## A. INTRODUCTION

This chapter discusses the existing utilities and related infrastructure in the Study Area that may be affected by the Proposed Project. Utilities considered include gas and electric lines, fiber optic and telephone lines, cable television lines, water and sanitary sewer lines, and stormwater drainage. Both publically- and privately -owned utilities were included, as well as specific LIRR-related utilities, including signal, electric power, and communications.

The Proposed Project would require new LIRR-specific utility infrastructure and the relocation of some existing utilities both within the LIRR right-of-way and grade crossings where improvements are proposed. As these improvements are made, in close coordination with the respective utility companies, LIRR will explore opportunities to improve the existing infrastructure or upgrade it to current design standards. For example, in the case of utility poles carrying overhead electric power lines, design standards were modified after Hurricane Sandy to avoid or minimize impacts that may occur from similar storms in the future. As a result, all overhead electric power lines running longitudinally in the Project Corridor that would be relocated for the Proposed Project would be installed on new, approximately 90-foot-tall steel poles.

Since all existing utilities would be replaced in-kind or redundant utilities removed during construction of the Proposed Project, and since no long-term disruptions in service to Study Area customers would result, there would be no significant adverse impacts to utilities within the Study Area.

## B. EXISTING CONDITIONS

A number of utilities run longitudinally along the Project Corridor such as LIRR signal and communications lines and PSEG-LI electric lines. Other utilities cross the Project Corridor in a number of different locations in order to continue service from one side to the other. Due to the historical development pattern in Nassau County and the fact that the Main Line has existed for a long time, these crossing utilities have, for the most part, been installed at grade crossings along the Project Corridor. As a result, in addition to discussion of utilities running longitudinally in the Project Corridor, much of the following discussion and the data provided in tables will focus on the utilities located within the grade crossings.

An inventory of utilities and related infrastructure was compiled for a Study Area encompassing 100 feet on either side of the LIRR right-of-way[1]. The inventory shows type, location, condition,

[1] At stations, substations, and other ancillary facilities, such as parking lots, the Study Area boundary was expanded to encompass 100 feet around these elements.

and ownership of utilities and related infrastructure within the Study Area, including at grade crossings, adjacent roadways, and other adjacent areas in which Proposed Project elements might be constructed. This inventory was based on information and record plans obtained from local utility companies and public agencies, including municipalities located within the Study Area. At grade crossings, field verification was performed either by conventional surveying for surface utility features or by using an electronic tone-out detector to identify horizontal location of underground utility facilities. **Table 9-1** provides a list of utility providers in the Study Area by type of utility. The following is a summary of these utilities and related infrastructure based on the preliminary inventory.

**Table 9-1**
**Study Area Utility Providers by Type**

| Utility Type | Utility Provider |
|---|---|
| Signals and Communication Lines | LIRR |
| Gas Lines | National Grid |
| Electric Power Lines | PSEG-LI (LIPA) |
| | LIRR |
| Fiber Optic and Telephone Lines | Verizon |
| | Verizon Business Solutions |
| | AT&T |
| | Lightower |
| | Crown Castle |
| | Level 3 |
| Cable Television Lines | Altice |
| Water and Sanitary Sewer Lines | Nassau County Department of Public Works (NCDPW) |
| | Village of Garden City |
| | Village of Mineola |
| | Water Authority of Western Nassau County (WAWNC) |
| | Westbury Water District |
| | Hicksville Water District |

## SIGNALS AND COMMUNICATION LINES

Between Floral Park and New Hyde Park, LIRR overhead signal and communication lines hang on utility poles along the north side of the LIRR right-of-way. In New Hyde Park, between Baer Place and Millers Lane, the signal and communication lines switch to the south side of the right-of-way and remain there to Hicksville.

## GAS LINES

National Grid 60-psi gas lines (gas pressure inside lines equals 60 pounds per square inch) are present in various locations throughout the Project Corridor. Gas lines traverse the LIRR right-of-way, station platforms, and the adjoining roadways. (see **Appendix 1-A**). Aside from standard commercial and residential service connections, gas lines are typically between two and eight inches in diameter and made of steel, polyethylene, or plastic. Gas lines are generally within roadway limits, although one two-inch line crosses the right-of-way at Millers Lane, inside a four-inch steel sleeve.

## ELECTRIC POWER LINES

Longitudinal overhead electric lines on utility poles, generally 50-80 feet in height, run east-west through the Study Area consisting of power lines for commercial and residential service along the north and south sides of the right-of-way and dedicated rectifier feeds for LIRR substations. Utility poles along the LIRR ROW are between 70 and 80 feet in height; at grade crossings they are approximately 55 feet in height. A direct-burial underground electric power line also runs through the Study Area, along a portion of the north side of the LIRR right-of-way. Voltages for these electric utilities range from 13.2 kV and 69 kV AC transmission lines to 120/240 volts for service to commercial and residential properties within the Study Area.

### *PSEG-LI*

PSEG-LI (Public Service Enterprise Group-Long Island), by leasing arrangement with the LIRR, operates and maintains utility poles with overhead power lines and underground lines in conduit within LIRR right-of-way (see **Table 9-2**). PSEG-LI operates five transmission districts within the Study Area from which it provides transmission and distribution services along local streets to the LIRR and its other customers. While PSEG-LI operates and maintains these electric utilities under contract, Long Island Power Authority (LIPA) owns the equipment and pays for annual capital and maintenance expenditures.

Within the Study Area, utility poles carrying overhead power lines typically range from 50 to 80 feet in height. Utility poles 50 or more feet tall are considered high tension utility poles. Both high tension utility poles and high tension utility towers (truss systems) run along the LIRR right-of-way, in addition to utility poles less than 50 feet in height that are used for distribution lines to customers.

### *LIRR SUBSTATIONS*

LIRR has eight traction power substations within the Project Corridor:

- Substation G13 in Floral Park, on Plainfield Avenue opposite 111 Plainfield Avenue.
- Substation G14 in New Hyde Park, at Third Avenue and South 9th Street on the south side of the Project Corridor.
- Substation G15, the Merillon Avenue substation, at Atlantic Avenue and Hilton Avenue.
- Substation G16 in Mineola, at the southwest corner of Main Street and Front Street.
- Substation G17 in Carle Place, in the southeast quadrant of Meadowbrook State Parkway and the LIRR just north of Mallard Road.
- Substation G18 in Westbury, southeast of Union Avenue and Sullivan Street on the north side of the Project Corridor.
- Substation G19 in New Cassel, at Broadway and Bond Street on the north side of the Project Corridor. Substation G20 in Hicksville, on the northwest corner of West Barclay Street and Wyckoff Street.

With the exception of the recent replacement of G13 Substation in Floral Park in 2010, the remaining seven substations are approximately 40 years old, nearing the end of their expected operating service life.

## Table 9-2
## PSEG-LI Electric Utilities

| Type | Location/Side | Side or Approx. Length in Feet (within footprint of roadway) |
|---|---|---|
| **Longitudinal in the Project Corridor** | | |
| Overhead | Floral Park Station to Covert Avenue | No PSEG-LI transmission lines in this segment. LIRR utility poles and electric lines along the north and south sides of the ROW. |
| Overhead | Covert Avenue to New Hyde Park Station | PSEG-LI utility poles and transmission lines on the south side of the ROW. |
| Overhead | Whitehall Boulevard to Mineola Station | PSEG-LI utility poles and transmission lines along the south side of the tracks outside the ROW beyond the station limits. Within the Mineola Station, PSEG-LI utility poles on the north side of the station. |
| Underground | Whitehall Boulevard to Mineola Station | PSEG-LI transmission lines along the south side of the tracks outside the ROW beyond the station limits. |
| Overhead | Mineola Station to Russell Drive | PSEG-LI utility poles and transmission lines on the north outside ROW along East 2nd Street. |
| Overhead | Russell Drive to Swalm Street | PSEG-LI utility poles and transmission lines on the north side of the ROW. |
| Overhead | Swalm Street to Wantagh Parkway | PSEG-LI utility poles and transmission lines on the north side of the ROW. |
| Overhead | Wantagh Parkway to Hicksville Station | Poles and transmission lines on the north side of the ROW, adjacent to East 2nd Street |
| **At-Grade Crossings** | | |
| **Covert Avenue Grade Crossing** | | |
| Overhead | East and west sidewalks crossing and north and south of tracks | 1,870 |
| **South 12th Street Grade Crossing** | | |
| Overhead | East and west sidewalks crossing and north and south of tracks | 680 |
| Overhead | Northeast corner at 3rd Avenue intersection | 60 |
| **New Hyde Park Road Grade Crossing** | | |
| Overhead | West sidewalk south of tracks | 250 |
| Overhead | Along Greenridge Ave and crossing New Hyde Park Rd | 250 |
| Overhead | West sidewalk crossing and north of tracks and crossing New Hyde Park Road | 550 |
| Overhead | Plaza Avenue north sidewalk | 40 |
| **Main Street Grade Crossing** | | |
| | West sidewalk and crossing roadway south of tracks | 210 |
| | East sidewalk south of tracks | 60 |
| | Along 3rd Street | 60 |
| Overhead | Along east and west sidewalks south of tracks | 310 |
| Overhead | Crossing roadway south of tracks | 90 |
| Overhead | East sidewalk north of tracks | 330 |
| | East sidewalk north of tracks | 70 |
| Overhead | Crossing sidewalks and roadway north of tracks (3) | 130 |
| | SB lane north of tracks | 160 |
| **Willis Avenue Grade Crossing** | | |
| Overhead | West sidewalk south of tracks and crossing roadway north and south of tracks | 450 |
| Overhead | East sidewalk crosses and at north and south of tracks | 900 |
| Overhead | East sidewalk crosses and at north of tracks | 510 |
| Overhead | East sidewalk crosses and at south of tracks | 390 |
| Overhead | East sidewalk crosses and at north and south of tracks | 900 |
| **School Street Grade Crossing** | | |
| Overhead | North and south sidewalks and crossings | 670 |
| **Urban Avenue Grade Crossing** | | |
| Overhead | West sidewalk crosses and at north and south of tracks | 740 |

**Note:** (1) Most of the existing utilities are within the roadway limits. Length measured within the footprint of the roadway construction.

## FIBER OPTIC CABLE AND TELEPHONE LINES

Several companies maintain underground and overhead fiber optic cable and telephone lines throughout the Study Area, including Verizon, Verizon Business Solutions, and AT&T. In addition, Lightower, Crown Castle, and Level 3 each maintain a limited number of cables or lines. Lightower maintains overhead fiber optic lines at two crossings of the LIRR right-of-way: one at Covert Avenue and the other at School Street. Crown Castle leases fiber optic lines from Lightower at Covert Street and School Street. Level 3 has fiber optic lines crossing Covert Avenue and New Hyde Park Road.

### *VERIZON*

Verizon maintains overhead telephone lines on both its own utility poles and on PSEG-LI utility poles along streets immediately adjacent to the LIRR right-of-way throughout the Study Area. Service connections also enter LIRR right-of-way from 3rd Avenue at South 10th Street and from 2nd Avenue east of Herkomer Street. In addition, Verizon has underground fiber optic lines in conduit at several locations crossing the LIRR right-of-way (see **Appendix 1-A** for additional detail). Most of the existing utilities are within the roadway limits.

### *VERIZON BUSINESS SOLUTIONS (VBS)*

VBS (formerly MCI) has both underground and overhead fiber optic lines within the LIRR right-of-way. Underground VBS lines run along the south side of the right-of-way from the eastern end of Greenridge Road to 4th Avenue, along the north side of the right-of-way from Kilburn Avenue to the vicinity of Whitehall Boulevard, along the south side of the right-of-way from Glen Cove Road to the vicinity of Hollis Place, and for a short distance along the south side of the right-of-way at Ellison Avenue.

Overhead VBS fiber optic lines run along the south side of the right-of-way from Plainfield Avenue to the eastern end of Greenridge Road, along the north side of the right-of-way from 4th Avenue to Kilburn Road and from Whitehall Boulevard to Russell Drive and along the south side of the right-of-way from Russell Drive to Glen Cove Road and from the vicinity of Hollis Place to Jerusalem Avenue.

VBS fiber optic lines traverse the LIRR Main Line at:

- South Tyson at Tulip Avenue and Plainfield Avenue in Floral Park – underground.
- Mineola Boulevard and Willis Avenue in Mineola – underground.
- Glen Cove Road – overhead.
- Ellison Avenue – underground and overhead.
- Post Avenue – underground.
- School Street – underground.
- Urban Avenue – underground.
- East of Charlotte Street – overhead.

### *AT&T*

AT&T maintains overhead and underground fiber optic lines at seven locations along and across the LIRR right-of-way carrying local network service (LNS):

- Crossing along South Tyson Avenue – LNS lines are carried in both AT&T conduit and Verizon conduit.
- Crossing along Herricks Road – LNS lines are carried in both AT&T conduit and in Verizon conduit.
- Crossing along Washington Avenue – LNS lines are carried in both AT&T conduit and in Verizon conduit.
- Crossing along Quentin Roosevelt Boulevard NB – LNS lines are carried in both AT&T conduit and in Verizon conduit.
- Crossing along Cherry Lane – LNS lines are carried in Verizon conduit.
- Along the south side on Railroad Avenue between Post Avenue and School Street – LNS lines are carried overhead on utility poles.
- Crossing along Charlotte Avenue – LNS lines are carried overhead together with Lightower lines.

## CABLE TELEVISION LINES

Altice (formerly Cablevision-NC) provides cable television to the various municipalities surrounding the Study Area. Cable lines generally follow the alignments of local overhead and underground power (PSEG-LI) and telephone (Verizon) lines. In addition, Altice facilities are tied to VBS fiber optic lines on utility poles in the LIRR right-of-way.

## WATER AND SANITARY SEWER LINES

Several municipalities and regional agencies own water and sanitary sewer lines paralleling or crossing the LIRR right-of-way: Nassau County Department of Public Works (NCDPW), Village of Garden City, Village of Mineola, Water Authority of Western Nassau County (WAWNC), Westbury Water District, and Hicksville Water District. Water lines, also called mains, generally are between six and 16 inches in diameter. Sanitary sewer lines generally are between eight and 24 inches in diameter. There is also a sewer manhole in Covert Avenue, where it is intersected by Wayne Avenue (see **Appendix 1-A** for additional detail).

## DRAINAGE FACILITIES

LIRR is a Municipal Separate Storm Sewer System (MS4) and has developed and implemented a Stormwater Management Program under the requirements of the SPDES General Permit for MS4s (GP-0-15-003).

There is very little stormwater drainage infrastructure within the Project Corridor or serving the surrounding residential, commercial, and industrial properties. As confirmed by information received from local utilities and review of publicly available topographical mapping, virtually no drainage structures exist within the Study Area, i.e., neither perforated storm pipe, leaching pits or basins, nor buried storm pipe. However, based on review of valuation maps, sporadic drainage pipe systems exist paralleling the right-of-way to both the north and south; the functionality of these systems has not been verified at this time. There may also be some under-drain pipe installed, but not shown on existing topographical and utility survey information.

Stormwater from the LIRR right-of-way predominantly discharges directly into soil consisting mostly of sand and gravel with little silt through ditches and channels on either side of the LIRR right-of-way. The existing ditches or channels on either side of the right-of-way appear to handle

the drainage runoff during typical storm events. Since groundwater table elevations are approximately 45 to 50 feet deep below the surface, sufficient room for the surface runoff to percolate deep into the sub soil layers exists.

It should be noted that in some fill sections along the Project Corridor, drainage runoff appears to flow outside of the LIRR right-of-way to adjacent properties. In a few cut sections, the reverse also occurs, storm water runoff from adjacent properties appears to flow into and contribute to Project Corridor drainage discharge. There are at least six drainage culverts crossing the LIRR right-of-way with pipe diameters ranging from 12-inches to 48-inches. Some of these crossings may be inactive or plugged, since they were built prior to 1916. If functional, these culvert crossings allow water to pass through the LIRR right-of-way, but do not contribute to the Project Corridor drainage runoff. At each cross street intersection along the LIRR right-of-way, a separate nearby roadway storm drainage system exists, owned and maintained by Nassau County, which eventually discharges into recharge basins well off the LIRR right-of-way. It appears that no stormwater runoff from LIRR property contributes to the Nassau County drainage system.

FEMA Flood Insurance Rate maps (FIRMs) indicate that the Project Corridor lies above the 100-year flood elevation.

## C. FUTURE WITHOUT THE PROPOSED PROJECT

The utility inventory compiled for the Study Area, including grade crossings and adjacent roadways, also requested utility companies to provide information on any planned utility and related infrastructure work in the Study Area within the next five years (through 2020). One project was identified that would require close coordination with the Proposed Project:

- A 13kV feeder, maintained by PSEG-LI, which supplies power to three substations along the LIRR right-of-way in the Study Area, has been planned for relocation. Relocating this feeder during construction of the Proposed Project will require extensive coordination between LIRR and PSEG-LI, especially in locations where right-of-way is restricted, in particular, immediately east of Roslyn Road and east of the Carle Place Station. One segment of the feeder (Mineola Feeder Replacement) has been scheduled for replacement in the near future. PSEG-LI may consider delaying implementation of this initial feeder segment replacement in order to better coordinate it with the Proposed Project.

In addition, as discussed in Section A, Existing Conditions, under Electric Power Lines, all but one of the LIRR substations within the Project Corridor, have reached the end of their design life. With or without the Proposed Project, these substations will require replacement in the near future.

## D. POTENTIAL IMPACTS OF THE PROPOSED PROJECT

The following subsections describe potential impacts of the Proposed Project to utilities and related infrastructure in the Study Area and measures to mitigate these potential impacts. The Proposed Project would not result in a significant increase in demand for any utilities serving the Study Area. Since all existing utilities would be replaced in-kind, or redundant utilities removed during construction of the Proposed Project, and since no long-term disruptions in service to Study Area customers would result there would be no significant adverse impacts to utilities within the Study Area. Potential visual impacts of new poles carrying overhead utilities are

addressed in Chapter 6, "Visual Impacts." Potential construction-period impacts to utilities are addressed in Chapter 13, "Construction."

## SIGNALS AND COMMUNICATION LINES

As a result of the Proposed Project, all signal equipment in the Study Area would be replaced and/or updated. In many cases, existing signal equipment lies in the path of the Proposed Project, either the track itself or ancillary facilities, such as retaining walls. Equipment that could remain would still be updated, since existing signal houses have insufficient space for new equipment, cases, and cables and cable trays. New signal equipment would be installed and made active before the Proposed Project would be constructed.

New signal houses and cases would be procured via pre-wired signal enclosure specification package built and delivered by a contractor. Design of the new signal system would include hardware and software to accommodate all staging for construction of new track and interlockings. Remaining signal equipment, such as signals, switches, switch heaters, cables, cable tray, and all applicable equipment required for a complete working signal system, would be procured by the LIRR. Installation of all signal equipment would be paid for by LIRR signal force account.

## GAS LINES

With the Proposed Project, relocation of gas lines would be required at each of the seven grade crossings. Some gas line relocations might also be required at the seven bridge widening locations. During the design process for each grade crossing and bridge widening, the number and extent of gas line relocations would be further detailed and quantified. The Preliminary Engineering Technical Memorandum (October 2016) (**Appendix 1-A**) summarizes gas utility conflicts and potential relocations.

## ELECTRIC POWER LINES

### *PSEG-LI*

The Proposed Project would require the relocation of PSEG-LI utility poles and overhead power lines in certain locations. For the replacement of existing timber utility poles, and for the addition of more load on existing timber utility poles, PSEG-LI policy requires the use of composite steel and concrete utility poles approximately 90 feet high. These utility poles are considered more resilient to severe storm events, as the material is stronger than wood and power lines are at a height above most trees. Specific relocation requirements for PSEG-LI utility poles and overhead and underground power lines would be determined on a case-by-case basis during the final design phase of the Proposed Project. It is generally expected that utilities poles would be replaced on a one-for-one basis. It also is expected that the composite steel and concrete utility poles would be used along the LIRR ROW, while wood poles approximately 55 feet in height would be used at the grade crossings.

Overhead and underground power lines cross each of the seven bridge locations proposed for widening. Relocations may be required to accommodate proposed construction.

Relocations resulting from Proposed Project construction are detailed in the **Appendix 1-A**). Potential construction-period impacts to PSEG-LI utility poles and overhead power lines are addressed in Chapter 13, "Construction."

The increased use of efficient electrical fixtures along the LIRR ROW may offset any increased electricity use attributable to the Proposed Project.

*LIRR SUBSTATIONS*

The Proposed Project would require the relocation or protection of PSEG-LI underground power lines in certain locations, summarized in the following list (see also Figure 9-13):

- A 13kV feeder, maintained by PSEG-LI, which supplies power to three substations along the corridor, would require relocation. The feeder must be maintained at all times to each of three substations in order to avoid compromising the power supply to the LIRR. Relocating this feeder during construction of the Proposed Project will require extensive coordination between LIRR and PSEG-LI, especially in locations where right-of-way is restricted, in particular, immediately east of Roslyn Road and east of the Carle Place Station. One segment of the feeder (Mineola Feeder Replacement) is scheduled for replacement in the near future. PSEG-LI is considering delaying implementation of this initial feeder segment replacement to coordinate with the Proposed Project.
- 345kV underground duct bank at Roslyn Road – This major feed for PSEG-LI cannot be relocated. It will require protection during Proposed Project construction.
- LIRR Power Preservation at Floral Park near Plainfield Avenue – LIRR's underground power lines between the PSEG-LI and LIRR substations on opposite sides of the LIRR right-of-way may need to be protected or relocated due to construction of retaining walls for the Proposed Project in this area.

As discussed in Section A, Existing Conditions, under Electric Power Lines, all but one of the LIRR substations within the Project Corridor, have reached the end of their design life. Replacement substations would occupy the same parcels as the present equipment. To accomplish this, prefabricated substation equipment would be used to expedite the implementation of the new units. This strategy would allow the continued functioning of existing substations, while the prefabricated buildings would be constructed and factory tested offsite, until it is deemed necessary to de-energize the existing equipment.

The existing traction power system in the Project Corridor was designed to accommodate one of the full service substations being out of service, so this approach is assumed viable. This should be confirmed by the load flow study presently underway. In addition, proposed replacement of the existing steel contact rail with a composite-type aluminum contact rail will help to limit voltage drop throughout the system, which would also support the proposed replacement strategy. While the conceptual size of each prefabricated substation is roughly 36 feet wide, 92 feet long, and 12 feet in height, each substation could be configured differently, should site conditions dictate.

## FIBER OPTIC AND TELEPHONE LINES

*VERIZON*

Verizon overhead conflicts and relocations will be determined during the final design phase of the proposed improvements. **Appendix 1-A** lists potential conflicts and relocations for underground Verizon utility facilities as a result of the Proposed Project. For all Verizon utilities, relocations would be coordinated with PSEG-LI.

*OTHER FIBER OPTIC AND TELEPHONE LINES UTILITIES*

Overhead and underground fiber optic and telephone line conflicts and relocations will be determined during the final design of proposed improvements for: Verizon Business Solutions (VBS), AT&T, Lightower, Crown Castle, and Level 3. If necessary, VBS, Lightower, Crown Castle, and Level 3 relocations would be coordinated with PSEG-LI. AT&T relocations would be coordinated with Verizon and Lightower and Crown Castle relocations would be coordinated with PSEG-LI and Lightower.

## CABLE TELEVISION LINES

Specific relocation requirements for Altice cable facilities will be determined on a case-by-case basis in conjunction with electric, telephone, and fiber optic utility relocations. Construction of cable facility relocations within the LIRR right-of-way will be coordinated with the relocations of LIRR utility poles and VBS fiber optic relocations. Construction of off-right-of-way relocations should be coordinated with PSEG-LI pole relocations required for grade crossings and bridge widening work.

## WATER AND SANITARY SEWER LINES

As a result of the Proposed Project, there could be potential impacts to water and sanitary sewer lines for: Nassau County Department of Public Works (NCDPW), Village of Garden City, Village of Mineola, Water Authority of Western Nassau County (WAWNC), Westbury Water District, and Hicksville Water District. **Appendix 1-A** lists these potential conflicts and likely relocations.

The Proposed Project is not expected to create additional demand on existing water and sewer services.

## DRAINAGE FACILITIES

Installation of the Proposed Project, including the third track, new station platforms, new parking lots and garages, and new grade crossings, presents an opportunity to install stormwater best management practices that would help to manage stormwater flows from existing and new impervious surfaces, alleviate any existing flooding problems, and to prevent future flooding from storms up to the 100-year design storm. Due to differences in the elevation of the LIRR right-of-way and the proposed NYSDOT grade crossing improvements, separate stormwater management strategies have been developed for the LIRR right-of-way and the NYSDOT grade crossings. All stormwater management strategies implemented for the Proposed Project would comply with the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002).

*LIRR DRAINAGE*

The Proposed Project track vertical alignment predominantly follows existing ground topography. Where the proposed alignment will be raised from the existing elevation, retaining walls will be used to minimize or avoid impacts to property outside of the LIRR right-of-way. Ten drainage areas, separated by high points along the alignment, will be affected by changes in the vertical profile for the Proposed Project. In most cases, project improvements will occupy the existing ditch line along the south side of the right-of-way and/or will displace station platform areas. This in turn will increase surface runoff volume, since bare ground will need to be

converted to ballasted area; soil below ballasted areas is generally compacted and may not have adequate infiltration compared to natural soils away from ballasted areas. As a result, modifying certain station facilities and relocating and upgrading the drainage ditches/channels will be necessary.

For purposes of conducting a conservative analysis of potential stormwater volume, it has been assumed that any existing stormwater management structures within the Project Corridor would not be able to accommodate additional stormwater flow and that drainage structures for the 100-year storm event volume would be provided within the LIRR right-of-way. The preferred options for providing adequate stormwater storage volume are: 1) where possible, to increase the size of existing drainage ditches alongside the track structure (upgraded side ditches/channels would be planted with short grass to intercept any oil or other contaminants which might flow from track areas). A minimum of 6-inch diameter perforated under-drain pipe would be constructed sufficiently underneath the track structure to provide runoff infiltration; and 2) where necessary, using perforated pipe, to construct under-drains on the north and south sides of the right-of-way, away from the track footprint, interconnected to support each other. Each of these two options would improve drainage conditions by preventing stormwater runoff in fill sections from flowing into adjacent properties. Periodic maintenance of grass-lined ditches/channels would be necessary to ensure the quality of water seeping into the groundwater table.

In some cases, another alternative for managing stormwater discharge could be considered using the nearest Nassau County recharge basins. This option would have to be approved by Nassau County and coordinated with NYSDOT for the design of the buried storm pipe system necessary to connect to these basins. Also, some existing recharge basins may need to be deepened to accommodate the additional flow from the Proposed Project.

As discussed in Section A, Existing Conditions, under LIRR Drainage, at least six drainage culverts cross the LIRR right-of-way with pipe diameters ranging from 12-inches to 48-inches. If any of these culverts remain active, which would be investigated further during the design process for the Proposed Project, they would be extended, maintained, and protected during construction or either replaced in-kind, if damaged, or upgraded to handle the appropriate design flow rate without causing stormwater to rise above the top of rail elevation.

Any existing longitudinal drainage pipes along the north or south sides of the LIRR right-of-way could be maintained and protected during construction, as long as they are not in direct conflict with Proposed Project facilities. If damaged, existing pipes would not need to be replaced, unless they currently receive storm runoff from outside of the LIRR right-of-way or from station buildings or platforms.

*DRAINAGE AT GRADE CROSSINGS*

Drainage improvements for local roadways at the seven proposed grade crossing improvement projects are discussed in this section. Stormwater volumes, based on the 100-year storm event, were calculated in order to determine the approximate size of the proposed stormwater management system. Stormwater management system designs may change as Proposed Project advances. By designing the stormwater management practices to NYSDEC design standards the Proposed Project would not result in any significant adverse impacts from stormwater runoff and may result in local area benefits where inadequate stormwater drainage practices exist.

*Covert Avenue Grade Crossing*

Preliminary drainage design for the Covert Avenue grade crossing includes the installation of an approximately 1,100-foot underground recharge chamber system (three rows of 72-inch diameter corrugated metal pipe) under Third Avenue. This system would be approximately 22 feet deep to allow for gravity inflow without the use of pumps. With the use of pumps, the system would be approximately 9 feet deep. Pre-treatment water quality devices would be located within the underpass to allow for ease of access.

Alternatively, the underground precast arch system (approximately 86 feet wide by 17 feet high) could be installed at the parcel to be acquired with gravity system as well as pump system.

Another alternative is to connect underpass drainage into an existing Nassau County recharge basin utilizing existing Nassau County drainage systems. These existing drainage systems may require upgrades or replacement. This alternative may require the installation of new sewers where sewers do not exist, connecting the underpass to existing sewers, and also may require the pumping of stormwater.

*South 12th Street Grade Crossing*

The Proposed Project preliminary drainage design for the South 12th Street grade crossing includes installation of a 520 foot by 30 foot underground recharge chamber system (two rows of 144-inch diameter corrugated metal pipe) under Third Avenue and a 200 foot by 120 foot underground recharge chamber system (eight rows of 144-inch diameter corrugated metal pipe) under the existing municipal parking lot at the southwest corner of Third Avenue and South 12th Street. These facilities would be approximately 28 feet deep, to allow for gravity inflow without the use of pumps, and would be hydraulically connected, functioning together as one storage system. Pre-treatment water quality devices would be located within the underpass to allow for ease of access.

*New Hyde Park Road Grade Crossing*

The Proposed Project preliminary drainage design for the New Hyde Park grade crossing includes installation of a 260-foot underground recharge chamber system (14 rows of 96-inch diameter corrugated metal pipe) under the proposed kiss-and-ride facility at 115 New Hyde Park Road. This design would accommodate the four-lane and five-lane design options provided that the property at 115 New Hyde Park Road is acquired and can be used for underground stormwater storage. This system would be approximately 30 feet deep to allow for gravity inflow without the use of pumps. With the use of pumps, the system would be approximately 11 feet deep. Pre-treatment water quality devices would be located within the underpass to allow for ease of access.

Another alternative is to connect underpass drainage into an existing Nassau County recharge basin utilizing existing Nassau County drainage systems. These existing drainage systems may require upgrades or replacement. This alternative may require the installation of new sewers where sewers do not exist, connecting the underpass to existing sewers, and also may require the pumping of stormwater.

*Main Street and Willis Avenue (Mineola Area) Grade Crossings*

The Proposed Project preliminary drainage design for the Main Street and Willis Avenue grade crossing includes installation of a stormwater conveyance pipe (varying in size from 48-inches up to 60-inches in diameter) at minimum slope for cleanout velocity, approximately 5,000 feet

west to the existing Nassau County Recharge Basin SWB 123, west of the intersection of Old Country Road and Herricks Road. This pipe would pick up runoff from both the Willis Avenue and Main Street underpasses. This system ranges from 25 feet deep near each underpass approach to 20 feet deep at Basin SWB 123 to allow for gravity flow without the use of pumps. With the use of pumps, the pipe system would be installed at average of 11 feet deep with 48-inches diameter pipe. Pre-treatment water quality devices would be located within each underpass to allow for ease of access.

Alternatively, new drainage systems along parallel routes north and south of the tracks may be considered; these systems would connect underpass drainage into the existing Nassau County recharge basin.

*School Street Grade Crossing*

The Proposed Project preliminary drainage design for the School Street grade crossing includes installation of a 30-inch diameter storm water conveyance pipe at minimum slope to maintain proper flow, approximately 3,300 feet south to the existing Nassau County Recharge Basin SWB 315 south of Linden Avenue. This system ranges from 25 feet deep near the underpass approach to approximately 15 feet deep at Basin SWB 315 to allow for gravity flow without the use of pumps. With the use of pumps, the pipe system would be installed at average of 7 feet deep with 18-inches diameter pipe. Pre-treatment water quality devices would be located within the underpass to allow for ease of access.

Alternatively, connecting underpass drainage into an existing Nassau County recharge basin using other parallel routes may be considered.

*Urban Avenue Grade Crossing*

Proposed Project preliminary drainage design at this location includes installation of a 60-inch stormwater conveyance pipe at minimum slope for cleanout velocity, approximately 3,500 feet south to the existing Nassau County Recharge Basin SWB 51, south of Old Country Road. This system ranges from 25 feet deep near the underpass approach to 15 feet deep at Basin SWB 51 to allow for gravity flow without the use of pumps. Pre-treatment water quality devices would be located within the underpass to allow for ease of access.

Alternatively, pumps could be utilized to move the pre-treated runoff to the existing 60 inch storm sewer located within Rushmore Avenue which drains into the existing county recharge basin. This alternative would require a 48-inches diameter pipe at 10 feet depths from the Urban Avenue railroad crossing, extending south along Urban Avenue, then west along Main Street to Rushmore Avenue.

An alternative to this scenario also will be considered: An existing sewer within Railroad Avenue north of the underpass discharges to an existing sewer within Rushmore Avenue. The existing Railroad Avenue sewer is in conflict with the proposed tunnel alignment and must be rerouted. This alternative proposed to replace the Railroad Avenue sewer, designed to capture and convey the 100-year design flow, preventing the water from reaching the underpass. It includes a new sewer alignment terminating at the existing Rushmore Avenue sewer, ultimately maintaining existing drainage patterns. ✷