifically, where additional gate down-time would otherwise cause any intersection approach to deteriorate below a certain level as detailed below, intersection improvements were identified to maintain efficient traffic operations. In connection with the proposed action, LIRR would work with the involved agencies to implement such measures, as appropriate.

- If an approach deteriorates from acceptable LOS A, B, C, or D No-Build conditions to LOS E or F Build conditions, measures have been identified to improve conditions to LOS D.
- If an approach deteriorates from LOS E No-Build to LOS F, measures have been identified to improve conditions to No-Build operations.
- If an approach deteriorates by more than ten seconds within LOS F as compared to the No-build condition, measures have been identified to improve conditions to No-Build operations.

Roadway traffic improvements have been proposed at the following intersections (see Figure 2-12A, *Intersection Traffic Improvements*) in order to maintain efficient Build traffic operations, reduce average delay per vehicle, and avoid potential significant traffic impacts:

- Islip Avenue (State Route 111) and Suffolk Avenue (CR 100) (Intersection 7) – Reduce AM peak hour traffic signal cycle length from 142 to 130 seconds and shift maximum green times from eastbound/westbound Suffolk Avenue to northbound/southbound Islip Avenue (State Route 111).
- Brentwood Road and Suffolk Avenue (CR 100) (Intersection 9) – Reduce midday peak hour traffic signal cycle length from 100 to 90 seconds and shift maximum green times from eastbound/westbound Suffolk Avenue (CR 100) to northbound/southbound Brentwood Road.
- Fifth Avenue at Suffolk Avenue (CR 100) (Intersection 10) – Shift maximum green times from eastbound/westbound Suffolk Avenue (CR 100) to northbound/southbound Fifth Avenue during the AM peak hour.
- Fifth Avenue at Pine Aire Drive (Intersection 11) – Shift maximum green times from northbound/southbound Fifth Avenue to eastbound/westbound Pine Aire Drive during the midday peak hour.
- Executive Drive at Pine Aire Drive (Intersection 12) – Convert median to allow additional lane to northbound Executive Drive to allow exclusive westbound right-turn movement so that this movement does not conflict with the eastbound left-turn phase.
- Straight Path (CR 2) at Long Island Avenue (Intersection 16) – Reduce cycle length and shift maximum green times from southbound Straight Path (CR 2) exclusive phase and eastbound/westbound Long Island Avenue phase to northbound Straight Path for AM and PM peak hours.
- New Highway and Conklin Street (Intersection 20) – Reduce traffic signal cycle length from 125 to 120 seconds and shift maximum green times from eastbound/westbound Conklin Street to northbound/southbound New Highway during midday peak hour.
- LIRR would work with NYSDOT, Suffolk County, and appropriate municipalities to implement these traffic improvement measures, as necessary and appropriate.

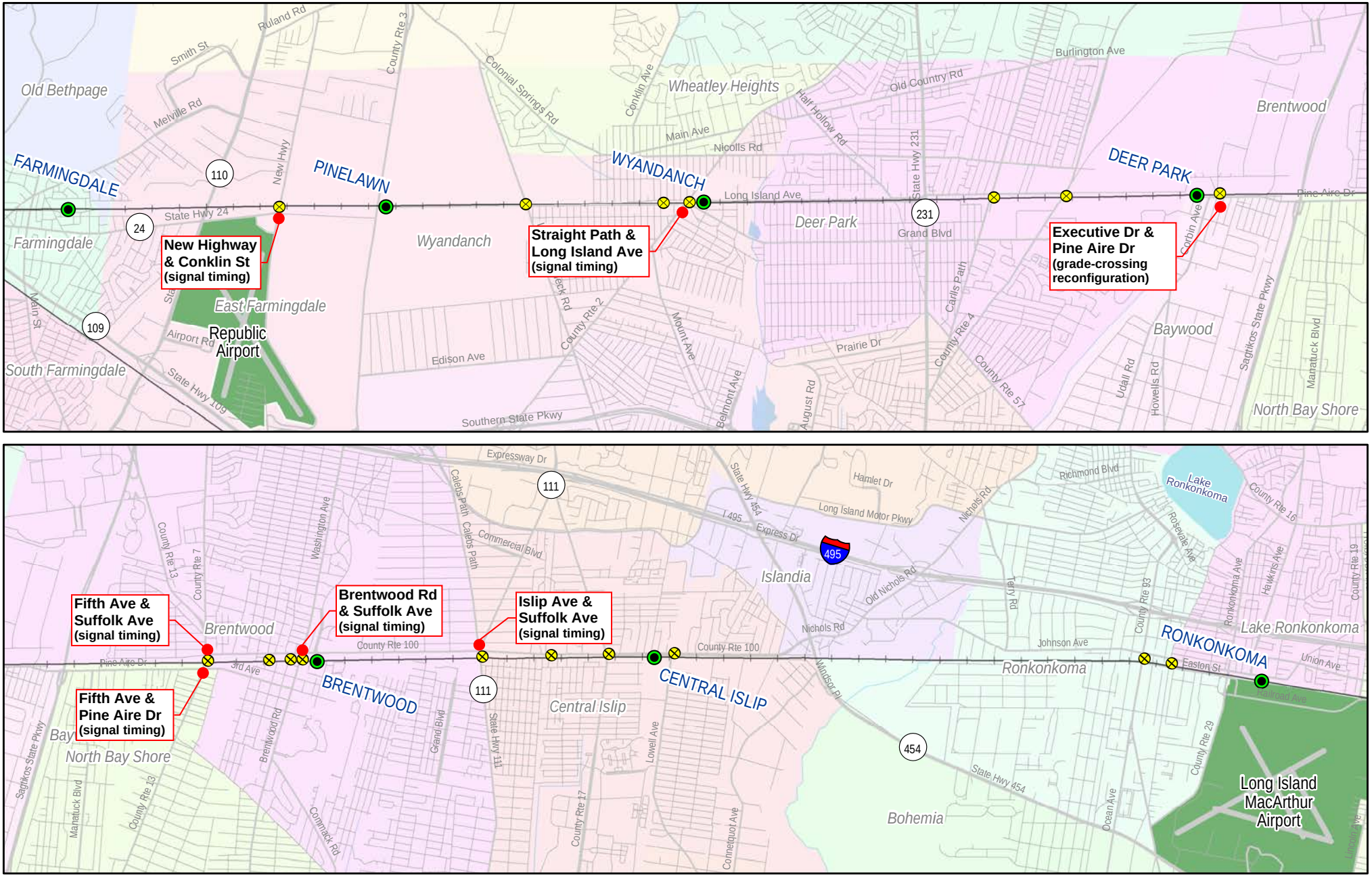

FARMINGDALE
PINELAWN
WYANDANCH
DEER PARK
Old Bethpage
Wheatley Heights
Brentwood
Farmingdale
Wyandanch
Deer Park
East Farmingdale
Republic Airport
South Farmingdale
Baywood
North Bay Shore
New Highway & Conklin St (signal timing)
Straight Path & Long Island Ave (signal timing)
Executive Dr & Pine Aire Dr (grade-crossing reconfiguration)
Fifth Ave & Suffolk Ave (signal timing)
Brentwood Rd & Suffolk Ave (signal timing)
Islip Ave & Suffolk Ave (signal timing)
Fifth Ave & Pine Aire Dr (signal timing)
BRENTWOOD
CENTRAL ISLIP
RONKONKOMA
Islandia
Central Islip
Ronkonkoma
Lake Ronkonkoma
Bohemia
Long Island MacArthur Airport
Rail Station
LIRR Track
Interstate
County Route
Grade-Crossing
Traffic Improvement Intersection
LIRR Double Track Project
Ronkonkoma to Farmingdale
Roadway Traffic Improvement Measures
Figure 2-12A
0
1
2
Miles

TABLE 2-22: SUMMARY OF NO-BUILD AND BUILD CONDITIONS WITH NO-BUILD AND BUILD IMPROVEMENTS

Intersection	Peak Hour Overall Intersection LOS No-Build / Build[1]		
	AM	Midday	PM
1. Pond Road at Easton Street	C	B	C
2. Ocean Avenue (CR 93) at Easton Street	C	C	E
3. Lowell Avenue at Suffolk Avenue (CR 100)	C	C	C
4. Lowell Avenue at Spruce Street/Central Islip Station	A / B	A	B
5. Carleton Avenue (CR 17)/Wheeler Road at Suffolk Avenue (CR 100)	D	D	D
6. North Peters Boulevard at Suffolk Avenue (CR 100)	B	A	B
7. Islip Avenue (State Route 111) at Suffolk Avenue (CR 100)	E / D	C	D
8. Islip Avenue (State Route 111) at Brightside Avenue	F / E	C / D	E
9. Brentwood Road at Suffolk Avenue (CR 100)	D	D	C
10. 5th Avenue at Suffolk Avenue (CR 100)	C	C	C
11. 5th Avenue at Pine Aire Drive	D	C	D
12. Executive Drive at Pine Aire Drive	E / D	C	D
13. Commack Road (CR 4) at Long Island Avenue	C	C (C)[2]	C
14. Carlls Straight Path at Long Island Avenue	C	B	C
15. Straight Path (CR 2) at Acorn Street[3]	D	-	B
16. Straight Path (CR 2) at Long Island Avenue[3]	E / D	-	C
17. Little East Neck Road (CR 95) at Long Island Avenue	C	B / C	C
18./19. Wellwood Avenue (CR 3) at Conklin Street/ Long Island Avenue	C	B	C
20. New Highway at Conklin Street	C	C	E

Notes:

1. A single LOS letter is presented where the overall intersection LOS is projected not to change between No-Build and Build conditions.
2. x/x (x/x) indicates overall weekday midday (Saturday midday) intersection LOS.
3. Existing traffic data could not be collected at the Straight Path (CR 2) intersections due to construction activity. Consequently, capacity analyses were based on those performed for the July 2010 *Wyandanch Intermodal Transit Facility Environmental Assessment*, which did not examine a weekday midday peak hour for traffic.

Build Parking Conditions

The demand for parking in the 2018 Build condition is expected to rise, due to increased ridership associated with additional off-peak train service provided by the proposed action (see Table 2-23, *Build Station Parking Utilization*). Many of these new person-trips to LIRR stations may become passenger pick-up/drop-off trips, which would increase the number of vehicle trips at each station, if additional parking availability or alternative methods of accessing the station (i.e., walking or biking) do not increase.

As previously noted, LIRR has funded a parking program aimed at stations where land, design opportunities, and local development plans support expanded parking options. LIRR will work with towns and villages to expand station parking on a case-by-case basis. LIRR is currently collaborating with the Town of Babylon on a new 1,000-space parking facility at Wyandanch Station with the ability to expand to 1,500 at a later date. LIRR will also continue to support opportunities that result in greater use of connecting transportation services, such as better pedestrian access, provision of bicycling facilities, expanded bus service, and improved pick-up and drop-off facilities.

TABLE 2-23: BUILD STATION PARKING UTILIZATION

Station	Total Spaces	2018 Parking Increment*	2018 Parking Demand	2018 Parking Utilization (%)
Ronkonkoma	5,802	185	6,280	108
Central Islip	903	50	1,050	116
Brentwood	754	20	545	73
Deer Park	1,496	45	1,700	114
Wyandanch**	1,482	25	1,100	74
Farmingdale	686	30	665	97
Total	**11,123**	**355**	**11,340**	**102**

* Assumes 17 percent LIRR ridership growth during the midday periods and the same travel mode choice as existing conditions.

**Wyandanch garage is currently scheduled to be completed in 2015, which will yield approximately 500 new parking spaces above what currently exists.

Build Freight Operations

The proposed action is a passenger rail project which would not result in new freight rail operations. Additionally, the scheduling of freight operations on the Ronkonkoma Branch would not be expected to change (i.e., no freight movements during peak passenger rail periods). Therefore, no new freight train movements were added into the grade-crossing traffic analysis for the Build condition.

2.8.5 East Side Access Project

As discussed in Section 2.7.3, the East Side Access (ESA) project, currently under construction, is expected to be completed subsequent to the 2018 build year for the proposed action. Once it goes into operation, ESA will result in an increase in train service throughout LIRR's entire network, including in the study area. The analyses contained in the EIS prepared for ESA, including the traffic analysis, assumed that the second track project would be complete when ESA became operational. Traffic impacts were identified in the ESA EIS and discussed in FTA's Record of Decision for the ESA project. In addition, as noted in Section 2.7, LIRR expects to undertake a separate environmental review for a storage yard required to serve ESA on the Ronkonkoma Branch (a project with utility independent of the proposed action) so that it will be in service by the time ESA opens.

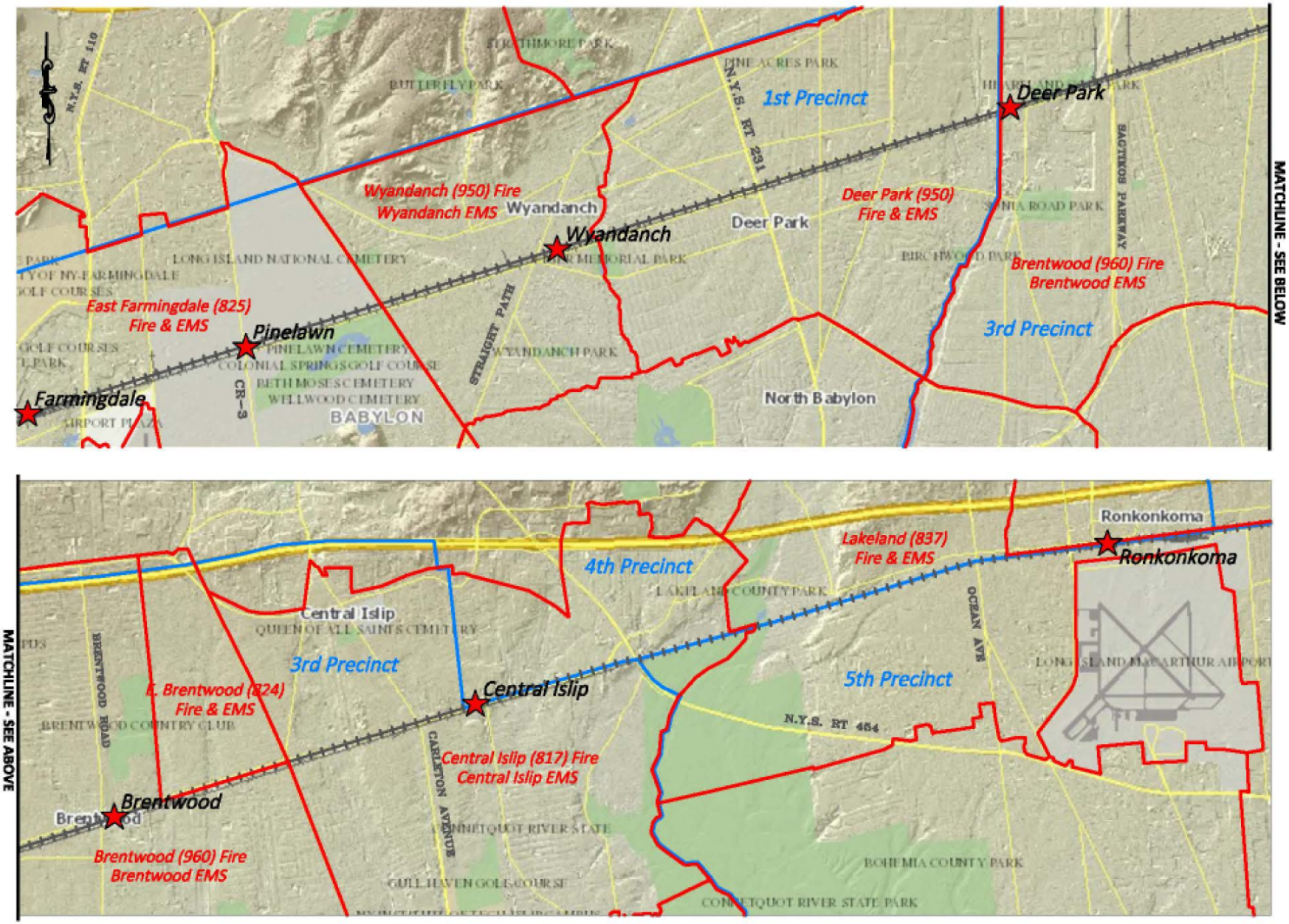
2.8.6 Emergency Vehicle Operations

Background

Along the project area, police protection is provided by 22 sectors of the 1st, 3rd, 4th, and 5th Precincts of the Suffolk County Police Department (SCPD), whose areas of responsibility adjoin or include the LIRR ROW. Additionally, other police assets are available, such as community-oriented police enforcement (COPE) and emergency services (EMS) to support the policing effort. MTA Police Department (MTA PD) District 1 provides security on all trains and at all stations, platforms, and other LIRR property. Emergency services are provided by 10 volunteer agencies, of which four provide both fire and emergency medical services, three provide fire protection only, and three provide only emergency medical services (see Figure 2-13, *Police, Fire, and EMS Boundaries*).

Existing Conditions

There are few data available to determine the present effect that operations of the LIRR have on emergency vehicle response times. Only Central Islip Fire Department, with over 800 alarms annually, has maintained a log of delays over the last six years. Although there were some gaps in the data, the logs indicate that during three 12-month periods, vehicles experienced about 25 delay events averaging 93-seconds at Carleton Avenue (CR 17), six events averaging 75 seconds at Lowell Avenue, and one event of 20 seconds at North Peters Boulevard. The 25 events at Carleton Avenue (CR 17) correspond to approximately one event every two weeks. Since each fire department or ambulance corps serves a different constituency in a different community, it is not appropriate to extrapolate this data to predict existing delay events at other LIRR crossings.



LEGEND:

- Police Precinct Boundary
- Fire District Boundary
- L.I.R.R. Track
- L.I.R.R. Station

LIRR Double Track Project
Ronkonkoma to Farmingdale

Police, Fire and EMS District Boundaries Map

Figure 2-13

0 1 2
Miles

Effects of the Proposed Action on Emergency Response

With trains being added as part of this project (see Section 1.3.7), there would be an increase in gate down time at all grade-crossings. This increase has the potential for causing additional emergency vehicle delays. However, predicting exactly when emergency vehicles might arrive at grade-crossings when gates are down is not possible with any accuracy, because of the random nature of these events. A Federal Railroad Administration (FRA) report entitled *Impact of Blocked Highway/Rail Grade Crossings on Emergency Response Services,* noted that "it is not possible to estimate the costs or impacts of such delays nationally or locally without much more detailed information from communities than is available." The report highlighted that the impacts on communities from delayed response due to blocked crossings are generally less than the impacts of traffic delays and congestion caused by blocked crossings.

Nevertheless, to reduce delays attributable to more frequent gate down events, traffic operational improvements, made as part of this project, should offset any increases in delay time at grade-crossings. LIRR would work with neighboring municipalities and agencies having jurisdiction to implement traffic operational improvements at roadway intersections adjoining grade-crossings, as described previously. These improvements, primarily geared toward providing more signal green time to adjacent signal phases, would help to reduce intersection delays and queues for all vehicles, including emergency vehicles approaching grade-crossings.

At the Pinelawn Station, a new westbound platform will be constructed west of the high-traffic volume grade-crossing at Wellwood Avenue (CR 3). This relocation would significantly reduce gate down times at this grade-crossing by eliminating the need to keep the gates down while westbound trains are stopped at the station.

2.8.7 Vehicular Accident History

Accident data were obtained from FRA and LIRR (see summary table in Appendix D). The analysis period began on January 1, 2007 and contains five full years of data, as well as partial data for 2012 (through October 31st).

Accident Summary

The following summarizes the accident history:

- A total of 19 accidents occurred during the analysis period. A total of 15 accidents occurred at four grade-crossings (the 18th Street, Fifth Avenue, and Brentwood Road grade-crossings had four accidents each and three occurred at the Carleton Avenue grade-crossing).
- Of the 16 accidents involving LIRR trains, six occurred in 2009. Between one and three accidents occurred in each of the other years analyzed.
- Of the 16 accidents involving LIRR trains, 13 appear to be the result of either driver or pedestrian error, suicide attempts, or a vehicle stuck in snow. The remaining three accidents occurred when vehicles became trapped on the tracks after the grade-crossing gates descended.
- Three of the four accidents at 18th Street involved freight trains operated by NYA (two of those occurred on the siding track at the grade-crossing).

Accident Analysis

As noted above, 13 of the 16 accidents involving LIRR-operated trains appear to be the result of either driver or pedestrian error, suicide attempts, or a vehicle stuck in snow. With respect to these accidents, there would be no physical changes to the grade-crossings which could mitigate their occurrence in future, since they were primarily due to human factors.

The remaining three accidents occurred when vehicles became trapped on the tracks after crossing gates descended. These accidents occurred at the Fifth Avenue, Brentwood Road, and Carleton Avenue (CR 17) grade-crossings. The following measures would be appropriate to reduce the potential for this type of accident (i.e., vehicles becoming trapped on the tracks):

- One way to minimize the potential for vehicles to become trapped on the tracks is to improve the level of service at the adjacent intersections. This would reduce overall congestion, including the lengths of vehicle queues on intersection approaches which cross the tracks, and can be accomplished by measures such as modifying traffic signal phasing and timing or by making geometric improvements, such as adding or lengthening a turn lane at the adjacent intersection. Intersection capacity improvements are discussed in Section 2.8.4.

- Another measure is to remind motorists not to stop on the tracks (to adhere to the *Vehicle and Traffic Law*) by posting/replacing existing "STATE LAW/DO NOT STOP ON TRACKS" signs at grade-crossings. Although these signs are currently in place at all three grade-crossings, two of the grade-crossings are wide, with multi-lane approaches. Existing signs could be replaced with larger ones (e.g., 36" x 54") to increase their visibility to motorists.

Other Considerations

While the accidents involving pedestrians were primarily the result of either suicide attempts or pedestrian error (attempting to outrace a train to a grade-crossing or walking along the tracks), it should be noted that with the proposed action in place throughout the project area ROW, there would be new occasions where trains would pass each other (where a single track currently exists) or an increase in these occasions (where two tracks now exist). Some pedestrians may attempt to cross in front of a train which is stopped at the station, even though crossing gates are down at grade-crossings adjacent to platforms, which have significant numbers of pedestrians crossing the track(s) to travel to and from stations.

Upon completion of the proposed action LIRR will post signage, make public service announcements, and take other steps to advise the public of the existence of a second track at each of the affected grade crossings.

2.8.8 Conclusion

The analyses indicate that there will be no significant impacts to traffic operations assuming the incorporation of intersection traffic improvement measures detailed in Section 2.8.4. Since peak and off-peak traffic operations under Build conditions remain essentially the same as under No-Build operations, potential delays to emergency service vehicles would also remain the same.

The demand for parking is expected to increase, resulting in a parking shortfall at some stations. As previously noted, LIRR will work with towns and villages to expand station parking on a case-by-case basis and will also continue to support opportunities that result in greater use of connecting transportation services, such as better pedestrian access, provision of bicycling facilities, expanded bus service, and improved pick-up and drop-off facilities.

2.9 CONSTRUCTION IMPACTS

This section addresses temporary impacts associated with construction of the proposed action, including staging areas, storage areas, laydown areas, temporary access roads, etc.

2.9.1 Construction Phasing

The proposed action would be constructed in two phases. Phase 1 is scheduled for construction beginning Spring 2014 through the end of 2016. Phase 2 is currently projected to be constructed beginning in Fall 2015 and to be completed by the end of 2018. This sequential approach is subject to the availability of funding and takes into account the availability of railroad support personnel, as well as other factors. A single civil construction contract would likely be awarded for each of the separate phases. Supplemental construction packages would be developed, as needed. These construction packages could include, but are not limited to railroad system equipment procurement, specialty track fabrication, work to be performed by railroad personnel, and early lead construction, such as utility adjustment.

The limits of the two construction phases are:

- Phase 1 – West of Ronkonkoma Station (MP 48.05) to east of Islip Avenue (State Route 111) (MP 42.50)

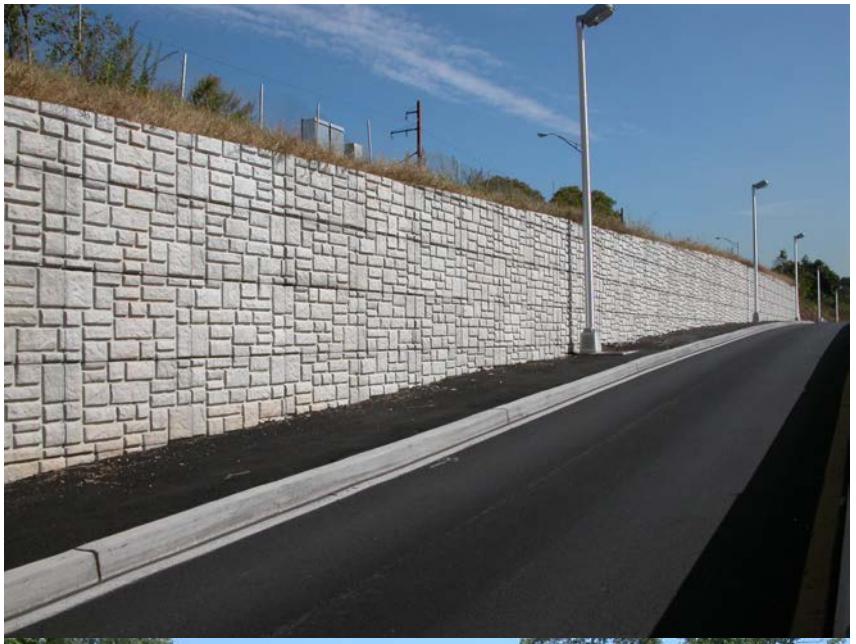
- Phase 2 – East of Islip Avenue (State Route 111) (MP 42.50) to east of Farmingdale Station (MP 30.52)

2.9.2 Construction Activities

The section describes qualitatively the major steps and activities in the process of constructing the proposed action.

Retaining Walls

To accommodate the addition of the second track within the existing ROW, earth retaining walls are necessary at certain locations. In other words, retaining walls are used in order to avoid expanding embankments or cuts wider than the existing LIRR ROW. The two forms of retaining walls that would be constructed are: fill walls and cut walls (described in the following two subsections). The photographs in Figure 2-14, *Retaining Wall Finishes*, illustrate four examples of possible finishes for the retaining walls to be constructed along the ROW.



LIRR Double Track Project
Ronkonkoma to Farmingdale

Retaining Wall Finishes

Figure 2-14

Fill Walls and Earthwork

When the railroad track is on embankment, higher than the adjacent ground, a fill wall is constructed to permit widening of the track structure (see Figure 2-15, *Typical Fill Wall Section*). Following construction of the wall, fill material is added in order to widen surface area available to construct a second track, while remaining within existing ROW.

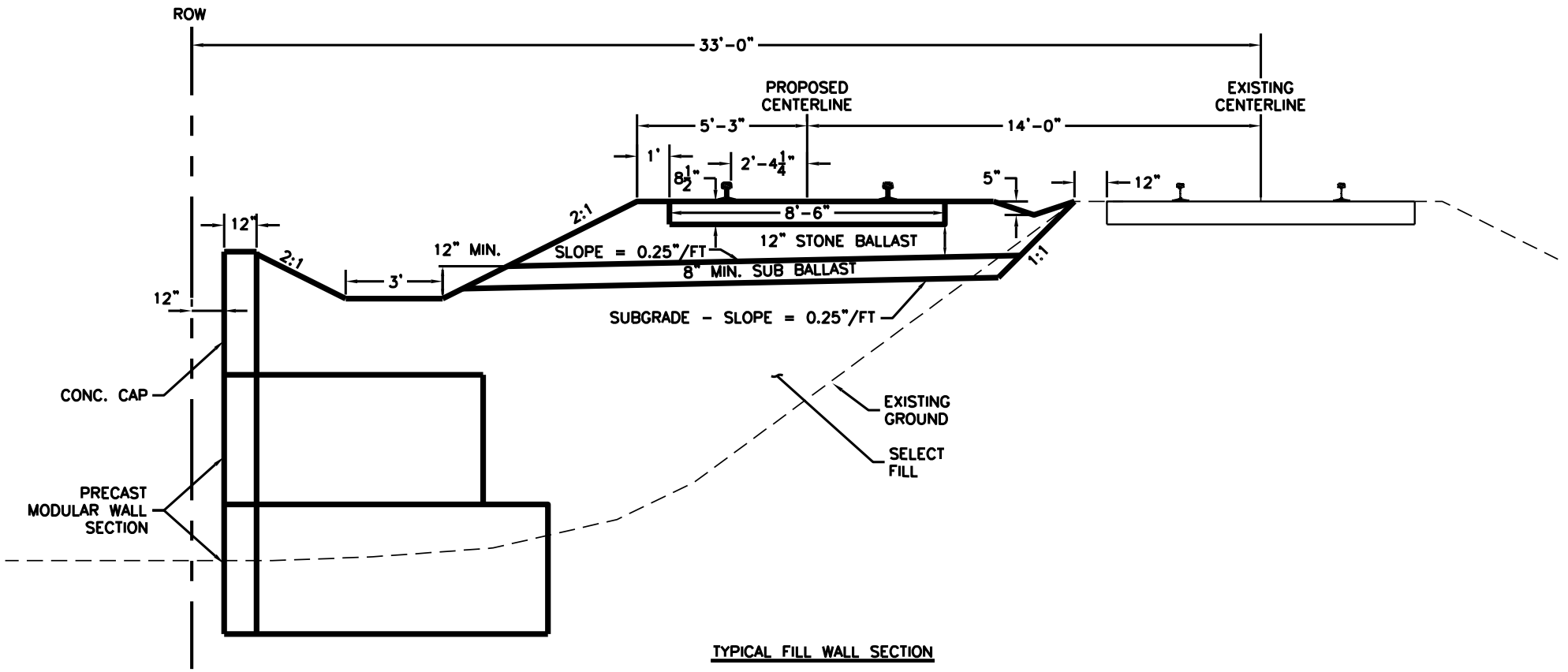
For fill sections, two types of wall construction are considered most appropriate. For short wall retaining structures, an interlocking modular concrete block wall provides an economical design. These are mortar-less walls installed without reinforcing steel. For taller walls, numerous concrete modular designs exist.

As shown in Figure 2-15, *Typical Fill Wall Section*, prior to placement of the modular wall elements, temporary support of excavations would be installed to support the embankment. Temporary steel sheet piling is likely to be used for this support. Sheet piling would be erected with a hydraulic telescoping crane using a light vibratory hammer to reduce noise and vibration. Temporary excavation is then made on the slope side of the sheeting (see existing ground line, away from the existing track) to provide a work area for placement of modular wall sections.

Following placement and backfilling of the permanent modular retaining wall, temporary sheet piling would be removed and recycled. Temporary fencing would be installed on or adjacent to sheeting to ensure personnel safety and limit the potential for active track fouling by construction personnel.

Modular wall sections are placed with a hydraulic telescoping crane, or possibly backhoe/loader. Delivery is by flat bed or similar type truck. Similarly, backfill material would be delivered by small [8-10 cubic yard (yd)] dump trucks. Fill material would be obtained from cut sections elsewhere on the project (see following discussion of Construction by Phase). It is assumed that material deliveries would generally not be made by rail, due to strict limits on available access hours to the existing track. Limiting material delivery to rail operations would significantly increase construction duration and costs. Material and equipment access is typically provided by temporary access road, preferably on the outside of the wall section. Top of wall guard or railing would be installed in compliance with OSHA and code requirements for worker fall protection.

Backfill in proximity to wall elements would first be placed with a small loader or dozer, then compacted using a plate compactor. Remainder of backfill would likely be graded by small dozer and compacted with a small roller compactor. Track section sub-ballast and base ballast material would be similarly spread, graded, and compacted.



TYPICAL FILL WALL SECTION

LIRR Double Track Project
Ronkonkoma to Farmingdale

Typical Fill Wall Section

Figure 2-15

Cut Walls and Earthwork

When the railroad track sits at the bottom of an embankment, lower than the adjacent ground, cut walls permit widening of the railroad within the existing ROW. Embankment material is removed from the cut section and remaining embankment is supported by a retaining wall (see Figure 2-16, *Typical Cut Wall Section*). Suitable excess material excavated from cut sections would be stockpiled in laydown areas in proximity to be used for backfill material in fill wall sections elsewhere along the rail ROW.

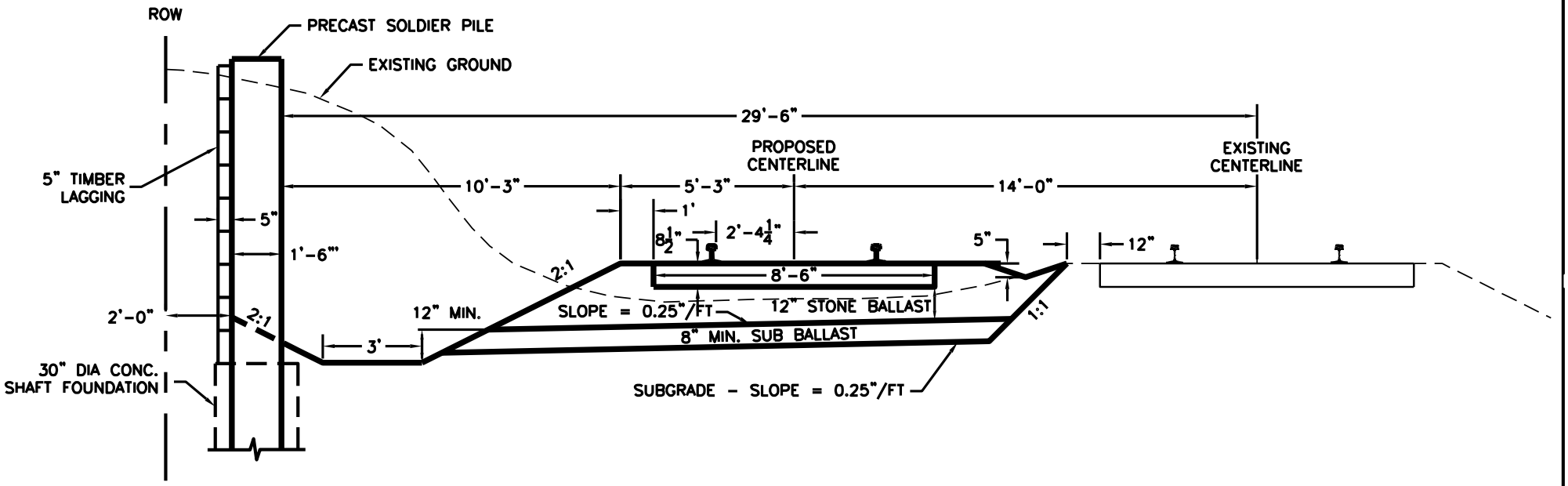
Soldier pile and lagging would be used, with minimal use of temporary support of excavation, for cut wall construction. To obtain required service life, precast concrete H piles and panels are used for soldier pile and lagging walls. Precast concrete H piles are set in drill augured holes, rather than driven. This allows more precision with pile placement and spacing and reduces construction noise. Holes are backfilled with concrete to final grade level (top of concrete shaft foundation). The embankment cut is then excavated from the top down, supported by temporary lagging placed behind H piles. After completion of excavation, permanent precast panels are placed between the piles. The remaining gap between the panels and the temporary lagging is then filled with porous material.

Final grading of track bed would be done by small dozer and compacted by small roller compactor. Track section sub-ballast and base ballast material would be similarly spread, graded, and compacted.

Utility Adjustments

Given the large-scale size of the proposed action, utility adjustments are relatively minor. Principal utility construction involves the pole line on the north side of the ROW in Phase 1 (see section on Construction by Phase). The pole line is shared by LIRR power, signal, and communications system utilities. At short cut wall locations, utility pole lines can be relocated at the same elevation. However for higher cut walls, utilities will likely be relocated to a temporary pole line clear of the existing track. A replacement permanent pole line would then be built adjacent to the new wall. Alternately, pole line utilities may be placed in ductbanks or conduits at ground level and the poles removed. Reconstruction and adjustment to existing underground railroad system utilities are also considered to be minor.

An underground LIPA feeder for traction power in Phase 1 is to be relocated to accommodate the new track (see subsection on Railroad Systems Construction). Other underground utility adjustments are expected to be minor, generally occurring in the vicinity of grade-crossings to which a track is to be added and/or alignment and super-elevation are to be revised. Such minor utility adjustments would occur prior to railroad construction. Excavations for track construction are shallow, so consequently no major conflicts with underground utilities have been identified.



TYPICAL CUT WALL SECTION

LIRR Double Track Project
Ronkonkoma to Farmingdale

Typical Cut Wall Section

Figure 2-16

Temporary Access Roads

In certain locations, temporary roads would be constructed to provide access for construction material and equipment to project work sites. The length and width of these roadways would vary, depending on available space and construction needs. These temporary roads would be unpaved, typically with a gravel surface, and generally within LIRR ROW. In most cases, these gravel roadways would remain following construction in order to facilitate periodic maintenance, similar to the existing maintenance roads along many areas of the ROW.

However, in the area of the ROW adjacent to Lakeland County Park, circumstances preclude the typical construction methods that would be used elsewhere for the project in the ROW. In this area, there are very limited access points to/from the ROW and the distance between access points is lengthy. Therefore, in this location, an alternative approach is being evaluated. With this alternative, a temporary construction roadway would be constructed within Lakeland County Park along the north side of the ROW. This temporary construction access road would be constructed within Town of Islip property in the western portion of the park, and possibly through the eastern portion of the park, which is owned by Suffolk County.

This alternative temporary construction roadway would be limited to 9.5 feet in width and would extend 3,082 feet from Erhardt Way east along the southern edge of the portion of Lakeland Park owned by the Town of Islip, and possibly another 2,084 feet through the portion of the park owned by Suffolk County, connecting to temporary roadways on either side. The total area of the access road would be no more than 1.13 acres (approximately 0.67 acres in the portion of Lakeland Park owned by the Town of Islip and approximately 0.46 acres in the portion owned by Suffolk County). Permission from the Town of Islip would be necessary to construct the temporary road through the western portion of the park. If the eastern portion of this temporary roadway running through Lakeland County Park is constructed, it would be necessary to obtain permission from Suffolk County.

In addition, because Suffolk County received funding through Section 6(f) of the federal Land and Water Conservation Fund Act for certain improvements in the eastern portion of the park, the possible construction of the temporary access road in that portion of the park would require permission from the National Park Service (NPS). The New York State Office of Parks, Recreation and Historic Protection (OPRHP) is responsible for coordinating this approval with NPS and would need to issue a concurrence. Further review would be coordinated with Suffolk County and OPRHP, as appropriate, if LIRR were to pursue a temporary access road through the eastern portion of Lakeland Park. This temporary roadway would be used for no more than six months and then the area occupied by the roadway would be restored to conditions existing prior to construction.

The majority of the length of this construction roadway would be in upland areas. However, it would also temporarily impact less than 0.35 acres of freshwater wetlands adjacent the Connetquot River (see the following subsection on wetlands for more information).

An analysis was conducted comparing construction of the proposed action using the temporary construction access road through parkland/wetland areas to construction of the proposed action without the temporary access road. The intent of this analysis was to understand the pros and cons associated with construction of the temporary access road in order to make a reasoned decision

about whether or not to select the alternative incorporating this temporary access road. The analysis determined that construction of the proposed action in this area would be shortened by five weeks and costs would be reduced by $2.3 million.

Wetlands

Slightly less than 0.15 acres of regulated freshwater wetlands would be permanently impacted in order to construct retaining wall and backfill along the northern side of the ROW associated with installation of the new second track. These impacts are narrow, sliver impacts within the ROW for a distance of approximately 1,200 linear feet. Where the proposed new second track would cross the Connetquot River, the existing culvert would be extended to the north by approximately 15 feet. In addition to the limited permanent freshwater wetland impacts, approximately 0.35 acres of temporary wetland impact would be associated with an alternative that includes construction of a temporary access road adjacent to the north edge of the ROW. Prior to the completion of construction, this area would be restored to pre-existing conditions.

Drainage and Surface Waters

Construction related to drainage and drainage structures is minor, particularly for a project the size of the proposed action. Current drainage patterns are to be maintained. Most drainage within the project area would continue to be accommodated as surface runoff or through the use of drainage swales. Track work would have minor impacts to ground surface permeability. Use of new buried underdrains and piping would be very limited, generally used at retaining walls to transport top of wall swale drainage to existing ground drainage areas. Drainage work would be done concurrently with embankment earthwork, using the same equipment.

At Lakeland County Park, the existing culvert carrying the Connetquot River under the railroad embankment needs to be extended to the north by approximately 15 feet, in order to accommodate the second track. The culvert extension would be of the same design and materials as the existing culvert, and a new headwall would be constructed. Culvert construction would use the same equipment mobilized for wall and embankment construction. If the alternative making use of the temporary construction road is selected, the culvert would be temporarily extended further in order to accommodate river flow during construction. The extension would be done using multiple, smaller pipes, instead of one larger pipe, in order to minimize the amount of fill placed in this wetland area. Prior to the completion of construction, the temporary culvert extension would be completely removed, along with the road, and the area would be restored to pre-existing conditions.

In order to assure that the Connetquot River is not adversely affected by construction activities, LIRR would incorporate the following safeguards into the construction contracts for those aspects of the proposed action that have the potential to affect the Connetquot River.

Duty to minimize environmental impacts. The contractor would be required to take all reasonable steps to prevent, minimize, or correct any adverse impact on the environment resulting from activities conducted in connection with the construction.

Proper site maintenance. The contractor would be prohibited from interfering with the free flow of a water by placing or dumping any materials, equipment, debris, or structures within or adjacent to

the channel. Upon completion of the work, the contractor would be required to remove and lawfully dispose of all excess materials, debris, equipment, silt fences, and other temporary soil erosion and sediment control devices from all regulated areas.

Stream banks disturbed during construction would be restored with native vegetation and stabilized with the use of bioengineering materials, such as bio-logs, fiber matting, etc.

Prior to the extension of any abutments or culverts, heavy duty turbidity barriers would be placed in the water around construction areas. Work associated with the abutment/culvert reconstruction would be performed inside these heavy duty turbidity barriers. The contractor would be required to use washed bedding material for culvert extension to minimize silting.

LIRR in consultation with NYSDEC ~~reserves~~ would have the right to temporarily suspend all work activities, if turbidity levels of the streams within the project area are increased because of regulated activities.

Construction equipment would not be stored, staged, or driven within any channel, freshwater wetland, or adjacent area, unless expressly approved NYSDEC. No storage of chemicals, oil, fuel, or refueling of equipment would occur within 50 feet of a wetland or wetland water shed area, whichever is greater. All chemicals, oil, fuel, or refueling of equipment storage areas impacting the Connetquot River and associated wetlands would be protected with appropriate spill containment facilities.

Stream flow would be maintained during the culvert extension operation or a seasonal restriction would be imposed so that the construction would take place during a low flow period.

To protect fishery resources within the proposed construction area, all in-stream activities would be prohibited during the appropriate times of the year (to vary depending on species warranting protection). NYSDEC would assist LIRR in determining the period(s) when this in- stream moratorium would be effective.

The contractor would install a double-row silt fence along the outer perimeter of all work areas impacting the Connetquot River and associated wetlands. The fence would be maintained on a daily basis. The contractor would be required to keep records of silt fence maintenance and inspections, including work area inspections and oversight.

All sediment barriers and other soil erosion control measures would be installed prior to commencing any clearing, grading, or construction on-site, and would be maintained in proper working condition throughout the entire duration of project construction.

It should be noted that in consultation with NYSDEC, LIRR may further define or otherwise modify the measures described in the previous list.

Pedestrian Overpass

Implementation of Phase 1 of the proposed action would necessitate the modification/relocation of a single pedestrian overpass at MP 47.0, in the vicinity of Ronkonkoma Middle School (see following discussion of Construction by Phase). This modification to the existing structure is required, due to a

conflict with the proposed two track alignment. To maintain pedestrian traffic during construction, the new appurtenances, such as foundations, would be built prior to modification of the existing bridge. The pedestrian bridge structure is relatively small, so material deliveries and equipment required for modification/relocation of the bridge would be limited and conventional.

Grade-Crossings

The proposed action includes modifications to 12 two-lane or multiple-lane grade-crossings. The least construction effort is required for those grade-crossings at which the second track would be added adjacent to the existing track, without the need for changes to the existing track and only minimal adjustments required to approach roadway grading. Grade-crossings are usually reconstructed by LIRR personnel (versus by outside contractor).

Work typically includes construction of conventional track through the grade-crossing and the subsequent placement of precast panels between and adjacent to the rail. Roadway paving transitions are then placed to the edge of the panels, resulting in a satisfactory surface for roadway vehicles. A small crane or loader is used to handle track materials, delivered by rail or truck. Work at a grade-crossing can typically be accomplished in one or two days.

Work impacting roadway traffic at grade-crossings would be restricted to weekends. Approved maintenance and protection of traffic (MPT) techniques would be used to minimize disruptions. Grade-crossing construction would be staged, such that MPT measures would not conflict. Adjacent grade-crossings would not be reconstructed concurrently.

Some project grade-crossings require more extensive construction, but construction methods and equipment are similar. Variations resulting in more extensive construction include adjustments in track alignment, track super-elevation, and/or profile of the existing track, prior to the addition of the new track. Modifications to existing track would be completed prior to the addition of the second track.

Laydown Areas

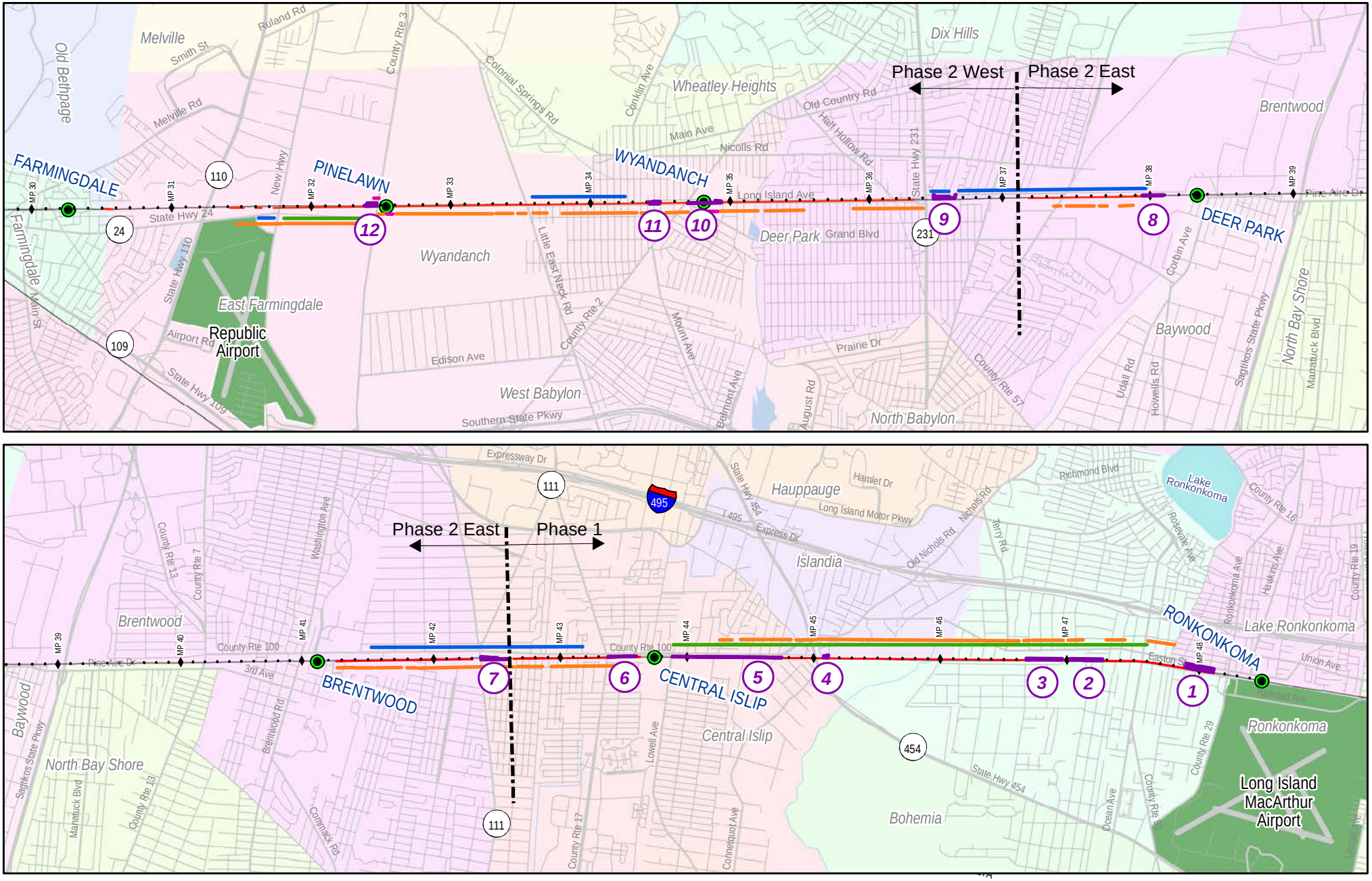
Certain areas within the ROW have been identified as potential locations for equipment marshaling and laydown areas to facilitate construction. These areas may also provide access to the ROW, in addition to other access points. ~~A number of locations exist along the alignment where MTA-LIRR owned ROW is wider than the typical 66 feet. It is intended that, where suitable, these wider locations would be used by the contractor for marshalling and laydown areas for equipment and material.~~ Generally, these areas have previously been developed and used by LIRR in support of its operations. ~~would be non-forested, h~~However, where portions of these potential laydown areas have not been previously used by LIRR or are forested, use would be restricted to the previously used and non-forested portions to the greatest extent practicable. Where perimeter vegetation provides visual screening in residential areas, care will be taken to maintain such screening. It is anticipated that ~~All of~~ these areas will be restored to their pre-existing condition before the end of project construction, to the greatest extent practicable. Table 2-24, *Potential Laydown Area Locations*, lists the specific areas that ~~where the width of existing ROW~~ would be available ~~allow~~ for potential use by project contractor(s) for activities in support of construction, including temporary material laydown and stockpiling~~s~~, and ROW access (see also Figure 2-17, *Potential Construction*

Laydown Area Locations). ~~A~~The actual use of such areas ~~shall~~ would be determined by contractor means and methods, and it is not expected that each one of these areas would be used, nor is it expected that the total area within each potential location would be needed for such activities.

TABLE 2-24: POTENTIAL LAYDOWN AREA LOCATIONS

~~Number~~	~~LIRR Mile Post~~	~~Location~~
~~1~~	~~MP 48.0~~	~~North side of ROW, west of Ronkonkoma Station, vicinity Substation G-35~~
~~2~~	~~MP 47.0~~	~~North side of ROW, vicinity of pedestrian bridge to be reconstructed~~
~~3~~	~~MP 46.7~~	~~North side of ROW, vicinity of Substation G-34~~
~~4~~	~~MP 45.1~~	~~North side of ROW, vicinity of Substation G-33~~
~~5~~	~~MP 44.4~~	~~North side of ROW, east of Central Islip Station, vicinity of Lowell Avenue~~
~~6~~	~~MP 43.4~~	~~North side of ROW, west of Central Islip Station, vicinity of Carleton Avenue~~
~~7~~	~~MP 42.4~~	~~North/south side of ROW, east of Islip Avenue/ Route 111~~
~~8~~	~~MP 41.5~~	~~North side of ROW, east of Brentwood Station~~
~~9~~	~~MP 38.0~~	~~North side of ROW, west of Deer Park Station~~
~~10~~	~~MP 36.6~~	~~North side of ROW, east of Deer Park Avenue (LIRR maintenance of way base at former Deer Park Station)~~
~~11~~	~~MP 34.9~~	~~North/south side of ROW, next to Wyandanch Station~~
~~12~~	~~MP 34.5~~	~~North/south side of ROW, east of 8th Street~~
~~13~~	~~MP 32.4~~	~~North side of ROW, west of Wellwood Avenue, Substation G-26~~

Number	LIRR Mile Post	Location
1	47.9-MP 48.1	MP North side of ROW, east of Substation G-35, west of Ronkonkoma Station
2	MP 47.0-MP 47.3	North side of ROW, east of Pedestrian Bridge 20-B-471 footpath, west of Ocean Avenue
3	MP 46.7-MP 47.0	North side of ROW, east of Substation G-34, west of Pedestrian Bridge 20-B-471 footpath
4	MP 45.1	North side of ROW, south of Ehrhardt Way, around Substation G-33
5	MP 43.9-MP 44.7	North side of ROW, east of Central Islip Station and Lowell Avenue, west of Veterans Memorial Highway Bridge 20-B-451
6	MP 43.4-MP 43.6	North side of ROW, east of Carleton Avenue, west of Central Islip Station
7	MP 42.4-MP 42.5	North/south side of ROW, east of Islip Avenue/Route 111
8	MP 37.9-MP 38.1	North side of ROW, south of Long Island Avenue, west of Deer Park Station
9	MP 36.5-MP 36.6	North side of ROW, east of Deer Park Avenue/NYS Route 231, at LIRR Maintenance of Way base (former Deer Park Station)
10	MP 34.7-MP 34.9	North/south side of ROW, south and east of Wyandanch Station, west of Deer Street Pedestrian Bridge 20-B-349
11	MP 34.4-MP 34.5	North/south side of ROW, west of 18th Street
12	MP 32.4-MP 32.5	North side of ROW, west of Wellwood Avenue, around Substation G-25


Phase 2 West
Phase 2 East
Phase 2 East
Phase 1
FARMINGDALE
PINELAWN
WYANDANCH
DEER PARK
BRENTWOOD
CENTRAL ISLIP
RONKONKOMA
Republic Airport
Long Island MacArthur Airport
Melville
Dix Hills
Brentwood
Wheatley Heights
Deer Park
Wyandanch
East Farmingdale
West Babylon
North Babylon
Baywood
North Bay Shore
Hauppauge
Islandia
Central Islip
Lake Ronkonkoma
Ronkonkoma
Bohemia
State Hwy 24
State Hwy 110
State Hwy 109
Long Island Ave
Grand Blvd
Prairie Dr
Edison Ave
Southern State Pkwy
Main Ave
Nicolls Rd
Old Country Rd
Half Hollow Rd
Long Island Motor Pkwy
Express Dr
Expressway Dr
Hamlet Dr
Richmond Blvd
Union Ave
Railroad Ave
Pine Aire Dr
3rd Ave
Easton St
State Hwy 454
MP 30
MP 31
MP 32
MP 33
MP 34
MP 35
MP 36
MP 37
MP 38
MP 39
MP 40
MP 41
MP 42
MP 43
MP 44
MP 45
MP 46
MP 47
MP 48
1
2
3
4
5
6
7
8
9
10
11
12
110
24
109
231
111
495
454
Rail Station
LIRR Track (Milepost)
Interstate
County Route
Potential Construction Laydown Areas
Track Being Added/Sidings Being Relocated
New Platforms
Existing Access Road
New Access Road
Retaining Walls
LIRR Double Track Project
Ronkonkoma to Farmingdale
Potential Construction Laydown Areas
Figure 2-17
0
1
2 Miles

Track Construction

The addition of the second track through much of the rail ROW requires the placement of substantial amounts of track materials (sub-ballast, ballast, ties, rails, and rail fasteners) on new and modified earthwork embankments. Due to the amount of track to be installed as part of the proposed action, it is anticipated that a highly-mechanized track laying system would be mobilized for construction. Ties and rails would be installed and assembled in a continuous operation ready for final lining and surfacing, greatly reducing construction time and cost. More time consuming track installation by placement of discrete track components or panelized track section would be possible, but not considered likely for proposed action track construction.

The proposed action also includes installation of track switches and turnouts as part of new or modified track interlockings. While component construction is possible, it is more likely that pre-assembled turnouts would be installed using a mechanized switch exchange system. This would reduce construction time and costs.

Railroad Systems Construction

The proposed action includes reconstruction of railroad signal and communication systems through the project ROW. Construction would be within railroad ROW, staged with civil construction work in order to maintain on-going rail operations.

The proposed action also includes electrification of the new second track using third rail electric traction, installed on extended-length ties. Existing traction power substations in the ROW are sufficient to accommodate the proposed action. Construction in existing substations would be limited to the addition of some switchgear, conduit, and cabling. The most significant traction power construction is the reconstruction of the buried power feeder connection between Substations G-33 and G-34. Conduit and cable would be reconstructed at locations away from the new second track.

2.9.3 Construction by Phase

In this section, the principle elements of the proposed action in each of the two construction phases are discussed in a more quantitative manner.

Phase 1 Construction. Principal construction consists of the addition of a second track north of the existing track (at locations currently with a single track) and related ancillary work. The second track would be added from east of Pond Road in Ronkonkoma (MP 47.85) to the vicinity of Dovecote Lane in Central Islip (MP 44.04). Between Ronkonkoma and Central Islip Station, the second track would be added on the north side of the existing track. West of Central Islip Station, the second track would be added on the south side of the existing track. Addition of the second track would require modifications to grade-crossings at (also shown in Figure 1-3, *Proposed Action*):

- Pond Road
- Ocean Avenue (CR 93)
- Carleton Avenue (CR 17)
- North Peters Boulevard

A pedestrian bridge would be replaced at MP 46.94 in the vicinity of Easton Street. This bridge provides separation of railroad and pedestrian traffic to access Duffield Elementary School and Ronkonkoma Middle School. To maintain pedestrian traffic, the new bridge would be built prior to demolition of the existing bridge.

Approximately 59,000 square feet of fill walls would be constructed in this section (7,200 lineal feet with an average height of eight feet), including construction of fill walls adjacent to Lakeland County Park. In addition, approximately 55,000 square feet of precast concrete cut walls would be constructed in this phase (approximately 8,400 feet long with an average height of 6.5 feet). Net of material used for fill walls, over 40,000 cubic yards of excess excavated material would be removed from the site. Total over road truck trips for Phase 1 construction, including delivery of wall components, transportation of excavated material, and delivery of track subballast and ballast would be approximately 9,600 trips (see Section 2.9.4 discussing traffic during construction).

Phase 2 East Construction. Principle construction consists of the addition of a second track south of the existing track (at locations currently with a single track) and related ancillary work. The second track would be added from east of Islip Avenue (State Route 111) (MP 42.5) to east of Brentwood Station (MP 41.04). A second track would also be added from MP 37.96 in the vicinity of Commack Road to MP 37.07. Work also includes the realignment and reconstruction of approximately 600 feet of siding track in the vicinity of Commack Road (CR 4). Addition of the second track would require modifications to grade-crossings at (also shown in Figure 1-3, *Proposed Action*):

- Islip Avenue (State Route 111).
- Wicks Road (CR 13).
- Commack Road (CR 4).

Note that work at the Wicks Road (CR 13) grade-crossing is anticipated to be limited to changing rubber grade-crossing panels to precast concrete grade-crossing panels.

Approximately 6,200 square feet of fill walls would be constructed in this phase (1,000 linear feet with an average height of six feet). In addition, approximately 3,500 square feet of precast concrete cut walls would be constructed in this phase (approximately 800 feet long with an average height of 4.5 feet). Net of material used for fill walls, over 13,000 cubic yards of excess excavated material would need to be removed from the site. Total over road truck trips for Phase 2 East construction, including delivery of wall components, transportation of excavated material, and delivery of track subballast and ballast would be approximately 3,200 trips (see Section 2.9.4 discussing traffic during construction).

Phase 2 West Construction. Principle construction consists of the addition of a second track south of the existing track (at locations currently with a single track) and related ancillary work. Second track would be added from west of Deer Park Avenue (State Route 231) (MP 36.30) to east of Farmingdale Station (MP 30.24). A new track crossover would be added east of Farmingdale Station. In addition, the project would construct a new south platform at Wyandanch Station and two new short station platforms at Pinelawn Station.

Addition of the second track would require modifications to grade-crossings at (also shown in Figure 1-3, *Proposed Action*):

- Straight Path (CR 2)
- 18th Street
- Little East Neck Road North (CR 95)
- Wellwood Avenue (CR 3)
- New Highway

Approximately 4,500 square feet of fill walls would be constructed in this phase (900 lineal feet with an average height of five feet). In addition, approximately 27,500 square feet of precast concrete cut walls would be constructed in this phase. These cut walls are approximately 11,200 feet long with an average height of 2.5 feet. Net of material used for fill walls, over 30,000 cubic yards of excess excavated material would be removed from the site. Total over road truck trips for Phase 2 West construction, including delivery of wall components, transportation of excavated material, and delivery of track subballast and ballast, would be approximately 9,300 trips (see Section 2.9.4 discussing traffic during construction).

2.9.4 Air Quality

Project construction would involve earthwork within the LIRR ROW using conventional, typical construction equipment and vehicles. Emissions of particulate matter (PM_{10} and $PM_{2.5}$) would be associated with both tailpipe emissions from vehicle and equipment exhaust and fugitive dust from earthwork. Fugitive dust represents particulate matter, or particle pollution, that becomes airborne as a result of construction-related activities, such as driving on unpaved roads, excavation, and soil and wind erosion. Under certain conditions and in certain quantities, fugitive dust can be harmful to human health and therefore should be minimized.

Additional pollutant emissions in the form of carbon monoxide (CO) and nitrogen dioxide (NO_2) would also be associated with equipment and vehicular exhaust. Expected mobile source activities would likely include off-site movements of delivery and dump trucks, worker vehicles, and traffic diversions, as well as non-road vehicles used within the construction zone, such as hydraulic cranes, bull dozers, or auger drills. However, it is expected that increases in construction emissions, although unavoidable, would be temporary and of short duration. As noted previously, substantial construction activities would not remain in one location for more than a few months at any one time, but would advance along the ROW as each section of the work is completed. Accordingly, it is unlikely that any particular receptor would be significantly affected by construction-related emissions.

To minimize construction-related air emissions, LIRR would incorporate control measures into construction contract specifications issued for the project, including the following:

- Use of water or other dust-suppression mixtures during excavation, grading, and other construction operations to minimize fugitive dust emissions.
- Application of dust suppression agents on a recurring basis to gravel or dirt access roadways, materials stockpiles, and other surfaces capable of producing airborne dust.

- Use of tarps to cover open-body dump trucks in motion to minimize dust emissions.
- Soil stabilizers should be applied to the surface of inactive stockpiles.
- Maintaining low speeds for all construction vehicles.
- Periodic cleaning of construction vehicle tires.
- Use of powered sweeper vehicles and water trucks with spray bar attachments to wet down nearby paved roadways.
- Prompt removal of loose surface material would preclude the formation of dust. Therefore, to the extent practicable, stockpiles from excess excavation would be used for backfill in widened embankments in order to reduce material transportation and consequent increases in vehicle use.Use of diesel-powered construction equipment with reduced carbon monoxide emissions, where practicable. Also, to the extent possible, construction equipment should be equipped with Diesel Particulate Filters.
- Proper planning of construction schedules would minimize traffic disruption and limit any short-term increase of air pollutants. Traffic patterns would be adjusted to maximize flow and minimize idling.
- Rerouting truck traffic away from schools and residential communities, when possible.
- Proper vehicle maintenance would be required to ensure that equipment and vehicular engines are operating within acceptable emissions limits.

2.9.5 Traffic

Construction services for Phase 1 of the proposed action would be procured using a design-build (DB) methodology. As a result, final design would be completed and specific construction methods would be selected by the chosen construction contractor(s). Therefore, the discussion of truck traffic during construction in this section is based on a set of reasonable assumptions in order to provide a clear and concise depiction of potential impacts.

In a number of locations along the rail ROW, access roadways (unpaved, gravel, or dirt roadways) would be developed in order to facilitate construction (and future maintenance) of the proposed action. These access roadways and other temporary access points along the rail ROW would result in shortening the overall timeframe for project construction and minimize potential impacts during construction at any given location along the rail ROW.

For Phase 1, in the portion of the ROW including Town of Islip property within Lakeland County Park, an alternative is under consideration which would involve construction of a temporary access road on the north side of the rail ROW for delivery/removal of construction materials. Trucks would enter this access road at either the Pond Road or Ocean Avenue (CR 93) grade-crossing, travel west along the roadway, and exit at East Suffolk Avenue (CR 100). If possible, the temporary roadway exit at Suffolk Avenue (CR 100) would occur at an existing intersection. Depending on the specific exit location, trucks would require flagging personnel, possibly MTA PD personnel in order to ensure safe traffic operations.

Table 2-25, *Weekday Total and Peak Hour Truck Trips* lists the hourly truck trips expected to be generated during weekdays, assuming a typical 8-hour workday, e.g., 7 AM – 3 PM (six hours of work, with an hour at the beginning for setup and an hour at the end for breakdown). For each location listed, trips are assumed to be made in a clockwise direction in order to avoid the need for

crossing the rail ROW. For example, the route following "Brentwood Road to 4th Street" indicates that a truck would enter the construction access road via southbound Brentwood Road and exit northbound to 4th Street, with no crossing of the rail ROW. Exiting trucks turning northbound would require flagging personnel at the exit driveway, as well as just south of the rail ROW to prevent roadway vehicles from queuing on the tracks.

In general, construction truck traffic generation would be low, thus not requiring quantitative traffic analyses. It is unlikely that any intersection in a residential area would experience more than 10 construction trucks per hour, during the limited periods of construction activity in any given area along the ROW. Trucks would be routed along the shortest route to the nearest state-designated truck routes for locations where access to construction areas is not provided directly from a truck route. To minimize overlapping of inbound and outbound truck movements at the same intersection from adjacent construction sections, construction would be staggered so that no work would be simultaneously occurring in adjacent sections. For example, work in the Straight Path (CR 2) to 18th Street and Little East Neck Road North (CR 95) to Wellwood Avenue (CR 3) construction sections would be scheduled together, while skipping the section in between from 18th Street to Little East Neck Road North (CR 95).

In most cases, 14 or fewer truck trips would occur during any one hour during a typical weekday (one trip every four to five minutes). No significant traffic impacts are expected during construction.

Grade-crossing construction may result in some temporary road or lane closures. Grade-crossing construction would be restricted to weekends and adjacent grade-crossings would not be reconstructed concurrently. During construction, approved maintenance and protection of traffic (MPT) techniques would be used to minimize disruptions and local emergency responders will be notified in advance of grade-crossing closures. Required permits would be obtained prior to grade-crossing closures. This same methodology would be implemented for construction of Phase 2 East and Phase 2 West.

TABLE 2-25: WEEKDAY TOTAL AND PEAK HOUR TRUCK TRIPS

Construction Section		Trucks per Day	Trucks per Hour
Phase 1	West of Ronkonkoma Station to Pond Road	46	8
	Pond Road to Ocean Avenue (CR 93)	82	14
	Ocean Avenue (CR 93) to MP 46.97 (Road)	19*	4*
	MP 46.97 (Road) to Substation G-34	21*	4*
	Substation G-34 to Substation G-33	30*	6*
	Substation G-33 to E. Suffolk Avenue (CR 100)	78*	14*
	E. Suffolk Avenue (CR 100) to Lowell Avenue	31	6
	Lowell Avenue to MP 43.47 (Signal Case)	43	8
	MP 43.47 (Signal Case) to Carlton Avenue (CR 17)	77	13
	Carleton Avenue (CR 17) to North Peters Boulevard	59	10
	North Peters Boulevard to Phase 1/Phase 2 boundary	22	4

Construction Section		Trucks per Day	Trucks per Hour
Phase 2 East and Phase 2 West	Phase 1/Phase 2 boundary to Islip Avenue (State Route 111)	58	10
	Islip Avenue (State Route 111) to MP 41.37 (Parking Lot)	28	5
	MP 41.37 (Parking Lot) to Brentwood Road	23	4
	Brentwood Road to 4th Street	0	0
	4th Street to 2nd Avenue	0	0
	2nd Avenue to 5th Avenue	0	0
	5th Avenue to Executive Drive	0	0
	Executive Drive to MP 38.01 (Road)	0	0
	MP 38.01 (Road) to Substation G-28	32	6
	Substation G-28 to Commack Road (CR 4)	42	7
	Commack Road (CR 4) to Carlls Path	21	4
	Carlls Path to Former Deer Park Station (MP 36.55)	16	3
	Former Deer Park Station (MP 36.55) to Straight Path (CR 2)	18	3
	Straight Path (CR 2) to 18th Street	45	8
	18th Street to Little East Neck Road (CR 95)	36	6
	Little East Neck Road (CR 95) to Wellwood Avenue (CR 3)	27	5
	Wellwood Avenue (CR 3) to New Highway	49	9
	New Highway to east of Farmingdale Station	27	5

* Truck trips for these construction sections would use the temporary access road to exit at East Suffolk Avenue (CR 100).

2.9.6 Noise and Vibration

Noise

Although standardized criteria for assessment of construction noise have not been established, FTA has developed reasonable guidance criteria, set forth in the FTA Manual, which can be applied to the proposed action. Using these guidance criteria, an assessment of construction noise was conducted at three residential locations, representative of worst-case construction conditions along the ROW. Results indicate that project-related construction activities would create temporary elevated noise levels at nearby noise-sensitive receptors. Construction assessment results are shown in Table 2-26, *Construction Noise Assessment Results*. Details of the assessment can be found in Appendix C, *Noise and Vibration Technical Report*.

TABLE 2-26: CONSTRUCTION NOISE ASSESSMENT RESULTS

Project Location	Site Number	Representative Receptor Description [1]	Distance from Construction Activities to Building (feet)	Projected Construction Noise Level ($L_{eq\ 1\text{-}hr}$)	Predicted Noise Level above FTA Manual Criteria? [2]
Phase 1	23LT	29 May Court	35	96	**Yes**
Phase 2 East	6LT	122 Suffolk Avenue	88	89	No
Phase 2 West	4LT	740 Long Island Avenue	73	88	No

Source: STV Incorporated, 2013.

[1] Site addresses are approximate.

[2] Applicable Leq 1-hour FTA construction noise criteria for residential uses is 90 dBA (see *Transit Noise and Vibration Impact Assessment Manual*, May 2006, Section 12.1.3).

Site 23LT is representative of the closest to the ROW of a small group of residences adjacent to the north side of Phase 1 of the proposed action, between the eastern boundary of Lakeland County Park and May Court. Conclusions of the construction noise assessment are based on the use of the construction noise criteria set forth in the FTA Manual, as applied to day-time construction activities.

Sporadic increases in local noise levels due to construction activities would occur. These temporary impacts would be categorized as unavoidable and short-term, given the inconsistent and transitory nature of construction activities and equipment use along the ROW. This occurrence is a unique characteristic of rail projects as construction would shift continuously along the area where the proposed action would be implemented. Therefore, the duration of and potential exposure to construction-related noise at any one property would be limited. For all construction phases, project contract specifications would require application of the following construction noise control measures, to minimize construction noise:

- Implement design considerations and project layout approaches, including measures such as construction of temporary noise barriers between construction equipment and noise sensitive receptors, placing construction equipment farther from noise sensitive receptors, constructing walled enclosures/sheds around especially noisy activities, such as pavement breaking, and sequencing operations to combine especially noisy equipment.
- Use of machinery with maximum-sized intake and exhaust mufflers on internal combustion engines.
- Replace back-up beepers on machinery with strobe lights (subject to other requirements, e.g., OSHA and Mine Safety and Health Administration, as applicable), in order to eliminate the most annoying impulse beeping.
- Carefully route construction equipment and vehicles carrying rock, concrete, or other materials over streets causing the least disturbance to schools and residences in the vicinity of the work.

- Proper planning of construction schedules to minimize traffic disruption and to limit any short-term increase in noise.
- Set up a community liaison and complaint hot line.
- Alternative construction methods, using special low noise emission equipment and selecting and specifying quieter demolition or deconstruction methods.
- Use of noise enclosures or noise insulation fabric on compressors, generators, etc.

With such measures in place for the potentially affected buildings, significant impacts resulting from construction-related noise can be avoided. Therefore, assuming that the noise control measures listed previously are implemented, and taking into account the short term and sporadic nature of noise generating activities at any one location along the ROW, significant construction-related noise impacts are not expected to occur as a result of the proposed action.

Vibration

Vibration from construction activities sometimes occurs during operation of equipment. However, because of its temporary nature, the major concern with regard to construction vibration is generally building damage. Therefore, a general assessment of construction vibration following the procedures outlined in the FTA Manual was performed in order to provide a conservative assessment of whether vibratory pile driving and the use of vibratory rollers (construction activities that result in the most vibration) would cause significant construction-related vibration at nearby residential and commercial buildings along the project ROW. This assessment resulted in the identification of four potential problem locations requiring special attention during final design, under the procedures established by the FTA Manual. These four locations are shown in Table 2-27, *Construction Vibration Assessment Results*.

TABLE 2-27: CONSTRUCTION VIBRATION ASSESSMENT RESULTS

Site Number	Building Type	Track Side	Milepost	Distance to Construction Vibration Activity (feet)	Distance to Potential Building Damage (feet)[1,2]	Potential for Impact Pursuant to FTA Manual?
CV1	Commercial	South	MP 42.4	<1	19	Yes
CV2	Commercial	South	MP 34.1	10	17	Yes
CV3	Commercial	North	MP 45.8 – MP 45.9	5	17	Yes
CV4	Residential	North	MP 46.43	21	22	Yes

[1] Assumes FTA PPV damage criteria of 0.2 in/sec for residential buildings and 0.3 in/sec for industrial/commercial buildings. All distances assumed to be measured from centerline of vibration-related construction activity to the edge of a building.

[2] Results based on vibration building damage equation in Section 12.2.1 of the *Transit Noise and Vibration Impact Assessment*, FTA, 2006.

Details of the assessment along with location maps of these affected areas can be found in the *Noise and Vibration Technical Report* prepared for the proposed action (see Appendix C).

In accordance with the FTA Manual, the potential for construction-related vibration impacts to affect these four buildings must be addressed during final design. In order to significantly reduce the potential for building damage and temporary annoyance to building occupants, for all construction phases, project contract specifications would require the development and preparation of a vibration mitigation plan, once more details regarding construction operations are known. This plan would be initiated at the start of construction. One primary element of the plan would include vibration compliance monitoring at potentially affected properties. Compliance would be based on damage criteria threshold limits defined by the FTA or other more refined threshold limits defined for individual structures by a qualified vibration specialist. The qualified vibration specialist would define the ability of each structure to withstand the loads and displacements due to construction vibrations and would as a result also continuously monitor affected properties to ensure that these damage criteria thresholds are not surpassed.

While specifics of any vibration monitoring plan would be developed during final design, typical procedures for compliance involve using two action vibration threshold limits. The first, lower action threshold limit would be identified as a “warning” level. If during construction this vibration level was to be exceeded at the building, a detailed review would be conducted to determine potential causes. The second, higher action threshold limit would result in an immediate “stop work" order in the vicinity of the affected structure. A further investigatory review would then be conducted and site specific mitigation measures would be developed to minimize any potential damage. The vibration specialist would also conduct a pre-construction survey and post-construction survey in sensitive areas for each of the potentially affected properties. Overall, the vibration mitigation plan would be used to minimize construction vibration damage using all reasonable and feasible means available. In addition to any requirements within the vibration mitigation plan, application of the following construction vibration control measures would also be required:

- Construction staging and supply storage areas would be limited to several specific pre-determined areas along the alignment.
- To the extent possible, earth moving equipment would be operated far from vibration-sensitive receptors.
- Select demolition methods that do not involve excessive impact, where possible. For example, the use of rotary rock-cutting heads in place of hydraulic breakers for concrete slab demolition.
- Where possible and practicable, auger piles would be used in place of impact pile drivers. In addition, pre-drilling a hole for a pile can be used to place the pile at or near its ultimate depth, thereby substantially reducing the number of vibration causing impacts.
- When practical, schedule pile driving activities during hours that would least impact residents at sensitive-receptors. For example, pile driving near a residential area can be scheduled to occur primarily during business hours on weekdays, when most people would be at work.
- Where possible, use of vibratory rollers should be limited near vibration-sensitive receptors.
- Divert the movement of heavy trucks and construction equipment away from sensitive receptors, when possible. Attempt to use roadways containing a limited number of residential or sensitive structures.

- Where practicable, use smaller sized bulldozers or backhoes.
- Properly secure street decking over cut-and-cover excavations.

Although construction-related vibration would occur, any increase would be temporary and short-term. Adherence to the previously listed vibration control measures would significantly reduce the likelihood of any significant adverse construction-related vibration, including at the four structures closest to the ROW. For structures where FTA Manual vibration criteria might be exceeded during construction, in addition to the previously listed control measures, the development of a detailed vibration mitigation plan would be required to prevent potential building damage. With such measures in place for the potentially affected buildings, significant impacts resulting from construction-related vibration would likely be avoided.

2.9.7 Soil Erosion

Erosion of soils may temporarily occur as construction activities disturb vegetation and expose soil. Soil erosion and sediment control measures required by applicable standards for project construction would be used during the progress of construction in order to minimize or avoid impacts of soil erosion. Soil Erosion and Sediment Control Plan Certification would be obtained from the Suffolk County Soil and Water Conservation District prior to construction.

As identified in the *Drainage and Surface Waters* section previously, a series of safeguards would be incorporated into the construction contracts to minimize soil erosion, siltation and sedimentation related impacts of project construction.

2.9.8 Visual Impacts

Section 2.2, *Visual Impacts*, identifies a list of aesthetic resources along the length of the project ROW. A number of the sensitive receptors in the vicinity of these aesthetic resources would experience temporary changes in viewshed, as a result of construction activities associated with the proposed action. Such temporary impacts would likely include the presence of construction equipment and possibly temporary storage of materials, in addition to the removal of scrub vegetation within the ROW, as necessary, to facilitate construction. In general, these potential changes to ROW conditions, as viewed from sensitive receptors, would represent minor changes to their respective viewsheds, and would be of limited duration, given the relatively short-term duration of project construction in any given area. Therefore, these temporary changes in viewshed are not considered to be significant.

It should be noted that in areas where the second track will be built on the north side of the existing track, aesthetic resources to the south, such as at Connetquot River State Park Preserve, would experience no significant temporary (or permanent) visual impacts. The reverse is also true in areas where the second track would be built on the south side of the existing track.

Given the specific nature of construction activities at Lakeland County Park (see Section 1.3.1), potential construction-related changes in viewshed need to be discussed in greater detail. As discussed in the subsection on Temporary Access Roads in Section 2.9.2, a construction alternative is being considered involving a temporary access road within Town of Islip property in Lakeland

County Park, immediately adjacent to the railroad ROW. Implementation of this construction roadway would entail temporary impacts to less than 0.35 acres of freshwater wetland.

Views from Lakeland County Park, looking south from the Long Island Greenbelt Trail boardwalk toward Connetquot River State Park Preserve, include this wetland area. As a result, there would be a temporary impact to this viewshed during construction of the proposed action. At the end of construction, estimated to last no more than six months, this wetland area would be restored to pre-construction conditions, therefore, eliminating this temporary impact.

2.9.9 Management of Contaminated Materials

Types of Potential Impacts

The soil and groundwater within the railroad ROW may be impacted by the railroad operations and the surrounding industrial operations identified in Section 2.6.1. Potential railroad and adjacent industrial operations related contaminants that could be encountered during the work include:

- Volatile organic compounds (VOCs). These include aromatic compounds, such as benzene, toluene, ethylbenzene, xylene (BTEX), and methyl tertiary butyl ether (MTBE) [found in petroleum products (especially gasoline)], and chlorinated compounds, such as tetrachloroethene (also known as perchloroethylene or "perc") and tricholoroethene [common ingredients in solvents, degreasers, and cleansers]. VOCs present the greatest potential for contamination issues during construction since, in addition to soil and groundwater contamination, they can generate organic vapors. Former and current auto repair shops, gasoline stations, manufacturing operations with machine shops and chemical storage tanks (identified in Section 2.6.1) could be potential sources for VOC contamination.

- Metals, such as lead, arsenic, cadmium, chromium, and mercury, are often used in smelters, foundries, and metal works and are also found as components in paint, ink, petroleum products, herbicides, and coal ash. These metals adhere to soil particles and, therefore, tend not to travel in soil. Former or current auto repair shops, gasoline stations, manufacturing operations involving use of dyes (identified in Section 2.6.1) could act as a potential source for metal contamination. Metals are also known to be present in fill material throughout the greater New York metropolitan area. As such, metals are anticipated to be encountered during construction activities along the project corridor.

- Semivolatile organic compounds (SVOCs). The most common SVOCs encountered are polycyclic aromatic hydrocarbons (PAHs), constituents of partially combusted coal or petroleum-derived products, such as coal and coal ash, and asphalt. PAHs are also known to be present in fill material throughout the New York metropolitan area. As such, PAHs are anticipated to be encountered during construction activities along the LIRR ROW.

- Creosote: Creosote is a wood preservative made by distilling wood or coal tar at very high temperatures. Creosote treated wood is anticipated to be encountered in the railroad ties and wooden utility poles within the project corridor.

- Polychlorinated biphenyls (PCBs). Commonly used in dielectric fluid in transformers and some underground high-voltage electric pipelines, PCBs are of special concern at rail yard and train maintenance locations and electric power transformer locations where leakage into soil under or surrounding transformers may have occurred. PCBs adhere to soil particles and generally tend to travel only short distances in soil. Manufacturing operations with machine shops and truck repair and transformer vaults could be potential sources for PCBs and/or PCB-containing materials.

- Pesticides, herbicides, and rodenticides. These are commonly used to control rodents, insects, and vegetation in rail yards, particularly between tracks and along the ROW.

The previous list provides a summary description and potential sources of categories of contaminants typically associated with the railroad operations and the industrial operations documented in the study area. However, it is not a comprehensive list of all contaminants that may be encountered. The primary concerns for this project related to potential contaminated materials are worker and community health and safety and managing the products of excavation in an appropriate manner, including beneficial reuse. Preventative measures to be employed to address these concerns are summarized in the following subsection.

Further Investigations

As design of the proposed action is finalized, specific areas where proposed construction activities would disturb soil and groundwater would be identified and investigated in order to determine the potential for contamination at these locations. As a result of such investigation, areas where testing should be performed would be identified. Where testing is to be performed, detailed work plans would be developed in accordance with the requirements of *Technical Guidance for Site Investigation and Remediation* (DER-10). The work plans would detail soil and groundwater sampling procedures and rationale, field and laboratory methods, quality control sampling, sample custody procedures, and field decontamination procedures to be followed. In addition, a site-specific *Health and Safety Program* (HASP) plan would also be prepared for the environmental investigation. Data obtained from environmental testing would be used in:

- Developing a HASP protective of project workers, compliant with OSHA requirements.
- Determining applicable federal and state hazardous waste disposal requirements for appropriate waste handling.
- Preparing an appropriate soil management plan allowing for relocation of soils from areas of excess cut to areas needing to be filled.
- Preventing soil excavated from contaminated areas to be used as fill in clean areas.

After completion of any testing, a detailed report would be prepared summarizing findings of field activities and comparing analytical results with the appropriate federal, state, and city standards and guidelines. Should contaminants of concern be detected at concentrations exceeding regulatory criteria, the report would include contaminated material management procedures under

appropriate health and safety measures, so that work would be performed safely. The construction contract would require the contractor to use the information provided in the contaminated material management procedures to prepare and implement a site-specific construction health and safety plan (CHASP) that is protective of the workers and members of the public.

LBP Management Plan

Surfaces coated with lead-based paint (LBP) require proper abatement prior to disturbance that would generate lead-containing dust or vapors (lead vapors could be generated through the cutting or welding of lead painted materials, such as structural steel). If lead paint-coated surfaces are present, an exposure assessment would be performed to determine whether lead exposure could occur during demolition. If the exposure assessment indicates the potential to generate airborne dust or lead fume levels exceeding health-based standards, a higher personal protection equipment standard would be employed to counteract exposure. In all cases, appropriate methods to control dust and air monitoring, as required by OSHA, would be implemented during demolition activities.

PCB-Containing Equipment Management Plan

Suspected PCB-containing equipment (e.g., transformers, electrical feeder cables, hydraulic equipment, etc.) would be surveyed. PCB-containing equipment that would be disturbed by the work associated with the proposed action would then be removed and disposed of in accordance with applicable federal (40 CFR Part 761), state (6 NYCRR Parts 360 – 376), and local regulations.

Mercury-Containing Switching Devices

If proposed action construction activities require the removal of switches, qualified and knowledgeable personnel would confirm whether mercury is present prior to their removal. Recycling or disposal of mercury and equipment would then be performed in accordance with applicable federal and state solid and hazardous waste regulations.

Management of Known or Suspected Contamination

Once contamination is known or suspected to exist in areas where excavation or disturbance would be required, as part of proposed action construction, appropriate measures would be followed to safely manage these areas, including:

- *Construction Health & Safety Plan* (CHASP): A site-specific CHASP would be prepared that outlines health and safety procedures to be followed to minimize exposure to workers and the public. The CHASP would include requirements for dust monitoring, and potentially compounds such as VOCs, both inside and outside of the work zone, as well as procedures for stockpiling, testing, loading, transporting, and properly disposing of the material. The site-specific CHASP, developed in accordance with OSHA regulations and guidelines, would address both known contamination issues and contingency items.

  The site-specific CHASP would define both the appropriate designated personnel to ensure that all requirements of CHASP plans are implemented, along with the training and qualifications required for on-site personnel. Training would enable personnel to recognize and understand potential hazards to health and safety, to provide the knowledge and skills necessary to perform the work with minimal risk to health and safety, and to ensure that personnel can safely avoid or escape from emergencies. The site-specific CHASP would also

define site work zones and the monitoring necessary to identify potential exposure of field personnel or the public to potential environmental hazards.

- *Contaminated Material Management Plan* (or *Soil Management Plan*): Waste (e.g., excavated soil, etc.) can be classified as "hazardous waste," if it contains one of the "listed wastes" in the EPA Code of Federal Regulations (40 CFR Part 261) or if it possesses one of four hazardous characteristics: ignitability, reactivity, corrosivity, or toxicity. New York State has similar regulations for identification and management of hazardous wastes (6 NYCRR Parts 370 – 376), but includes PCBs above 50 parts per million as a hazardous waste, whereas PCBs are regulated under TSCA on the federal level. Hazardous waste would require special handling, storage, transportation, and disposal methods to prevent releases that could impact human health or the environment, pursuant to a soil management plan.

  NYSDEC requires implementation of fugitive dust control measures at sites containing elevated concentrations of SVOCs and metals (TAGM 4031, Fugitive Dust Suppression and Particulate Monitoring Program). To confirm the effectiveness of dust control measures at such locations, a *Community Air Monitoring Plan,* approved by the New York State Department of Health, would be implemented, if applicable, during construction. Depending on the nature of the contaminated material, special containers or stockpiling practices for on-site storage of the material may be implemented, in accordance with applicable federal, state, and local regulations to prevent the release of hazardous materials to the environment. Federal and New York State Departments of Transportation (DOT) have requirements for transportation of wastes containing hazardous materials. Hazardous waste would be transported only to a facility with federal, state, and local permits to accept that waste. Waste facilities require representative waste sampling and laboratory analysis prior to accepting material for disposal.

  Should above ground or underground petroleum storage tanks be encountered and need to be removed to construct the proposed action, removal would be performed in accordance with NYSDEC regulations (6 NYCRR Part 613.9), mandating that tanks no longer in use be closed in place or removed according to specific requirements. Contaminated soils surrounding these tanks, separate phase products, such as gasoline or fuel oil, etc., floating on top of the water table, or contaminants dissolved in the groundwater would also be removed in accordance with NYSDEC regulations (6 NYCRR Part 611.6). Article 12 of the New York Navigation Law provides notification and management requirements for spills to waters of the state.

- Contaminated Groundwater Management: The discharge of groundwater generated during dewatering operations would be required to conform to limitations imposed by NYSDEC under the State Pollution Discharge Elimination System (SPDES) program.

Upon completion of construction activities, disturbed areas would be covered and potential pathways for exposure would be eliminated.

2.10 AIR QUALITY

Based on traffic studies conducted for the proposed action, there will be no permanent impacts to either microscale or regional air quality as a result of the proposed action. In addition, any air quality impacts caused by construction-related activities would be temporary in nature and would not result in significant impacts (see Section 2.9, *Construction Impacts*). The proposed action would also not result in any significant pollutant emissions from stationary sources.

2.10.1 Existing Conditions

Pollutants of Concern

The United States Environmental Protection Agency (EPA) has identified several criteria pollutants of concern nationwide, including: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) (including PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). As a result, EPA has established National Ambient Air Quality Standards (NAAQS), for these criteria pollutants, categorized as "primary" and "secondary." **Primary standards a**re designed to establish limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. **Secondary standards** set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Pollutant Characteristics

A summary of the characteristics of these pollutants follows.

Carbon Monoxide. Carbon monoxide is a colorless and odorless gas, primarily associated with the incomplete combustion of vehicle fuel. Carbon monoxide (CO) is very reactive and its concentrations are limited to relatively short distances near crowded intersections and along slow moving, heavily traveled roadways. To assure that air quality conditions continue to improve within New York State, it is important to monitor potential impacts of new traffic generating projects. As a result, concentrations of CO are evaluated on a local or microscale basis.

Nitrogen Dioxide. Nitrogen dioxide is formed from the burning of fossil fuels, such as natural gas. Primary sources include on and off road vehicles, as well as power generating plants.

Lead. Lead emissions are associated with industrial uses and motor vehicles using gasoline containing lead additives. As newer car models, using unleaded gasoline, have replaced older vehicles, lead emissions have decreased significantly.

Inhalable Particulate Matter. Inhalable particulate matter (PM) is a respiratory irritant, of most concern when particulate size is less than 10 microns in diameter (PM_{10}). Particulate matter is primarily generated by the combustion of diesel fuel. Particulate matter also develops from the mechanical breakdown of coarse particulate matter (e.g., from building demolition or roadway surface wear, as well as other construction-related activities).

EPA has also recently promulgated standards for PM less than 2.5 microns in diameter ($PM_{2.5}$). While $PM_{2.5}$ and PM_{10} both emanate from similar sources, $PM_{2.5}$ or "fine particulates" is made up of a complex mixture of extremely small particles and liquid droplets, considered the most damaging to human health because they penetrate and remain in the deepest passages of the lungs.

Sulfur Dioxide. Oxides of sulfur (SO_2) are respiratory irritants associated with the combustion of sulfur-containing fuels, such as heating oil and coal. SO_2 is a precursor to acid rain and to $PM_{2.5}$, both of which create damage to individual health and the environment. All NYSDEC sulfur dioxide monitoring sites have remained in compliance with the New York State/Federal annual mean standard, for over twenty consecutive years.

Greenhouse Gases. GHGs trap heat in the atmosphere, creating what is called the greenhouse effect. Some GHGs, such as carbon dioxide (CO_2), occur naturally, and are emitted to the atmosphere through both natural processes and human activities, while other GHGs are created and emitted solely through human activities. Of principal relevance to the proposed action would be CO_2.

Attainment Status/State Implementation Plan (SIP)

The Clean Air Act (CAA), as amended in 1990, defines non-attainment areas as geographic regions that have not met one or more of the NAAQS. When an area within a state is designated as non-attainment by EPA, the state is required to develop and implement a State Implementation Plan (SIP), which describes how it will meet NAAQS under deadlines established by the CAA. Suffolk County, as part of the New York-New Jersey-Connecticut metropolitan statistical area (NYMA), complies with the NAAQS for SO_2, CO, and lead, but is designated as a non-attainment area for 8-hour ozone and $PM_{2.5}$.

Violations of the CO standard have not been recorded at NYSDEC monitoring sites for several years. As part of its ongoing effort to maintain its attainment designation for CO, New York State has committed to the implementation of area-wide and site-specific control measures to continue to reduce CO levels.

Historical monitoring data for Suffolk County indicate that the ozone 8-hour standard is exceeded. To be in compliance, the 3-year average of the annual fourth highest maximum 8-hour average concentration should not exceed the ozone 8-hour standard. In August 2007, the state submitted the final proposed revision of the SIP for ozone, documenting how the area will attain the 8-hour ozone standard by 2013. Separately, the state has requested that the NYMA, which includes Suffolk County, be reclassified from “moderate” to “serious” nonattainment. In March 2008, EPA revised the 8-hour ozone NAAQS to 0.075 ppm.

On February 9, 2010, EPA revised the Clean Air Act primary NAAQS for NO_2 by supplementing the existing annual primary standard of 53 parts per billion (ppb) with a new 1-hour primary standard at 100 parts per billion (ppb), based on the 3-year average of the 98th percentile of the daily maximum 1-hour average concentrations and establishing a new monitoring program [75 Federal Register 6475 (Feb. 9, 2010)]. The final rule became effective on April 12, 2010. EPA intends to promulgate initial NO_2 designations of attainment, nonattainment, and unclassifiable areas, using the three most recent years of quality assured air quality data from the current monitoring network.

EPA will designate as ‘‘nonattainment’’ any areas with NO_2 monitors recording violations of the revised NO_2 NAAQS and intends to designate all other areas of the country as ‘‘un-classifiable’’ to indicate that there is insufficient data to determine whether or not they are attaining the revised NO_2 NAAQS. The current monitoring network focuses on concentrations for general population

exposure at neighborhood and larger scales to support the current annual NO_2 standard, and therefore, does not include monitors near major roadways that could measure localized concentrations, estimated to be responsible for the majority of 1-hour peak NO_2 exposures [75 Federal Register 6479 (Feb. 9, 2010)]. States must site required NO_2 near-roadway monitors and have them operational by January 1, 2013, which means that sufficient air quality data from the new network will not be available to determine compliance with the revised NAAQS until after 2015.

On June 22, 2010, EPA promulgated a new 1-hour NAAQS for SO_2. The final rule became effective on August 23, 2010. States were required to submit their initial area designation recommendations for SO_2 to EPA no later than June 2011. EPA will designate areas as attainment, nonattainment, or unclassifiable for the new 1-hour NAAQS by June 2013. EPA plans to approve plans needed to provide for attainment and maintenance of the new 1-hour NAAQS by approximately August 2017 in all areas of the state, including any area initially designated nonattainment, and also including any area designated unclassifiable that has SO_2 sources with the potential to cause or contribute to a violation of the NAAQS. All NYSDEC sulfur dioxide monitoring sites have remained in compliance with the New York State/Federal annual mean standard for over 20 consecutive years.

Air Quality Monitoring

EPA operates a network of monitoring stations throughout the country to measure ambient air quality with the results published on an annual basis. The most recent EPA AirData database for 2011 identifies existing air quality levels for the project area, based on data from monitoring stations nearest to the proposed action. Background air quality levels for the project area are shown in Table 2-28, *Monitored Ambient Air Quality Data*. Selected locations represent available background sites closest to the project area.

TABLE 2-28: MONITORED AMBIENT AIR QUALITY DATA

Pollutant	Location	Units	Period	Concentrations			Number of Violations of Federal Standards	
				Mean	Highest	Second Highest	Primary	Secondary
CO	Queens College 2	ppm	8-hour	-	1.8	1.7	0	0
			1-hour	-	2.1	1.9	0	0
SO_2	Holtsville	ppb	Annual	2.2	-	-	0	-
			24-hour	-	10.2	10.0	0	-
			3-hour	-	22.0	21.3	-	0
			1-hour	21.3	-	-	0	-
Respirable Particulates (PM_{10})	Queens College 2	$\mu g/m^3$	24-hour	-	47	40	0	0
Respirable Particulates ($PM_{2.5}$)	Babylon	$\mu g/m^3$	Annual	8.8	-	-	0	0
			24-hour	23.4	32.6	31.8	0	0
NO_2	Queens College 2	ppb	Annual	21.6	-	-	0	0
			1-hour	65	79.3	77.5		
Lead (Pb)	JHS 126	$\mu g/m^3$	3-month	-	.012	.010	0	0
O_3	Babylon	ppm	1-hour	-	.137	.123	1	1
			8-hour	0.084			1	1

Source: EPA AirData Database 2012 (http://www.epa.gov/airdata/ad_maps.html)
Source: New York State Annual Ambient Air Quality Report 2011
ppm – parts per million
ppb – parts per billion

Air Quality Mobile Source Screening Methodology

NYSDOT Environmental Procedures Manual (EPM) outlines criteria to determine whether or not a project would require a detailed air quality analysis. For intersections that may be potentially affected by traffic generated by the proposed action, this three tiered process involves:

1. Level of Service Screening
2. Capture Criteria Screening
3. Volume Threshold Screening

Level of Service (LOS) screening involves examining delay time at each intersection that could potentially be affected by project-generated traffic. The Highway Capacity Manual (HCM) defines LOS as the amount of delay at an intersection (see Table 2-29, *Level of Service Criteria*). Intersections that operate at Level D, E, or F are subject to the next tier of screening. Intersections operating at C or above would not result in any impacts to air quality and, therefore, would not

require any further analysis. Because the proposed project would induce an insignificant number of vehicles, intersections operating at C or above that are nearby sensitive receptors (i.e. schools, hospitals, retirement communities, etc), would also not require any further analysis.

TABLE 2-29: LEVEL OF SERVICE CRITERIA

Delay Time (seconds)		
Level of Service (LOS)	**Unsignalized Intersections**	**Signalized Intersections**
A	≤ 10	≤ 10
B	>10-15	>10-20
C	>15-25	>20-35
D	>25-35	>35-55
E	>35-50	>55-80
F	>50	>80

For those locations that are not screened out under the LOS criteria, a five-step Capture Criteria screening analysis must then be undertaken, comparing No-Build to Build conditions. The criteria used in this evaluation include:

1. A 10 percent or more reduction in the source-receptor distance.
2. A 10 percent or more increase in traffic volume on affected roadways under Build conditions (referred to as estimated time of completion (ETC).
3. A 10 percent or more increase in vehicle emissions for ETC.
4. Any increase in the number of queued lanes at intersections for ETC.
5. A 20 percent reduction in traffic speed when build estimated speed is at 30 miles per hour (mph) or less.

For projects that include traffic intersections that are part of New York State's Carbon Monoxide SIP demonstration, a more stringent Capture Criteria screening would be utilized. However, based on the NYSDOT EPM, if SIP intersections are located further than ½ mile from a project, they do not require further consideration. Since there are no SIP intersections located within ½ mile of the proposed project area, only the above capture criteria were used in evaluating potential air quality impacts from the project.

If any of the study area intersections fail any of the capture criteria, they must be evaluated using the third tier Volume Threshold screening. Volume Threshold screening uses the traffic volume threshold conditions shown in Tables 3a, 3b, and 3c of Chapter 1.1 of the NYSDOT EPM. These tables are examined to determine if any of the identified intersections require microscale air quality analysis. Threshold volumes correspond to specific emissions factors and, therefore, if Build alternative emission factors were to correspond to a NYSDOT EPM threshold volume that is higher than the future peak hour traffic projections, then a violation of the carbon monoxide NAAQS is highly unlikely and a microscale air quality analysis would not be required. Otherwise, a microscale analysis of mobile source air quality would be required.

Regional Air Quality

There would be no impacts from project related regional emissions as the proposed project would not result in any increase in vehicle miles traveled (VMT). On the contrary, VMT Is likely to decrease slightly as a result of the project. As a result, none of the NYSDOT requirements for a detailed analysis would be met and no further discussion of regional emissions is required.

2.10.2 Potential Impacts and Improvements with the Proposed Action

Level of Service Screening

The proposed action would result in several intersections affected by changes in traffic conditions. To evaluate these conditions, a screening level analysis was performed for air quality at intersections exhibiting LOS D or worse. Based on a review of traffic analysis conducted for the proposed action, a total of 10 intersections would exhibit a LOS of D, E, or F during Build conditions. These intersections and their future Build LOS are shown in Table 2-30, *Intersection Level of Service – NYSDOT Air Quality Screening*.

TABLE 2-30: INTERSECTION LEVEL OF SERVICE – NYSDOT AIR QUALITY SCREENING

Intersection	AM	Mid-day	PM
New Highway and Conklin Street	-	-	E
Straight Path (CR 2) and Acorn Street	D	-	-
Straight Path (CR 2) and Long Island Avenue	D	-	-
Executive Drive and Pine Aire Drive	D	-	D
Fifth Avenue and Pine Aire Drive	D	-	D
Brentwood Road and Suffolk Avenue (CR 100)	D	D	-
Islip Avenue (State Route 111) and Brightside Avenue	E	D	E
Islip Avenue (State Route 111) and Suffolk Avenue (CR 100)	D	-	D
Carleton Avenue (CR 17) and Suffolk Avenue (CR 100)	D	D	D
Ocean Avenue (CR 93) and Easton Avenue	-	-	E

Since these intersections and roadways would exhibit LOS D, E, or F in Build conditions, they require further screening using the NYSDOT capture criteria.

Capture Criteria Screening

Intersections and roadways impacted by the project exhibiting LOS D, E, or F in ETC, ETC + 10, and ETC + 20 build scenarios were screened using the capture criteria below:

- A significant increase (10%) in traffic volume along the proposed roadway, or intersecting nearby roadways.

As noted in Table 2-31, *Project Related Traffic Increases*, the project would not result in a 10% increase in traffic in the study area. Any traffic diverted due to construction activities would be temporary in nature and would not cause adverse air quality impacts. Therefore the proposed project would not exceed this screening criterion.

TABLE 2-31: PROJECT RELATED TRAFFIC INCREASES

Intersection	AM	Mid-day	PM
New Highway & Conklin Street	0.00%	0.00%	-
Wellwood Avenue (CR 3) and Conklin St/Long Island Avenue	0.00%	0.00%	-
Straight Path (CR 2) and Long Island Avenue	0.00%	-	0.00%
Executive Drive and Pine Aire Drive	0.00%	0.12%	0.00%
Fifth Avenue and Suffolk Avenue (CR 100)	0.00%	0.00%	0.00%
Fifth Avenue and Pine Aire Drive	0.00%	0.00%	0.00%
Brentwood Road and Suffolk Avenue (CR 100)	0.00%	0.07%	0.00%
Islip Avenue (State Route 111) and Suffolk Avenue (CR 100)	0.00%	0.00%	0.00%
Carleton Avenue (CR 17) and Suffolk Avenue (CR 100)	0.00%	0.13%	0.00%
Lowell Avenue and Suffolk Avenue (CR 100)	0.00%	0.45%	0.00%
Ocean Avenue (CR 93) and Easton Avenue	0.00%	0.00%	0.00%
Pond Road and Easton Avenue	0.00%	-	-

- A significant reduction (10%) in the source-receptor distance (i.e., the straight line distance between the edge of the nearest travel lane and the receptor).

The proposed project would not result in a 10% reduction in distance between the roadway and any potential receptors. Therefore the proposed project would not exceed this screening criterion.

- Any increase in the number of queuing lanes for Estimated Time of Completion (ETC), ETC + 10, or ETC + 20.

Based on the traffic studies for the proposed project, there will not be an increase in queuing lanes. Therefore the proposed project would not exceed this screening criterion.

- A 20% reduction in speed, when build estimated average speed is at 30 mph or less

The proposed project will not result in a reduction of travel speed. Therefore the proposed project will not meet this screening criterion.

- A 10% or more increase in vehicle emissions for ETC, ETC +10, and ETC + 20.

The proposed project will not result in a 10% increase in vehicle emissions. Due to more stringent federal emissions regulations being enforced in the future and no project generated increase in volumes, vehicular emissions are expected to decrease. Therefore the proposed project will not meet this screening condition.

If an impacted intersection or roadway meets any one of the applicable criteria above, the use of the NYSDOT's EPM volume and emission factor chart is needed to do the volume threshold screening. Additionally, there are no potentially sensitive receptors located near the project area that would be affected by project generated traffic changes. Since none of the NYSDOT Capture

Criteria are met, the proposed project does not require a microscale air quality analysis. No further assessment of mobile sources is required.

Conformity with the State Implementation Plan

Impacts to air quality from the proposed action are not expected, and therefore, the proposed action is consistent with the New York State Implementation Plan for the control of carbon monoxide. As the proposed action is consistent with the NYS CO SIP, and would not increase VMT, it is also not expected to significantly contribute to any emissions on a regional basis.

Based on the NYSDOT mobile source screening procedures, it has been determined that future traffic generated by the proposed action would have no adverse effect on surrounding air quality conditions.

2.11 ENVIRONMENTAL JUSTICE

This environmental justice (EJ) analysis has been prepared to identify and address any disproportionate impacts on minority or low-income populations that could result from the proposed action. This EJ analysis identifies the locations of minority and low-income populations in the project study area. Based on design work completed for the Environmental Assessment, the project would not create any disproportionate impacts on EJ communities.

The EJ analysis was prepared in accordance with NYSDEC Commissioner Policy 29 on Environmental Justice and Permitting (CP-29). CP-29 provides guidance for incorporating EJ concerns into the NYSDEC environmental permit review process and the NYSDEC application of the State Environmental Quality Review Act. The policy also incorporates EJ concerns into some aspects of the NYSDEC enforcement program, grants program, and public participation provisions. The policy is written to assist NYSDEC staff, the regulated community, and the public in understanding the requirements and review process.

In instances where NYSDEC is not the lead agency for a project, a lead agency may elect to conduct an EJ analysis consistent with CP-29 for NYSDEC's use in its permitting process for the project. In this case the LIRR has conducted the environmental analysis in accordance with CP-29 and will coordinate with the NYSDEC Regional Permit Administrator to determine if any actions are needed to address the needs and concerns of environmental justice communities.

2.11.1 Methodology

CP-29 specifically requires the identification of populations that meet or exceed certain statistical thresholds relative to minority groups and households below the poverty level:

1. At least 51.1% of the population in an urban area reported themselves to be members of minority groups;
2. At least 33.8% of the population in a rural area reported themselves to be members of minority groups; or,
3. At least 23.59% of the population in an urban or rural area had household incomes below the federal poverty level.

As required by CP-29, an analysis was conducted of NYSDEC County Maps Showing Potential Environmental Justice Areas, which rely on Year 2000 census data. Figure 2-18, *Potential Environmental Justice Areas per NYSDEC*, shows potential environmental justice areas in Western Suffolk County.

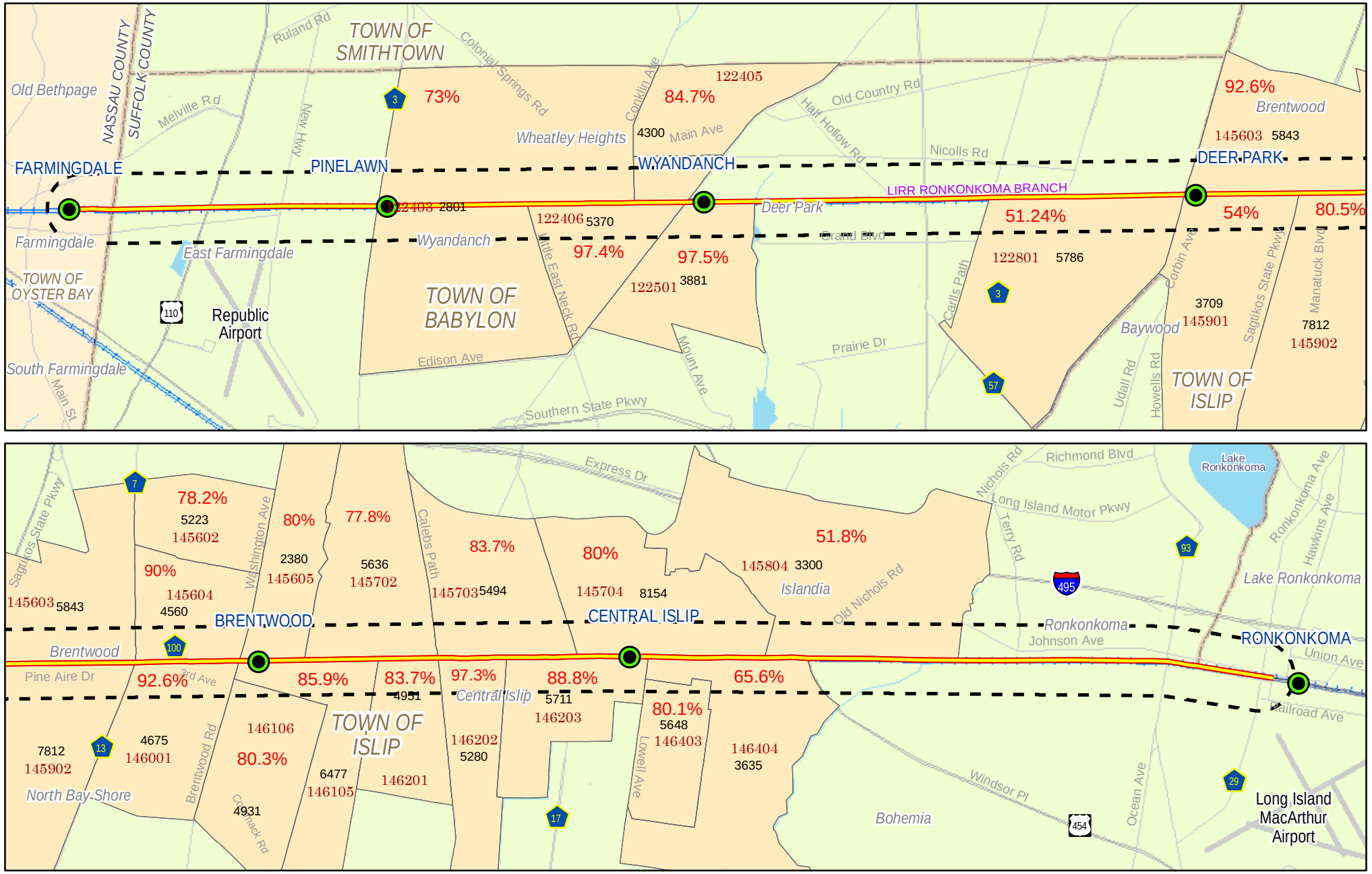
In addition, an analysis was conducted using 2010 American Community Survey (ACS) data from the US Census Bureau. This analysis was conducted in order to identify specific numbers and percentages of individuals meeting and/or exceeding the thresholds set by NYSDEC for EJ communities and to provide more recent data than those available through the NYSDEC official maps. Figure 2-19, *Environmental Justice Analysis at the Census Tract Level*, shows the EJ areas within the study area according to the most recent US Census data.

Potential Environmental Justice Areas in Western Suffolk County per NYSDEC

LIRR Double Track Project
Ronkonkoma to Farmingdale

Potential Environmental Justice Areas

Figure 2-18



0 1 Miles

Source: US Census Bureau, 2010 (American Community Survey)

- Rail Station
- Study Corridor
- 1,320' Radius Study Area
- LIRR Track
- Interstate
- State Highway
- County Route

> 51.1% of the population is reported as a member of a minority group (23 out of 43 tracts)

#: Total Population
#: % Minority
#: Tract Number

LIRR Double Track Project
Ronkonkoma to Farmingdale

Environmental Justice Analysis at the Census Tract Level

Figure 2-19

2.11.2 Existing Conditions

NYSDEC EJ maps provide limited data, but do indicate that there are EJ communities within the study area. Analysis of 2010 ACS data also found that of the 43 census tracts located wholly or partially within the study area, 23 of those census tracts had EJ populations.

Table 2-32, *Percent Minority Population by Census Tract* identifies the percent of minority population in each of the census tracts within the project study area. Within the 23 census tracts meeting or exceeding the EJ threshold, the percentage of minority population ranges from 51.24 percent to 97.5 percent. Figure 2-19 illustrates these 23 census tracts with minority populations within the study area and the percent of the tract identified as a minority population according to the 2010 ACS. No census tracts were identified as having populations that triggered the federal poverty level threshold.

EJ communities within the study area are identified in red in Figure 2-19. In addition, the census tracts that trigger the NYSDEC thresholds for minority populations are identified in beige. Within those tracts is the following information:

- Total population of the census tract.
- Percent of the census tract identified as minority population.
- Census tract number.

Minority populations represented in the study area include Black, Hispanic, and Asian. Appendix F, *Environmental Justice Communities within the Study Area* provides a breakdown of minority populations by census tract.

TABLE 2-32: PERCENT MINORITY POPULATION BY CENSUS TRACT

Census Tract Number	Percent of Population Reported as Minority	Census Tract Number	Percent of Population Reported as Minority
1224.03	72.97	1458.04	51.79
1224.05	84.70	1459.01	53.95
1224.06	97.39	1459.02	80.53
1225.01	97.50	1460.01	92.60
1228.01	51.24	1461.05	85.92
1456.02	78.21	1461.06	80.29
1456.03	92.57	1462.01	83.72
1456.04	90.00	1462.02	97.27
1456.05	80.08	1462.03	88.76
1457.02	77.84	1464.03	80.98
1457.03	83.73	1464.04	65.61
1457.04	80.08	-	-

2.11.3 Potential Impacts and Improvements

The purpose of this section is to identify impacts associated with the proposed project. In an EA, if any disproportionate adverse impacts are identified, typically the remedy is to provide additional targeted outreach to EJ communities to ensure that these individuals are aware of the project, its goals and objectives, any potential impacts, and proposed strategies to minimize and/or eliminate any disproportionate impacts.

Based on the engineering completed for this EA, there are no significant impacts to any community within the study area and no significant disproportionate impacts to EJ communities within the study area.

The project does provide positive benefits to EJ communities (as well as to all communities within the study area) with the following benefits:

- Half-hourly off-peak service in both directions
- More choices for intra-Island commuters
- Better service reliability
- Improved on-time performance
- Greater service to LI MacArthur Airport