FINAL ENVIRONMENTAL IMPACT STATEMENT

Volume 2: FEIS Report

For the

Proposed Reconstruction and Expansion of Jamaica Bus Depot

Project Location:

Jamaica, Queens, New York

SEPTEMBER 2019

Prepared for:

MTA New York City Transit

2 Broadway, New York, New York

Prepared by:

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FOREWORD

A Final Environmental Impact Statement (FEIS) has been completed by the Metropolitan Transportation Authority (MTA) New York City Transit (NYCT) for the Proposed Reconstruction and Expansion of Jamaica Bus Depot located at 165-18 Tuskegee Airmen Way in Jamaica, New York. This FEIS was prepared pursuant to the State Environmental Quality Review (SEQR), Article 8 of the Environmental Conservation Law (ECL §§ 8-0101 et seq.) and its implementing regulations, Title 6 NYCRR §617.

This FEIS addresses the comments received during the Draft Environmental Impact Statement (DEIS) comment period, including written and oral testimony received at the DEIS Public Hearing. The FEIS identifies the comments received and provides responses in **Chapter 25.0: Responses to DEIS Comments**. Substantive updates, revisions, and additions to the document since the publication of the DEIS are double-underlined in this FEIS. This FEIS identifies a Preferred Alternative in **Chapter 3.0: Alternatives**.

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SEQR FEIS COVER SHEET

Type: **Final Environmental Impact Statement SEQR Classification – Unlisted Action**

Project: **Proposed Reconstruction and Expansion of Jamaica Bus Depot**

Location: 165-18 Tuskegee Airmen Way
Jamaica, New York

Lead Agency: **Metropolitan Transportation Authority (MTA)**

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TABLE OF CONTENTS

VOLUME 2:

LIST OF FIGURES

VOLUME 2:

LIST OF TABLES

VOLUME 2:

LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACM	Asbestos containing material
ACRIS	Automated City Register Information System
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act of 1990 Accessibility Guidelines
AEB	All-electric bus
ANSI	American National Standards Institute
APE	Area of Potential Effect
APP	Accident Prevention Program
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
ATR	Automatic Traffic Recorder
BCCNY	Building Code of the City of New York
BCNYS	Building Code of New York State
BCP	Brownfield Cleanup Program
BTU	British Thermal Units
C&D	Construction and demolition
CAA	Clean Air Act
CBD	Central Business District
CBS	New York State Chemical Bulk Storage Site Listing
CEPP	Construction Environmental Protection Program
CEQR	City Environmental Quality Review
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CESQG	Federal Conditionally Exempt Small Quantity Generator
CHASP	Construction Health and Safety Plan
CO	Carbon monoxide
CORRACT	Federal Corrective Action Report
CP	NYSDEC Commissioner Policy
CRRA	Community Risk Resiliency Act
CSO	Combined sewer overflows
CTPP	Census Transportation Planning Products
CUNY	City University of New York
CZMA	Coastal Zone Management Act
dB	Decibel
dBA	A-weighted decibel
DEIS	Draft Environmental Impact Statement
DOF	New York City Department of Finance
DOL	New York State Department of Labor
DSD	Draft Scoping Document
DSNY	New York City Department of Sanitation

E NL	Existing Noise Level
E PCE	Existing Passenger Car Equivalents
EABP	Environmental Anticipatory Boring Program
EAF	Environmental Assessment Form
ECHO	Federal Enforcement & Compliance History Information
ECL	Environmental Conservation Law
EDR	Environmental Data Resources
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMS	Federal Emergency Management System
ENB	Environmental Notice Bulletin
EO	Executive Order
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
F PCE	Future Passenger Car Equivalents
FAA	Federal Aviation Administration
FAR	Floor Area Ratio
FDNY	City of New York Fire Department
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FFRMS	Federal Flood Risk Management Standard
FINDS	Federal Facility Index System / Facility Registry System
FOIA	Freedom of Information Act
FRESH	Food Retail Expansion to Support Health
FSD	Final Scoping Document
FTA	Federal Transit Administration
GIS	Geographic Information System
gpd	Gallons Per Day
HASP	Health and Safety Plan
HCM	Highway Capacity Manual
HCP	Hazard Communication Program
HDDV	Heavy duty diesel vehicle
HRU	Heat Recovery Unit
HSWDS	New York State Hazardous Substance Waste Disposal Site Inventory
HVAC	Heating, Ventilation, and Air Conditioning
ICIS	Integrated Compliance Information System
JBD	Jamaica Bus Depot
KWH	Kilowatt Hours
LBP	Lead-based paint
LEED	Leadership in Energy and Environmental Design
LF	Landfill
LIRR	Long Island Railroad
LOS	Level of Service

LQG	Federal Large Quantity Hazardous Waste Generator
LT	Long-term
LTANKS	New York State Leaking Storage Tank Incident Reports
LWRP	Local Waterfront Revitalization Plans
mg/l	Milligrams per liter
MGP	Manufactured Gas Plants
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emissions Simulator
MPO	Metropolitan Planning Organization
MPT	Maintenance and Protection of Traffic
MTA	Metropolitan Transportation Authority
MW	Megawatt
na	Not available
NAA	Non-attainment areas
NAAQS	National Ambient Air Quality Standards
NB	Northbound
NFPA	National Fire Protection Association
NFRAP	No Further Remedial Action Planned
NHPA	National Historic Preservation Act
NICE	Nassau Inter-County Express
NJ	New Jersey
NLR	No Longer Reporting
NO_2	Nitrogen dioxide
NOI	Notice of Intent
NO_x	Nitrogen oxides
NPL	National Priority List for Superfund Cleanup
NWI	National Wetlands Inventory
NY	New York
NY SPILLS	New York Spills Information Database
NY SWRCY	New York State Registered Recycling Facilities
NYCDCP	New York City Department of City Planning
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCDOHMH	New York City Department of Health and Mental Hygiene
NYCDOT	New York City Department of Transportation
NYCDPR	New York City Department of Parks and Recreation
NYCLPC	New York City Landmarks Preservation Commission
NYCOER	New York City Office of Environmental Remediation
NYCT	New York City Transit
NYPD	City of New York Police Department
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSHPO	New York State Historic Preservation Office

NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation
O&M	Operations and Maintenance
OCMC	NYCDOT Office of Construction Mitigation and Coordination
OER	New York City Office of Environmental Remediation
OLM	Ozone Limiting Method
OSHA	Occupational Health and Safety Administration
PAH	Polycyclic aromatic hydrocarbons
PAL	Public Authorities Law
PCB	Polychlorinated biphenyls
PCE	Passenger Car Equivalents
PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
ppb	Parts per billion
PPE	Personal protective equipment
ppm	Parts per million
PSD	Prevention of significant deterioration
RAP	Remedial Action Plan
RBO	Regional Bus Operations
RCRA	Resource Conservation and Recovery Act
RCRA-Non-Gen	RCRA Non-Generators
REC	Recognized Environmental Condition
S/NRHP	State/National Register of Historic Places
SB	Southbound
SBE	Standard Bus Equivalent
SCFWH	Significant Coastal Fish and Wildlife Habitat
SCO	Soil Cleanup Objective
SEQRA	New York State Environmental Quality and Review Act
sf	Square feet
SHWS	New York State Hazardous Waste Disposal Sites
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SPDES	State Pollutant Discharge Elimination System
SQG	Federal Small Quantity Hazardous Waste Generators
SSA	Sole Source Aquifer
SSCO	Supplemental Soil Cleanup Objective
STARS	Spill Technology and Remediation Series
SVOC	Semi-volatile organic compound
SWF	Solid Waste Facility
SWP	Safe Work Plan
SWPPP	Stormwater Pollution Prevention Plan
TAGM	Technical and Administrative Guidance Memorandum

TCE	Trichloroethene
TCLP	Toxicity Characteristics Leaching Procedure
TIP	Transportation Improvement Programs
TMC	Turning movement count
TRB	Transportation Research Board
TRIS	New York State Toxic Release Inventory System
TSCA	The Toxic Substance Control Act
TSD	Treatment, Storage, or Disposal Facilities
US AIRS	United States Air Emissions Data
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGBC	United States Green Building Council
USGS	United States Geological Survey
UST	Underground Storage Tank
v/c	Volume-to-capacity
VCP	Voluntary Cleanup Program
VEC	Vapor encroachment condition
VOC	Volatile organic compound
vph	Vehicles per hour
WB	Westbound
WRP	New York City Waterfront Revitalization Plan
ZoLa	Zoning and Land Use Map
μg	Microgram

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The Jamaica Bus Depot (JBD) was constructed in 1939 and provides daily operations and maintenance (O&M) support for up to 200 buses. However, the aging JBD is an outdated facility that requires extensive upgrades in order to meet current and future bus operation demands and the increased capacity for bus storage. Given the structural and operational limitations of the current facility to meet the existing and future demands of servicing and storing 300 buses, MTA NYCT proposed in its 2015-2019 MTA Capital Program[1] to:

> *"address numerous functional deficiencies at the current depot…such as poor layout, inadequate work areas, and insufficient capacity."*

As a result of the changing service demands and operational needs, the existing JBD facility presents several critical functional deficiencies. Depot deficiencies have become apparent as the demand for services have increased, necessitating a larger fleet, and as opportunities to improve bus stock have allowed MTA to invest in newer buses. Modern diesel buses include higher passenger capacity vehicles than those for which the 1939 depot was designed for; they are also designed to operate in ways that differ from previous bus technology – such as clean diesel fuel and hybrid-electric buses. The outdated 1939 facility cannot adequately service and maintain the needs of the current fleet.

Construction funding for the reconstruction of the JBD is anticipated to be solicited in the upcoming 2020-2024 MTA Capital Program. This proposal reflects the culmination of years of NYCT attempts to address the existing site limitations. These attempts have included:

- *Investigating opportunities to purchase various properties* (eleven) in the region that NYCT believed had the potential to serve as a replacement for the existing JBD. None of these opportunities materialized; thus, NYCT has concluded that reconstruction of the existing JBD on-site is the only viable approach to pursue.
- *Purchasing properties adjacent to the existing JBD* to provide bus storage development potential at the existing site[2].
- *Identifying and evaluating a variety of concept designs* to maximize the potential of the existing site for current and future bus service/storage demands and to minimize capital costs of construction[3].
- *Synthesizing the most feasible features of a variety of concept designs into "Candidate Alternatives*," which have been advanced for further evaluation and consideration as part of the environmental review process.
- As discussed in the Final Scoping Document and **Chapter 3.0: Alternatives**, three Candidate Alternatives were identified and advanced for further study. These Candidate Alternatives have been characterized by NYCT according to the manner in which the depot design could provide outdoor parking:
    - *"principally open parking",*

[1] MTA Capital Program 2015-2019, as proposed to the MTA Board October 28, 2015.
[2] During 2017-2018, MTA Bus secured eight properties along Merrick Boulevard, demolished the existing buildings and paved the area for additional bus parking.
[3] See for reference the Final Scoping Document, published March 13, 2019

- *"partially open parking," and*
- *"principally enclosed parking."*

Together with the efforts specific to the design of the proposed facility, NYCT has also:

- *initiated efforts to secure temporary bus storage space* to accommodate JBD buses while re-construction at the site is underway;
- *continued discussion with New York State Department of Environmental Conservation (NYSDEC)* to develop a management plan for the petroleum spill at the site that will proceed independently of the reconstruction and operation of the new JBD under the existing NYSDEC Consent Order;
- *performed evaluation of all potential bus routing strategies* to/from the reconstructed JBD; and,
- *registered the project for Leadership in Energy and Environmental Design (LEED)* certification with the United States Green Building Council (USGBC).

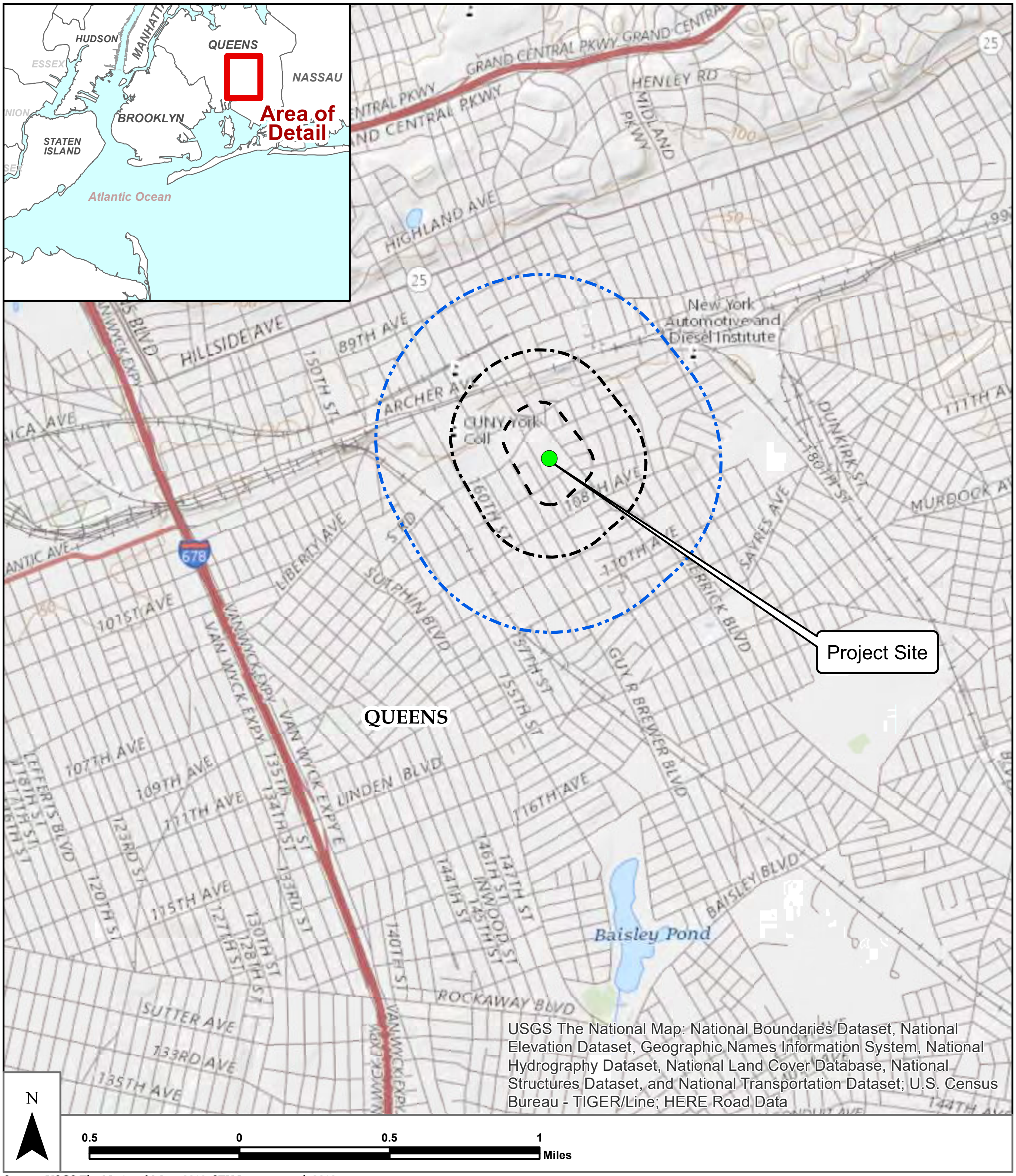
NYCT envisions the start of construction in 2021, utilizing the Design-Build approach so that construction time and cost are minimized. Construction is anticipated to be completed in 2025.

1.2 PROJECT BACKGROUND

The address for the Jamaica Bus Depot is 165-18 Tuskegee Airmen Way, Jamaica, New York 11433. The facility is located on Queens Block 10164, Lots 46, 80, 84, 97, and 103, bounded by Merrick Boulevard, 107th Avenue, and Tuskegee Airmen Way (**Figure 1-1: Project Location and Study Area**). The JBD has remained in operation since its construction in 1939 and, through the formation of Regional Bus Operations (RBO), has operated as a critical component of the Queens Division Bus depot network. It is one of eight depots in Queens intended to provide storage and servicing of the Queens Division bus fleet.

In 1950, the depot was expanded eastward to add a bus wash area and provide additional storage. In 1968, transportation offices and locker rooms were constructed on the north side of the facility on an upper mezzanine level. Neither the original 1939 depot or the 1968 construction project envisioned the need to accommodate the large increase in service and growing number of operating employees working at this depot.

The JBD maintains and operates buses which services nine bus routes (Q3, Q4, Q5, Q17, Q30, Q42, Q77, Q84, and Q85). These buses serve local routes within Queens and regional connections to Nassau County, including service to the Green Acres Mall in Valley Stream. The current facility cannot accommodate articulated buses; which can service the high-volume routes more effectively such as the Q44, Q111, or Q113 that operate along Archer Avenue near the JBD.



Source: USGS The National Map, 2019: STV Incorporated, 2019.

Figure 1-1

Project Location and Study Area

400-ft Study Area
1/4-Mile Study Area
1/2-Mile Study Area

Reconstruction and Expansion of Jamaica Bus Depot

The current JBD fleet size is approximately 200 buses and recently the facility was able to provide storage for all these buses because of the recent acquisition of properties adjacent to the existing JBD. These properties are Lots 41, 53, 60, 61, 63, 66, 68, and 72 on Block 10164.

The original bus depot design configuration cannot provide adequate maintenance for the current buses; specifically, articulated buses. Further, the JBD's transportation and maintenance staff amenities are in poor condition and in need of improvement. Moreover, the depot does *not* meet the Unified Buses Planning and Design Guidelines and current code standards, such as Americans with Disabilities Act of 1990 (ADA) the *Accessibility Guidelines* (ADAAG). The current depot cannot be expected to service the projected number of buses required to meet the increased ridership demands in this section of Queens, nor could it respond to new demands resulting from service changes that may necessarily occur (i.e., resulting from changes in depot/route assignment reconfigurations). Additionally, the depot would not be able to service the emerging generation of electrical buses which is expected to be fully implemented by NYCT in 2040.

1.3 PROJECT PURPOSE AND NEED DESCRIPTION

The *purpose* of the project is to develop a reconstructed JBD that can:

- *Manage the operations/maintenance and on-site bus storage* of up to 300 Standard Bus Equivalents (SBEs[4]) to serve the projected bus assignments at this depot;
- *Allow additional capacity* due to the density of bus service in the southeast section of Queens and the long-range outlook for new service demands, while accommodating potential route/depot assignment reconfigurations; and,
- *Demonstrate the maximum potential,* from among the Candidate Alternatives, *to minimize* adverse effects/impacts to the community based on integrated consideration of engineering, economic, and environmental factors.

The *need* for the project results from:

- Upgrade the *antiquated technology and facilities* at the existing JBD to provide appropriate operation and maintenance services for a modern bus fleet;
- *Increase bus service and storage capacity to meet the growing demand for* bus service; and,
- The *long-term inability of NYCT to secure a new property(ies)* in the region to manage the current and estimated future bus demand capacity.

1.3.1 PROPOSED ACTION

NYCT proposes to:

- *Select* a "Preferred Alternative" from among three Candidate Alternative site design concepts that have been developed as a result of extensive engineering, economic, and environmental planning within NYCT through the New York State Environmental Quality Review Act (SEQRA) process and is consistent with commitments to ISO 14000 and sustainability;
- *Allow* award of a Design-Build contract in 2021 that would result in the start of actual operations at the reconstructed JBD in the year 2025;

[4] An SBE represents the space needed to park a standard 40-foot-long, single-unit bus.

- *Select in consultation with NYCDOT*, a preferred routing strategy for buses returning to the reconstructed JBD from among three Candidate Alternatives Routes developed by MTA NYCT;
- *Identify* a preferred location(s) for the temporary storage of buses during the depot re-construction period. (Note, as of this writing, no temporary bus storage location(s) have been identified. A separate supplemental environmental evaluation will be performed for the temporary bus storage location(s) when it is identified);
- *Develop* a management plan for the oil/petroleum spill (Spill No. 9010039) that exists at the JBD. The spill management plan will be implemented independent of the JBD reconstruction project and be consistent with NYSDEC Consent Order requirements; and,
- *Secure* LEED Certification through the USGBC.

Upon the close of the SEQRA process and acceptance of its "Findings" by the MTA Board, NYCT will:

- Complete appropriate engineering and planning for the Board-approved Preferred Alternative;
- Demolish the existing JBD;
- Construct the new JBD; and,
- Operate and continuously improve the reconstructed JBD so as to support the inevitable increasing demand for bus service and technological changes (e.g., electric buses) over the next few decades.

These efforts will be guided by MTA NYCT's continuing commitments to ISO 14000 and sustainability.

1.4 PROJECT GOALS

Fundamentally, the Preferred Alternative design for the proposed facility would be capable of *accommodating* standard and articulated buses and would also meet the following key design criteria, which are fundamental to ensuring that the design of the proposed reconstructed depot meets the overall project purpose and need:

- parking for 300 standard bus equivalents (SBEs);
- 15 maintenance bays;
- 1 chassis wash station;
- 3 fueling lanes;
- 3 bus wash lanes;
- 2 interior wash stations;
- administrative spaces for Maintenance and Transportation Divisions;
- adequate storage spaces for equipment;
- support the operation/maintenance of a minimum of 60 electric buses on its opening day; and,
- continue ISO 14000 and USGBC quality performance.

The Preferred Alternative would also represent the site design which, from among the Candidate Alternatives, demonstrates the greatest potential to *minimize*, *based on integrated consideration of engineering, economic,* and *environmental* factors*, the effects/impacts of construction and operation*.

The preferred bus routing (during operations) and temporary bus storage location(s) (during construction) plan would also be evaluated for its potential to minimize the effects/impacts of the related construction/operations utilizing an integrated consideration of engineering, economic, and environmental factors.

Construction is anticipated to begin in 2021 and be completed in 2025. As indicated in the detailed descriptions of the Candidate Alternatives in **Section 3.0: Alternatives**, construction duration would vary among the alternatives.

2.0 PROCEDURAL AND ANALYTICAL FRAMEWORK

2.1 INTRODUCTION

The proposed MTA NYCT Reconstruction and Expansion of the Jamaica Bus Depot in Jamaica Queens, entails the planning, design and construction of a modern expanded bus facility to service the surface transit demands in southeastern Queens. An Identification, Description, and Comparative Analysis of Alternative Design Concepts was performed by the MTA NYCT in May 2016, which considered seven alternative facility design concepts. The seven design concept alternatives were then evaluated further and three Candidate Alternatives were identified that are evaluated in the FEIS process. The comparative alternative analysis is described in **Chapter 3.0 Alternatives** of the FEIS.

This chapter identifies the approvals anticipated to be required for implementation of the proposed project and provides an overview of the analytical framework used to guide the technical analyses presented in subsequent chapters of this FEIS.

2.2 REQUIRED APPROVALS AND AGENCY COORDINATION

The Proposed Action would require a number of City and State approvals and coordination with various City and State agencies as listed below:

- NYC Transit & MTA Board (NYCT/MTA);
- New York State Department of Environmental Conservation (NYSDEC);
- New York Natural Heritage Program & U.S. Fish and Wildlife Service (USFWS);
- New York City Department of Transportation (NYCDOT);
- New York City Department of Environmental Protection (NYCDEP); and,
- New York City Department of Parks and Recreation (NYCDPR).

2.2.1 ESTABLISHING A LEAD AGENCY

Per SEQRA, the "lead agency" is the public entity responsible for conducting the environmental review. Usually, the lead agency is also the entity primarily responsible for carrying out, funding, or approving the Proposed Action. MTA NYCT issued its Notice of Intent to serve as lead agency on May 18, 2016. Other agencies with discretionary authority over portions of the Proposed Action are considered "involved" agencies under SEQRA. There are no involved parties identified for this project.

2.2.2 DETERMINATION OF SIGNIFICANCE

The lead agency's first charge is to determine whether the Proposed Action might have a significant adverse impact on the environment. To make this determination, MTA NYCT prepared ***an Environmental Assessment Form (EAF)*** which is included as Appendix C of the March 2019 Final Scoping Document. Based on the information contained in the EAF, MTA NYCT determined that the Proposed Action could have the potential to result in significant adverse environmental impacts and, ***thus, the Positive Declaration was issued on May 18, 2016.***

2.2.3 SCOPING

"Scoping" or creating the scope of work, focuses on the environmental impact analyses required for the key issues to be studied in the DEIS. MTA NYCT issued a Draft Scoping Document for the EIS on May 18, 2016. This was widely distributed to the public, interested parties/agencies, and other stakeholders. A Public Scoping Meeting was held for the Proposed Action on June 15, 2016, at Junior High School 8 (IS 8) Richard S. Grossley, at 108-35 167th Street, Queens, New York 11433. Written comments were accepted through July 8, 2016, and a Final Scoping Document, reflecting comments made during scoping, was issued on March 13, 2019.

2.2.4 DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

The Proposed Action is classified as an Unlisted Action under the New York State Environmental Quality Review Act (SEQRA) (6 NYCRR Part 617.4(9)); it is not included in statewide or individual agency lists of Type I or Type II actions. A Positive Declaration was issued on May 18, 2016 and included in Appendix D of the March 2019 Final Scoping Document.

This Draft Environmental Impact Statement (DEIS) is part of the environmental review process that NYCT is undertaking pursuant to the SEQRA requirements and all applicable state law and regulations. As stated in SEQRA (6 NYCRR 617):

> *"The basic purpose of SEQRA is to incorporate the consideration of environmental factors into the existing planning, review and decision-making processes of state, regional, and local government agencies at the earliest possible time. To accomplish this goal, SEQRA requires that all agencies determine whether the actions they directly undertake, fund or approve may have a significant impact on the environment, and, if it is determined that the action may have a significant adverse impact, prepare or request an environmental impact statement."*

The analyses conducted to support the environmental review were intended to identify potential significant adverse environmental impacts; these findings are presented in this DEIS, together with potential mitigation measures to address any identified significant adverse environmental impacts.

As the lead agency, MTA NYCT must review all aspects of the DEIS to determine its adequacy and adherence to the work effort outlined in the Final Scoping Document. Once MTA NYCT is satisfied that the DEIS is complete for the purposes of public review and comment, *MTA NYCT issues a Notice of Completion and circulates the DEIS for public review.*

2.2.5 PUBLIC REVIEW

Publication of the DEIS and issuance of the Notice of Completion signal the beginning of the public comment period for the DEIS. During this time, which extends for a minimum of 30 days after publication of the DEIS, ***the public may review and comment on the DEIS, either in writing or at a Public Hearing convened for the purpose of receiving such comments.*** Notice of the Public Hearing was published in the NYSDEC's Environmental Notice Bulletin (ENB), on the MTA NYCT web site, in local newspapers, and on social media. *A printed copy of the DEIS was made available for public review* at the same repositories utilized for the review of the Final Scoping Document, including:

- Queens Community Board 12, 9028 161st Street, Jamaica, NY 11432;
- Queens Central Library, 89-11 Merrick Boulevard, Jamaica, NY 11432; and,
- South Jamaica Library, 10841 Guy R. Brewer Boulevard, Jamaica, NY 11433.

The DEIS was also available on the MTA website (www.mta.info/) pursuant to the requirements in the 2005 amendment to SEQRA (Chapter 641 of the NYS Laws of 2005; "Ch. 641").

The Public Hearing for MTA NYCT's Reconstruction and Expansion of the Jamaica Bus Depot DEIS was advertised for more than 14 days in advance of the Public Hearing held on June 27, 2019.

The public comment period for interested parties and agencies and for the public to review and comment on the DEIS was open until July 19, 2019, 22 days after the Public Hearing. All substantive comments received on the DEIS, at the Public Hearing or during the comment period, have become part of the SEQRA record and are summarized and responded to by NYCT in this Final Environmental Impact Statement (FEIS).

2.2.6 FINAL ENVIRONMENTAL IMPACT STATEMENT (FEIS)

Once the public comment period for the DEIS closed on July 19, 2019, the MTA NYCT prepared the FEIS. This document includes a summary of, and response to, each substantive comment made about the DEIS. Once MTA NYCT determines that the FEIS is complete, MTA NYCT will issue a Notice of Completion for publication in NYSDEC's ENB and the local newspapers and circulate the FEIS. A printed copy of the FEIS will be made available for public review at each of the same repositories utilized for the review of the DEIS as noted in **Section 2.2.5. Public Review**. A copy will also be available on the MTA NYCT website (www.mta.info/). After at least ten days from issuance of the FEIS, a written Findings Statement will be prepared by MTA NYCT.

2.2.7 STATEMENT OF FINDINGS

The lead agency must adopt a formal set of written findings based on the FEIS. In accordance with 6 NYCRR Part 617.11(d), the SEQRA Findings Statement issued in connection with a project approval must: (i) consider the relevant environmental impacts, facts, and conclusions disclosed in the FEIS; (ii) weigh and balance relevant environmental impacts with relevant social, economic, and other considerations; (iii) provide the rationale for the agency's decision; (iv) certify that the requirements of 6 NYCRR Part 617 have been met; and (v) certify that, consistent with social, economic, and other essential considerations, and considering the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable, and that adverse environmental impacts will be avoided or minimized to the maximum extent practicable by incorporating as conditions to the decision, those mitigation measures identified as practicable.

Once the Statement of Findings is adopted by the MTA Board, the SEQRA process is completed, and the lead agency will begin to approve and implement the Proposed Action or decide to not move forward with the project. This will be accomplished through a formal action by the MTA Board.

2.3 FRAMEWORK FOR ENVIRONMENTAL ANALYSIS

2.3.1 SCOPE OF ENVIRONMENTAL ANALYSIS

As set forth in the Positive Declaration, the lead agency has determined that the Proposed Action may result in one or more significant adverse environmental impacts and, thus, preparation of this FEIS is required. This document follows methodologies and supplements the guidelines set forth by SEQRA. When matters arise and SEQRA guidance is non-existent, other relevant and reasonable guidance is identified and used, to the extent practicable. For example, the Federal Transit Administration (FTA) and NYSDEC guidance could be used. In addition, City Environmental Quality Review (CEQR) guidance from the City of New York could be used to address traffic issues because NYCDOT stipulations for the Maintenance and Protection of Traffic (MPT) plan would be sought for the project in any event.

As described in the Final Scoping Document, this FEIS includes the following discussions and evaluations:

- Transportation, including Traffic, Parking, Transit, and Pedestrians
- Air Quality
- Noise and Vibration
- Historic and Cultural Resources
- Social and Economic Conditions, including Land Use, Zoning, and Public Policy, Socioeconomics, Community Facilities and Services, Open Space/Parkland and Recreational Facilities, and Environmental Justice
- Urban Design and Visual Resources
- Shadows
- Neighborhood Character
- Natural Resources
- Coastal Zone
- Contaminated and Hazardous Materials
- Infrastructure, Energy, and Solid Waste
- Safety and Security
- Construction Methods and Activities
- Displacement and Relocation
- Secondary and Cumulative Effects
- Commitments to Mitigating Adverse Effects
- Irretrievable and Irreversible Commitment of Resources
- Unavoidable Adverse Effects
- Growth Inducing Aspects of the Proposed Projects
- Coordination and Public Outreach

For each technical analysis section in the FEIS, the assessment includes: a description of existing conditions; an assessment of conditions in the future *without* the Proposed Action for the year(s) in which the action would be constructed and operational (No-Build Alternative); and, an assessment of conditions in the future *with* the proposed project for the years(s) in which the action would be constructed and operational. In addition, relevant standards and guidelines are identified and described.

2.3.2 ANALYSIS YEARS

An EIS analyzes the effects of a Proposed Action on its environmental setting. Because, typically, a proposed project, if approved, would take place in the future, the action's environmental setting is not the current environment but *the environment as it would exist at project completion, in the future*. Therefore, future conditions must be projected. This projection is made for a particular year, generally known as the "analysis year" or the "build year," which is the year when the proposed JBD would be substantially operational.

The proposed action could have potential significant adverse environmental impacts during its operational phase; therefore ***the analysis year 2025 (representing, generally, "first day of operations"), is considered the operational year in this document for the*** **Proposed Action**. Conditions in the future *without* the proposed action, (i.e. the No-Build condition), have been evaluated to compare conditions in the future *with* the proposed action for the analysis year.

Construction is anticipated to begin in 2021 and would require approximately 42 to 48 months to complete, depending on which Candidate Alternative is selected. ***The critical construction year*** – the period when construction activity has the greatest potential for environmental impacts – would vary depending on the resource category. For example, the greatest potential for transportation impacts, has been determined to be in 2022 when the combination of construction-related trucking activity and number of construction workers would be at a peak (see **Chapter 17.0: Construction Methods and Activities**). For noise impacts, the construction activities related to excavation and demolition activities would be considered the peak period, which would occur in approximately 2021 for Phase I and 2023 for Phase II construction (see **Chapter 17.0: Construction Methods and Activities**).

2.3.3 DEFINITION OF STUDY AREAS

Study areas relevant for each analysis category are defined in this FEIS and include the geographic areas most likely to be potentially affected by the Proposed Action for a given analysis category. Appropriate study areas differ depending on the analysis category. It is anticipated that the *principal direct effects of the Proposed Action would occur within the project site and its immediate vicinity, which ranges from the project site through ½- mile radius*. The specific methods and study areas are discussed in the individual technical analysis chapters.

2.3.4 DEFINITION OF BASELINE CONDITIONS AND THE NO BUILD ALTERNATIVE

For each assessment, this FEIS provides the following descriptions; existing conditions for each analysis category, the No-Build condition; and future conditions with the Proposed Action.

The assessment of existing 2019 conditions establishes a baseline – not against which the proposed action is measured, but from which future conditions can be projected. Existing conditions are used because they can be measured and observed.

The No-Build Alternative is evaluated for the same analysis year as the Proposed Action (i.e., 2025 for all analysis categories). The No-Build Alternative, or "future without the proposed project" condition, uses existing conditions as a baseline and adds changes that are known or expected to be in place at various times in the future. This includes development currently under construction, or that can be reasonably anticipated based on current development plans and public approvals.

The future conditions with the Proposed Action during the construction period are discussed in **Chapter 17.0: Construction Methods and Activities**, for each analysis category.

2.3.5 ALTERNATIVES

The range of alternatives for the Proposed Action was identified in both the Draft and the Final Scoping Document. From the range of alternatives, three Candidate Alternatives were identified in the Final Scoping Document and are described and assessed in **Chapter 3.0: Alternatives**. SEQRA requires that a description and evaluation of *the range of reasonable alternatives* to a proposed action be included in an EIS at a level of detail sufficient to allow a comparative assessment. Alternatives and the rationale behind their selection are important in the disclosure of environmental effects of a proposed action and provide a framework for comparison of potential impacts and project objectives (6 NYCRR Part 617.9b (5)(v)). If the environmental assessment and consideration of alternatives identify a feasible alternative that eliminates or minimizes significant adverse impacts, the lead agency may want to consider adopting that alternative as the proposed action. SEQRA also requires consideration of a No-Build Alternative that evaluates environmental conditions that are likely to occur in the future without the Proposed Action (6 NYCRR Part 617.9b (5)(v)).

2.3.6 CUMULATIVE EFFECTS ASSESSMENT

Cumulative effects result from the incremental effect of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes such actions. The objective of cumulative effects analysis is to identify and consider the total and combined effects of multiple actions that potentially would not be the same if each action and its associated impacts were evaluated in isolation.

2.3.7 CONSTRUCTION ENVIRONMENTAL PROTECTION PLAN/ISO 14000 STANDARDS/STATE SMART GROWTH PUBLIC INFRASTRUCTURE POLICY ACT

A key element in the assessment of potential construction generated environmental impacts is that MTA NYCT requires that Contractors prepare a Construction Environmental Protection Plan **(CEPP***) for MTA NYCT acceptance before construction initiates*. The CEPP must identify those commitments adopted by MTA NYCT that would contribute to *mitigating the Proposed Action's potential for the adverse environmental impacts during construction, while reducing the Proposed Action's potential cumulative adverse effects (see Section 2.3.6) in the study area*. The proposed mitigation consists of measures that would be implemented *proactively* in order to avoid or to minimize potential significant adverse environmental impacts that otherwise could potentially occur with the Proposed Action. These mitigation measures would be particularly focused on the resource categories that are the most sensitive to construction and operations, specifically:

- Noise and vibration
- Air quality
- Traffic and parking, transit and pedestrian movements
- Community disruption
- Urban design and visual resources

- Contaminated and hazardous materials
- Safety and security
- Cumulative effects

The CEPP would, thus, codify all commitments made in the EIS process and include those in the project construction specifications to assure conformance as described in **Chapter 17.0: Construction Methods and Activities**. Where applicable, the technical analysis chapters in the EIS provide a discussion of how the project would implement protective measures to proactively minimize adverse effects on the environment in the form of mitigation measures and the anticipated benefit of those measures for the environment.

MTA NYCT Capital Program Management is ISO 14001 certified and the continuous improvement mandate that is an intrinsic aspect of its certification also applies to the continuous improvement of environmental performance and sustainability. This provides a further framework for implementing emission reduction measures. ISO 14001 registration requires evidence of implementation of ISO 14001, which includes: procedures to maintain compliance to applicable laws; commitment to continual improvement (in a broad sense); and, commitment to prevention of pollution (e.g., recycling, process changes, energy efficiency, materials substitution).

The ISO 14000 Series of International Standards addresses environmental areas including: management systems; auditing; labeling; performance evaluation; and life cycle assessment. ISO 14000 comprises voluntary standards for the establishment of a common worldwide approach to management systems that will lead to the protection of the earth's environment while spurring international trade and commerce. They serve as tools to manage corporate environmental programs and provide an internationally recognized framework to measure, evaluate, and audit these programs. When implemented, these standards ensure consistency in environmental management practice, harmonize national environmental standards within a single system for all transnational subsidiaries, and offer guidelines for environmental excellence. Even though the standards do not prescribe performance levels, performance improvements will invariably be achieved by any business if its commitment to environmental care is emphasized and employees are trained and aware of the policies in place to protect the environment. The State Smart Growth Public Infrastructure Policy Act of 2010, passed by New York State in 2010, is a law that promotes Smart Growth and sustainable infrastructure investments. The act establishes 10 Smart Growth criteria in state law for infrastructure projects reviewed by the state. Projects must meet those criteria "to the extent practicable." Should the MTA Board approve the proposed JBD, this project would be in compliance with the State Smart Growth Public Infrastructure Policy Act of 2010. A summary of the 10 Smart Growth criteria used to review public infrastructure projects is provided below.

- **Maintenance and use of existing infrastructure –** similar to a "fix-it-first" policy, which focuses funding on repair and maintenance of existing infrastructure, rather than constructing new infrastructure.
- **Location in "municipal centers"** – development and re-development in existing or new centers of activities (e.g., downtowns, Main Streets, central business districts, brownfield areas, local waterfront revitalization areas, environmental justice areas, hardship/low-income areas and transit-oriented development, among others).
- **Infill Development** – redevelopment, rehabilitation, and development between existing buildings and on vacant, abandoned or underutilized properties.
- **Natural resource protection** – preserving, protecting, and enhancing water, air, agricultural land, forests, recreation, open spaces, scenic areas, and historic/archaeological resources.
- **Smart Growth planning and design principles** – includes density, mixed-uses, public spaces, diverse housing choices near employment, and other amenities and age and income-integration.

- **Mobility and transportation choices** – reducing car-dependence through walkable, bikeable, transit-friendly neighborhood design and street connectivity.
- **Inter-governmental coordination** – regional, inter-municipal, and state/local coordination
- **Community-based planning** – projects that result from inclusive, bottom-up, stakeholder-driven planning processes.
- **Predictability and reliability in building and zoning codes** – clear codes that promote smart growth and are consistently and predictably applied.
- **Sustainability development** – projects that use existing resources in ways that do not compromise the needs of future generations (e.g., reducing greenhouse gas emissions, promoting broad-based public participation and adequate governance structures to ensure and maintain sustainability).

2.3.8 USGBC LEED CERTIFICATION

The Leadership in Energy and Environmental Design (LEED) program is managed by the United States Green Building Council (USGBC). LEED certification is used to measure the *sustainability and energy efficiency of new construction*. The United Nations World Commission on Environment and Development defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." NYCT has registered the Proposed Action for LEED certification with USGBC, and the final design will be required to meet LEED standards for certification at the highest level achievable.

LEED 2009 for New Building Design + Construction (NBD+C) applies to buildings that are being newly constructed or going through a major renovation. This rating system addresses design and construction activities for both new buildings and major renovations of existing buildings. This includes major HVAC improvements, significant building architectural envelope modifications and major interior rehabilitation.

In order to measure that a Candidate Alternative has met the definition of a high-performance green building as defined by LEED, the LEED rating system has performance criteria in these major areas:

- **Sustainable Sites;**
- **Water Efficiency;**
- **Energy and Atmosphere;**
- **Materials and Resources;**
- **Indoor Environmental Quality;**
- **Innovation in Design; and**
- **Regional Priority.**

Within the LEED rating system, each sustainable category has LEED Credits and/or LEED Prerequisites. **Prerequisites are mandatory** project characteristic, measurement, quality, value or function as identified within the LEED rating system. Prerequisites do not earn a project any LEED points because they are "***required***" for the project to be considered. Each project must satisfy all specified prerequisites outlined in the LEED rating system under which it is registered. Failure to meet any prerequisite will render a project ineligible for certification.

The LEED NBD+C New Construction Prerequisites include:

- **Sustainable Sites Prerequisite** – Construction Activity Pollution Prevention
- **Water Efficiency Prerequisite** – Outdoor Water Use Reduction
- **Water Efficiency Prerequisite** – Indoor Water Use Reduction

- **Water Efficiency Prerequisite** – Building-level Water Metering
- **Energy and Atmosphere Prerequisite** – Fundamental Commissioning and Verification
- **Energy and Atmosphere Prerequisite** – Minimum Energy Performance
- **Energy and Atmosphere Prerequisite** – Building-level Energy Metering
- **Energy and Atmosphere Prerequisite** – Fundamental Refrigerant Management
- **Materials and resources Prerequisite** – Storage and Collection of Recyclables
- **Materials and resources Prerequisite** – Construction and Demolition Waste Management Planning
- **Indoor Environmental Quality Prerequisite** – Minimum Indoor Air Quality Performance
- **Indoor Environmental Quality Prerequisite** – Environmental Tobacco Smoke (ETS) Control

Credits are "optional" elements meaning it is a non-mandatory project characteristic, measurement, quality, value or function as identified within a LEED rating system. Project teams need to choose enough credits to achieve their desired certification level. Project teams can mix and match credits until they reach the desired number of points. Either of the Candidate Alternatives will only need to achieve enough credits to achieve the desired certification level the project is aiming for – "certified" (40-49 points), "silver" (50-59 points), "gold" (60-79 points), or "platinum" (80-100 points).

It is expected that credits for the Sustainable Sites, Water Efficiency, Materials and Resources, Innovation in Design, and Regional Priority categories would be common and achievable for each of the Candidate Alternatives.

Regarding the Energy and Atmosphere category, a preliminary review suggests that the larger *partially/ fully enclosed facilities* (Candidate Alternatives B and D) would require higher energy use (as illustrated by their annual energy costs), and therefore be less efficient. Similarly, for the Indoor Environmental Quality category, Candidate Alternatives B and D would likely require more extensive controls to maintain the indoor air quality levels required to match comparable levels in Candidate Alternative A.

The LEED process begins with holding a Charrette, where participants combine brainstorming, discussion, and strategy development to create a shared vision, goals and understanding of the next steps for a project, organization or community. For more information see http://www.planning.dot.gov/PublicInvolvement/pi_documents/2b-b.asp Public Involvement Techniques Section 2.B.b: Charrettes. This input will give the project a chance to be integrated into the community while helping designers and engineers determine how to minimize construction and environmental impacts to the community. During the Charette, LEED goals are communicated to all team members, and LEED credit feasibility is evaluated.

Project teams should take advantage of design charrettes that allow public input on the Proposed Action. This input will give the project a chance to be integrated into the community while helping designers and engineers determine how to minimize construction and environmental impacts to the community. The charrette process can reveal potential community alliances and partnerships.

2.3.9 TRANSITION TO ELECTRIC VEHICLES

Typically, the attention to and analysis of sustainable facility construction and operation is applied to an enterprise that has certain "fixed" features (e.g., a new heating/ventilation system, a new commercial/residential/mixed use structure, use of concrete versus steel, a new depot, etc.) that are planned to exist in its original condition for a reasonably foreseeable time period. In the current project, however, the reconstructed JBD is planned to:

- ***Initially support 300 SBE fleet of buses; approximately 15 percent would be electric, and 85 percent would be diesel fuel; and,***
- ***Progressively migrate to 100 percent electric bus fleet within the 15 years of operation, from 2025 to 2040.***[5]

The conceptual design of each the Candidate Alternatives is based on NYCT's current understanding of the maintenance and operation requirements for the foreseeable future. However, new technologies and processes continue to emerge and improve. For example, it is expected that electric buses and bus charging equipment of today will be replaced by better, more efficient technology by 2040 when the entire NYCT bus fleet will be electric.

Given this future necessary migration/development of the selected Preferred Alternative from among the Candidate Alternatives, attention to, and consideration of the implications and importance of the "migration", an evaluation process must be addressed in the selection of the Preferred Alternative. Without consideration of the future development, could lead to a situation where a structure/facility that is built for the current and near future operating technology would have to be removed/demolished/rebuilt in part or whole at a later time. Therefore, to the extent practicable, the Preferred Alternative should:

- Allow the facility to be retrofitted to support that future all-electric bus fleet;
- Not include structural/components that will need to be removed/demolished/rebuilt in the future; and,
- not commit more resources (building materials, funding, etc.) than necessary to support and service the fleet composition of the known future (2040).

Consideration would be given to the facility design to enable easy retrofitting for future technology and developments that can be reasonably anticipated but may not be ready yet, thereby allowing facilities/structures to be 'fitted for but not yet fitted with' future improvements that would enhance environmental and community resiliency and sustainability.

2.3.10 MITIGATION

Mitigation measures for all significant adverse impacts identified in this FEIS are described in each chapter. SEQRA requires that any significant adverse impacts identified in the EIS be minimized or avoided to the fullest extent practicable, and balanced against social, economic, and other considerations (6 NYCRR Part 617.11.d(5)). In the DEIS, options for mitigation, where necessary and appropriate, were presented for public review and discussion, prior to MTA NYCT's selecting the Preferred Alternative for implementation. Where feasible mitigation is not available or practicable, the FEIS discloses the potential for unavoidable significant adverse impacts.

[5] MTA NYCT Bus Plan dated April 2018 (http://web.mta.info/nyct/service/bus_plan/bus_plan.pdf) and MTA NYCT President Andy Byford's remarks at April 25, 2018 MTA Board Meeting.

3.0 ALTERNATIVES

3.1 INTRODUCTION

In mid-2014, MTA NYCT initiated engineering and economic planning for a reconstructed Jamaica Bus Depot (JBD) at the existing JBD site. Focusing on the potential servicing needs for a nominal 300 buses, an array of different service sequencing opportunities within the site were identified for such service elements as bus washing, maintenance and fueling, and traffic flow and circulation configurations. MTA NYCT engineers/architects/operation/cost control staff were involved, and over fifteen (15) concepts alternatives evolved. These were then critically compared and resulted in seven (7) alternatives being selected as Potential Alternatives which NYCT believed would represent a reasonable array of reconstruction opportunities to evaluate in terms of: taking maximum engineering/operations advantage of the site; utilizing current and emerging servicing technology; demonstrating an array of associated costs/capacities; and, reflecting a diversity of potential environmental effects/impacts related to their operating future. This evaluation, "Identification, Description, and Comparative Analysis of Alternative Design Concepts" is presented in Appendix B of the Final Scoping Document.

The seven Potential Alternatives were then evaluated further and three Candidate Alternatives, A, B and D were identified and are evaluated in the FEIS. These three Candidate Alternatives represent conceptual depot designs that evaluated three potential bus parking configurations. The distinguishing aspects between these configurations are as follows:

- **CANDIDATE ALTERNATIVE A** is referenced herein as ***PRINCIPALLY OPEN*** **PARKING** (most bus parking would be outdoors in unenclosed space);
- **CANDIDATE ALTERNATIVE B** is referenced herein as the ***PARTIALLY OPEN*** **PARKING** (some bus parking would be provided outdoors in unenclosed space, with the remainder of the bus parking provided indoors, within enclosed and climate-controlled space); and,
- **CANDIDATE ALTERNATIVE D** is referenced herein as ***PRINCIPALLY ENCLOSED*** **PARKING** (most bus parking would be provided indoors, within enclosed and climate-controlled space).

The conceptual designs of these three Candidate Alternatives allow for a reasonable range of proposed alternatives to be considered for comparative engineering, economic, and environmental evaluation in the FEIS. Specifically, a range of bus storage capacity; capital and annual operational energy costs; and potential environmental effects (preliminarily represented by the extent of indoor/outdoor bus parking) are captured by these Candidate Alternatives, which are described below in narrative and graphic form.

Upon completion of the planned SEQRA Scoping process, the resultant Candidate Alternatives were further analyzed and compared in the current Environmental Impact Statement (EIS) process document(s). That process addresses engineering, economic, and environmental considerations related to both construction and operating features and characteristics of the Candidate Alternatives and, when appropriate, identification of a Preferred Alternative. The Preferred Alternative which results from the EIS process will then be the basis for a Design-Build Contract which will result in the construction/operation of the new depot.

3.1.1 CANDIDATE ALTERNATIVE A – PRINCIPALLY OPEN PARKING

This Candidate Alternative would meet the most recent MTA Unified Buses Planning and Design Guidelines and future bus storage capacity and operation and maintenance requirements of the current and future bus fleet.

3.1.1.1 DEPOT STRUCTURE

Candidate Alternative A would be a new one-story building positioned along Merrick Boulevard, and extending southward from Tuskegee Airmen Way to 107th Avenue, as shown in **Figure 3-1: Alternative A ("Principally Open") – Massing Diagram** and **Figure 3-2**: **Alternative A ("Principally Open") – Plan**[6]. Candidate Alternative A would include:

- Candidate Alternative A consists of two buildings. The main depot building (Building A) would be located along Merrick Boulevard and would extend from Tuskegee Airmen Way to 107th Avenue. An administrative building would be located along Tuskegee Airmen Way and would extend from 165th Street to Merrick Boulevard.
- A three-story administrative building would provide about 7,600 square feet (sf) of administrative space on the first and second floors, and the third floor would bridge over the at-grade bus parking area and extend to the main structure providing an additional 19,700 sf. The height of the administrative building would be approximately 43 feet, which would include a four-foot parapet wall.
- The one-story depot building would provide approximately 125,000 sf on the first floor.
- The roof level of the main building would be about 26 feet above the ground floor, with a 10-foot parapet wall on all sides. A ramp at the south end of the depot building would connect the ground floor to the rooftop parking level. The height of the ramp structure is approximately 15 feet above the roof level; therefore, the height of the depot building would range from 36 feet at the north end of the facility to a maximum building height of 51 feet at the south end of the building.
- A surface parking lot would be located west of the main depot building.
- A 31-foot security/sound barrier wall would be located on the west side of the depot, adjacent to the mostly residential buildings located along 165th Street. A 20-foot security/sound barrier wall would be constructed along the south side of the depot at 107th Avenue.
- Candidate Alternative A would have three fueling lanes, three bus wash lanes, two interior bus wash stations, one chassis wash station, and 15 maintenance bays.

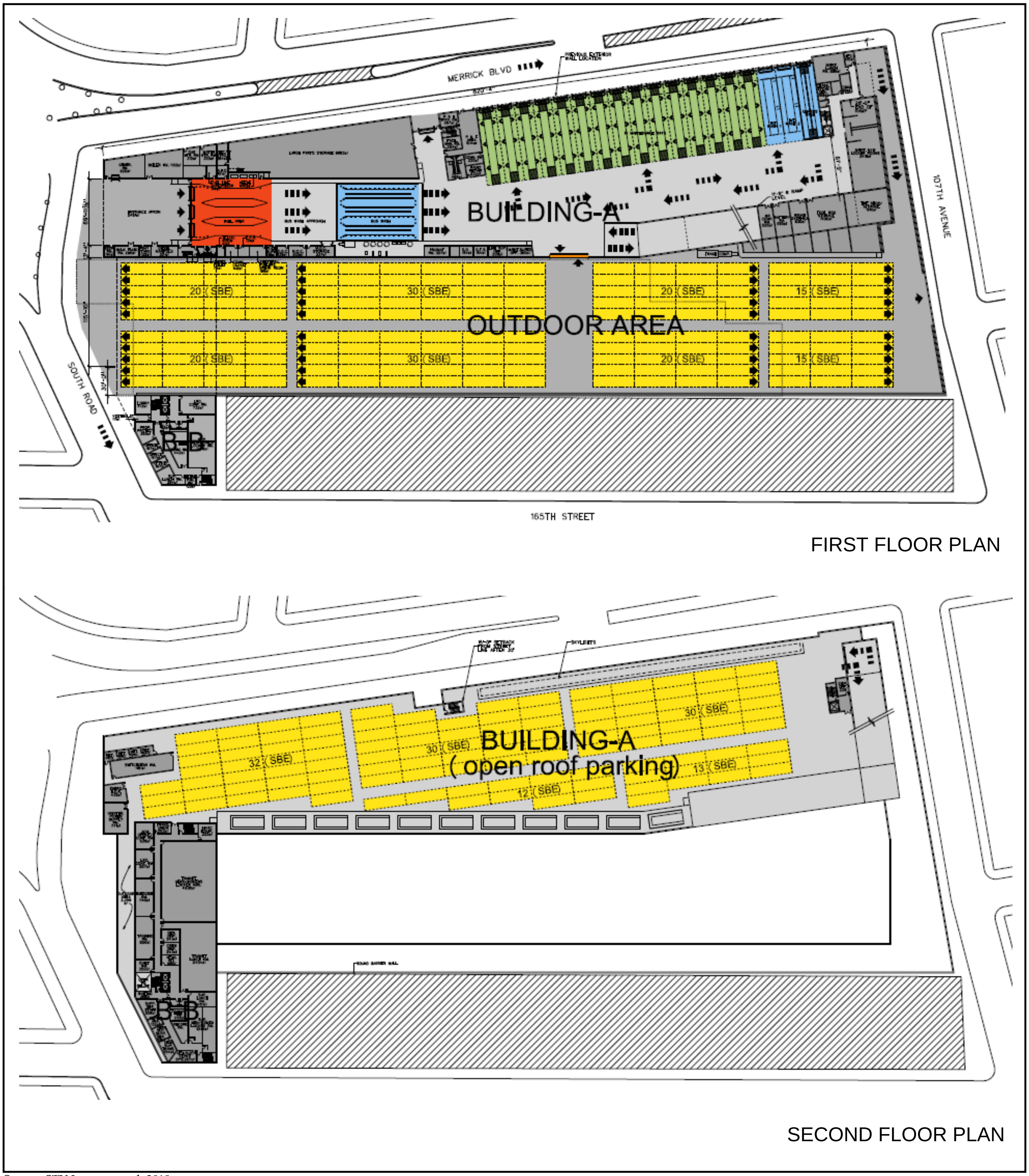
[6] Plans and massing diagrams are presented for diagrammatic purposes only.

Note: Rendering has been updated to show a more accurate rendition of the height of the proposed security/sound barrier as presented at the Public Hearing on June 27.

Source: STV Incorporated, 2019.

Figure 3-1

Alternative A ("Principally Open") - Massing Diagram



Source: STV Incorporated, 2019.

Figure 3-2

Alternative A ("Principally Open") - Plan

3.1.1.2 PARKING

Candidate Alternative A would provide a total of **305 SBE[7] parking spaces**:

- 18 SBE parking spaces would be indoors on the first level of the main building;
- 170 SBE parking spaces would be outdoors on the west side of the property; and
- 117 SBE parking spaces would be outdoors on the roof.

Candidate Alternative A would meet the future bus storage capacity target of 300 SBEs.

3.1.1.3 BUS CIRCULATION

Buses returning in the late afternoon or evening would enter the proposed depot structure from Tuskegee Airmen Way into one of the three fueling lanes to be fueled and to extract revenue. The buses would proceed to the bus wash area to be cleaned and parked on the roof or to the outdoor bus storage area. The proposed depot would have several exits for buses. A driveway on the east side of the building, approximately midblock between Tuskegee Airmen Way and 107th Avenue, would allow buses to exit onto Merrick Boulevard. Buses could exit on the west side of the building to the outdoor parking area and exit the depot to the north on Tuskegee Airmen Way. An emergency exit would be located at 107th Avenue at the south end of the site. Candidate Alternative A would also have an entrance driveway from Merrick Boulevard just north of 107th Avenue.

3.1.1.4 CONSTRUCTION

In order for bus operations and maintenance to remain operational during the 42-month construction period, the proposed one-story structure would be constructed along Merrick Boulevard; this would minimize interference with bus operations of the existing depot and require modest construction phasing.

3.1.1.5 COSTS

Total project costs are estimated to be $385,000,000, while the annual operational energy costs are estimated to be $1,050,000.

[7] An SBE represents the space needed to park a standard 40-foot-long, single-unit bus. A 60-foot-long articulated bus is considered as 1.5 SBEs and a 45-foot-long express bus is considered as 1.15 SBEs.

3.1.2 CANDIDATE ALTERNATIVE B – PARTIALLY OPEN PARKING

This Candidate Alternative would meet the most recent MTA Unified Planning and Design Guidelines and future bus storage capacity and operation and maintenance requirements of the current and future bus fleet.

3.1.2.1 DEPOT STRUCTURE

As shown in **Figure 3-3: Alternative B ("Partially Open") – Massing Diagram** and **Figure 3-4A: Alternative B ("Partially Open") – First and Second Floor Plan** and **Figure 3-4B: Alternative B ("Partially Open") – Roof Plan,** Candidate Alternative B would be a two-level building positioned along Merrick Boulevard and would include:

- Candidate Alternative B consists of two buildings. The main depot building would consist of two structures, the first (Building A) would be located along Merrick Boulevard and would extend from Tuskegee Airmen Way to 107th Avenue. The second structure (Building B) would be connected to the northern portion of Building A to the west. An administrative building would be located along Tuskegee Airmen Way and would extend from 165th Street to Merrick Boulevard.
- The administrative building would provide about 11,000 sf of administrative space on the first and second floors and 22,000 sf on the third floor. The height of the administrative building would be approximately 50 feet, which would include a four-foot parapet wall.
- The first floor of the main depot building would be approximately 161,000 sf for bus operation/ maintenance and parking. The second level of the main building would be 160,000 sf for indoor parking and the roof would provide 82,000 sf of outdoor parking.
- The roof height of the main building would be about 46 feet above street level, with a 10-foot parapet wall on three sides (north, east, and west). A ramp at the south end of the main building would connect the ground level to the second level and rooftop parking. The height of the ramp structure is approximately 15 feet above the roof level; therefore, the height of the depot building would range from 56 feet at the north end of the facility to a maximum building height of 61 feet at the south end of the building.
- A surface parking lot would be located west of the main depot building.
- A 20-foot security/sound barrier wall would be located on the west and south sides of the depot, adjacent to the principally residential properties located along 165th Street and 107th Avenue, respectively.
- Candidate Alternative B would have three fueling lanes, three bus wash lanes, two interior bus wash stations, one chassis wash station, and 15 maintenance bays.

3.1.2.2 PARKING

Candidate Alternative B would provide a total of 309 SBE parking spaces:

- 60 SBE parking spaces indoors on the first floor;
- 130 SBE parking spaces indoors on the second floor; and
- 119 SBE parking spaces outdoors on the roof.

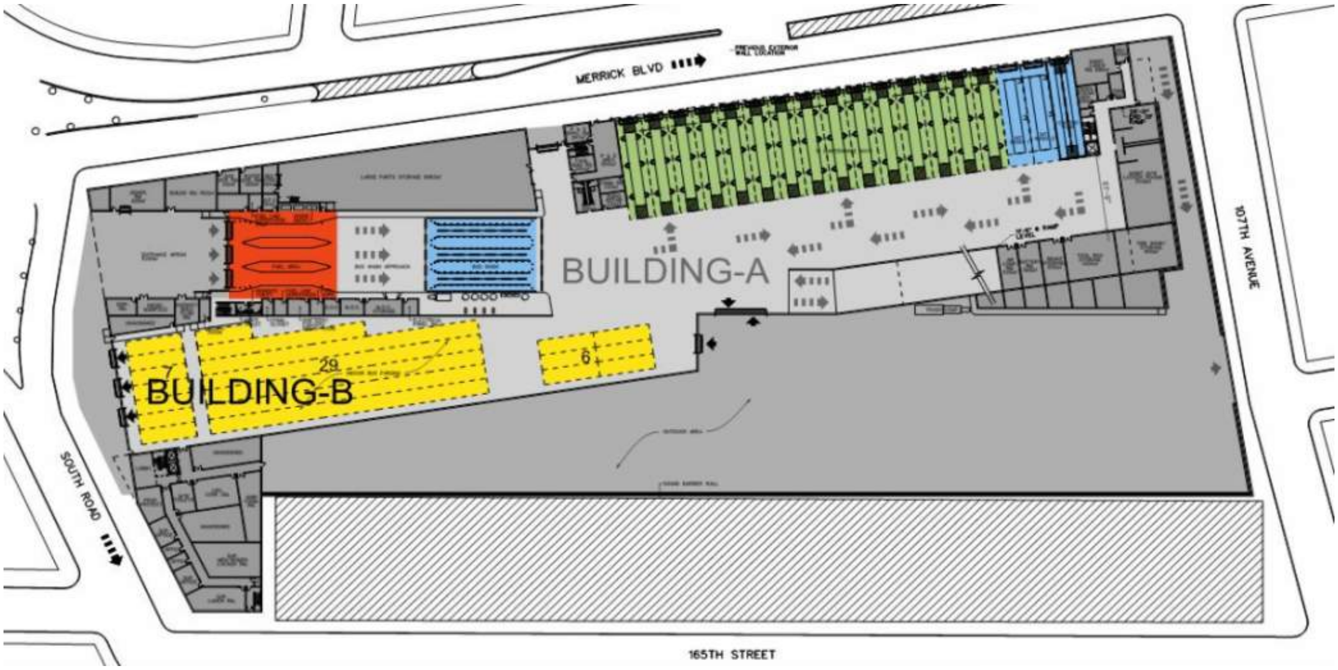
Candidate Alternative B would meet the future bus storage capacity target of 300 SBEs and would provide supplementary bus parking capacity on the depot grounds during an emergency.

Note: Rendering has been updated to show a more accurate rendition of the height of the proposed security/sound barrier as presented at the Public Hearing on June 27.

Source: STV Incorporated, 2019.

Figure 3-3

Alternative B ("Partially Open") - Massing Diagram



FIRST FLOOR PLAN

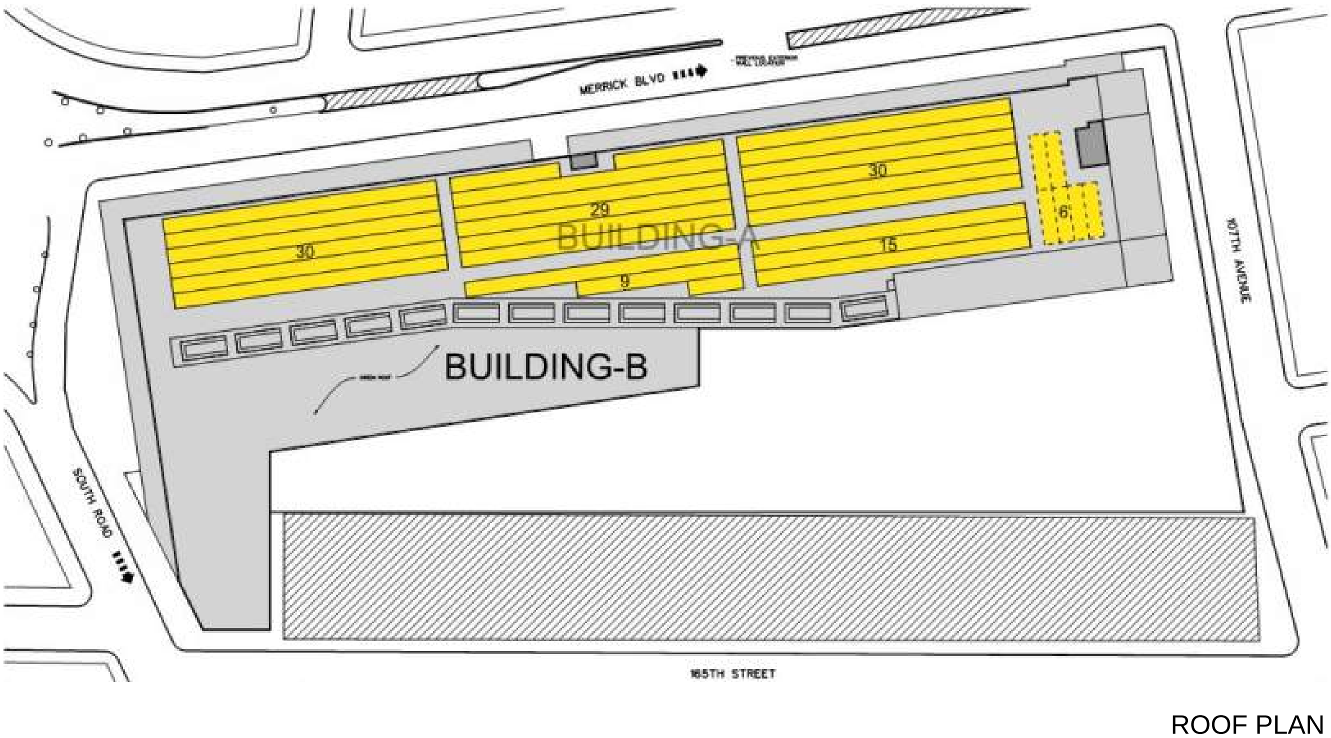
SECOND FLOOR PLAN

Source: STV Incorporated, 2019.

Figure 3-4A

Alternative B ("Partially Open") - First & Second Floor Plan

Reconstruction and Expansion of Jamaica Bus Depot



Source: STV Incorporated, 2019.

Figure 3-4B

Alternative B ("Partially Open") - Roof Plan

3.1.2.3 BUS CIRCULATION

Buses returning in the late afternoon or evening would enter the proposed depot from Tuskegee Airmen Way into one of the three fueling lanes to be fueled and to extract revenue. The buses would proceed to the bus wash area to be cleaned and parked indoors on the second level of the building or outdoors on the roof. The proposed bus depot would have several exits. On the east side of the building a driveway would be located approximately midblock between Tuskegee Airmen Way and 107th Avenue that would provide a bus exit onto Merrick Boulevard. Buses would also exit the north end of the depot onto Tuskegee Airmen Way. Buses may also exit the outdoor parking area at 107th Avenue via an emergency exit located at the south end of site. A ramp to the second level and rooftop parking areas would be provided at the southwest end of the building. Candidate Alternative B would also have an entrance driveway from Merrick Boulevard just north of 107th Avenue.

3.1.2.4 CONSTRUCTION

Operations within the existing depot building would not be interrupted during construction. Candidate Alternative B proposes to construct Building A adjacent to the existing building, once completed transfer bus operation and maintenance to the new structure. The existing building would be demolished to allow construction of Building B. Given the slightly larger footprint of Candidate Alternative B as compared to Candidate Alternative A, and that the construction of Building B would be adjacent to the newly occupied Building A and more complicated, the construction duration for Candidate Alternative B is expected to be longer (46 months).

3.1.2.5 COSTS

Total project costs are estimated to be approximately \$493,000,000, while annual operating energy costs are estimated to be \$1,550,000.

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3.1.3 CANDIDATE ALTERNATIVE D – PRINCIPALLY ENCLOSED PARKING

This Candidate Alternative would meet the most recent MTA Unified Buses Planning and Design Guidelines and future bus storage capacity and operation and maintenance requirements of the current and future bus feet.

3.1.3.1 DEPOT BUILDING

As show in in **Figure 3-5: Alternative D ("Principally Enclosed") – Massing Diagram and Figure 3-6A: Alternative D ("Principally Enclosed") – First and Second Floor Plan and Figure 3-6B: Alternative D ("Principally Enclosed") – Roof Plan**, Candidate Alternative D would consist of:

- Candidate Alternative D consists of two buildings. The main depot building would consist of two structures, the first (Building A) would be located along Merrick Boulevard and would extend from Tuskegee Airmen Way to 107th Avenue. The second structure (Building B) would be connected to Building A to the west. An administrative building would be located along Tuskegee Airmen Way and would extend from 165th Street to Merrick Boulevard.
- The administrative building would provide about 7,500 sf of administrative space on the first floor, 7,500 sf on the second floor, and 20,000 sf on the third floor. The height of the administrative building would be approximately 43 feet, which would include a four-foot parapet wall.
- On the first level, Building A would provide 125,000 sf for operation and maintenance space and Building B would provide 103,000 sf for indoor bus parking space. On the second level, Buildings A and B would provide 119,000 sf and 88,000 sf, respectively, for indoor bus parking space.
- *The roof heights of Buildings A and B* would be about 46 feet above the ground level, with a four-foot parapet wall on all sides, for a maximum building height of 50 feet. A ramp at the south end of the depot building would connect the first and second levels of the depot building.
- A 20-foot security/sound barrier wall would be located on the west and south sides of the depot, adjacent to the residential neighborhood on 165th Street and 107th Avenue, respectively.
- Candidate Alternative D would have three fueling lanes, three bus wash lanes, two interior bus wash stations, one chassis wash station, and 15 maintenance bays.

3.1.3.2 PARKING

Candidate Alternative D would provide a total of **338 SBE parking spaces**:

- 18 and 128 SBE parking spaces would be provided indoors in Buildings A and B on the first level, respectively; and
- 90 and 102 SBE bus parking spaces would be provided indoors in Buildings A and B on the second level, respectively.

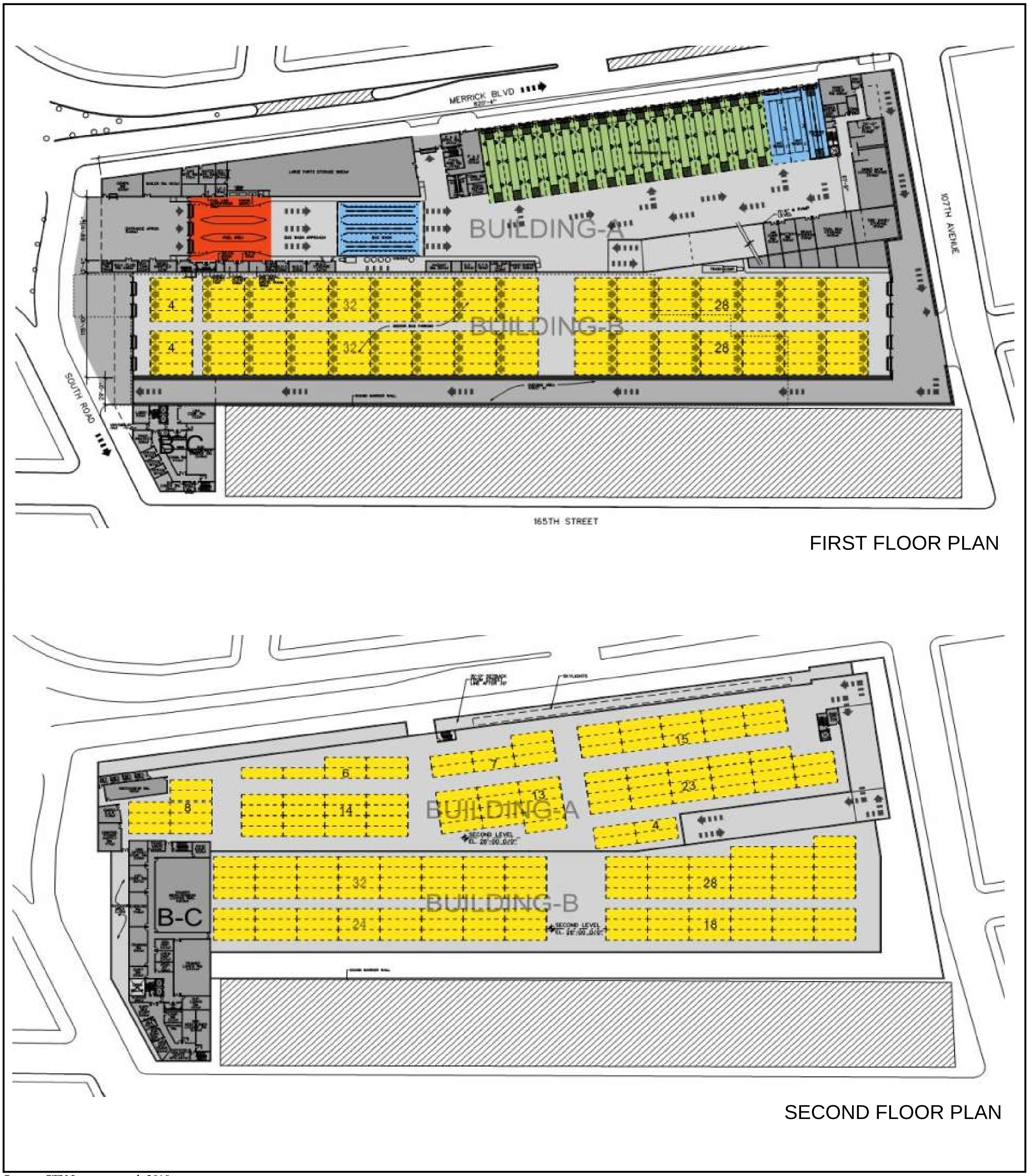
Note: Rendering has been updated to show a more accurate rendition of the height of the proposed security/sound barrier as presented at the Public Hearing on June 27.

Source: STV Incorporated, 2019.

Figure 3-5

Alternative D ("Principally Enclosed") - Massing Diagram

Reconstruction and Expansion
of Jamaica Bus Depot

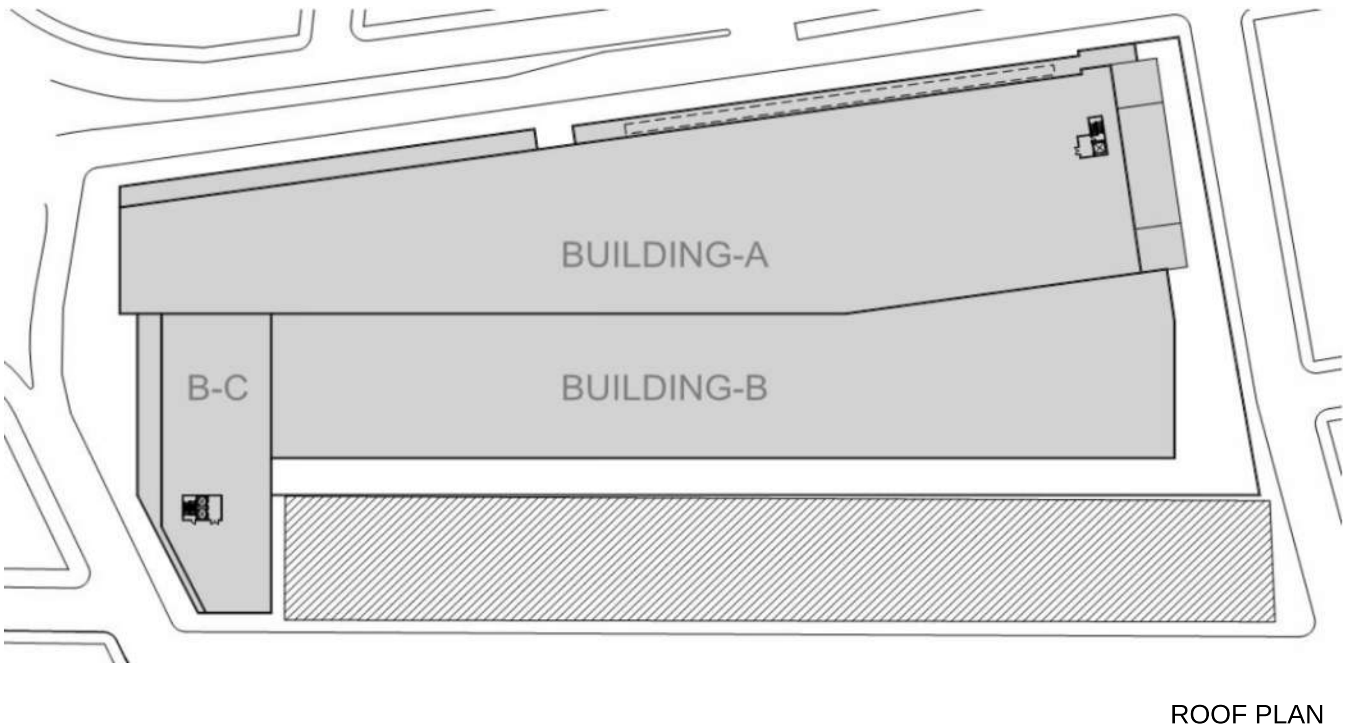


Source: STV Incorporated, 2019.

Figure 3-6A

Alternative D ("Principally Enclosed") - First & Second Floor Plan

Reconstruction and Expansion of Jamaica Bus Depot



Source: STV Incorporated, 2019.

Figure 3-6B

Alternative D ("Principally Enclosed") - Roof Plan

3.1.3.3 BUS CIRCULATION

Buses returning in the late afternoon or evening would enter the depot from Tuskegee Airmen Way into one of the three fueling lanes to be fueled and extract revenue. The buses would then proceed to the bus wash area to be cleaned after which the buses would be parked indoors on the first level or second level. The proposed bus depot would have several bus exits. On the east side of the building a driveway would be located approximately midblock between Tuskegee Airmen Way and 107th Avenue that provides a bus exit onto Merrick Boulevard. Buses may also exit at the west side of Building A, to the indoor parking area of Building B. Buses would exit the Building B parking area at Tuskegee Airmen Way, located at the north end of site and may exit at 107th Avenue via the emergency exit located at the south end of site. Candidate Alternative D would also have an entrance driveway from Merrick Boulevard just north of 107th Avenue. A ramp to the second level of parking would be provided at the southwest end of Building A.

3.1.3.4 CONSTRUCTION

Bus operations and maintenance currently conducted at the existing depot building would remain operational during construction of Building A. Once Building A is completed and fitted, construction of Building B would begin; the operation and maintenance at the existing depot building would be transferred to Building A, and the existing depot structure would be demolished before the construction of Building B. A detailed and completed phasing scheme would be required intended to minimize disruption to depot operations and maintenance. Construction duration would be approximately 48 months.

3.1.3.5 COSTS

Total project costs are estimated to be approximately $519,000,000, while annual operating energy costs are estimated to be $1,950,000.

3.2 SELECTION OF THE PREFERRED ALTERNATIVE

The project goals are presented in **Chapter 1.4: Project Goals** of the FEIS as follows:

- parking for 300 standard bus equivalents (SBEs);
- 15 maintenance bays;
- 1 chassis wash station;
- 3 fueling lanes;
- 3 bus wash lanes;
- 2 interior bus wash stations;
- administrative spaces for Maintenance and Transportation Divisions;
- adequate storage spaces for equipment;
- support the operation/maintenance of a minimum of 60 electric buses on its opening day; and,
- continue ISO 14000 and USGBC quality performance.

The Preferred Alternative would represent the site design which, from among the Candidate Alternatives, demonstrates *the greatest potential to **minimize**, based on an integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the Reconstructed Jamaica Bus Depot.*

Three Candidate Alternatives were selected from among the seven reasonable alternatives initially evaluated (see **Chapter 3.1: Introduction**), which MTA NYCT believed would represent a reasonable array of reconstruction and expansion opportunities to evaluate in terms of: taking the maximum advantage of the engineering/operations considerations of the site; utilizing current and emerging servicing/maintenance technology; demonstrating an array of associated costs/capacities; and, reflecting a diversity of potential environmental effects/impacts related to their operating future.

These Candidate Alternatives are feasible, reflect relevant/appropriate economic constraints, and also present the greatest opportunity to minimize environmental impacts. However, differences among the alternatives in terms of engineering and economic effects/impacts were judged by MTA NYCT to exist and required further evaluation in order to determine the Preferred Alternative. The comparative analysis to determine the Preferred Alternative from among Candidate Alternatives A, B, and D, as developed in detail in this FEIS and in accordance with the SEQRA process (see **Section 2.2.7**), is presented below. This selection of the Preferred Alternative satisfies the requirements of 6 NYCRR Part 617.11 (d), considers the relevant environmental impacts, facts, and conclusions disclosed in this FEIS, and balances/weighs the relevant environmental impacts with relevant social, economic, and other considerations.

The No Action Alternative would not fulfill the project goals, and was, therefore, not included in the comparative evaluation below. Candidate Alternative A was identified as the Preferred Alternative, for reasons described below and in the balance of the FEIS.

3.2.1 COMPARATIVE EVALUATION OF CANDIDATE ALTERNATIVES A, B, AND D WITH REGARD TO ENVIRONMENTAL EFFECTS/IMPACTS

In terms of potential environmental effects/impacts, the FEIS evaluated Candidate Alternatives A, B, and D at a greater level of detail than was performed to select Alternatives A, B, and D from among the original array of reasonable alternatives (see **Chapter 3.0: Alternatives**). These analyses were, as appropriate, further refined in preparation of this FEIS. *Candidate Alternatives A, B, and D conform to all applicable laws and regulations*. The analyses demonstrated that there would be *no unavoidable adverse impacts* from any of the three Candidate Alternatives analyzed for both the operations and construction of the alternatives. The DEIS demonstrated that there are no differentiating environmental effects among the three alternatives evaluated.

The analyses demonstrated the following ***during the operational phase*** of the proposed JBD:

- **Transportation:** All three Candidate Alternatives would result in a significant traffic impact at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour.
- **Noise and Vibration:** None of the three Candidate Alternatives would result in any significant mobile (from moving buses) or stationary (from the depot) noise impacts to sensitive noise receptors such as nearby residences and community facilities. Buses are rubber-tired vehicles; therefore, there would be no significant vibration effects to nearby vibration sensitive receptors such as residences and community facilities.
- **Displacement and Relocation:** Each Candidate Alternative would require the acquisition of six adjacent lots located on Merrick Boulevard and the permanent displacement of the occupants to permit the reconstruction of the depot. All property acquisition would be undertaken within the framework of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act and the New York State Eminent Domain Procedure Law.

For each Alternative, after construction, an up to 5-foot wide permanent easement may be required on adjoining 165th Street properties to accommodate the below ground foundation elements of the security/sound barrier wall.

The analyses demonstrated the following ***during the construction phase*** of the proposed JBD:

- **Noise and Vibration:** Construction of any of the three Candidate Alternatives would not result in *noise impacts* to sensitive noise receptors such as nearby residences and community facilities. The *levels of vibration* resulting from construction activities are projected to be below the FTA damage criteria at all vibration sensitive receptors except for one residential building (104-09 165th Street) where the northern façade of that building would be located approximately three feet from the construction zone.
- The FTA vibration annoyance criteria of 72 VdB (vibration decibels) would be exceeded at properties within approximately 80 feet of the construction zone. Exceedances would occur at some residential buildings along 165th Street and along 107th Street at the Allen Cathedral Senior Center. However, most of these potential impacts would occur during tasks associated with excavation. The duration of these events would be relatively short and intermittent and would represent a small segment of the total construction period.
- **Displacement and Relocation:** For each Candidate Alternative, a 10-foot wide temporary easement would be required on the adjoining 165th Street properties as a protective measure. These easements would be established by MTA NYCT in consultation with the property owners.

The DEIS identified the following ***mitigation measures*** to address the effects/impacts identified above:

- **Transportation:** There are two potential mitigation measures available to address the traffic impact at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour during the operational period of the proposed JBD:
  - Installation of a traffic signal at this intersection would improve intersection operations to an acceptable Level of Service (LOS) C conditions or better for all approaches.
  - Reroute all AM peak hour buses that were originally assigned to exit the proposed JBD via Tuskegee Airmen Way to exit via Merrick Boulevard.
- **Noise and Vibration:** During construction, a condition survey of all buildings adjacent to the work would be conducted. For the house at 104-09 165th Street, MTA NYCT would use vibration control measures to minimize, to the extent practicable, the vibration levels for all properties near the construction site. Prior to and during construction, vibration would be monitored at all buildings within a 200-foot radius of the project and if vibration measurements indicated the potential for the building to be damaged, alternative construction methods would be implemented. MTA NYCT and/or its contractors would be responsible for any vibration damage incurred during construction. NYCT would repair damage or provide equitable compensation to the property owners. Furthermore, all efforts would be made by the contractor to schedule vibration generating activities during the least intrusive times. In addition, the contractor would inform the occupants of adjacent buildings in advance of proceeding with work associated with equipment such as a jackhammer or backhoe.
- The designs for each of the Candidate Alternatives would incorporate security/sound barrier walls. For Alternative A, the height of the security/sound barrier wall adjacent to the primarily residential properties present along 165th Street would be increased to 31 feet so that noise levels from the

proposed JBD would not exceed the FTA's threshold criteria level. Candidate Alternatives B and D would have 20-foot high security/sound barrier walls.

- **Displacement and Relocation:** Adequate notice for any relocation of the adjacent commercial businesses will be assured by written and verbal distribution of information that explains the relocation benefits (i.e., advisory services, moving costs, and reestablishment costs) and eligibility requirements.

Temporary and permanent easements would be established by MTA NYCT in consultation with the property owners.

Table 3-1: Comparative Evaluation with Regard to Environmental Effects/Impacts presents a comparative evaluation of the alternatives with regard to environmental effects/impacts. As noted in the table, the Candidate Alternatives were considered to have comparable potential for environmental effects/impacts.

TABLE 3-1: COMPARATIVE EVALUATION WITH REGARD TO ENVIRONMENTAL EFFECTS/IMPACTS

DOMAIN	ALTERNATIVES			NOTES
	Alternative A (principally open parking)	Alternative B (partially open parking)	Alternative D (principally enclosed parking)	
Conformance with Applicable Laws and Regulations	▲	▲	▲	All Candidate Alternatives conform to applicable laws and regulations.
Mitigation	▬	▬	▬	Comparable mitigation measures are required for all three Candidate Alternatives.
Unavoidable Adverse Impacts	▲	▲	▲	No Unavoidable Adverse Impacts were identified for any of the three Candidate Alternatives.
Easements, Displacement, & Relocations	▼	▼	▼	Comparable easements and property acquisitions are required for all three Candidate Alternatives.
Summary	▲	▲	▲	

▲ - Minor or No Impact
▬ - Moderate Impact
▼ – Major Impact

3.2.2 COMPARATIVE EVALUATION OF CANDIDATE ALTERNATIVES A, B, AND D WITH REGARD TO ENGINEERING EFFECTS/IMPACTS

The DEIS evaluated the potential for engineering effects/impacts associated with Candidate Alternatives A, B, and D. The analyses demonstrated that there are differentiating engineering effects/impacts from the design and construction of the alternatives. As shown in **Table 3-2: Comparative Evaluation with Regard to Engineering Effects/Impacts**, the design complexity, construction complexity, and construction duration all increased as the proposed JBD building structure increased in size from Alternative A to Alternative B to Alternative D. As a result, Candidate Alternative A (followed by Alternative B and then Alternative D) was considered to have the lowest potential for engineering effects/impacts.

TABLE 3-2: COMPARATIVE EVALUATION WITH REGARD TO ENGINEERING EFFECTS/IMPACTS

DOMAIN	ALTERNATIVES			NOTES
	Alternative A (principally open parking)	**Alternative B (partially open parking)**	**Alternative D (principally enclosed parking)**	
Design Complexity	▲	▬	▼	Design complexity would increase with the partially enclosed alternative (“B”) and further increase with fully enclosed alternative (“D”) giving these options a less-favorable rating.
Construction Complexity	▲	▬	▼	Construction complexity would increase with the partially enclosed alternative (“B”) and further increase with fully enclosed alternative (“D”) giving these options a less-favorable rating.
Construction Duration	▲	▬	▼	Construction duration would increase with the partially enclosed alternative (“B”) and further increase with fully enclosed alternative (“D”) giving these options a less-favorable rating.
Summary	▲	▬	▼	

▲- Minor or No Impact
▬ - Moderate Impact
▼ – Major Impact

3.2.3 COMPARATIVE EVALUATION OF CANDIDATE ALTERNATIVES A, B, AND D WITH REGARD TO ECONOMIC EFFECTS/IMPACTS

Table 3-3: Comparative Evaluation with Regard to Economic Effects/Impacts presents the construction, energy, and facility maintenance costs for each Candidate Alternative. As demonstrated by Table 3-3, the costs to construct, provide energy, and maintain the facilities for each of the Candidate Alternatives vary significantly, and Candidate Alternative A represents the least construction, energy, and facility maintenance costs.

TABLE 3-3: COMPARATIVE EVALUATION WITH REGARD TO ECONOMIC EFFECTS/IMPACTS

DOMAIN	ALTERNATIVES			NOTES
	Alternative A (principally open parking)	**Alternative B (partially open parking)**	**Alternative D (principally enclosed parking)**	
Construction Cost	▲	▬	▼	Alternative A - $385M Alternative B - $493M Alternative D - $519M
Annual Energy Cost	▲	▬	▼	Alternative A - $1.05M Alternative B - $1.55M Alternative D - $1.95M
Annual Facility Maintenance Cost	▲	▬	▬	Facility maintenance cost (e.g., HVAC & boiler) would relatively increase with the partially enclosed alternative ("B") and fully enclosed alternative ("D") given the larger interior building square footage.
Summary	▲	▬	▼	

▲ - Minor or No Impact
▬ - Moderate Impact
▼ – Major Impact

3.2.4 COMPARATIVE EVALUATION OF CANDIDATE ALTERNATIVES A, B, AND D WITH REGARD TO OTHER CONSIDERATIONS

As required by 6 NYCRR Part 617.11(d), the SEQRA Findings Statement must weigh and balance relevant environmental impacts with relevant social, economic, and ***other considerations***. In the DEIS, the following other considerations were identified:

- Construction Environmental Protection Plan (CEPP) / ISO 14000 Standards / State Smart Growth Public Infrastructure Policy Act;
- USGBC LEED Certification; and,
- Transition to Electric Buses.

Table 3-4: Comparative Evaluation with Regard to Other Considerations presents a comparative evaluation of these other considerations.

The **CEPP** would codify all commitments made in the EIS process and include those in the project construction specifications to assure conformance as described in **Chapter 17.0: Construction Methods and Activities**. As each Candidate Alternative would comply with the CEPP, no distinction is made among the Alternatives for this criterion.

MTA NYCT Capital Program Management is **ISO 14001** certified and compliance with these standards ensures consistency in environmental management practice and provide guidelines for environmental excellence. As with the CEPP, each Candidate Alternative would comply with ISO 14000; therefore, no distinction is made among the Alternatives for this criterion.

The **State Smart Growth Public Infrastructure Policy Act** establishes 10 Smart Growth criteria in state law that apply to state infrastructure projects. Each of the Alternatives would be constructed in accordance with this Act; therefore, no distinction is made among the Alternatives for this criterion.

With respect to **USGBC LEED Certification**, each of the Candidate Alternatives would pursue the maximum practicable certification level; therefore, no distinction is made among the Candidate Alternatives for this criterion.

As presented in **Chapter ES.3.17: Transition to Electric Buses**:

> *"…to the extent practicable, the Preferred Alternative that is selected should be such as to allow for the necessary flexibility to: proactively accommodate electric bus technology and ultimately support an all-electric bus fleet; and, promote and provide a more resilient and sustainable community facility and environment."*

After further evaluation, it has been determined that the future electric bus operations/maintenance technology (e.g., means of energy distribution, type of charging equipment) has not been established because it is only emerging, and may be different from the technology that MTA NYCT is currently testing/piloting. Based on the electric bus technology available today, all alternatives would require additional space for a mini substation, sub panels, and overhead charging stations, which does not substantially favor one alternative as compared to another. This technology is anticipated to further develop during the next several years; therefore, the electric buses criterion was not considered in the selection of the Preferred Alternative as there is not sufficient information available at this time to make an informed decision.

TABLE 3-4: COMPARATIVE EVALUATION WITH REGARD TO OTHER CONSIDERATIONS

DOMAIN	ALTERNATIVES			NOTES
	Alternative A (principally open parking)	Alternative B (partially open parking)	Alternative D (principally enclosed parking)	
Construction Environmental Protection Plan / ISO 14000 / State Smart Growth Public Infrastructure Policy Act	▲	▲	▲	No difference between Alternatives as all Alternatives will comply with mitigation commitments and with MTA construction standards.
USGBC LEED Certification	▲	▲	▲	MTA NYCT has registered the proposed project for LEED certification and the final design for each Alternative will achieve the maximum practicable level of certification.
Transition to Electric Buses	N/A	N/A	N/A	This criterion was not considered in this evaluation as sufficient technological information to make an informed decision is not available at this time.
Summary	▲	▲	▲	

▲ - Minor or No Impact
▬ - Moderate Impact
▼ – Major Impact
N/A – Not Analyzed

3.2.5 PUBLIC COMMENTS ON THE ALTERNATIVES PRESENTED IN THE DEIS

Following the publication of the DEIS, the public review process generated comments relevant to the three Candidate Alternatives. Analysis of the public comments on the DEIS, provided in **Chapter 25: Response to DEIS Comments**, indicates that six individuals remarked on the DEIS, which included: one elected official; two representatives from Queens Community Board 12; the president of Amalgamated Transit Unit Local 1056; one resident; and one private citizen. In aggregate, MTA presented 24 detailed responses to the comments provided based on material previously given in the DEIS.

Review of the public comments indicates that several interests and concerns are expressed. Some of the comments agreed that a new bus depot is needed. One commenter noted that the depot needs to be renovated to accommodate articulated buses and the elected official noted that a new depot would improve access for Southeast Queens commuters and improve frequency of bus service.

Concerns that the commenters expressed were primarily focused on the immediate neighborhood, such as residents along 165th Street and in the Allen Cathedral Senior Residence located to the south of the property. These concerns included:

- Air pollution / adverse health impacts
- On-street parking of buses and employee parking
- Traffic congestion
- Construction duration and impacts
- Safety and health concerns
- Noise and vibration impacts

Several commenters preferred the partially (Alternative B) or fully enclosed parking (Alternative D) alternatives. The Transportation Committee Chairwoman for Queens Community Board 12 noted that it would be "*deleterious to the people that live in that area to have an open depot*" and the elected official noted that Alternative D "*would demonstrate maximum potential in terms of minimizing adverse effects to the community*".

3.2.6 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The Final Environmental Impact Statement (FEIS) has been completed and accepted by MTA NYCT. The FEIS was prepared consistent with the requirements of the New York State Environmental Quality Review Act (SEQRA) Article 8 of the New York State Environmental Conservation Law (ECL). SEQRA requires public agencies to conduct an environmental review of any construction project that has the potential for environmental impacts.

MTA NYCT reviewed fifteen potential alternatives for depot concepts and designs and narrowed down these alternatives to Candidate Alternatives. These options best met the future bus depot requirements for maintenance, operations, and bus storage capacity and were evaluated in the FEIS. The three (3) Candidate Alternatives are:

- Candidate Alternative A: has principally open parking. All bus parking would be outdoors on the roof and in an unenclosed paved area;
- Candidate Alternative B: has partially open parking. Some bus parking would be outdoors on the roof of the depot and the rest of the bus parking would be within an indoor, enclosed, and climate-controlled area of the depot; and,
- Candidate Alternative D: has principally enclosed parking. All bus parking would be indoors, within an enclosed and climate-controlled area of the depot facility.

The EIS analyses demonstrated that there would be no unavoidable significant adverse environmental impacts (i.e., Air Quality, Noise and Vibration, Traffic, etc.) from any of the three Candidate Alternatives for both the construction and operational conditions. However, the evaluation did demonstrate that, from engineering and economic perspectives, Candidate Alternatives B and D would be: more complex to design (larger buildings with more integrated systems) as one singular facility when operational); more difficult to construct (increasing construction duration, require more phasing of construction, more structural components); cost more to build (Alternative A = $385M, B = $493M, Alternative D = $519M) and maintain (more HVAC systems, air exchangers, heating, cooling); and, have higher ongoing energy usage (more equipment).

MTA/NYCT prepared and issued the DEIS on June 5, 2019 and held a Public Hearing on June 27, 2019. The associated comment period for the FEIS closed on July 19, 2019. During the DEIS comment period, six individuals submitted commentary to NYCT (in letters, on the website, and via oral and written testimony) and the commentary is presented in Volume 3 of the FEIS. MTA/NYCT reviewed, considered and responded to all comments and presented our Response to Comments in Volume 2, Chapter 25 of the FEIS.

MTA NYCT has concluded that Candidate Alternative A is the Preferred Alternative because, it demonstrates *the greatest potential to minimize, based on an integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the reconstructed Jamaica Bus Depot (see* ***Table 3-5: Comparative Evaluation with Regard to Environment, Engineering, and Economic Effects/Impacts****)*. As project design for the Preferred Alternative proceeds after the close of the EIS process, MTA NYCT will continue to work with: ***"…all appropriate parties…on a regular/routine basis…"*** as MTA NYCT has committed in this FEIS.

TABLE 3-5: COMPARATIVE EVALUATION WITH REGARD TO ENVIRONMENTAL, ENGINEERING, ECONOMIC EFFECTS/IMPACTS AND OTHER CONSIDERATIONS

DOMAIN	ALTERNATIVES		
	Alternative A (principally open parking)	**Alternative B (partially open parking)**	**Alternative D (principally enclosed parking)**
Environmental	▲	▲	▲
Engineering	▲	—	▼
Economic	▲	—	▼
Other Considerations	▲	▲	▲
Summary	▲	—	▼

▲ - Minor or No Impact
— - Moderate Impact
▼ – Major Impact

To allow a greater understanding of potential environmental impacts and the basis for selecting Candidate Alternative A as the Preferred Alternative, the analyses presented in the balance of this FEIS continue to include Candidate Alternatives A, B, D, and the No Action Alternative.

3.3 TEMPORARY BUS STORAGE

All three Candidate Alternatives have been conceived, and their respective construction planned, to ensure that the facility remains operational throughout the construction period. Although it may be possible to store some buses on the project site during less intensive periods of construction, all three Candidate Alternatives would need to store approximately 170 buses off-site during the construction period. Thus, a critical component of the Proposed Action is the need to provide *off-site/off-street* bus storage throughout the construction period. Therefore, single or multiple temporary bus storage locations must be identified in advance of construction. Further, because the construction period would be expected to last approximately four years and the temporary bus storage would require moving buses between the depot and the off-site parking location(s), the related impacts/effects of bus movement to the off-site location(s) will also be analyzed in a supplemental environmental document.

NYCT has determined that the off-site bus storage must be sited within an approximate five-mile radius of the JBD to continue service at current levels. This radius is defined according to the need to provide timely maneuvering of buses between the depot and the temporary bus storage location(s), thus minimizing the logistical and economic complications of bus "deadheading" and employee movement, and without compromising routine bus services.

NYCT has retained outside consultants to identify and secure such property nearby. To date, NYCT has not identified suitable candidate locations for the temporary bus storage; therefore, NYCT will provide supplemental environmental documentation prior to the acquisition of the temporary bus storage location. Construction of the depot will be delayed until a site is secured.

4.0 TRANSPORTATION

4.1 INTRODUCTION

This chapter analyzes potential effects from the ***operation*** of the proposed Reconstruction and Expansion of Jamaica Bus Depot (the Proposed Action) on traffic and transportation. The potential effects from the construction of the proposed action are analyzed in **Chapter 17.0: Construction Methods and Activities**.

The objective of the transportation analyses is to determine whether the Proposed Action may have a ***potential significant impact on traffic operations and mobility, public transportation facilities and services, pedestrian elements and flow, safety of roadway users (pedestrians, cyclists, transit users and motorists), on- and off-street parking, or goods movement.*** The chapter discusses:

- **Traffic and Parking**
- **Transit and Pedestrians**

The *Traffic and Parking section* evaluates the traffic operations, travel characteristics, and parking conditions within the study area for the Proposed Action, which includes:

- The roadway network within the study area;
- Methodologies used to evaluate traffic and parking;
- Characteristics of the existing traffic and parking conditions; and,
- Evaluation finding for the potential impact of the Candidate Alternatives on intersection operations and parking supply.

Similarly, the *Transit and Pedestrian section* describes the transit and pedestrian characteristics of the study area for the Proposed Action and:

- Identifies the existing transit service and pedestrian network; and,
- Outlines the criteria and methodology required for analysis.

Possible mitigation measures to address potential traffic impacts are also identified in this chapter.

4.2 CONTEXT AND KEY ISSUES

The proposed JBD is located within Jamaica Queens and is predominantly bordered by residential land uses to the south and west, and by commercial and industrial/manufacturing land uses to the north and east.

Traffic and transportation operations have been examined in the EIS process to *assess the effect of the Proposed Action on local traffic, parking, transit, and pedestrian operations.* Whereas three Candidate Alternatives were developed (see **Chapter 3.0: Candidate Alternatives**) to assess representative conceptual designs of the structure for the reconstructed JBD facility, from a *transportation perspective*, all three Candidate Alternatives provide the same:

- number of driveway locations;
- on-site circulation patterns; and,
- bus service, washing, and maintenance areas.

The two *primary differences* among the Candidate Alternatives that would affect traffic and parking conditions include the *increased number of buses and bus storage capacity* and the *associated increase in the number of employees/operators* that would commute to/from the proposed reconstructed depot.

The existing JBD and the properties along Merrick Boulevard can store 200 standard bus equivalents[8] (SBEs). The Candidate Alternatives are planned to accommodate bus storage capacities of:

- 305 SBEs (Candidate Alternative A);
- 309 SBEs (Candidate Alternative B); and,
- 338 SBEs (Candidate Alternative D).

The traffic routing and bus circulation patterns for each Candidate Alternative is assessed in this chapter because the proposed JBD bus entrance and exit driveway will be relocated. In addition to examining the effect of increased bus/employee trips for each of the Candidate Alternatives bus parking capacities, the analysis also considers *three bus routing strategies for buses* returning to the depot at the end of their service runs to understand potential effect on traffic operations. Therefore, the traffic analysis examines the Candidate Alternatives in regard to:

- The *effect of increased bus and employee trips generated by the Proposed Action on the study area roadway network*; and,
- The effect of *changes to the depot's entrance and exit locations* on bus movements within the traffic study area.

Each Candidate Alternative would have sufficient on-site capacity for bus storage. *The number of employees* commuting to/from the facility each day would increase and potentially affect the demand for on-street parking near the depot. A *detailed assessment of on-street parking conditions* has been performed and is also described in this chapter.

The chapter also assesses the *existing roadway crash history* on the study area roadway network and the potential *effect of increased bus operations on safety*. The assessments are based on three years of crash data from NYCDOT and were examined to determine predominant crash types (i.e., rear-end, sideswipe, pedestrian, etc.) that may be influenced by increased bus trips from the Proposed Action; and, to identify potential safety improvement measures.

[8] A SBE represents a standard bus configuration (standard 40-foot-long, single- unit bus). A 60-foot-long articulated bus is normalized to 1.5 SBEs and a 45-foot-long express bus is normalized to 1.15 SBEs.

4.3 SUMMARY AND CONCLUSIONS

4.3.1 TRAFFIC AND PARKING

As described below, the Proposed Action would affect traffic volumes on the local study area street network as a result of:

- *increased number* of bus and employee trips to/from the proposed JBD; and,
- *reconfiguration* of bus movements/bus circulation on the street and within the proposed JBD.

4.3.1.1 INCREASED BUS TRIPS

With the Proposed Action, ***the number of physical buses*** parked on-site would increase: from 200 to 240 buses for Candidate Alternative A; 244 buses for Candidate Alternative B; and, 266 buses for Candidate Alternative D. ***Note: The actual numbers of physical buses for the Candidate Alternatives are lower than the SBE totals because most of the buses to be maintained at the proposed JBD are anticipated to be the longer articulated and express bus types that require more space for parking than a single SBE.***

Bus storage capacity and number of employees would increase in the Build Year 2025 of all three Candidate Alternatives. Bus parking is defined in units of SBEs; an SBE represents the space needed to park a standard 40-foot-long, single-unit bus. NYCT also operates longer buses, such as express buses, *which are 45 feet long*, and articulated buses, which are 60 feet long. Because these buses are longer, their parking spaces, an express bus is 1.15 SBEs and an articulated bus is 1.5 SBEs for parking space calculations.

*The existing JBD currently has a storage capacity for 200 standard buses (157 SBEs within the original JBD property and 43 SBEs within the newly acquired properties along Merrick Boulevard). A*ll three Candidate Alternatives A, B, and D would be designed to accommodate express and articulated buses and provide O & M services and parking capacity respective 305, 309, and 338 SBEs.
Overall, the largest proposed JBD design, in terms of bus capacity is Candidate Alternative D, which is estimated to accommodate storage for 66 more physical buses (*a 33 percent increase over the* number of buses currently stored at the existing JBD). The proposed JBD is estimated to employ additional bus operators, administrative staff, and vehicle maintainers. The number of additional daily employees was estimated to be: 102 employees for Candidate Alternative A; 131 for Candidate Alternative B; and, 165 for Candidate Alternative D, which would generate up to 30 new vehicle trips on the adjacent street network during the AM and PM peak hours.

The traffic analysis findings indicate that each of the Candidate Alternatives would result in *a significant traffic impact at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour.* This intersection is currently a two-way stop-controlled intersection, with STOP signs on the east- and west-bound Tuskegee Airmen Way approaches. ***Installing a traffic signal at this intersection is one potential measure that would mitigate the adverse traffic impact***. The NYCDOT requires a comprehensive investigation of traffic conditions to determine the necessity for traffic signal installation. Existing traffic and operational conditions at the intersection of Tuskegee Airmen Way at 165th Street intersection meet traffic control signal needs studies as per the *CEQR Traffic Signal Warrant Analysis* for Warrant 3: Peak Hour Traffic Volumes. Installing a traffic signal would improve intersection operations to an acceptable Level of Service (LOS) C conditions or better for all approaches.

An alternative mitigation option, which would limit the volume of future bus traffic through this intersection, and avoid creating a significant impact, *is to reroute all AM peak hour buses that were* *originally assigned to exit the Proposed JBD via Tuskegee Airmen Way to exit via Merrick Boulevard*. This mitigation option would require the removal of the raised center median on Merrick Boulevard opposite the driveway located midblock between Tuskegee Airmen Way and 107th Avenue so that buses may turn left onto Merrick Boulevard northbound.

The final decision regarding the measures to be implemented to avoid this potential impact would be made in consultation with NYCDOT during the post-EIS project design phase.

4.3.1.2 BUS ROUTING

As previously noted, buses returning to the existing JBD in the late afternoon or evening often form a queue in the existing bus storage area while waiting to enter the depot's main entrance for fueling and washing. The Proposed Action would have three fueling/washing lanes to service the buses. This is an increase from the two lanes at the existing JBD and results in a shorter queue.

Three bus routing strategies to enter the fueling/wash lanes that prescribe a specific approach route and queue location for returning buses were examined. Based on the assessment, MTA NYCT analyzed a routing strategy that would direct all returning buses to southbound Merrick Boulevard to enter the depot via the south Merrick Boulevard driveway. This routing strategy was preferred as all returning buses would be able to queue on the depot property when waiting to enter the fueling lanes. Buses would move to the north end of the NYCT property where they could turn into the fueling lanes using the depot's north apron area, separate from the Tuskegee Airmen Way sidewalk and pedestrians. This preferred routing strategy was used for the traffic analyses; however, the final decision regarding the preferred bus routing strategy will be made in consultation with NYCDOT during the post-EIS project design phase.

4.3.1.3 INCREASED EMPLOYEE TRIPS

No significant parking impacts would be expected on the streets within a ¼-mile radius of the proposed JBD from employee parking. *The Proposed Action would potentially increase on-street parking demand by up to 32 vehicles for personal employee vehicles*, which would increase the shortfall *for available on-street parking to34 spaces* in the study area on a typical weekday. This shortfall is not considered *a significant* impact due to the availability and proximity of transit in the area. Furthermore, MTA NYCT encourages their employees to use public transit to commute to work by providing a MetroCard as part of their employee compensation package. Alternative travel modes are available for the JBD employees including six local NYCT bus routes that operate along Merrick Boulevard and Liberty Avenue. If feasible, and as noted in Response-to-Comments in the Final Scoping Document, future depot management may also identify opportunities to provide some on-site parking at the proposed JBD for employees during the day when buses are in service on their assigned bus routes.

4.3.2 TRANSIT AND PEDESTRIANS

According to the *CEQR Technical Manual*, detailed transit analyses are required if a proposed action is projected to result in an increase of 200 or more passengers at a single subway station or on a single subway line or if a proposed action would result in 50 or more bus passengers being assigned to a single bus route (in one direction) during the AM and PM peak hours. Quantitative pedestrian analyses are required if a Proposed Action results in more than 200 new pedestrian trips.

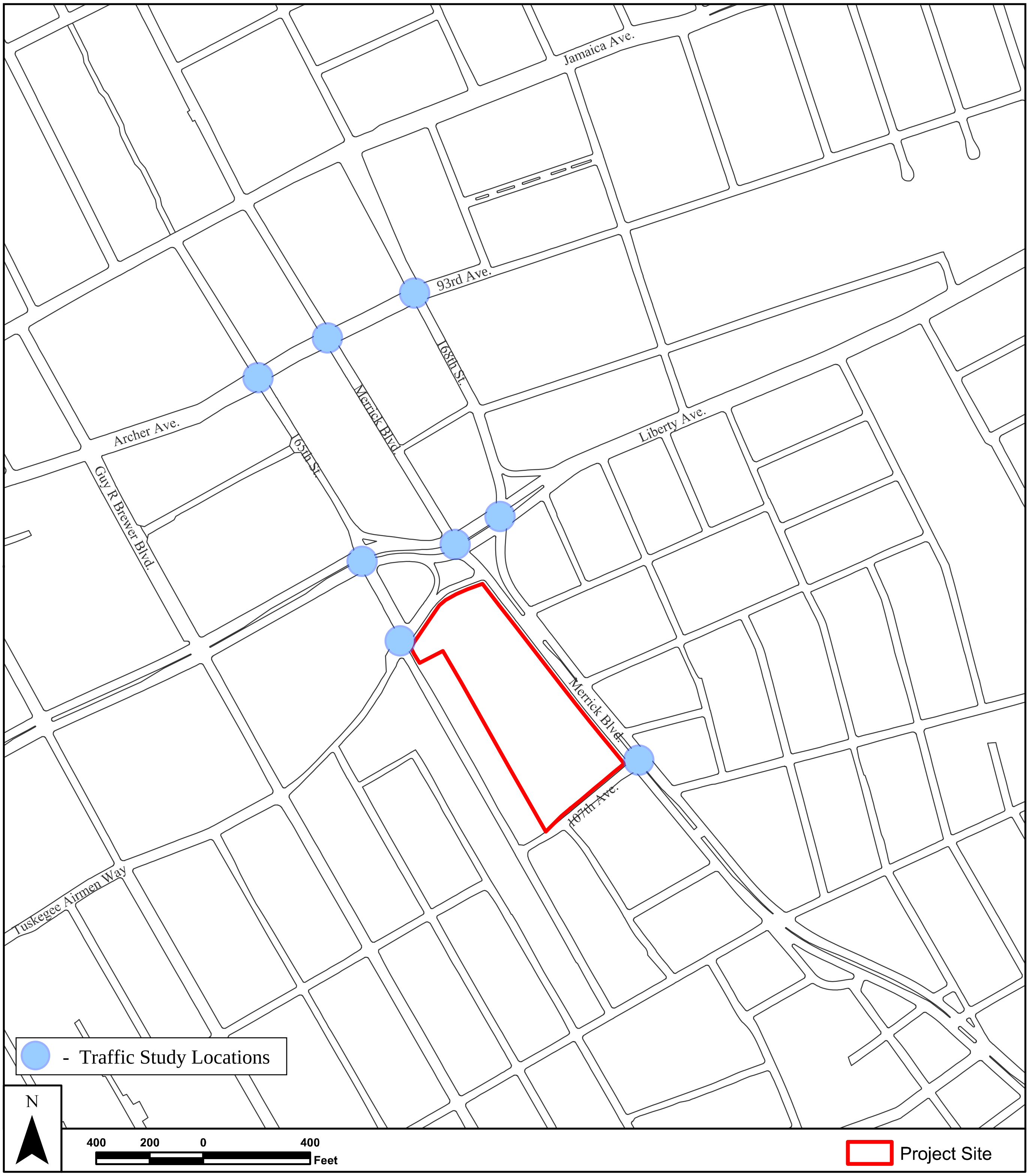
The number of daily employees at the proposed JBD is projected to increase by up to 165 new employees, depending on what alternative is identified as the Preferred Alternative. Given that *the net increase in* *employees from current staff levels is less than 200 employees,* of which only a portion are expected to travel during the AM and PM peak hours (the proposed JBD would utilize a staggered shift schedule that is similar to current operations), transit and pedestrian related activities generated by the Proposed Action *would not exceed the CEQR Technical Manual* screening criteria. Therefore, *detailed analysis of transit and pedestrian conditions are not required*, and the Proposed Action would not result in any significant adverse transit or pedestrian impacts.

4.4 TRANSPORTATION STUDY AREA

The study area for transportation analyses in this FEIS is illustrated **on Figure 4-1: Traffic Study Area** and generally extends between Archer Avenue/93rd Avenue to the north, 168th Avenue to the east, 107th Avenue to the south, and 165th Street to the west. After considering the primary routes of buses traveling between the proposed JBD and their start/end points, determining the routings to the depot that will be examined, observing relative traffic levels on the roadways, and consulting with NYCDOT, it was determined that the traffic analysis would be focused at the intersections of:

- Archer Avenue at 165th Street
- Liberty Avenue at 165th Street
- Archer Avenue/93rd Avenue at 168th Street
- Liberty Avenue at 168th Street
- Merrick Boulevard at 107th Avenue
- Archer Avenue at Merrick Boulevard
- Merrick Boulevard at Liberty Avenue
- 165th Street at Tuskegee Airmen Way

Traffic and pedestrian data were collected at these key intersections as discussed in Sections 4.5.3.1 and 4.6.4.2 below.



Source: STV Incorporated, 2019.

Figure 4-1

Traffic Study Area

Reconstruction and Expansion of Jamaica Bus Depot

4.5 TRAFFIC AND PARKING

4.5.1 INTRODUCTION

This section describes:

- the traffic operations, travel characteristics, and parking conditions within the study area as related to the operation of the Proposed Action;
- the roadway network of the study area; and,
- the methodology used to evaluate traffic and parking.

The following sections characterize the existing traffic and parking conditions, summarize the potential impact of the Candidate Alternatives in the Build Year on intersections and parking supply, and identify possible mitigation measures, as appropriate.

4.5.2 ROADWAY NETWORK

The streets within the study area form a regular grid network, but with the grid rotated such that streets are at diagonals to true north. Most arterials, collectors, and local streets in the vicinity of the JBD are two-way northwest-southeast and northeast-southwest roadways. For the purposes of the transportation analyses, the northwest-southeast and northeast-southwest roadways are considered north-south and east-west roadways, respectively, and will be referred to as such for the remainder of this chapter. The key travel routes within the study area are:

- Merrick Boulevard is a two-way, north-south, urban principal arterial that extends from Hillside Avenue to the north to Hook Creek Boulevard to the south. In the study area, Merrick Boulevard provides two travel lanes per direction, curbside parking on each side of the street, and turning lanes at key intersections. South of Liberty Avenue, the north and south travel movements along Merrick Boulevard are generally separated by a raised, concrete, center median, except for the roadway segment opposite the current JBD's entrance/exit driveway. North of Liberty Avenue, the northbound travel lanes become 168th Street (one-way northbound) and the one-way southbound lanes are considered Merrick Boulevard. Merrick Boulevard serves local MTA NYCT bus routes Q4, Q5, Q84, and Q85, and the Nassau Inter-County Express (NICE) bus routes N4/N4X.
- 168th Street is a one-way urban minor arterial that extends from Francis Lewis Boulevard to the north to Liberty Avenue to the south. In the study area, 168th Street provides two northbound moving travel lanes, one curbside parking lane, and serves local MTA NYCT bus routes Q4, Q5, Q84, and Q85.
- Archer Avenue is a two-way, east-west, urban minor arterial from the Van Wyck Expressway Service Road to the west to 168th Street to the east. It continues east of 168th Street by the name of 93rd Avenue. Through the study area, the corridor generally provides one travel lane per direction, an eastbound exclusive bus lane to Merrick Boulevard, and turn lanes at key intersections. Archer Avenue serves numerous local and express MTA NYCT bus routes including Q4, Q5, Q20A, Q20B, Q24, Q30, Q31, Q83, Q84, Q85, Q44 Select Bus Service, and the NICE bus routes N4/N4X.
- Liberty Avenue is a two-way, east-west, urban principal arterial that extends from Mother Gaston Boulevard to the west to Farmers Boulevard to the east. In the study area, two travel lanes and a curbside parking lane are provided in each direction. Left-turn lanes are provided at key

intersections such as at 165th Street, Merrick Boulevard, and 168th Street. Liberty Avenue serves local MTA NYCT bus routes Q42 and Q83, and express route X64.

4.5.3 METHODOLOGY

Data were compiled in the study area for existing conditions as described below. Intersection capacity analyses were conducted at the eight key intersections as **identified in Section 4.4: Transportation Study Area** in the study area using the analytical procedures described in the *Highway Capacity Manual 2000 (HCM 2000)*, published by the Transportation Research Board, National Research Council, Washington, D.C., and modeled using Synchro (Version 10) software. *While this FEIS meets SEQRA requirements, SEQRA has no traffic guidelines; thus, the analysis was performed consistent with the analytical procedures of the CEQR Technical Manual, which meet the acceptance of NYCDOT*. Level of service (LOS) is the measure used to analyze intersections and roadway operations by categorizing traffic flows within quality levels based on vehicle speeds, density, and congestion. The criteria used to define LOS for each type of facility and impact criteria are described below in the following sections.

4.5.3.1 DATA COLLECTION

Turning movement counts (TMCs), including manual turning movement and vehicle classification counts, as well as 24-hour automatic traffic recorder (ATR) machine counts and pedestrian counts were collected for the study area. *ATR counts were conducted over a nine-day period*, from Saturday, October 20 through Monday, October 29, 2018 to provide continuous 24-hour traffic data recorded in 15-minute intervals. The ATR count data was used to adjust the one-day TMCs to average weekday conditions and define nighttime and weekend traffic flow levels.

The TMCs were collected at the study area intersections concurrently with the ATR counts on Tuesday, October 23, 2018 for the morning and evening peak periods of 6-9 AM and 4-7 PM. The counts were collected in 15-minute intervals and classified into three vehicle types: passenger cars; buses; and, heavy-duty trucks. The peak hour within each peak period was identified by summing the total of the four highest consecutive 15-minute intervals for all study intersections. Pedestrian counts were also collected simultaneous to the TMCs at selected study intersections.

A physical inventory of each study intersection was performed. Field reconnaissance surveys were conducted at these intersections to establish the existing physical characteristics including roadway and lane widths, the number of travel lanes, crosswalk widths, curb parking regulations, lane utilization (turn prohibitions), bus stop locations and signal timing/phasing data. Official intersection signal timing data was obtained from NYCDOT's Traffic Signal Bureau. The timings were field checked at the signalized intersections to verify actual traffic operation conditions.

Figure 4-2: AM Existing Traffic Network and **Figure 4-3: PM Existing Traffic Network** present the Existing AM and PM peak hour traffic volumes through the study area for an average weekday. The highest traffic volumes in the study area were identified at Merrick Boulevard and Liberty Avenue. Traffic volumes along Merrick Boulevard/168th Street generally range between 600 and 1,200 vehicles per hour (vph) per direction and are higher in the northbound direction during the AM peak hour (peaking at 1,000 vph) and in the southbound direction during the PM peak hour (1,200 vph).

Traffic volumes along Liberty Avenue are slightly lower ranging between 600 and 1,000 vph per direction and are higher in the westbound direction in the AM peak hour (peaking at 1,000 vph) and nearly balanced (1,000 vph per direction) during the PM peak hour.

Volumes along Archer Avenue/93rd Avenue are generally lower than along Liberty Avenue and Merrick Boulevard and range from 300 to 500 vph during the AM peak hour and from 390 to 640 vph during the PM peak hour. The higher volumes are eastbound during both peak periods.

Traffic volumes along 165th Street vary according to the time of day and location along the corridor. Traffic volumes on 165th Street are highest between Tuskegee Airmen Way and Liberty Avenue during the AM peak hour, especially in the northbound direction. Northbound traffic volumes are approximately 350 vph approaching Tuskegee Airmen Way. At Tuskegee Airmen Way, about 300 vph join the northbound traffic stream turning left from the eastbound approach resulting in nearly 600 vph traveling northbound on 165th Street at the Liberty Avenue approach. Some northbound motorists turn on Liberty Avenue; therefore, northbound volumes are lower (450 vph) approaching Archer Avenue. In the southbound direction, traffic volumes are generally less than 150 vph. During the PM peak hour, northbound traffic volumes are generally lower, with the highest volumes (300 vph) processed at the approach to Liberty Avenue. Southbound volumes along 165th Street are higher in the PM peak hour, with totals of approximately 250 vph at Liberty Avenue and about 190 vph turning right at Tuskegee Airmen Way.

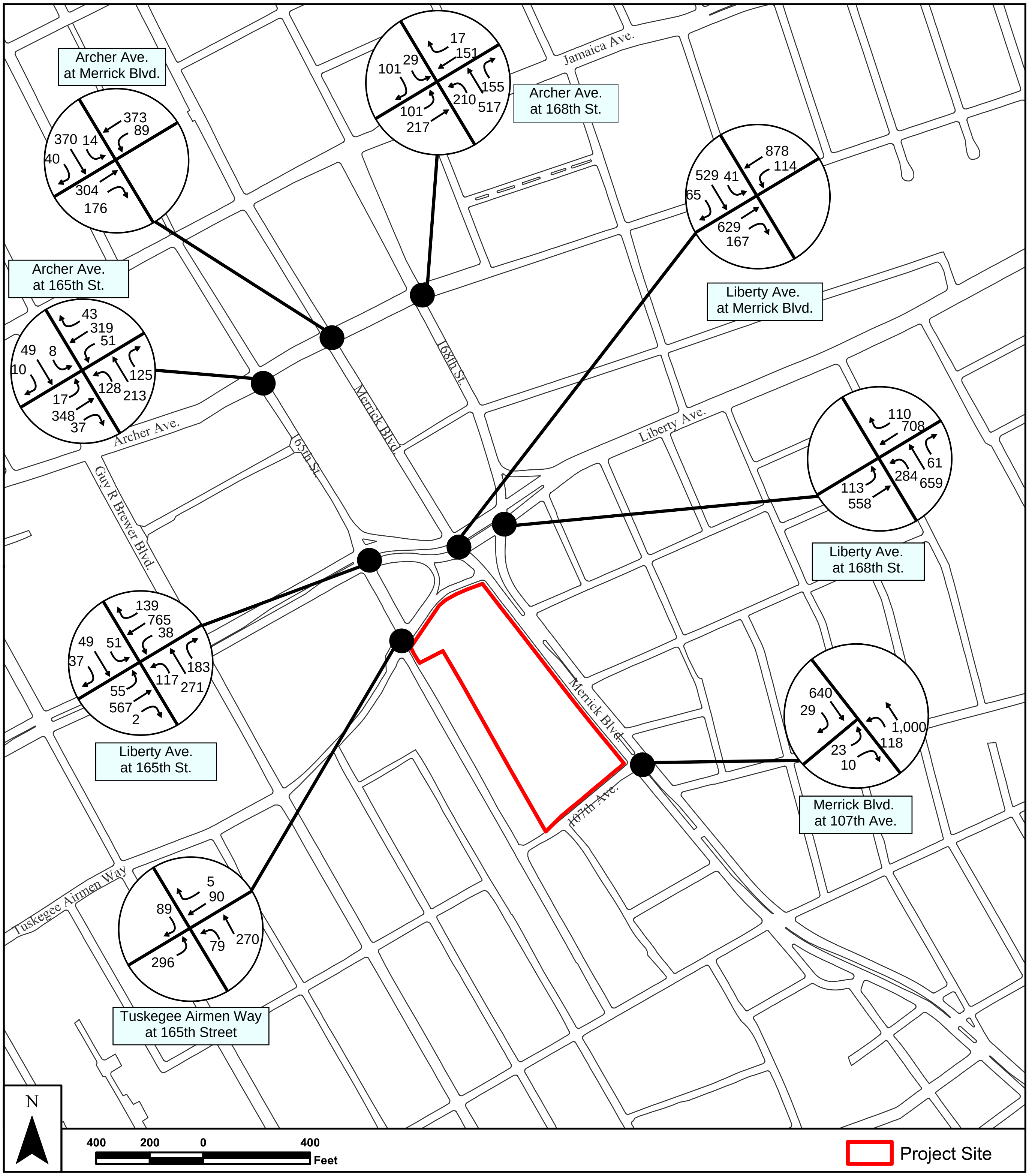
4.5.3.2 SIGNALIZED INTERSECTIONS

The *HCM 2000* procedures were used to determine the capacities and levels of service for each of the intersections comprising the study area. For a signalized intersection, levels of service are determined for the intersection and its individual lane groups and defined in terms of the average control delays experienced by all vehicles that arrive in the analysis period, including delays incurred beyond the analysis period when the intersection or lane group is saturated.

The delay levels for signalized intersections are detailed below and in **Table 4-1: Signalized Intersection LOS Criteria**.

- LOS A describes operations with very low delay, i.e., less than ten seconds per vehicle. This occurs when signal progression[9] is extremely favorable, and most vehicles arriving during the green phase would not have to stop at all.
- LOS B describes operations with delays in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. Again, most vehicles would not have to stop at the intersection.
- LOS C describes operations with delays in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression (i.e., about half of the vehicles approaching the intersection arrive on the green signal indication) and/or longer cycle lengths. The number of vehicles stopping at an intersection would be significant at this level, although many would still pass through without stopping.
- LOS D describes operations with delays in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, 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 delays in the range of 55.1 to 80.0 seconds per vehicle. This is considered the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios.

[9] Traffic signal progression is the method of coordinating multiple signalized intersections together so that platoons (groups) of vehicles can pass through several intersections without getting stopped at a red light.

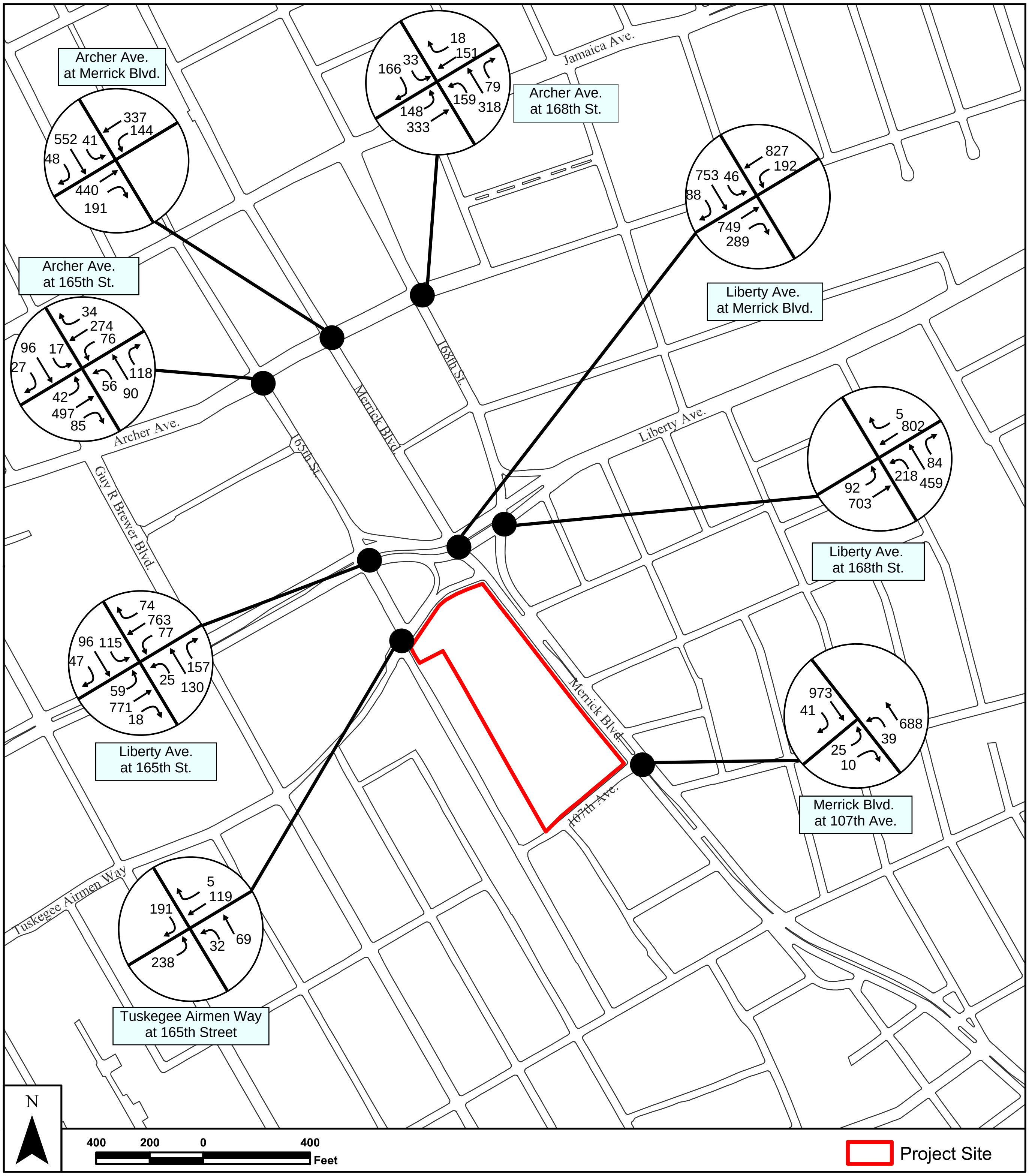


Source: STV Incorporated, 2019.

Figure 4-2

**Existing Condition Traffic Volume
AM Peak Hour**

**Reconstruction and Expansion
of Jamaica Bus Depot**



Source: STV Incorporated, 2019.

Figure 4-3

Existing Condition Traffic Volume
PM Peak Hour

Reconstruction and Expansion of Jamaica Bus Depot

- LOS F describes operations with delays in excess of 80.0 seconds per vehicle. This is considered 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 and, often vehicles would not pass through the intersection in one signal cycle.

TABLE 4-1: SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Average Delay per Vehicle (Seconds)
A	less than 10.1
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	greater than 80.0

Source: HCM 2000

4.5.3.3 UNSIGNALIZED INTERSECTIONS

The LOS thresholds for unsignalized intersections differ slightly from those for signalized intersections. Delay levels for unsignalized intersections are detailed below and in **Table 4-2: Unsignalized Intersection LOS Criteria**.

- 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 delays 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 delays 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 delays in the range of 25 to 35 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable, and longer traffic delays are experienced.
- LOS E describes operations with delays in the range of 35 to 50 seconds per vehicle. At LOS E, there is obvious congestion, and very long traffic delays are experienced at the intersection.
- LOS F describes operations with delays greater than 50 seconds per vehicle. At LOS F, there is heavy congestion, and excessive traffic delays are experienced at the intersection.

TABLE 4-2: UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Average Delay per Vehicle (Seconds)
A	less than 10.1
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	greater than 50.0

Source: HCM 2000

For signalized and unsignalized intersections, LOS A, B, and C are considered acceptable; LOS D is considered marginally acceptable for delays shorter than or equal to those at mid-LOS D; LOS D is considered marginally unacceptable for delays longer than those at mid-LOS D; and LOS E and F are considered unacceptable.

4.5.3.4 INTERSECTION IMPACT CRITERIA

Generally, traffic impacts may result from either construction of a project or its subsequent operation. This chapter addresses the traffic impact analysis for the operational condition of the proposed JBD in its opening year of 2025. The construction-related impact analysis is discussed in **Chapter 17.0: Construction Methods and Activities.** The identification of significant adverse traffic impacts at analyzed intersections is based on the following criteria presented in the *CEQR Technical Manual*.

- If a lane group in the Future With the Proposed Action condition is within LOS A, B or C, or marginally acceptable LOS D (i.e., delay less than or equal to 45.0 seconds/vehicle for signalized intersections and delay less than or equal to 30.0 seconds/vehicle for unsignalized intersections), the impact is not considered significant.
- If the lane group LOS would deteriorate from LOS A, B, or C in the No-Build condition to worse than mid-LOS D or to LOS E or F in the Future With the Proposed Action condition, a significant traffic impact is identified.
- For a lane group that would operate at LOS D in the No-Build condition, an increase in delay of 5.0 or more seconds in the Future With the Proposed Action condition is considered a significant impact if the Future With the Proposed Action delay would exceed mid-LOS D.
- For a lane group that would operate at LOS E in the No-Build condition, a projected Future With the Proposed Action increase in delay of 4.0 or more seconds is considered a significant impact.
- For a lane group that would operate at LOS F in the No-Build condition, a projected Future With the Proposed Action increase in delay of 3.0 or more seconds is considered a significant impact.

4.5.4 AFFECTED ENVIRONMENT

The affected environment assessed and described in this chapter encompasses traffic operations as indicated by intersection operations and level of service and parking related issues as related to the current parking supply and demand in the study area.

4.5.4.1 TRAFFIC

As discussed in **Section 4.4: Transportation Study Area**, eight intersections in the vicinity of the JBD were analyzed for 2018 daily peak operating conditions using HCM 2000 procedures. Traffic volumes, pedestrian crosswalk volumes, signal timing, intersection geometry (i.e., lane utilization, lane widths, parking regulations, etc.), and other pertinent information regarding each intersection were used in this analysis. The resulting output, consisting of volume-to-capacity ratios (v/c), individual movement and approach delays (seconds/vehicle), individual lane group and approach levels of service are presented in **Table 4-3: 2018 Existing Traffic Operations** for the weekday AM and PM peak hours. The analyses showed that the majority of intersection approaches in the study areas operate at acceptable levels of service with overall operations at LOS mid-D or better.

Following is a summary of intersections and movements that operate at unacceptable LOS mid-D, E, or F conditions.

Intersections:

- 165th Street and Tuskegee Airmen Way (LOS E in AM)

Movements:

- Eastbound Tuskegee Airmen Way left-turn movement at 165th Street operates at LOS F during the AM peak hour. This poor LOS condition may be attributed to the high left-turn volume (296 vehicles in the AM peak hour) that must wait at the eastbound stop-controlled approach until the uncontrolled north and southbound approaches clear of conflicting traffic.
- Eastbound Liberty Avenue left-turn movement at 168th Street operates at LOS E during the AM peak hour. This poor LOS is the result of a relatively high left-turn volume (113 vehicles in the AM peak hour) that must wait for gaps in the westbound traffic stream (708 vph) before turning left as there is no protected left-turn signal at this intersection approach.

TABLE 4-3: 2018 EXISTING TRAFFIC OPERATIONS

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Signalized								
165th Street and Archer Avenue								
Archer Avenue	EB	L	0.06	14.1	B	0.13	14.9	B
		TR	0.65	23.9	C	0.86	34.9	C
	WB	LTR	0.45	35.4	D	0.49	21.9	C
165th Street	NB	LTR	0.82	34.4	C	0.51	21.4	C
	SB	LTR	0.14	15.9	B	0.26	17.4	B
Overall Intersection		-		**30.4**	**C**		**26.3**	**C**
165th Street and Liberty Avenue								
Liberty Avenue	EB	L	0.41	15.1	B	0.39	25.0	C
		TR	0.57	10.9	B	0.71	24.5	C
	WB	L	0.20	14.6	B	0.59	31.3	C
		TR	0.61	16.7	B	0.57	16.0	B
165th Street	NB	LT	0.65	17.6	B	0.23	10.8	B
		R	0.31	11.7	B	0.25	11.1	B
	SB	LTR	0.23	11.0	B	0.45	13.4	B
Overall Intersection		-		**14.5**	**B**		**18.5**	**B**
168th Street and Archer Avenue/93rd Avenue								
Archer Avenue/93rd Avenue	EB	LT	0.38	12.8	B	0.53	14.6	B
	WB	TR	0.14	10.5	B	0.14	10.5	B
168th Street	NB	L	0.50	17.6	B	0.48	17.7	B
		TR	0.56	15.8	B	0.37	13.6	B
	SB	LR	0.31	13.9	B	0.40	15.0	B
Overall Intersection		-		**14.6**	**B**		**14.2**	**B**
168th Street and Liberty Avenue								
Liberty Avenue	EB	L	0.80	68.3	E	0.59	12.4	B
		T	0.40	35.9	D	0.47	2.0	A
	WB	TR	0.66	22.1	C	0.59	20.5	C
168th Street	NB	LTR	0.87	30.9	C	0.66	22.5	C
Overall Intersection		-		**30.9**	**C**		**15.3**	**B**
Merrick Boulevard and 107th Avenue								
107th Avenue	EB	LR	0.09	21.6	C	0.08	21.5	C
Merrick Boulevard	NB	L	0.47	17.2	B	0.27	14.6	B
		T	0.63	14.9	B	0.42	11.9	B
	SB	TR	0.51	13.1	B	0.68	16.0	B
Overall Intersection		-		**14.5**	**B**		**14.6**	**B**

TABLE 4-3: 2018 EXISTING TRAFFIC OPERATIONS (CONTINUED)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Merrick Boulevard and Archer Avenue								
Archer Avenue	EB	TR	0.45	20.5	C	0.53	30.2	C
	WB	LT	0.53	20.2	C	0.65	23.4	C
Merrick Boulevard	SB	LTR	0.42	18.1	B	0.53	19.8	B
Overall Intersection		-		**19.7**	**B**		**24.5**	**C**
Merrick Boulevard and Liberty Avenue								
Liberty Avenue	EB	T	0.68	29.3	C	0.76	32.0	C
		R	0.40	25.6	C	0.66	32.6	C
	WB	L	0.43	35.6	D	0.82	38.6	D
		T	0.63	26.6	C	0.58	9.5	A
Merrick Boulevard	SB	LTR	0.61	22.0	C	0.77	26.3	C
Overall Intersection		-		**26.4**	**C**		**24.5**	**C**
Unsignalized								
165th Street and Tuskegee Airmen Way								
Tuskegee Airmen Way	EB	L	1.03	98.3	F	0.49	17.8	C
	WB	TR	0.31	18.6	C	0.28	14.4	B
165th Street	NB	LT	0.06	2.2	A	0.03	2.7	A
	SB	R	0.06	0.0	A	0.14	0.0	A
Overall Intersection		-		**35.7**	**E**		**9.3**	**A**

- "Mvt." refers to the specific intersection approach lane(s) and how the lane(s) operate and/or specific pavement striping. TR is a combined through- right turn lane(s), R or L refers to exclusive right- or left-turn movement lane(s), and LTR is a mixed lane(s) that allows for all movement types.
- V/C is the volume-to-capacity ratio for the Mvt. listed in the first column. Values above 1.0 indicate an excess of demand over capacity.
- Level of service (LOS) for signalized intersections is based upon average control delay per vehicle (sec/veh) for each lane group listed in the Mvt. Column as noted in the 2000 HCM - TRB.
- The delay calculations for signalized intersections represent the average control delay experienced by all vehicles that arrive in the analysis period, including delays incurred beyond the analysis period when the lane group is saturated.
- LOS for unsignalized intersections is based upon total average delay per vehicle (sec/veh) for each lane group listed in the Mvt. column as noted in the 2000 HCM -TRB.

4.5.4.2 PARKING

On-street parking inventories and utilization surveys were conducted during weekday midday hours within a ¼-mile (a typical "walkable" radius) of the existing JBD. The on-street inventory included a compilation of all posted curbside regulations within the area surveyed. The curbside regulations within the parking study area are provided in **Appendix A: Traffic and Transportation**.

Generally, on-street parking is permitted within the study area. Many blocks have alternate-side parking regulations in effect once a week for street cleaning purposes; most prohibited time periods are in the late evening and early morning times (between midnight and 6 AM). Some blocks do not have any parking regulations, such as 165th Street. Within the parking study area, there are approximately 1,443 legal on-street commercial vehicle parking spaces during the weekday midday period (10 AM to 4 PM) and approximately 1,402 were utilized for a midday on-street utilization rate of 97 percent (see **Table 4-4: 2018 Existing On-Street Parking Supply and Demand**).

TABLE 4-4: 2018 EXISTING ON-STREET PARKING SUPPLY AND DEMAND

Parking Parameter	w/o Regs
Parking-Space Supply	1,443
Demand (Occupancy Rate)	1,402 (97%)
Spaces Available (Rate)	41 3%

4.5.4.3 SAFETY

According to *CEQR Technical Manual*, a high-crash location is one where 48 or more total crashes or five or more pedestrian/bicycle injury crashes occurred in any consecutive twelve-month period. A review of the crash data obtained from NYCDOT for the most recent three-year period of 2014 through 2016 indicated that none of the study intersections were high-crash locations (see **Table 4-5: 2014-2016 Crash Summary, Table 4-6: 2014-2016 Detailed Crash Summary by Year** and **Figure 4-4: Three Year Crash Total (2014-2016) By Location**).

The Archer Avenue intersections at Merrick Boulevard and 168th Street had the highest number of pedestrian-related crashes. The majority of the pedestrian crashes involved motorists failing to yield to pedestrians when turning at the intersections. Currently, NYCT buses also turn at these intersections and the volume of buses turning movements would likely increase with the proposed JBD. As a safety consideration, NYCDOT has implemented leading pedestrian intervals (LPIs), which allow pedestrians a seven-second head start (walk signal) crossing the intersections before the parallel traffic stream receives the green signal. This allows pedestrians to establish their presence in the crosswalk, thereby improving their visibility to motorists and reducing their exposure to turning vehicle traffic. NYCT will coordinate with NYCDOT to determine if this safety measure is needed and, if it is, identify any additional traffic studies that may be required prior to implementation. These efforts would occur after the Preferred Alternative is selected as a result of the EIS process.

The intersection of Liberty Avenue and 168th Street experienced the highest number of crashes in the study area. The predominant accidents types were overtaking (i.e., same direction sideswipe crash) and right-angle crashes. These crashes may be attributed to the skewed angled at which 168th Street intersects Liberty Avenue and potentially to the relatively short vehicle queuing distance (approximately 125 feet) on westbound Liberty Avenue between the Merrick Boulevard and 168th Street intersections. Currently, six NYCT bus routes travel through this intersection and the volume will likely increase with the Proposed Action. Suggested safety improvements could include adding pavement marking extension lines[10] through the intersection to help motorists stay within their lanes while traveling north through the intersection. Another consideration is adjusting the signal timing to clear vehicles off of Liberty Avenue between Merrick Boulevard and 168th Street before the start of the 168th Street green phase. NYCT will coordinate with NYCDOT to verify if further study of this intersection would be needed, to confirm that the recommended safety measures are appropriate, and to determine if additional traffic studies would be required prior to implementation. These efforts would occur after the Preferred Alternative is selected as a result of the EIS process.

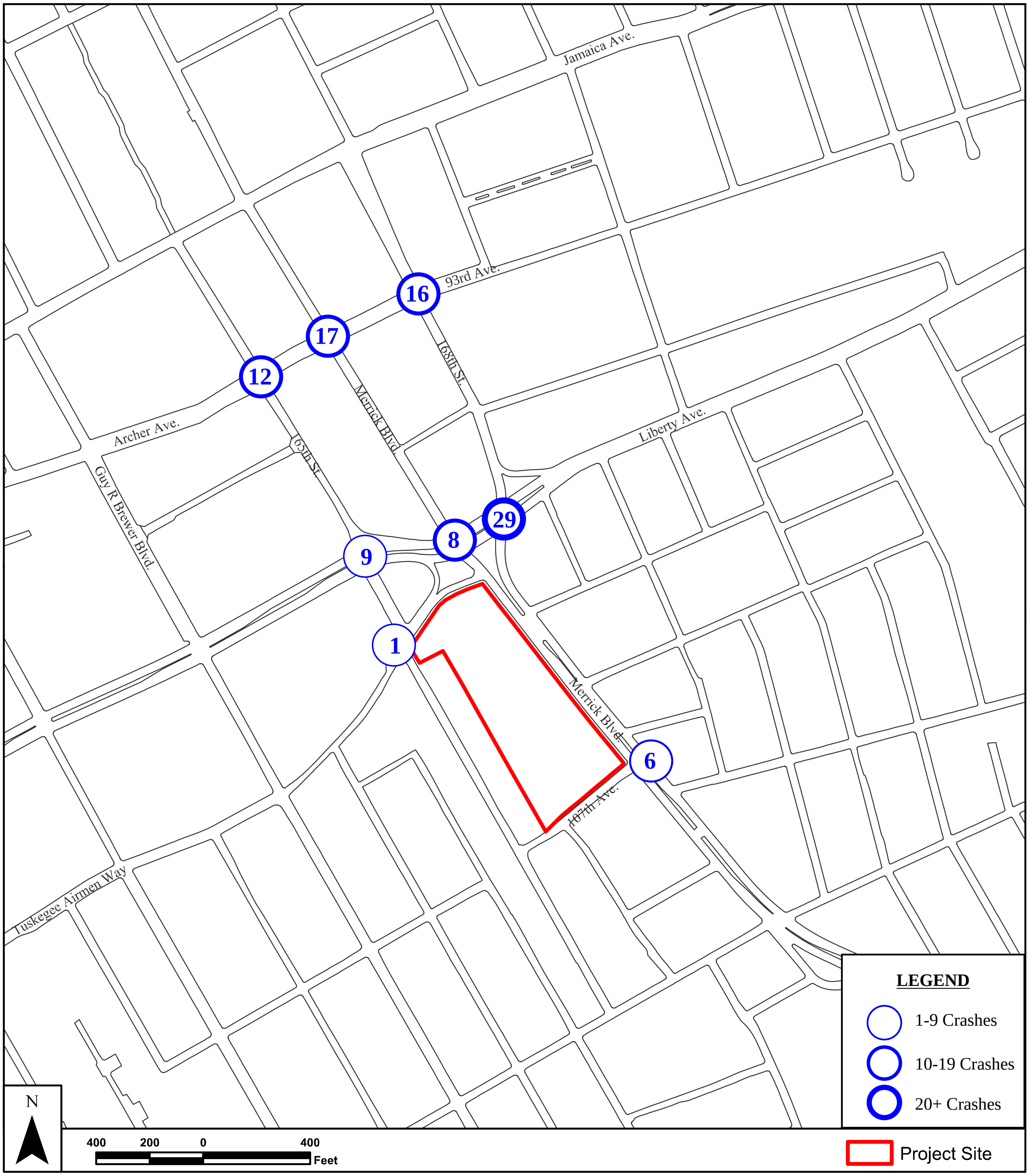
[10] Line extensions through intersections (as known as skip lines or cat tracks) are dotted or solid white lines that guide motorists through an intersection that may be skewed, offset, or complex. The line extension markings are used to extend longitudinal line markings through an intersection to provide control and guide vehicles along the desired travel path, thereby limiting sideswipe or head-on vehicle conflicts.

TABLE 4-5: 2014-2016 CRASH SUMMARY

Intersection		Crashes, 2014-2016				Injuries	Fatalities
		Total	Motor Vehicle	Pedestrian	Bicycle		
Archer Ave.	165th St.	12	9	3	0	19	0
	Merrick Blvd.	17	11	6	0	14	0
	168th St.	16	10	6	0	13	0
Liberty Ave.	165th St.	9	8	1	0	5	0
	Merrick Blvd.	8	8	0	0	11	0
	168th St.	29	26	2	1	38	0
107th Ave.	165th St.	1	0	1	0	1	0
	Merrick Blvd.	6	6	0	0	8	0
Tuskegee Airmen Way	165th St.	1	1	0	0	1	0

TABLE 4-6: 2014-2016 DETAILED CRASH SUMMARY BY YEAR

Intersection		Crashes												Injuries			Fatalities		
		Total			Motor Vehicle			Pedestrian			Bicycle								
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Archer Ave.	165th St.	5	5	2	4	4	1	1	1	1	0	0	0	3	13	3	0	0	0
	Merrick Blvd.	7	4	6	4	3	4	3	1	2	0	0	0	6	3	5	0	0	0
	168th St.	6	8	2	4	4	2	2	4	0	0	0	0	6	6	1	0	0	0
Liberty Ave.	165th St.	0	5	4	0	4	4	0	1	0	0	0	0	0	4	1	0	0	0
	Merrick Blvd.	2	3	3	2	3	3	0	0	0	0	0	0	2	5	4	0	0	0
	168th St.	9	9	11	8	7	11	1	1	0	0	1	0	10	10	18	0	0	0
107th Ave.	165th St.	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0
	Merrick Blvd.	3	3	0	3	3	0	0	0	0	0	0	0	3	5	0	0	0	0
Tuskegee Airmen Way	165th St.	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0



Source: New York City Department of Transportation - Transportation Information Management System, 2019; STV Incorporated, 2019.

Figure 4-4

Three Year Crash Total (2014-2016) by Location

Reconstruction and Expansion of Jamaica Bus Depot

4.5.5 ENVIRONMENTAL IMPACT

4.5.5.1 INTRODUCTION

The assessment of traffic impacts was performed for the No-Build (without the Proposed Action) and Future With the Proposed Action (with the reconstructed JBD) conditions for 2025, the opening year of the proposed JBD. The detailed traffic and parking analysis was performed to evaluate the effect of:

- increased number bus trips to/from the proposed JBD;
- increased number of employees; and,
- modified bus routing to/from the reconstructed depot due to a reconfiguration of site driveways and on-site circulation/operations.

As indicated in **Chapter 3.0: Alternatives**, there are three Candidate Alternatives under evaluation to assess a representative array of building design types. Additionally, for each Candidate Alternative, three separate bus routing strategies for buses returning to the proposed JBD at the end of their runs has been assessed to determine potential traffic-related impacts.

4.5.5.2 NO-BUILD ALTERNATIVE

Traffic

The analysis of the traffic conditions for the No-Build condition serves as the baseline against which impacts of operating the Proposed Action are compared. The No-Build analysis includes the traffic volume increases expected due to an overall growth in background traffic through and within the study area, and major real-estate developments and roadway system changes scheduled to be occupied or implemented by the future 2025 Build Year. A background growth rate of approximately three percent[11] was assumed for this area of Queens.

Aside from background growth, real-estate developments within the study area anticipated to be constructed and occupied prior to the Build Year 2025 have the potential to generate trips. Several, No-Build projects (projects that would happen with or without the reconstruction and expansion of the JBD) were identified in the study area and their anticipated vehicle trip generation/assignments were developed and incorporated into the No-Build traffic volume network, including:

- 165-20 Archer Avenue: 10-story, 206-room Holiday Inn Express Hotel (87,092 square feet)
- 92-32 Union Hall Street: 110-room hotel
- 92-33 168th Street: Mixed-use development with retail and 350 units of affordable residential housing (450,000 square feet)

Discussions with the Queens office of the New York City Department of City Planning (NYCDCP) indicated that several development projects are expected to be completed in the study area by 2025 and include the following:

- 163-05/25 Archer Avenue: Mixed-use 600-unit building

[11] The three percent background growth rate assumes an annual background growth of 0.50 percent for years 1 to 5 (2018 to 2023) and an annual growth of 0.25 percent for year 6 and beyond (2024-2025) as per the *CEQR Technical Manual*.

- 90-75 Sutphin Boulevard: 181-room hotel, 28,103 square feet of office space, and 3,729 square feet of retail
- 93-01 Sutphin Boulevard (The Crossing at Jamaica Station): 669 residential rental units in a 24-story building scheduled for completion in 2019 (669 rental units, 35,000 SF of retail space, and 187 above-grade parking spaces in a two-tower mixed-use complex)
- 93-43 Sutphin Boulevard: 221-room, 27-story hotel
- 148-18 Archer Avenue: 338-room hotel
- 149-03 Archer Avenue: 283-room, 18-story hotel
- United American Land Development Mixed-use Development: 4-story building on Jamaica Avenue between Union Hall Street and 160th Street
- 104-32 Merrick Boulevard: one-story commercial building with mezzanine

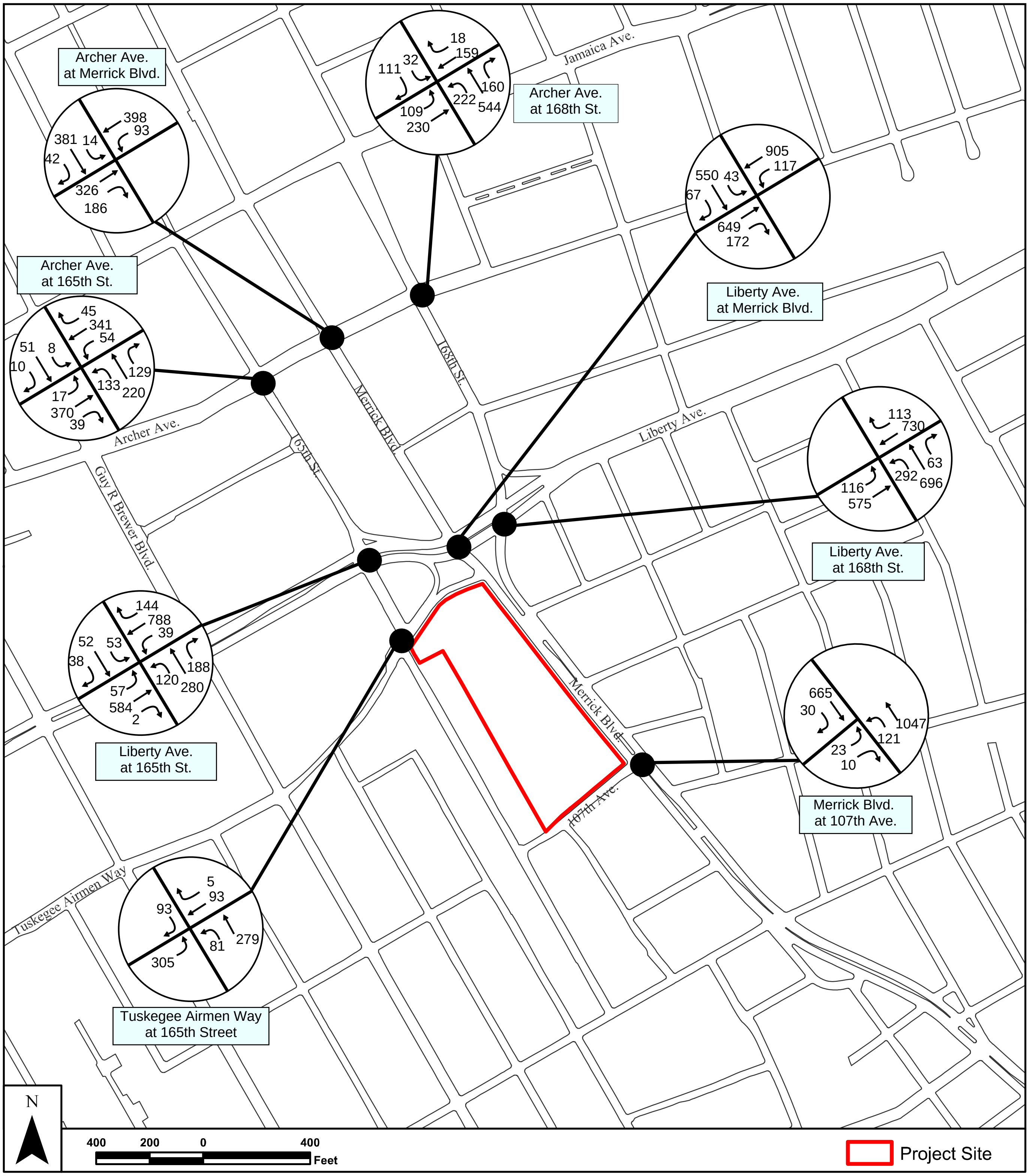
Few vehicle trips from these No-Build projects are anticipated to be traveling through the intersections studied for the proposed JBD due to the size of the No Build developments or the distance of these developments from the JBD. Therefore, vehicle trip generation for these No-Build projects was assumed to be included within the background growth rate due to their development size or distance from the study area.

Traffic volumes for the 2025 analysis year No-Build condition were developed by applying the background traffic growth rate of approximately three percent to the existing roadway volume networks and overlaying the trip generation from the No-Build developments. The resulting 2025 No-Build study area traffic volume network is presented on **Figure 4-5: No-Build Condition Traffic Volume - AM Peak Hour** and **Figure 4-6: No-Build Condition Traffic Volume - PM Peak Hour**, which indicate an increase in traffic volumes of approximately 20 to 50 vph per direction on the major arterial corridors of Merrick Boulevard and Liberty Avenue during the peak hours. Traffic volume increments along Archer Avenue and 165th Street are lower, with less than 30 vph during the peak hours.

No changes to the street network in the study area are anticipated by 2025. However, NYCDOT has a capital proposal to reconstruct Tuskegee Airmen Way between Merrick Boulevard and Guy R Brewer Boulevard to widen the roadway and create sidewalks. This project is currently unfunded and; therefore, not included in the 2025 No-Build traffic analysis.

Presented in **Table 4-7: 2025 No-Build Traffic Operations** are v/c (volume-to-capacity) ratios, individual movement and approach delays (seconds/vehicle), individual lane group and approach levels of service for year 2025 No-Build weekday AM and PM peak hours. With the relatively minor increase in traffic projected on the study area roadways between 2018 and 2025, No-Build levels of service are generally similar to existing conditions with slight increases in delay. Specific intersection movements that would deteriorate to a LOS mid-D, E, or F condition between 2018 and 2025 include:

- Eastbound Liberty Avenue left-turn movement at 168th Street would deteriorate within LOS E conditions during the AM peak hour.
- Westbound Liberty Avenue left-turn movement at Merrick Boulevard would deteriorate to unacceptable LOS D conditions during the PM peak hour.
- Eastbound Tuskegee Airmen Way left-turn movement at 165th Street would deteriorate within LOS F conditions during the AM peak hour.

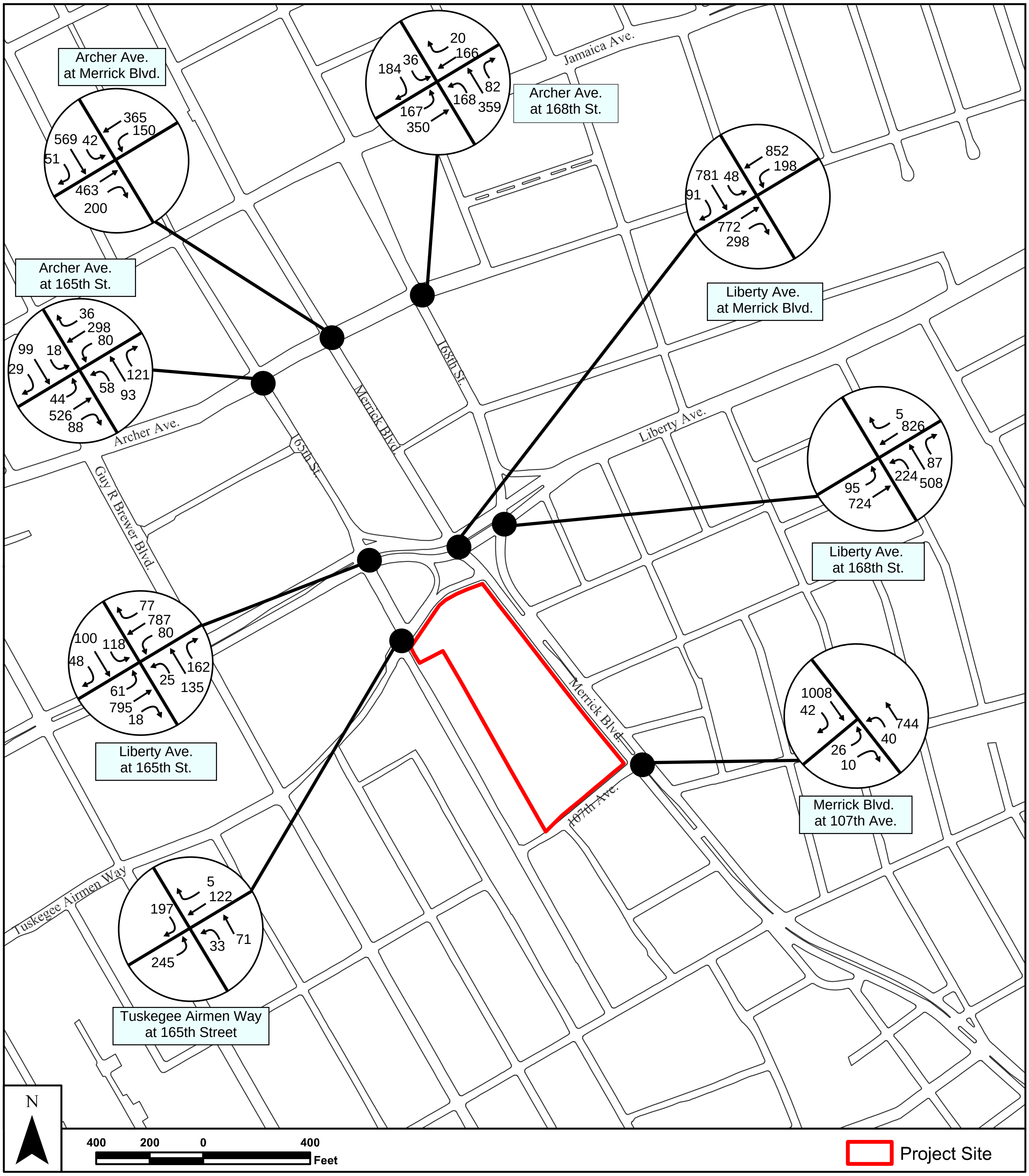


Source: STV Incorporated, 2019.

Figure 4-5

No-Build Condition Traffic Volume
AM Peak Hour

Reconstruction and Expansion of Jamaica Bus Depot



Source: STV Incorporated

Figure 4-6

No-Build Condition Traffic Volume
PM Peak Hour

Reconstruction and Expansion
of Jamaica Bus Depot

TABLE 4-7: 2025 NO-BUILD TRAFFIC OPERATIONS

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
__Signalized__								
165th Street and Archer Avenue								
Archer Avenue	EB	L	0.07	14.2	B	0.14	15.1	B
		TR	0.69	25.3	C	0.91	40.4	D
	WB	LTR	0.49	36.0	D	0.55	22.7	C
165th Street	NB	LTR	0.85	36.8	D	0.53	21.9	C
	SB	LTR	0.15	16.0	B	0.28	17.7	B
Overall Intersection		**-**		**31.8**	**C**		**28.8**	**C**
165th Street and Liberty Avenue								
Liberty Avenue	EB	L	0.45	16.5	B	0.43	26.2	C
		TR	0.59	11.0	B	0.73	25.0	C
	WB	L	0.21	14.9	B	0.65	36.6	D
		TR	0.63	16.9	B	0.59	16.3	B
165th Street	NB	LT	0.68	18.3	B	0.24	10.9	B
		R	0.32	11.8	B	0.26	11.2	B
	SB	LTR	0.24	11.1	B	0.47	13.7	B
Overall Intersection		**-**		**14.8**	**B**		**19.1**	**B**
168th Street and Archer Avenue/93rd Avenue								
Archer Avenue/93rd Avenue	EB	LT	0.41	13.1	B	0.57	15.4	B
	WB	TR	0.15	10.5	B	0.15	10.5	B
168th Street	NB	L	0.55	18.9	B	0.53	19.1	B
		TR	0.59	16.2	B	0.41	14.0	B
	SB	LR	0.35	14.5	B	0.45	15.8	B
Overall Intersection		**-**		**15.0**	**B**		**14.8**	**B**
168th Street and Liberty Avenue								
Liberty Avenue	EB	L	0.87	78.4	E	0.64	14.6	B
		T	0.41	35.8	D	0.49	2.0	A
	WB	TR	0.67	22.5	C	0.61	20.8	C
168th Street	NB	LTR	0.91	34.4	C	0.71	23.8	C
Overall Intersection		**-**		**32.9**	**C**		**16.0**	**B**
Merrick Boulevard and 107th Avenue								
107th Avenue	EB	LR	0.09	21.6	C	0.08	21.5	C
Merrick Boulevard	NB	L	0.50	18.5	B	0.30	15.7	B
		T	0.66	15.4	B	0.46	12.3	B
	SB	TR	0.53	13.4	B	0.70	16.6	B
Overall Intersection		**-**		**15.0**	**B**		**15.0**	**B**

TABLE 4-7: 2025 NO-BUILD TRAFFIC OPERATIONS (CONTINUED)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Merrick Boulevard and Archer Avenue								
Archer Avenue	EB	TR	0.48	20.7	C	0.56	30.4	C
	WB	LT	0.57	21.2	C	0.70	25.3	C
Merrick Boulevard	SB	LTR	0.43	18.3	B	0.55	20.1	C
Overall Intersection		-		**20.1**	**C**		**25.2**	**C**
Merrick Boulevard and Liberty Avenue								
Liberty Avenue	EB	T	0.70	29.9	C	0.79	33.0	C
		R	0.41	25.8	C	0.68	33.3	C
	WB	L	0.46	36.8	D	0.88	45.5	D
		T	0.65	26.9	C	0.60	9.4	A
Merrick Boulevard	SB	LTR	0.64	22.5	C	0.80	27.5	C
Overall Intersection		-		**26.8**	**C**		**25.6**	**C**
Unsignalized								
165th Street and Tuskegee Airmen Way								
Tuskegee Airmen Way	EB	L	1.12	128.7	F	0.52	18.7	C
	WB	TR	0.33	19.5	C	0.29	14.7	B
165th Street	NB	LT	0.07	2.2	A	0.03	2.6	A
	SB	R	0.07	0.0	A	0.14	0.0	A
Overall Intersection		-		**45.8**	**E**		**9.7**	**A**

Parking

Midday weekday parking demand in the study area was increased based on *CEQR Technical Manual* guidelines by one-half percent per year for the first five years and one-quarter percent for the sixth and seventh years, resulting in an approximate increase of three percent. The on-street parking demand is projected to rise to approximately 1,445 spaces or 100 percent of supply, thereby decreasing parking space availability from the existing three percent surplus to a zero percent surplus in the future 2025 No-Build conditions (see **Table 4-8: 2025 No-Build On-Street Parking Supply and Demand**).

TABLE 4-8: 2025 NO-BUILD ON-STREET PARKING SUPPLY AND DEMAND

Parking Parameter	Without Regulations in Effect
Parking-Space Supply	1,443
Demand (Occupancy Rate)	1,445 (100%)
Spaces Available (Rate)	41 0%

4.5.5.3 FUTURE WITH THE PROPOSED ACTION (BUILD YEAR 2025)

Three Candidate Alternatives were developed to assess representative depot building types for the Proposed Action. From a transportation perspective, the three Candidate Alternatives provide the same:

- number of driveway locations;
- on-site circulation patterns; and,
- areas for bus servicing, washing, and maintenance.

The two primary differences among the Candidate Alternatives that would affect traffic and parking conditions in the study area include: the increased bus parking capacity for each Candidate Alternative; and, the associated increase in the number of employees/operators that would commute to/from the reconstructed depot.

In addition to examining the effect of the increase of bus/employee trips, three different bus routing strategies were also assessed to better understand the potential impact of how buses returning to the depot may affect traffic operations. Therefore, the following traffic analysis examines the effect of increased bus trips on the study area roadway network, and the effect of modified bus routing to the proposed JBD at the end of their in-service run to determine potential impacts on the study area roadway network.

Candidate Bus Depot Alternatives – Effect of Increased Bus Parking Capacity

<u>Traffic Operations</u>

Bus storage capacity and depot employment would increase between existing conditions and the Future Build Year 2025 for all three Candidate Alternatives. The area needed to park one standard sized bus at NYCT depots is defined in units of SBEs; an SBE represents the space needed to park a standard 40-foot-long, single-unit bus. NYCT also operates longer buses, such as express buses, which are 45 feet long, and articulated buses, which are 60 feet long. Because these buses are longer, they would require a larger parking space; an express bus is 1.15 SBEs and an articulated bus is 1.5 SBEs for parking space calculations.

The proposed JBD currently has storage capacity for 200 standard buses (157 SBEs within the original JBD property and 43 SBEs within the new acquired properties along Merrick Boulevard) and does not service/maintain the longer articulated or express bus types. However, the proposed JBD would be designed to accommodate express and articulated buses. **Table 4-9: Bus Fleet Breakdown by Bus Type** provides a summary of the existing JBD bus fleet composition and compares it to the future estimated bus fleet projections, post-opening, for Candidate Alternatives A, B, and D. Note that the actual number of physical buses for Candidate Alternatives A, B, and D is lower than the SBE total as most of the buses are the larger articulated and express bus type that require more space for parking than a single SBE.

The 2025 Future With the Proposed Action operational traffic analysis initially examines conceptual depot design Candidate Alternative D as it would provide parking for the highest number of physical buses (266 buses), which represents a 33 percent increase over the existing depot capacity.

TABLE 4-9: BUS FLEET BREAKDOWN BY BUS TYPE

Bus Type	Existing Bus Depot		Alternative A		Alternative B		Alternative D	
	No. of Buses	*SBEs*	*No. of Buses*	*SBEs*	*No. of Buses*	*SBEs*	*No. of Buses*	*SBEs*
Standards	200	200	74	74	75	75	81	81
Standards – AEB	0	0	22	22	23	23	25	25
Articulated	0	0	124	186	126	188	137	206
Express	0	0	20	23	20	23	23	26
Total	200	200	240	305	244	309	266	338

Notes:
1. Standards and AEB buses quantify as 1 SBE
2. Articulated buses quantify as 1.5 SBEs
3. Express buses quantify as 1.15 SBEs
4. An AEB is an all-electric bus

Bus movements in and out of the existing JBD vary over the course of the day (see **Table 4-10: Existing Jamaica Bus Depot Bus Entry/Exit Movements**). Currently, 170 buses pull out of the JBD between 3 AM and 7:30 AM to serve the morning commuting period. Many of these buses return to the depot between 8:30 AM and 11 AM. Between 12:30 PM and 3 PM, another surge of approximately 110 buses depart the facility, many of them serving the bus passenger demand during the school dismissal period. Beginning at about 6:30 PM, buses begin returning to the depot at the end of their runs to be fueled, washed, and then parked overnight. Buses typically need to be on their routes and serving the public during the standard 7-9 AM and 4-6 PM commuting periods; consequently, the peak periods for buses entering and exiting the depot are typically before and after the commuter peak hours.

TABLE 4-10: EXISTING JAMAICA BUS DEPOT BUS ENTRY/EXIT MOVEMENTS

Time	Existing Bus Movement	
	In	Out
12 - 1 AM	18	4
1 - 2 AM	12	0
2 - 3 AM	5	0
3 - 4 AM	1	6
4 - 5 AM	3	28
5 - 6 AM	1	45
6 - 7 AM	0	76
7 - 8 AM	3	15
8 - 9 AM	34	3
9 - 10 AM	55	18
10 - 11 AM	29	20
11 AM - 12 PM	14	13
12 - 1 PM	15	20
1 - 2 PM	18	32
2 - 3 PM	10	66
3 - 4 PM	20	12
4 - 5 PM	31	31
5 - 6 PM	16	26
6 - 7 PM	20	11
7 - 8 PM	45	20
8 - 9 PM	53	14
9 - 10 PM	37	14
10 - 11 PM	27	9
11 PM - 12 AM	18	1

Bus movements in and out of the proposed JBD are assumed to be similar to existing patterns. The only difference is that the proposed JBD would accommodate additional buses and the number of bus trips entering/exiting would increase proportionately. Specifically, the number of trips would increase by 20, 22, and 33 percent, respectively, for Candidate Alternatives A, B, and D.

The incremental hourly increase in bus trips to/from the facility was combined with hourly traffic volumes processed on the adjacent roadway network to identify the peak hours for the traffic analysis. As presented in **Table 4-11: Existing Adjacent Roadway Traffic Volumes and Incremental Bus Depot Trips**, the AM and PM peak hours for the roadway network were selected for the traffic analysis as the cumulative volume of new bus trips and existing traffic would peak during these periods.

TABLE 4-11: EXISTING ADJACENT ROADWAY TRAFFIC VOLUMES AND INCREMENTAL BUS DEPOT TRIPS

Time	Existing Traffic Volume (Vehicles)		Incremental Bus Trips (Alternative D)	Total (Vehicles)
	Merrick Blvd.	Liberty Ave.		
12 - 1 AM	334	312	7	653
1 - 2 AM	225	204	4	432
2 - 3 AM	155	172	2	328
3 - 4 AM	125	180	2	307
4 - 5 AM	241	301	10	553
5 - 6 AM	557	626	15	1,198
6 - 7 AM	1,379	1,139	25	2,543
7 - 8 AM	**1,861**	**1,606**	**6**	**3,473**
8 - 9 AM	1,860	1,564	13	3,438
9 - 10 AM	1,451	1,293	24	2,768
10 - 11 AM	1,192	1,159	16	2,367
11 AM - 12 PM	1,231	1,135	9	2,375
12 - 1 PM	1,329	1,181	11	2,520
1 - 2 PM	1,394	1,233	17	2,644
2 - 3 PM	1,511	1,326	25	2,862
3 - 4 PM	1,728	1,557	10	3,294
4 - 5 PM	1,749	1,592	21	3,363
5 - 6 PM	**1,907**	**1,754**	**14**	**3,675**
6 - 7 PM	1,800	1,656	11	3,468
7 - 8 PM	1,596	1,351	21	2,968
8 - 9 PM	1,348	1,072	22	2,442
9 - 10 PM	1,007	806	17	1,830
10 - 11 PM	683	637	12	1,332
11 PM - 12 AM	498	437	7	942

The proposed JBD is anticipated to be complete in year 2025, and this year has been chosen as the Build Year for which traffic analyses were performed. The incremental changes to the future 2025 traffic network for each Candidate Alternative was developed by incorporating three separate traffic components:

- Increased number of bus trips to/from the expansion of the reconstructed depot
- Increased number of employee trips to/from the reconstructed depot
- Modification of existing bus movements into and out of the depot due to the relocation of driveways and on-site bus circulation

The proposed JBD is estimated to employ additional bus operators, up to three additional administrative staff, two additional maintainers, and one additional "shifter" (i.e., an employee who drives the buses through the fueling/washing lanes and parks the buses on-site for overnight storage). The estimated number of additional daily bus operators would be 96 for Candidate Alternative A, 125 for Candidate Alternative B, and 159 for Candidate Alternative D. The bus operators were assumed to arrive to work within the hour before their scheduled bus pull out time from the depot and assumed to depart for home within the hour of their bus pull in time to the depot. The administrative staff were assumed to arrive to work during the AM peak traffic analysis hour and depart during the PM peak traffic analysis hour. The additional maintainers and shifter are needed at the depot when the buses are returning for the day; therefore, these employees were assumed to arrive to the depot during the mid-afternoon hours and then depart later in the evening/night. For traffic analysis purposes, all of the employee commuting trips were conservatively assumed to be made by private auto. Overall, the total incremental number of vehicle trips (autos and buses) to and from the reconstructed depot would be 12 trips in the AM peak hour and 28 trips during the PM peak hour.

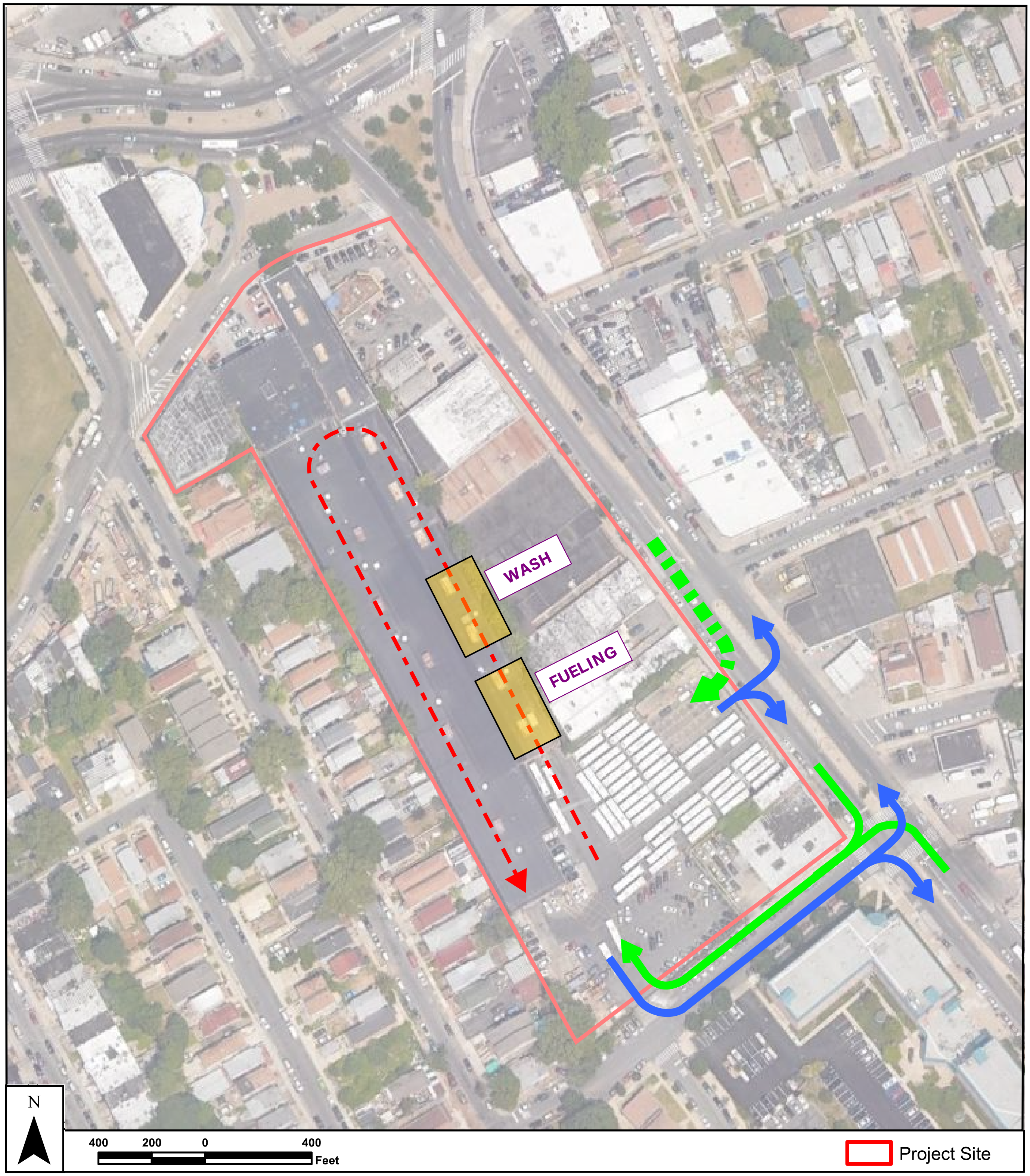
According to the *CEQR Technical Manual*, if a proposed development results in fewer than 50 peak hour vehicle trip-ends (such as this Proposed Action), further detailed traffic analyses would typically not be necessary as the potential for significant traffic impacts are unlikely. However, given that existing bus movements would also be rerouted as part of the Proposed Action, a detailed traffic analysis was performed.

Currently, bus movements to, from, and within the existing JBD typically follow the pattern depicted on **Figure 4-7: Existing Condition Bus Movements**. During the AM and PM peak hours, buses depart and access the depot via the 107th Avenue and Merrick Boulevard driveways. Buses that return to the depot during the morning and early afternoon hours typically layover in the outdoor bus parking areas near the Merrick Boulevard driveway.

Starting in the late afternoon, and continuing through the evening hours, as buses finish their runs for the day, the buses are refueled and washed in the depot. This process begins when the operators return their buses to the depot, typically through the Merrick Boulevard driveway, and queue (line up) their bus within a designated area of the parking area. Depot "shifters" then take buses through the fueling and bus wash lanes (see dotted red line on **Figure 4-7: Existing Condition Bus Movements**) before parking the buses on-site for the night.

The Candidate Alternatives consist of different building types; however, the driveway locations and on-site bus circulation movements would be similar. Buses departing the depot and destined to the north would likely depart the proposed JBD via the Tuskegee Airmen Way driveway and turn onto northbound 165th Street (see **Figure 4-8: Future Jamaica Bus Depot Bus Movements**). Buses departing the depot and destined to the south would likely depart the proposed JBD via the Merrick Boulevard driveway located midblock between 107th Avenue and Tuskegee Airmen Way. NYCT anticipates using flaggers at the Merrick Boulevard driveway to enhance safety and reduce conflicts between pedestrians on the sidewalk and buses at the depot exit. Note that buses may also exit onto Merrick Boulevard from each of the eighteen maintenance bays and pedestrians would be protected by NYCT flaggers if these movements should occur.

All returning buses were assumed to enter the proposed JBD via the southbound Merrick Boulevard driveway that would be located just north of 107th Avenue because: a driveway would be located close to the Merrick Boulevard/107th Avenue signalized intersection; and, Merrick Boulevard has a raised center median at this driveway location, which would prevent turns from northbound Merrick Boulevard.

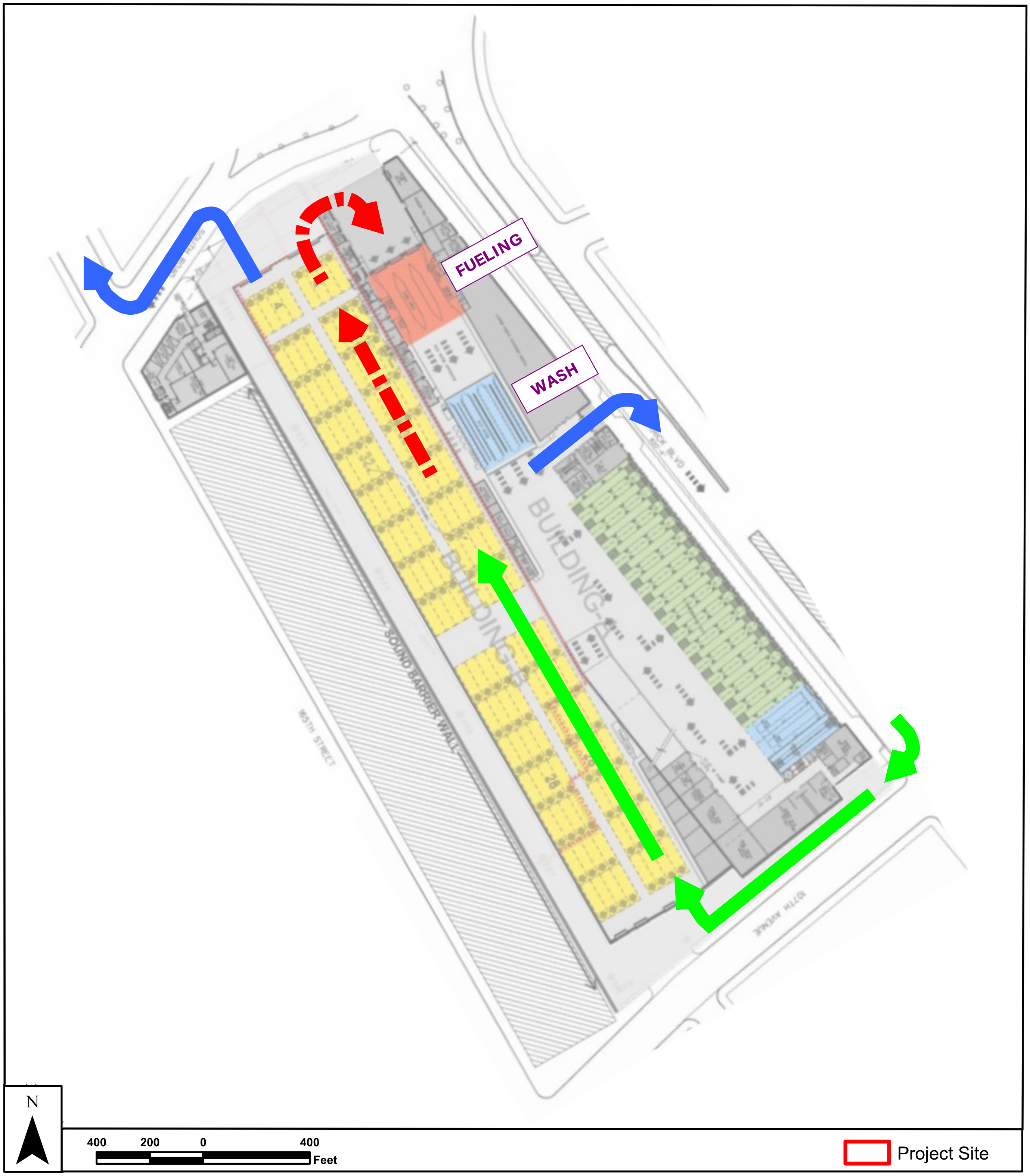


Source: Google Maps, April 2019; STV Incorporated, 2019.

Figure 4-7

Existing Condition Bus Movements

Reconstruction and Expansion of Jamaica Bus Depot



Source: New York City Transit, 2019; STV Incorporated, 2019.

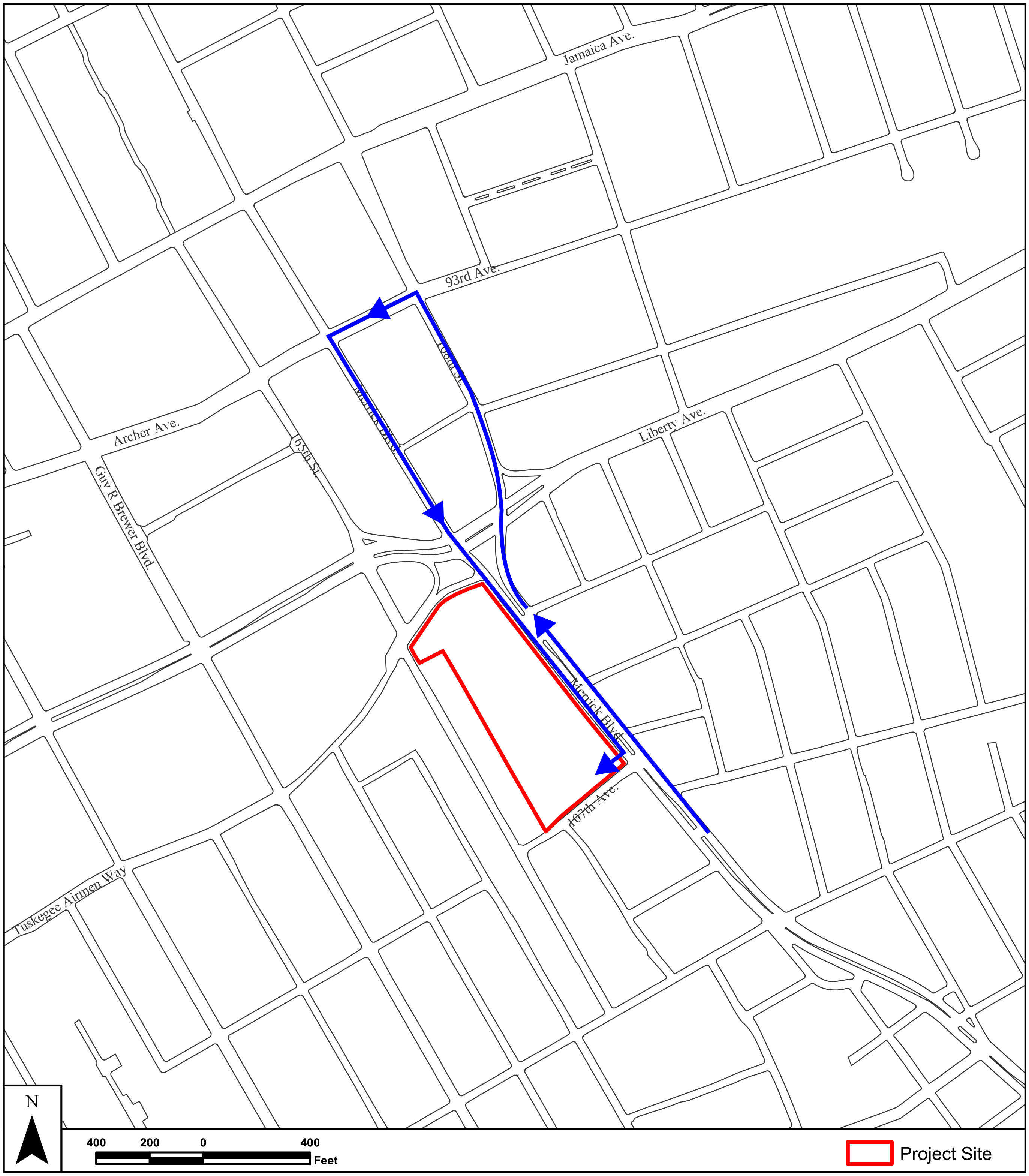
Figure 4-8

Future Jamaica Bus Depot Bus Movements

Buses returning to the proposed JBD from the south via northbound Merrick Boulevard would be rerouted north along 168th Street to Archer Avenue and then south on Merrick Boulevard to enter the facility through the Merrick Boulevard driveway (see **Figure 4-9: Northbound Merrick Boulevard Bus Routing To Proposed Depot Driveway**). For the Candidate Alternatives, buses returning in the late afternoon or evening for fueling and washing would enter the depot via the south Merrick Boulevard driveway. These buses would then queue within the outdoor parking area for Candidate Alternative A, or within Building B for Candidate Alternatives B and D. The shifters (i.e., the depot employees who drive the buses on the depot property) would drive the buses to the three fueling/wash lanes along the north apron of the depot (see red lines on **Figure 4-8: Northbound Merrick Bus Routing**). When fueling and washing is complete, the shifters would then park the buses within the proposed JBD for the night.

Figure 4-10: Future with Proposed Action Increment (AM Build) and **Figure 4-11: Future with Proposed Action Increment (PM Build)** show the incremental change in vehicle trips due to new trips that would be generated by Candidate Alternative D during the AM and PM peak hours and by rerouting existing trips to proposed depot driveway locations. **Figure 4-12: Future with Proposed Action (AM Build)** and **Figure 4-13: Future with Proposed Action (PM Build)** indicate the total Future With the Proposed Action volumes during the AM and PM peak hours, respectively.

Presented in **Table 4-12: 2025 Future With the Proposed Action (Candidate Alternative D) Traffic Operations** are v/c ratios, individual movement and approach delays (seconds/vehicle), and levels of service for year 2025 Future With the Proposed Action weekday AM and PM peak hours. With the relatively minor increase in traffic generated by Candidate Alternative D, the Future With the Proposed Action levels of service are generally similar to No-Build conditions with slight increases in delay. The level-of-service analysis indicated that a significant traffic impact would be expected at one intersection, Tuskegee Airmen Way at 165th Street. The eastbound Tuskegee Airmen Way left-turn delay at 165th Street would increase by more than three seconds and deteriorate within LOS F conditions during the AM peak hour.

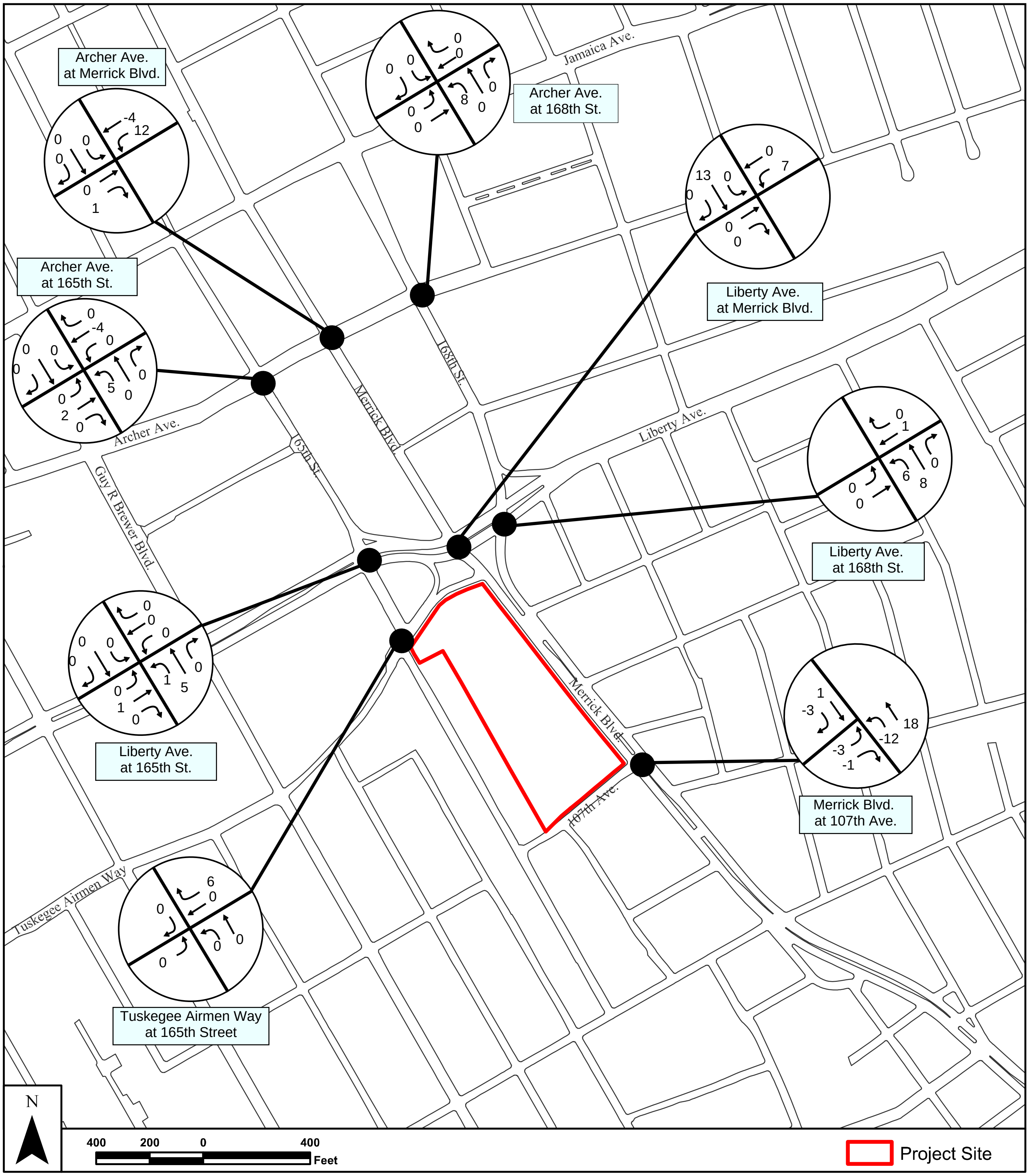


Source: STV Incorporated, 2019.

Figure 4-9

Northbound Merrick Boulevard Bus Routing to Proposed Depot Driveway

Reconstruction and Expansion of Jamaica Bus Depot

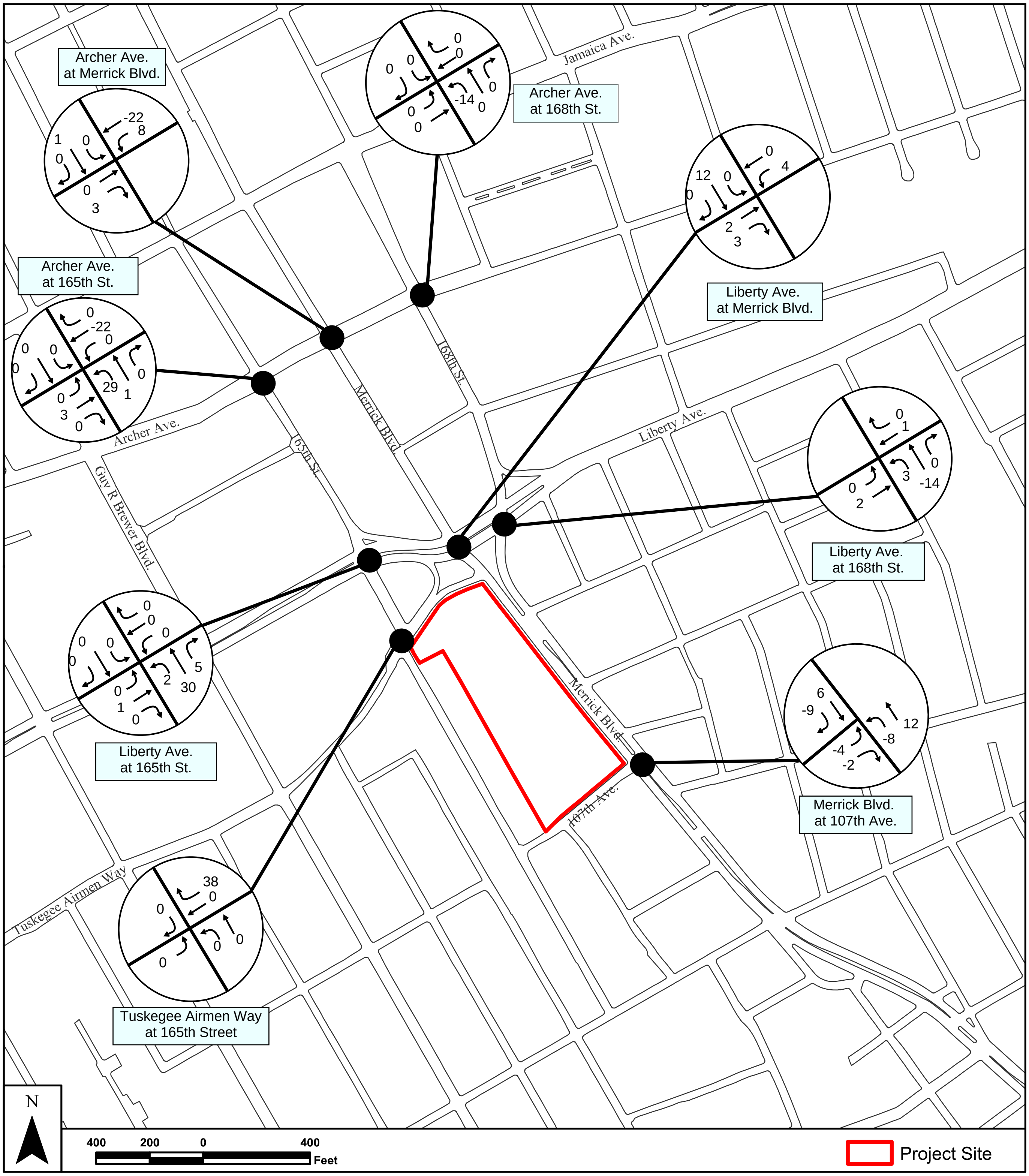


Source: STV Incorporated, 2019.

Figure 4-10

Future with The Proposed Action
Increment Traffic Volume AM Peak Hour

Reconstruction and Expansion
of Jamaica Bus Depot

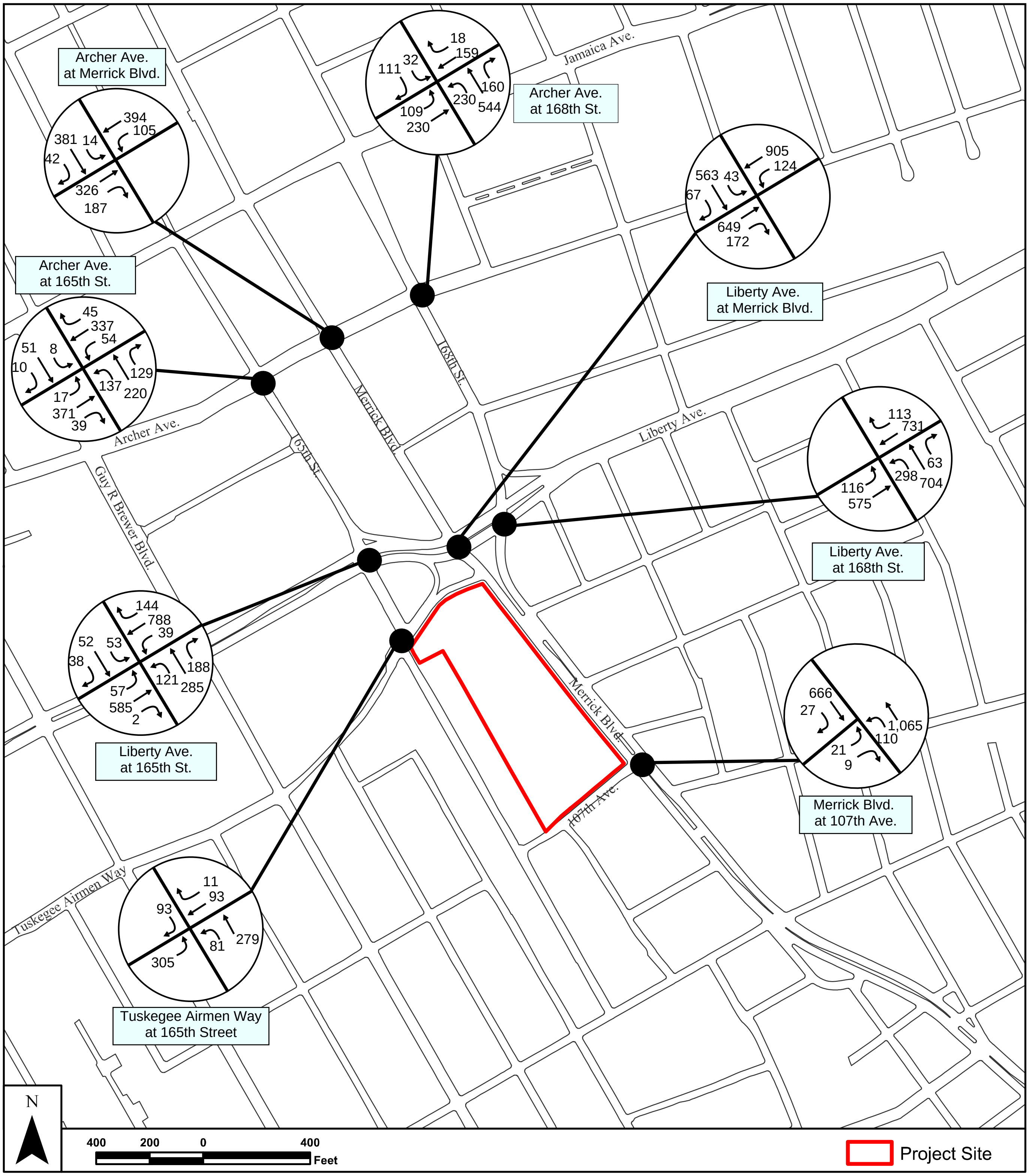


Source: STV Incorporated, 2019.

Figure 4-11

Future with The Proposed Action
Increment Traffic Volume PM Peak Hour

Reconstruction and Expansion of Jamaica Bus Depot

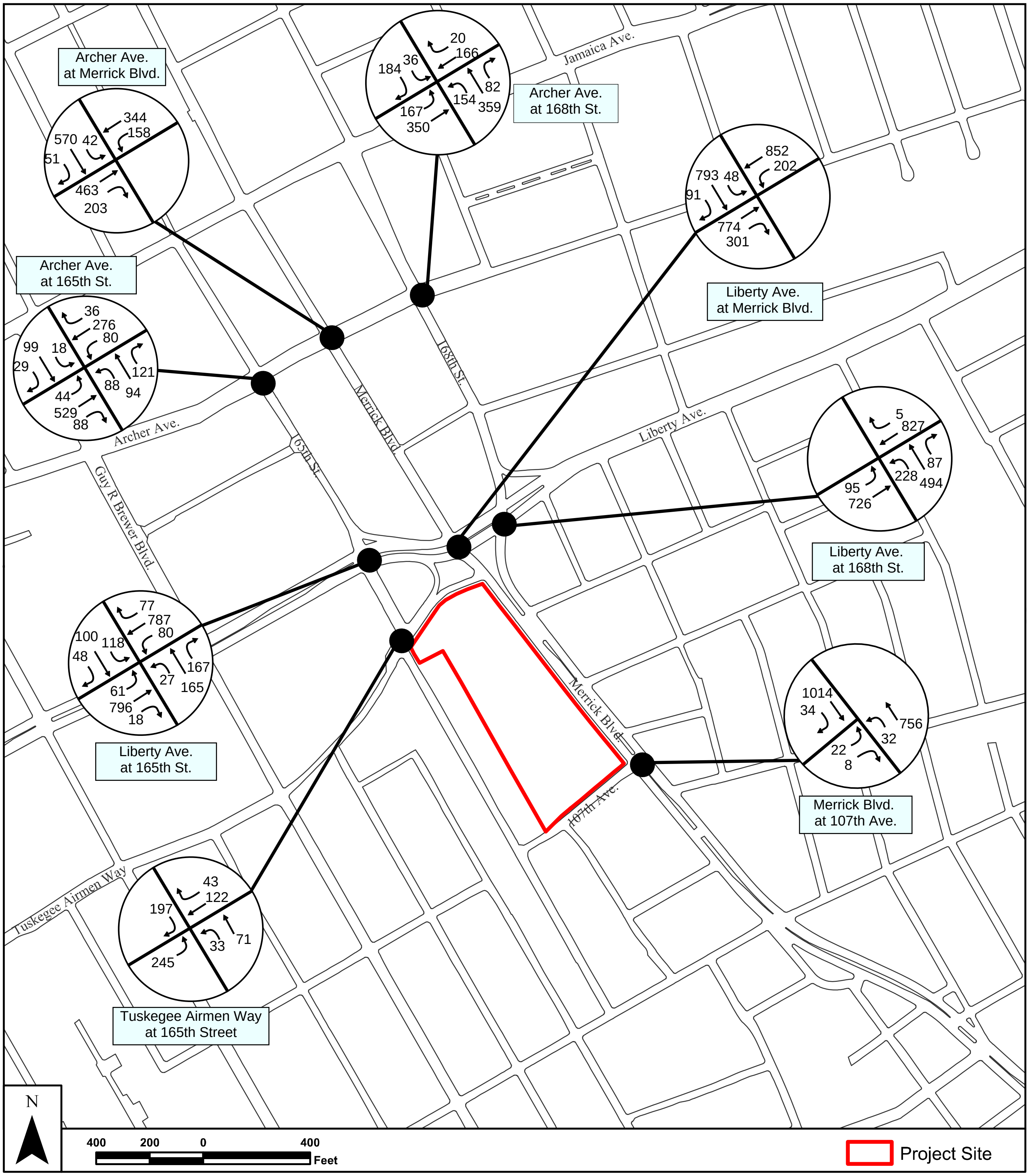


Source: STV Incorporated, 2019.

Figure 4-12

Future with The Proposed Action Condition Traffic Volume AM Peak Hour

Reconstruction and Expansion of Jamaica Bus Depot



Source: STV Incorporated, 2019.

Figure 4-13

Future with The Proposed Action Condition
Traffic Volume PM Peak Hour

Reconstruction and Expansion
of Jamaica Bus Depot

TABLE 4-12: 2025 FUTURE WITH THE PROPOSED ACTION (CANDIDATE ALTERNATIVE D) TRAFFIC OPERATIONS

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Signalized								
165th Street and Archer Avenue								
Archer Avenue	EB	L	0.07	14.2	B	0.13	15.0	B
		TR	0.70	25.4	C	0.91	41.0	D
	WB	LTR	0.49	35.5	D	0.53	22.1	C
165th Street	NB	LTR	0.86	37.9	D	0.61	24.3	C
	SB	LTR	0.15	16.0	B	0.28	17.7	B
Overall Intersection		-		**32.1**	**C**		**29.4**	**C**
165th Street and Liberty Avenue								
Liberty Avenue	EB	L	0.45	16.5	B	0.43	26.2	C
		TR	0.59	11.0	B	0.73	25.1	C
	WB	L	0.21	15.0	B	0.65	37.1	D
		TR	0.63	16.9	B	0.59	16.3	B
165th Street	NB	LT	0.68	18.6	B	0.28	11.3	B
		R	0.32	11.8	B	0.27	11.3	B
	SB	LTR	0.24	11.1	B	0.48	13.9	B
Overall Intersection		-		**14.9**	**B**		**19.0**	**B**
168th Street and Archer Avenue/93rd Avenue								
Archer Avenue/93rd Avenue	EB	LT	0.41	13.1	B	0.57	15.4	B
	WB	TR	0.15	10.5	B	0.15	10.5	B
168th Street	NB	L	0.57	19.4	B	0.49	18.0	B
		TR	0.59	16.2	B	0.41	14.0	B
	SB	LR	0.35	14.5	B	0.45	15.8	B
Overall Intersection		-		**15.1**	**B**		**14.7**	**B**
168th Street and Liberty Avenue								
Liberty Avenue	EB	L	0.87	79.6	E	0.64	14.5	B
		T	0.41	35.8	D	0.49	2.0	A
	WB	TR	0.68	22.6	C	0.61	20.9	C
168th Street	NB	LTR	0.92	35.7	D	0.70	23.6	C
Overall Intersection		-		**33.5**	**C**		**15.9**	**B**
Merrick Boulevard and 107th Avenue								
107th Avenue	EB	LR	0.08	21.6	C	0.07	21.4	C
Merrick Boulevard	NB	L	0.45	16.9	B	0.24	13.9	B
		T	0.67	15.7	B	0.46	12.4	B
	SB	TR	0.53	13.4	B	0.70	16.5	B
Overall Intersection		-		**15.0**	**B**		**15.0**	**B**

TABLE 4-12: 2025 FUTURE WITH THE PROPOSED ACTION (CANDIDATE ALTERNATIVE D) TRAFFIC OPERATIONS (CONTINUED)

INTERSECTION & APPROACH		Mvt.	AM Peak Hour			PM Peak Hour		
			V/C	Control Delay	LOS	V/C	Control Delay	LOS
Merrick Boulevard and Archer Avenue								
Archer Avenue	EB	TR	0.49	20.8	C	0.56	30.3	C
	WB	LT	0.61	22.1	C	0.69	25.0	C
Merrick Boulevard	SB	LTR	0.43	18.3	B	0.55	20.1	C
Overall Intersection		-		**20.5**	**C**		**25.1**	**C**
Merrick Boulevard and Liberty Avenue								
Liberty Avenue	EB	T	0.70	29.9	C	0.79	33.1	C
		R	0.41	25.8	C	0.69	33.7	C
	WB	L	0.49	37.4	D	0.90	48.7	D
		T	0.65	26.8	C	0.60	9.5	A
Merrick Boulevard	SB	LTR	0.65	22.8	C	0.81	27.9	C
Overall Intersection		-		**26.9**	**C**		**26.1**	**C**
Unsignalized								
165th Street and Tuskegee Airmen Way								
Tuskegee Airmen Way	EB	L	1.15	139.1	F	0.58	22.5	C
	WB	TR	0.34	19.3	C	0.34	14.3	B
165th Street	NB	LT	0.07	2.2	A	0.03	2.6	A
	SB	R	0.07	0.0	A	0.14	0.0	A
Overall Intersection		-		**49.0**	**E**		**11.1**	**B**

Candidate Alternatives A and B provide lower on-site bus parking storage capacities of 305 and 309 SBEs, respectively, as compared to the 338 SBE parking capacity for Candidate Alternative D. Consequently, the incremental volume of new bus and employee vehicle trips generated by Candidate Alternatives A and B during the AM and PM peak hours would be lower (see **Table 4-13: Future With the Proposed Action Incremental Peak Hour Vehicle Trips by Alternative**).

TABLE 4-13: FUTURE WITH THE PROPOSED ACTION INCREMENTAL PEAK HOUR VEHICLE TRIPS BY ALTERNATIVE

Candidate Alternative	Incremental Vehicle Trips	
	AM Peak Hour	PM Peak Hour
A	9	18
B	9	18
D	12	28

Traffic analyses performed for depot design Candidate Alternatives A and B indicated that the significant traffic impact identified at the intersection of Tuskegee Airmen Way and 165th Street for Candidate Alternative D would also occur for Candidate Alternatives A and B.

On-Street Parking Conditions

Of the Candidate Alternatives, Candidate Alternative D would have the most employees; therefore, this condition was examined to assess the effect of the Proposed Action on on-street parking conditions. The depot is active and in operation 24 hours a day. During the peak daytime shift, an estimated 53 additional employees would report to the depot – nearly all of these employees would be bus operators. For parking analysis purposes, of these estimated 53 additional employees, 32 employees were assumed to arrive at the JBD by private auto and park[12], thereby increasing the on-street parking demand by 32 vehicles for Candidate Alternative D, which would increase the shortfall in available on-street parking to two percent (34 spaces) on a typical weekday (see **Table 4-14: 2025 Future With the Proposed Action (Candidate Alternative D) On-Street Parking Supply and Demand**). This shortfall is not considered a significant impact for this project due to the availability and proximity of transit in the area. Additionally, NYCT encourages their employees to use public transit to commute to work by providing a MetroCard as part of their employee compensation package. Alternative travel modes are available for JBD employees including four local NYCT bus routes that operate along Merrick Boulevard and two local NYCT bus routes along Liberty Avenue, which could encourage non-auto travel to and from the site and further reduce the parking demand.

MTA NYCT policy does not provide employee parking facilities. However, recognizing the on-street parking space utilization concern in the area surrounding the existing Jamaica Bus Depot, MTA will work to provide on-site parking to the extent that it does not interfere with usual and customary operations at the depot. MTA NYCT proposed JBD employees will be able to park their personal vehicles in the parking spaces when the buses are out in service.

[12] The 60 percent employee private auto mode choice was estimated based on U.S. Census reverse journey to work data for workers within Queens Census Tract 254, the census tract for the Jamaica Bus Depot.

TABLE 4-14: 2025 FUTURE WITH THE PROPOSED ACTION (CANDIDATE ALTERNATIVE D) ON-STREET PARKING SUPPLY AND DEMAND

Parking Parameter	w/o Regs
Parking-Space Supply	1,443
Demand (Occupancy Rate)	1,477 (102%)
Spaces Available (Rate)	-34 -2%

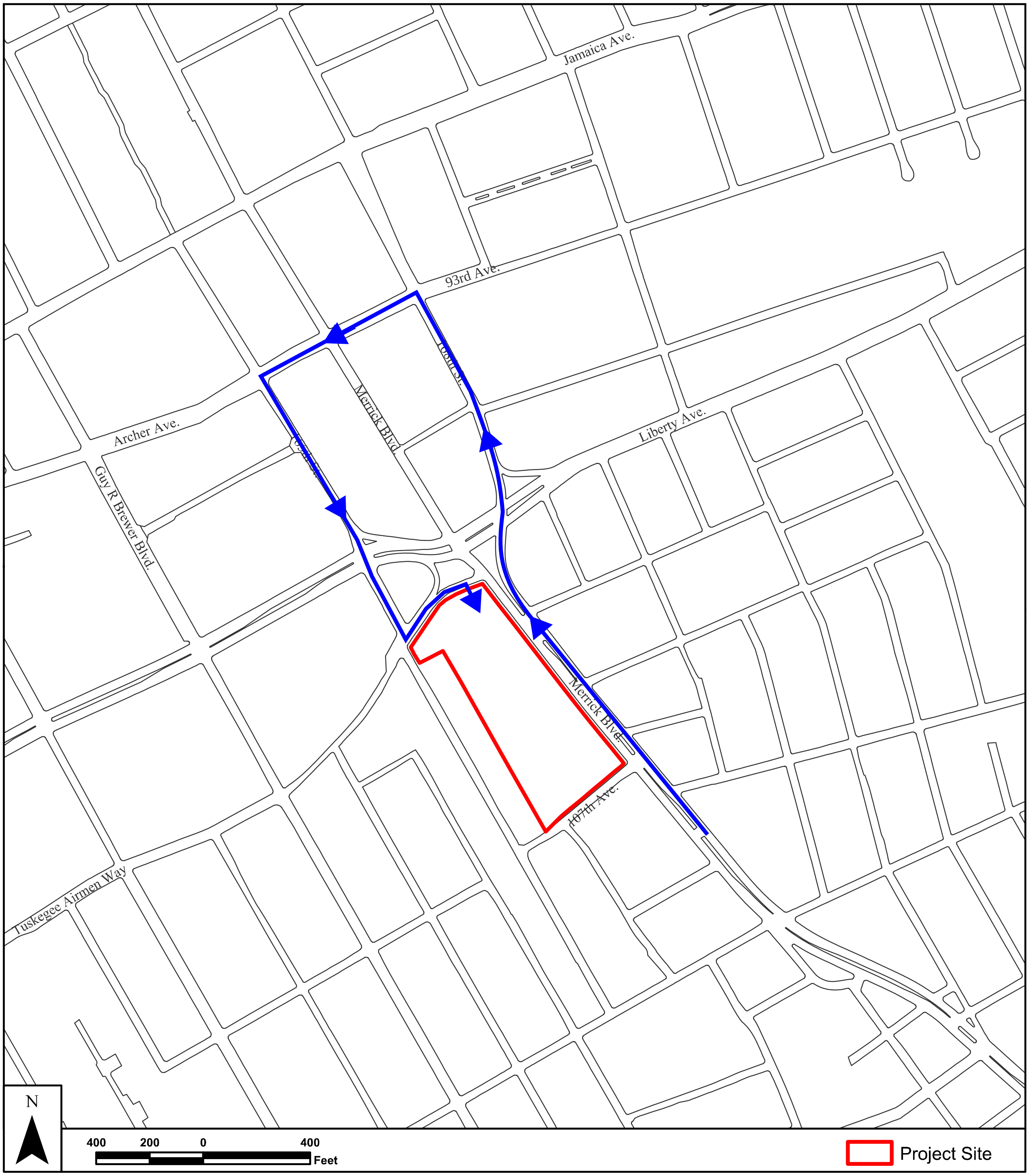
Candidate Bus Depot Alternatives – Effect of Alternative Bus Routing Strategies

As previously discussed, buses returning to the proposed JBD in the late afternoon or evening often form a queue while waiting to enter the depot for fueling and washing. The proposed JBD will increase the number of fueling and bus wash lanes from the existing two to three lanes; however, the number of buses that will need to be serviced will also increase.

NYCT has proposed three alternative bus routing strategies for this fueling/washing process that prescribe a specific approach route and queue location for returning buses. Following is a description of the three routing strategies and their associated benefits and shortcomings.

Bus Route A would direct all returning buses to southbound 165th Street and then eastbound Tuskegee Airmen Way to the proposed JBD's fueling lanes (see **Figure 4-14: Bus Routing "A"**). Buses approaching the depot from the south would travel north on Merrick Boulevard, turn west on Archer Avenue, and then turn left (southbound) on 165th Street. The Route A strategy is not desirable as it would require two-way street operations along Tuskegee Airmen Way between 165th Street and the depot's fueling lanes. Tuskegee Airmen Way is currently a narrow one-way westbound street and would require the prohibition of on-street curbside parking to accommodate two-way traffic for buses. Furthermore, if the arrival rate of returning buses exceeds the processing time, buses may need to queue on Tuskegee Airmen Way or on the bus depot apron, which may result in increased conflicts with pedestrians on the south sidewalk.

Bus Route B would direct all returning buses to southbound Merrick Boulevard to enter the proposed JBD's fueling lanes on a straighter alignment for the buses (see **Figure 4-15: Bus Routing "B"**). Buses approaching the depot from the south would travel north on Merrick Boulevard to 168th Street, turn west on Archer Avenue, and then turn left (southbound) on Merrick Boulevard. The Route B strategy would necessitate modifications to the existing traffic "triangle" at Tuskegee Airmen Way and Merrick Boulevard that would require approval by NYCDOT. This routing alternative creates an undesirable pedestrian environment along the west side of Merrick Boulevard between Liberty Avenue and Tuskegee Airmen Way as the existing triangle and sidewalk area becomes a large, extended driveway to the depot's fueling lanes. Additionally, if the arrival rate of returning buses exceeds the processing time, bus queues may extend back onto Merrick Boulevard, a high-volume arterial, which may increase roadway congestion and vehicle conflicts.

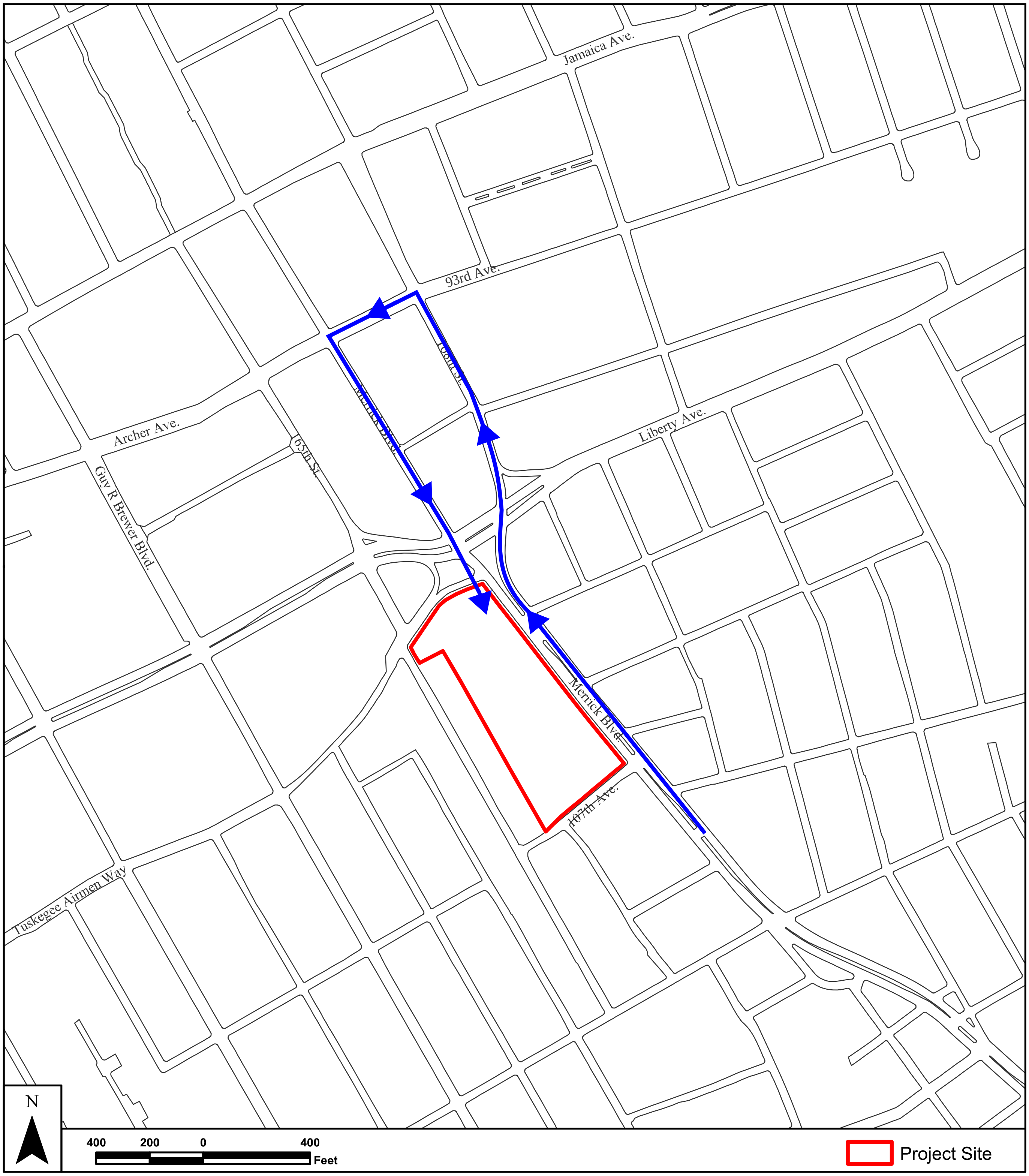


Source: STV Incorporated, 2019.

Figure 4-14

Bus Routing Strategy "Route A"

Reconstruction and Expansion of Jamaica Bus Depot



Source: STV Incorporated, 2019.

Figure 4-15

Bus Routing Strategy "Route B"

Reconstruction and Expansion
of Jamaica Bus Depot

Bus Route C would direct all returning buses to southbound Merrick Boulevard to enter the depot via the south Merrick Boulevard driveway (see **Figure 4-16: Bus Routing "C"**). Similar to Route B, buses approaching the proposed JBD from the south would travel north on Merrick Boulevard to 168th Street, turn west on Archer Avenue, and then turn left (southbound) on Merrick Boulevard. Route C is the preferred strategy as all returning buses would be able to queue on the depot property when waiting to enter the fueling lanes. Bus shifters would drive the buses to the north end of the property where they could turn into the fueling lanes using the depot's north apron area (see dotted lines in **Figure 4-16: Bus Routing "C"**), separate from the Tuskegee Airmen Way sidewalk and pedestrians. This preferred routing strategy was used for the traffic analyses detailed in the previous section.

All three of these bus routing strategies are for buses returning to the proposed JBD during the afternoon and evening hours; therefore, the potential AM peak hour traffic impact identified at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour would remain for all three routing options.

4.5.6 SUMMARY OF ADVERSE IMPACTS AND MITIGATION MEASURES

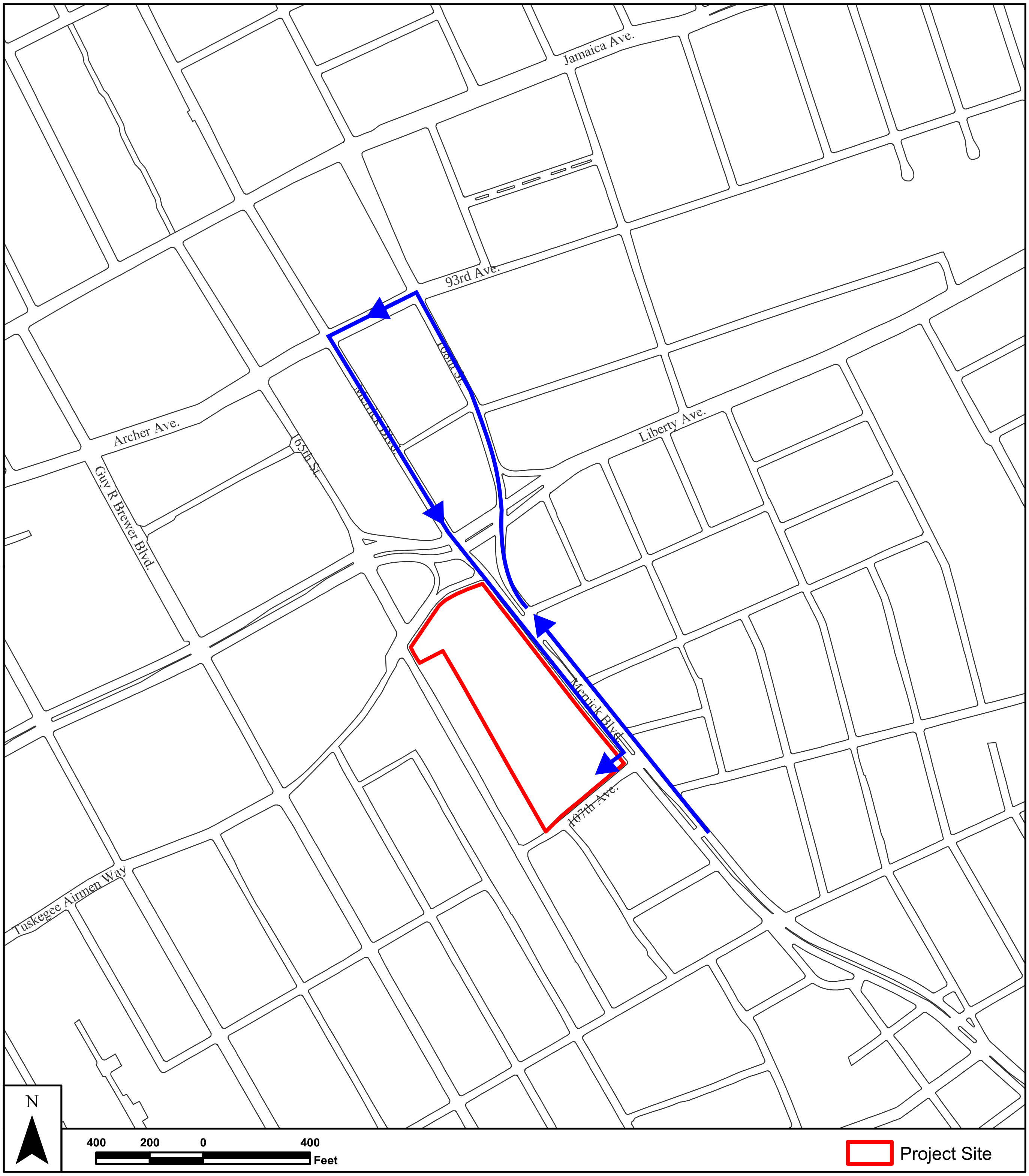
*A significant traffic impact was identified at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour for Candidate Alternatives A, B, and D (see **Section 4.5.5.3**).* This intersection is currently a two-way stop-controlled intersection, with STOP signs on the east and westbound Tuskegee Airmen Way approaches.

Installing a traffic signal is one potential measure that could mitigate the adverse traffic impact at the unsignalized intersection of 165th Street and Tuskegee Airmen Way. In consultation with NYCDOT, a comprehensive investigation of traffic conditions would be required to determine the necessity for a traffic signal installation. The *CEQR Traffic Signal Warrant Analysis* specifies nine traffic control signal needs studies, known as warrants, to justify a signal installation. A traffic signal should not be installed unless one or more the warrants is met.

Existing conditions at the intersection of Tuskegee Airmen Way at 165th Street intersection meet the *CEQR Traffic Signal Warrant Analysis* for Warrant 3: Peak Hour traffic volumes as follows:

- The total stopped time delay experienced by the traffic on one minor-street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach; and
- The volume on the same minor-street approach equals or exceed 100 vehicles per hour for one moving lane of traffic; and
- The total entering volume serviced during the hour exceeds 800 vehicles per hour for intersections with four or more approaches.

During the AM peak hour period, the eastbound Tuskegee Airmen Way approach experiences a delay of approximately eight vehicle hours (exceeds four vehicle hours warrant threshold), processes a peak hour volume of 296 vehicles (exceeds 100 vehicles per hour warrant threshold), and the total peak hour entering volume for the intersection equals 829 vehicles (exceeds 800 vehicle warrant threshold).



Source: STV Incorporated, 2019.

Figure 4-16

Bus Routing Strategy "Route C"

Reconstruction and Expansion of Jamaica Bus Depot

Installing a traffic signal would improve intersection operations to an acceptable LOS C condition or better for all approaches during the AM peak hour (see **Table 4-15: Mitigated 2025 Future With the Proposed Action (Candidate Alternative D) Traffic Operations**).

TABLE 4-15: MITIGATED 2025 FUTURE WITH THE PROPOSED ACTION (CANDIDATE ALTERNATIVE D) TRAFFIC OPERATIONS

INTERSECTION & APPROACH		Mvt.	No-Build			Build			Mitigated Build			Improvement Measures
			V/C	Control Delay	LOS	V/C	Control Delay	LOS	V/C	Control Delay	LOS	
AM Peak												
165th Street and Tuskegee Airmen Way												
Tuskegee Airmen Way	EB	L	1.12	128.7	F	1.15	139.1	F	0.60	23.9	C	- Install a traffic signal
	WB	TR	0.33	19.5	C	0.34	19.3	C	0.16	15.4	B	
165th Street	NB	LT	0.07	2.2	A	0.07	2.2	A	0.57	21.6	C	
	SB	R	0.07	0.0	A	0.07	0.0	A	0.19	15.8	B	
Overall Intersection		-		**45.8**	**E**		**49.0**	**E**		**20.9**	**C**	

An alternative mitigation option, which would limit the volume of future bus traffic through this intersection, and avoid creating a significant impact, *is rerouting all AM peak hour buses that were originally assigned to exit the depot via Tuskegee Airmen Way to exit via Merrick Boulevard*. This mitigation option would require the removal of the raised center median on Merrick Boulevard opposite the driveway located midblock between Tuskegee Airmen Way and 107th Avenue so that buses may turn left. The final decision regarding the measures to be implemented to avoid this potential impact would be made in consultation with NYCDOT.

4.6 TRANSIT AND PEDESTRIANS

4.6.1 INTRODUCTION

This section describes the transit and pedestrian characteristics within the study area as related to the operation of the proposed Reconstruction and Expansion of the JBD. The following sections describe the existing transit services and pedestrian network and outlines the criteria and methodology as required for a transit and pedestrian analysis.

4.6.2 STUDY AREA

Potential impacts to pedestrian or transit service that may occur during operation of the proposed JBD would be localized in close proximity to the bus depot site.

4.6.3 METHODOLOGY

According to the thresholds specified in the *CEQR Technical Manual*, detailed transit analyses are required if a Proposed Action is projected to result in an increase of 200 or more passengers at a single subway station or on a single subway line or if a Proposed Action would result in 50 or more bus passengers being assigned to a single bus route (in one direction) during the AM and PM peak hours. Quantitative pedestrian analyses are required if a proposed project results in more than 200 new pedestrian trips.

The number of daily employees at the proposed JBD is projected to increase by up to 165 new employees, depending on which alternative is identified as the Preferred Alternative. Given that the net increase in employees from current staff levels is less than 200 employees, of which only a portion are expected to travel during the AM and PM peak hours, transit and pedestrian related activities generated by the Proposed Action would not exceed the *CEQR Technical Manual* screening Action would not result in any significant adverse transit or pedestrian impacts.

The following section describes the subway and bus lines in the area that serve the site and the existing pedestrian conditions.

4.6.4 AFFECTED ENVIRONMENT

4.6.4.1 TRANSIT

Subway Service

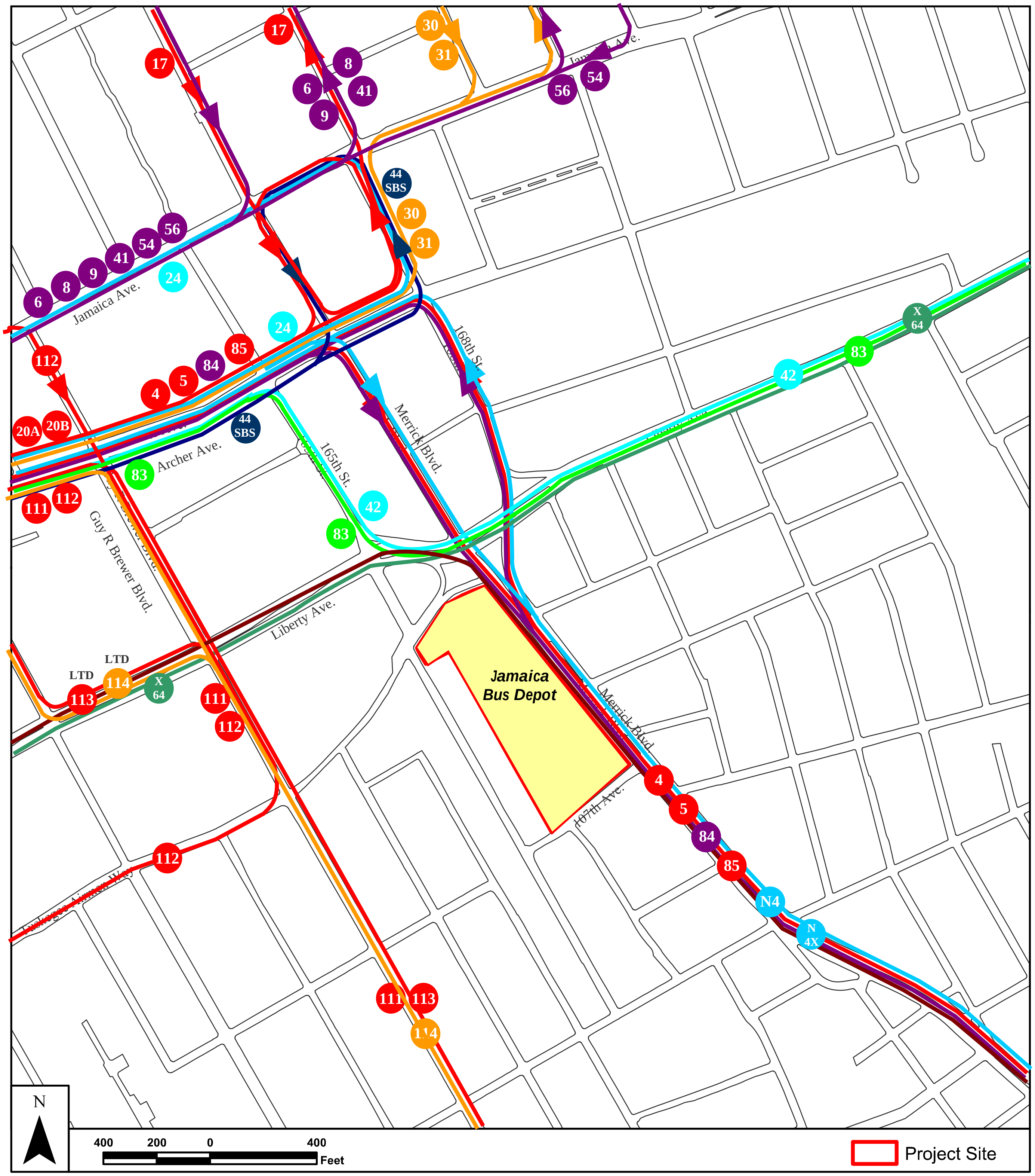
The Jamaica Center-Parsons/Archer Station is the eastern terminus of the MTA NYCT Eighth Avenue Line and the Jamaica Line. The station is located northwest of the study area. Two subway routes operate between Jamaica, Queens and Lower Manhattan. The **E** train operates to the World Trade Center and **J** and **Z** trains to Broad Street. The **E** and **J** trains operate 24 hours a day, seven days a week. The **Z** train operates in the peak direction during weekday rush hours only as part of a skip-stop service pattern with the **J** train. Under the skip-stop service pattern, some stations are served by **J** trains, some stations are served by **Z** trains, and some stations are served by both **J** and **Z** trains. The **J**/**Z** skip stop service operates to Manhattan between 7:15 and 8 AM and from Manhattan between 4:30 and 5:45 PM.

Bus Service

As shown in **Figure 4-17: Public Transit**, the study area is served by ten MTA bus routes. These include the Q4, Q5, Q42, Q83, Q84, Q85, Q111, Q112, Q114, and X64. A brief overview of these bus services is provided below:

<u>Q4</u>
The Q4 route operates with two service patterns on weekdays, as a local route and a limited stop service (weekdays, both directions). The Q4 Local operates daily between Jamaica Center-Parsons/Archer subway station and Linden Boulevard/235th Street, 24 hours per day. Service frequencies on the Q4 Local are every nine minutes in the AM and every ten minutes in the PM. In proximity to the JBD, Q4 Local buses operate along Merrick Boulevard with stops at 104th Avenue and 105th Avenue.

During weekdays only, the Q4 Limited operates between Jamaica Center-Parsons/Archer subway station and Linden Boulevard/235th Street with ten-minute service frequencies during the AM and PM peak periods.



Source: New York City Transit, 2019; STV Incorporated, 2019.

Figure 4-17

Public Transit

Reconstruction and Expansion of Jamaica Bus Depot

Legend

X = Bus Route Direction of Service

X = Bus Route Number

Q5

The Q5 route operates with two service patterns on weekdays, as a local route and a limited stop service (weekdays, peak direction only). The Q5 Local operates daily between Green Acres Mall and Jamaica Center-Parsons/Archer subway station, 24 hours per day. Service frequencies on the Q5 Local are every eight minutes in the AM and every six minutes in the PM peak periods. Q5 Local buses operate along Merrick Boulevard with stops at 104th Avenue and 105th Avenue.

The Q5 Limited operates from MTA LIRR Rosedale Station to Jamaica Center-Parsons/Archer subway station during the weekday AM peak period and from Jamaica Center-Parsons/Archer subway station to MTA LIRR Rosedale station during the weekday PM peak period. Service frequency on the Q5 Limited is approximately every eight minutes.

Q42

The Q42 route runs between Jamaica Center-Parsons/Archer subway station and Sayres Avenue/180th Street on weekdays only. During the AM and PM periods, service frequency is about every 15-20 minutes. In proximity to the JBD, the Q42 operates along Liberty Avenue with stops at 168th Place and 170th Street.

Q83

The Q83 route operates with two service patterns on weekdays, as a local route and a limited stop service (weekdays, peak direction only). The Q83 Local operates daily between 227th Street/113th Drive in Queens Village and 153rd Street/Hillside Avenue, 24 hours per day. Service frequencies on the Q83 Local are every eight minutes in the AM and every ten minutes in the PM peak period. Q83 Local buses operate along Liberty Avenue with stops at 168th Place and 170th Street.

The Q83 Limited operates from Queens Village to Jamaica Center-Parsons/Archer subway station during the AM peak period and from 153rd Street/Hillside Avenue to Queens Village during the PM peak period. Service frequency on the Q83 Limited is every six minutes in the AM period and every ten minutes in the PM period.

Q84

The Q84 route provides daily service between Laurelton Parkway/130th Avenue and Jamaica Center-Parsons/Archer subway station. The service frequency is every eight minutes during the AM peak period and every ten minutes in the PM period. Q84 buses operate along Merrick Boulevard with stops at 104th Avenue and 105th Avenue.

Q85

The Q85 route operates with two service patterns, as a local route and a limited stop service (weekdays, peak direction only). The Q85 Local operates 24-hour service daily between 243rd Street/147th Avenue in Rosedale and Jamaica Center-Parsons/Archer subway station. After 8 AM, trips also serve Green Acres Mall. Service frequency on the Q85 Local is every ten minutes in the AM and every nine minutes in the PM peak period. Q85 Local buses operate along Merrick Boulevard with stops at 104th Avenue and 105th Avenue

The Q85 Limited operates from 243rd Street/147th Avenue to Jamaica Center-Parsons/Archer subway station during the weekday AM peak period and from Jamaica Center-Parsons/Archer subway station to 243rd Street/147th Avenue during the PM peak period. Service frequency on the Q83 Limited is every eight minutes in the AM period and every ten minutes in the PM period.

Q111

The Q111 route provides 24-hour service daily between 148th Avenue/Francis Lewis Boulevard in Rosedale and Hillside Avenue/Parsons Boulevard in Jamaica. Service frequency is every seven minutes during the

AM peak period and every five minutes during the PM peak period. In proximity to the JBD, Q111 buses operate along Guy Brewer Boulevard with stops at Tuskegee Airmen Way.

Q112
The Q112 route provides service daily between Rockaway Boulevard/97th Street in Ozone Park and Parsons Boulevard/89th Avenue in Jamaica. Service frequency is every seven minutes during the AM peak period and every ten minutes in the PM peak period. In proximity to the JBD, Q112 buses operate along Guy Brewer Boulevard with stops at Tuskegee Airmen Way.

Q114
The Q114 Limited route provides 24-hour service daily between Sea Girt Boulevard/Beach 20th Street in in Far Rockaway and Parsons Boulevard/88th Avenue in Jamaica. Service frequency is every 20 minutes during the AM peak period and every 13 minutes in the PM peak period. In proximity to the JBD, Q114 buses operate along Liberty Avenue with stops at Merrick Boulevard and 168th Place.

X64
The X64 route provides express service (weekdays, peak direction only) between Linden Boulevard/235th Street in Cambria Heights and Peter Cooper Village in Manhattan. Service frequency is every 20 minutes during the AM peak period and every 25 minutes during the PM peak period. In proximity to the JBD, X4 buses operate along Liberty Avenue with stops at Merrick Boulevard and 168th Place.

NICE N4
The Nassau Inter-County Express (NICE) N4 route provides 24-hour service daily between the MTA LIRR Freeport Station in Nassau County and Jamaica Center-Parsons/Archer subway station in Jamaica. NICE buses pick up eastbound customers in Queens traveling to Nassau County and drop off westbound customers boarding in Nassau County and traveling to Queens.

Service frequencies are every twelve minutes during the AM peak period and every 13 minutes during the PM period. In proximity to the JBD, N4 buses operate along Merrick Boulevard with stops at 104th Avenue and 105th Avenue.

4.6.4.2 PEDESTRIANS

Pedestrian counts were conducted in October 2018 concurrent with the intersection turning movement counts during the AM and PM peak hours at the traffic study intersections. High-visibility crosswalks are provided at the intersections of Merrick Boulevard at 107th Avenue, Liberty Avenue at 168th Street, and Liberty Avenue at Merrick Boulevard in the vicinity of the JBD. Generally, pedestrian volumes are low, with less than 50 pedestrians per hour crossing at each crosswalk. One exception is the west crosswalk of 107th Avenue at Merrick Boulevard which processes up to 100 pedestrians in a peak hour.

4.6.5 ENVIRONMENTAL IMPACT

As noted in the Methodology section, the *CEQR Technical Manual* ***thresholds for transit and pedestrian screening analyses were not exceeded by the Proposed Action; therefore, a detailed analysis of transit and pedestrian conditions were not warranted. The Proposed Action would not result in any significant adverse transit impacts***.

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5.0 AIR QUALITY

5.1 INTRODUCTION

Operation of the Proposed Action has the potential to affect localized air quality conditions, which could result in potential effects to public health and the environment. Therefore, analyses were conducted for the Candidate Alternatives in accordance with the most current *CEQR Technical Manual*, as well as other relevant guidance and protocols provided by New York State Department of Environmental Conservation (NYSDEC), New York City Department of Environmental Protection (NYCDEP), and United States Environmental Protection Agency (USEPA). In addition, the air quality characteristics of the Proposed Action are identified and discussed within the context of the Clean Air Act (CAA) requirements and other applicable state and local air quality standards. Construction air quality impacts are discussed in **Chapter 17.0: Construction Methods and Activities**.

This chapter examines the potential for direct and indirect air quality impacts from the **Proposed Action.** ***Direct impacts*** stem from emissions generated by stationary sources at the project site, such as emissions from fossil fuels burned on site for heating, ventilation, and air conditioning (HVAC) systems. ***Indirect impacts*** can include emissions from mobile vehicle trips generated by a project or other changes to traffic conditions from a project.

The Proposed Action would include fossil fuel-fired HVAC systems to provide heating and cooling to the proposed JBD. Therefore, this chapter assesses the impacts of these systems to the surrounding community and the environment. The Proposed Action would increase traffic in the vicinity of the project site resulting from the increase in the future ridership demand forecasted within the Jamaica bus service area. To meet the future ridership demand, MTA will require more buses, higher capacity buses, and additional employees to service and operate them, than currently served by the existing depot. Therefore, screening analyses for carbon monoxide (CO) and particulate matter (PM_{10} and $PM_{2.5}$) were conducted to assess the *impacts from mobile sources*.

The project area for the Proposed Action and project area would include the boundaries of: the existing MTA Jamaica Bus Depot property which is surrounded by both residential and commercial/industrial land uses. Residential homes dominate the project area (west of the project site) on 165th Street, whereas, commercial and retail business (east and north of the project area) dominate the land use along Merrick Boulevard and Tuskegee Airmen Way, respectively. A high-rise senior citizen housing complex is located south of the project area.

This chapter assesses future air quality conditions with and without the proposed action.

5.2 SUMMARY AND CONCLUSION

The air quality analysis for the proposed action indicates that ***the maximum predicted pollutant concentrations and concentration increments from stationary and mobile sources would not result in any significant adverse air quality impacts***.

As discussed below, the *stationary source screening* analysis determined that there would be no potential significant adverse air quality impacts from the emissions of pollutants from both the HVAC systems and bus parking activities of the Proposed Action.

For all three Candidate Alternatives, increases in *mobile* and *stationary source* resulting from the Proposed Action ***would not exceed*** the USEPA's National Ambient Air Quality Standards (NAAQS) or the NYSDEC *de minimis* impact criteria.

For ***mobile sources***, the *CEQR Technical Manual* traffic screening threshold for CO and PM_{10} would not be surpassed at any of the studied intersections; however, three intersections associated with Candidate Alternative D would exceed the *CEQR Technical Manual* screening criteria for $PM_{2.5}$ for increased heavy-duty diesel vehicle (HDDV) equivalents. As a result, *a detailed intersection analysis of* $PM_{2.5}$ *was conducted* for the intersection with the greatest potential to exceed the NYSDEC *de minimis* impact criteria. The results of the detailed intersection analysis conducted for $PM_{2.5}$ indicate that ***there would be no exceedance of the NYSDEC de minimis impact criteria***.

For ***stationary sources***, a detailed assessment of on-site emissions from bus parking and maintenance activities as well as the proposed JBD's heat and hot water systems was conducted for NO_2, SO_2 and $PM_{2.5}$. The results of the analyses indicate that ***none of the three Candidate Alternatives would have a*** **significant adverse air quality impact at any of the nearby residences (sensitive receptors)**. Concentrations of NO_2 and SO_2 would *not exceed* the USEPA's NAAQS criteria and $PM_{2.5}$ concentrations would *not exceed* the NYSDEC *de minimis* impact criteria.

The projected emission pollutant burdens calculated for each of the three Candidate Alternatives would result in annual emissions that would ***categorize the proposed JBD as a minor source and, as a result, would be eligible to obtain a state facility permit***.

5.3 REGULATORY FRAMEWORK

5.3.1 NATIONAL AMBIENT AIR QUALITY STANDARDS

Ambient air quality is affected by air pollutants produced by both motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions, while emissions from fixed facilities are referred to as stationary source emissions. As required by the Clean Air Act, primary and secondary NAAQS have been established for six major air pollutants: CO; NO_2; ozone; respirable PM ($PM_{2.5}$ and PM_{10}); SO_2; and lead. The *primary standards* represent levels that are requisite to protect public health, allowing an adequate margin of safety. The *secondary standards* are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary and secondary standards are the same for NO_2, ozone, lead, and PM, and there is no secondary standard for CO. The NAAQS are presented in **Table 5-1: National Ambient Air Quality Standards**. The NAAQS for CO, NO_2, and SO_2 have also been adopted as the ambient air quality standards for New York State, but are defined on a running 12-month basis rather than for calendar years only.

TABLE 5-1: NATIONAL AMBIENT AIR QUALITY STANDARDS

National Ambient Air Quality Standards Pollutant	Primary/Secondary	Averaging Period	Concentration
Carbon Monoxide (CO)	Primary	1-hour	35 ppm
		8-hour	9 ppm
Lead (Pb)	Primary and Secondary	Rolling 3 Month Average	0.15 µg/m^3 (1)
Nitrogen Dioxide (NO_2)	Primary	1-hour	100 ppb
	Primary and Secondary	Annual	53 ppb (2)
Ozone (O_3)	Primary and Secondary	8-hour	0.070 ppm (3)
Particulates ($PM_{2.5}$)	Primary	Annual	12 µg/m^3
	Secondary	Annual	15 µg/m^3
	Primary and Secondary	24-hour	35 µg/m^3
Particulates (PM_{10})	Primary and Secondary	24-hour	150 µg/m^3
Sulfur Dioxide (SO_2)	Primary	1-hour	75 ppb (4)
	Secondary	3-hour	0.5 ppm

(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
(2) The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

Source: US Environmental Protection Agency; New York State Department of Environmental Conservation, 2019

Ug/m3 = micrograms per cubic meter
PPM – parts per million
PPB – parts per billion

5.3.2 RELEVANT AIR POLLUTANTS FOR ANALYSIS

5.3.2.1 CARBON MONOXIDE

Carbon monoxide is a colorless and odorless gas produced primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. Since CO is a reactive gas which does not persist in the atmosphere, CO concentrations can vary greatly over relatively short distances; elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis.

The proposed JBD would increase bus and automobile traffic volumes on streets near the project site and may result in local increases in CO levels. Therefore, a mobile source assessment was conducted at critical intersections in the study area to evaluate CO concentrations in the No-Build and Future With the Proposed Action conditions to determine the potential for significant adverse impacts.

5.3.2.2 LEAD

Airborne lead emissions are principally associated with industrial sources and motor vehicles that use gasoline containing lead additives. Most U.S. vehicles produced since 1975, and all produced after 1980, are designed to use unleaded fuel. As these newer vehicles have replaced the older ones, motor vehicle related lead emissions have decreased. As a result, ambient concentrations of lead have declined significantly. Nationally, the average measured atmospheric lead level in 1985 was only about one-quarter the level in 1975.

In 1985, USEPA announced new rules that drastically reduced the amount of lead permitted in leaded gasoline. The maximum allowable lead level in leaded gasoline was reduced from the previous limit of 1.1 to 0.5 grams per gallon effective July 1, 1985, and to 0.1 grams per gallon effective January 1, 1986. Monitoring results indicate that this action has been effective in significantly reducing atmospheric lead concentrations. Effective January 1, 1996, the Clean Air Act banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles, concluding the 25-year effort to phase out lead in gasoline. Even at locations in the New York City area where traffic volumes are very high, atmospheric lead concentrations are far below the national standard of 1.5 micrograms per cubic meter (three-month average). No significant sources of lead are associated with the Proposed Action. Based on the above information, an air quality analysis for lead is not warranted.

5.3.2.3 NITROGEN OXIDES, VOCS, AND OZONE

Nitrogen oxides (NO_x) are of concern because of their role, together with volatile organic compounds (VOCs), as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants travel downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. Therefore, the effects of NO_x and VOC emissions from added stationary or mobile sources are generally examined on a regional basis.

Although New York City is designated as a non-attainment area for ozone, the relatively small scale of this project does not warrant a regional assessment of this pollutant. However, because the proposed JBD heating and hot water systems would be natural gas fired, a more localized assessment of this pollutant is warranted.

5.3.2.4 RESPIRABLE PARTICULATE MATTER — PM_{10} AND $PM_{2.5}$

PM is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. The constituents of PM are numerous and varied, and they are emitted from a wide variety of sources (both natural and anthropogenic). Natural sources include the condensed and reacted forms of naturally occurring VOCs; salt particles resulting from the evaporation of sea spray; wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and material from live and decaying plant and animal life; particles eroded from beaches, soil, and rock; and particles emitted from volcanic and geothermal eruptions and from forest fires. Naturally occurring PM is generally greater than 2.5 micrometers in diameter. Major anthropogenic sources of PM include the combustion of fossil fuels (e.g., vehicular exhaust, power generation, boilers, engines, and home heating); chemical and manufacturing processes; all types of construction; agricultural activities; as well as wood-burning stoves and fireplaces. PM also acts as a substrate for the adsorption of other pollutants, which are often toxic, as well as some likely carcinogenic compounds.

As described below, PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers, or $PM_{2.5;}$ and particles with an aerodynamic diameter of less than or equal to 10 micrometers, or PM_{10}, which includes the smaller $PM_{2.5}$. $PM_{2.5}$ is extremely persistent in the atmosphere and has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles. $PM_{2.5}$ is mainly derived from combustion material that has volatilized and then condensed to form primary PM (often soon after the release from an exhaust pipe or stack) or from precursor gases reacting in the atmosphere to form secondary PM.

Since the proposed JBD would increase the number of buses and automobiles traveling near the project site, a PM emissions assessment was performed for both mobile sources (buses and vehicles) and stationary sources (heat and hot water systems) following the *CEQR Technical Manual* and USEPA guidance.

5.3.2.5 SULFUR DIOXIDE

SO_2 emissions are primarily associated with the combustion of sulfur-containing fuels such as oil and coal. Due to federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Therefore, an analysis of this pollutant from mobile sources is not warranted.

As stated above the heating and hot water systems would be “gas fired.” The sulfur content of natural gas is negligible; therefore, SO_2 analysis was not necessary.

5.3.3 NAAQS ATTAINMENT STATUS AND STATE IMPLEMENTATION PLAN (SIP)

The Clean Air Act as amended in 1990 (CAA), defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by USEPA, the state is required to develop and implement a State Implementation Plan (SIP), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA. Queens County complies with the NAAQS for SO_2, NO_2, CO, PM_{10} and lead, but is designated as a nonattainment area for eight-hour ozone(O_2) and an unclassified/maintenance area for $PM_{2.5}$.

Violations of the CO standard have not been recorded at NYSDEC monitoring sites for many 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 indicate there is an exceedance of the eight-hour ozone standard for New York City. To be in compliance, the three-year average of the annual fourth highest maximum eight-hour average concentration should not exceed the ozone eight-hour standard. In March 2008, USEPA revised the eight-hour ozone NAAQS to 0.075 parts per million (ppm), and on May 2012 designated the NYC Region as marginally nonattainment. As of January 1, 2016, the primary ozone eight-hour standard was revised to 0.070 ppm.

Air quality monitoring in Manhattan indicates that the annual average concentration of respirable particulates is above the NAAQS. In November 1990, USEPA designated New York County (Manhattan) as a nonattainment area for respirable particulate matter (PM_{10}). The other four New York City boroughs (including Queens County) are designated as in attainment for the PM_{10} standards. As of 2015, New York City has been designated as a maintenance area for $PM_{2.5}$. New York State submitted a draft SIP to USEPA demonstrating that the annual average standard would be met by April 8, 2010. USEPA concurred with the state's finding, and on December 15, 2010, finalized its determination that this area had attained the annual NAAQS. On May 5, 2011, the state submitted a clean data petition for this area pertaining to the 24-hour $PM_{2.5}$ NAAQS. On December 31, 2012, USEPA finalized its approval of this petition, determining that the NYC Region nonattainment area had attained the 24-hour NAAQS. USEPA made its initial designations for annual standards on December 18, 2014. However, these designations were revised in March 2015 to correct an inadvertent technical error.

On February 9, 2010, USEPA revised the Clean Air Act's primary NAAQS for NO_2 by supplementing the existing annual primary standard of 53 parts per billion (ppb) with a new one-hour primary standard at 100 parts per billion (ppb) based on the three-year average of the 98th percentile of the daily maximum one-hour average concentrations and establishing a new monitoring program[13]. The final rule became effective on April 12, 2010. On October 5, 2012, USEPA established a series of deadlines that required states and local agencies to begin operating the near-road component of the NO_2 monitoring network in phases starting on January 1, 2014. This replaced the 2010 rule requirement that all new NO_2 monitors were required to begin operating no later than January 1, 2013.

Until the NO_2 designations are made, USEPA states that "major new and modified sources applying for NSR/PSD permits will initially be required to demonstrate that their proposed emissions increase of NO_x will not cause or contribute to a violation of either the annual or one-hour NO_2 NAAQS and the annual PSD increment."[14] USEPA may provide additional guidance in the future, as necessary, to assist states and emissions sources to comply with the CAA requirements for implementing new or revised NO_2 NAAQS.

On June 22, 2010, USEPA promulgated a new one-hour NAAQS for SO_2, replacing the 24-hour and annual standards. The final rule became effective on August 23, 2010. States were required to submit their initial area designation recommendations for SO_2 to USEPA no later than June 2011. On March 20, 2012, USEPA took final action to retain the current secondary NAAQS for oxides of sulfur (SO_2). On July 25, 2013, USEPA designated 29 areas in 16 states as "nonattainment" for the 2010 SO_2 standard. Air quality monitors in each of these areas measured violations of the standard based on 2009-2011 data. State plans demonstrating how these areas were to meet the SO_2 standard were due to USEPA by April 4, 2015. At that time, USEPA indicated that it intended to address designation for the remainder of the country in separate

[13] https://www.govinfo.gov/content/pkg/FR-2010-02-09/pdf/2010-1990.pdf (page 6475)
[14] https://www.govinfo.gov/content/pkg/FR-2010-02-09/pdf/2010-1990.pdf (page 6525)

future actions. As a result, USEPA will complete designations for all remaining areas in the country in up to three additional rounds: the first round by July 2, 2016, the second round by December 31, 2017, and the final round by December 31, 2020. None of the monitors in the NYC metropolitan area have shown violations of the one-hour SO_2 standard.

5.3.3.1 FEDERAL CONFORMITY

Federal conformity regulations promulgated under the Clean Air Act require projects in non-attainment areas that receive federal funding to conform to the applicable SIP. An area's Metropolitan Planning Organization (MPO), together with the State, is responsible for demonstrating conformity with respect to the SIP on metropolitan long-range transportation plans and Transportation Improvement Programs (TIPs). The Proposed Action is not receiving federal funding and is not required to meet the federal conformity requirements; however, the project is listed in the current TIP for the New York metropolitan area.

5.3.4 IMPACT CRITERIA

The State Environmental Quality Review Act (SEQRA) regulations and the *CEQR Technical Manual* state that the significance of a likely consequence (i.e., whether it is material, substantial, large or important) should be assessed in connection with its setting (e.g., urban or rural), its probability of occurrence, its duration, its irreversibility, its geographic scope, its magnitude, and the number of people affected. In terms of the magnitude of air quality impacts, any action predicted to increase the concentration of a criteria air pollutant to a level that would exceed the concentrations defined by the NAAQS (see **Table 5-1: National Ambient Air Quality Standards**) would be deemed to have a potential significant adverse impact. In addition, to maintain concentrations lower than the NAAQS in attainment areas, or to ensure that concentrations will not be significantly increased in non-attainment areas, threshold levels have been defined for certain pollutants; any action predicted to increase the concentrations of these pollutants above the thresholds would be deemed to have a potential significant adverse impact, even in cases where violations of the NAAQS are not predicted.

5.3.4.1 CO *DE MINIMIS* CRITERIA

New York City has developed de minimis criteria to assess the significance of the increase in CO concentrations that would result from the impact of proposed projects or actions on mobile sources, as set forth in the *CEQR Technical Manual*. These criteria set the minimum change in CO concentration that defines a significant environmental impact. Significant increases of CO concentrations in New York City are defined as:

- An increase of 0.5 ppm or more in the maximum eight-hour average CO concentration at a location where the predicted No-Action eight-hour concentration is equal to or between 8.0 and 9.0 ppm; or
- An increase of more than half the difference between baseline (i.e., No-Action) concentrations and the eight-hour standard, when No-Action concentrations are below 8.0 ppm.

5.3.4.2 $PM_{2.5}$ *DE MINIMIS* CRITERIA

The NYSDEC has published a policy to provide interim direction for evaluating $PM_{2.5}$ impacts. This policy applies only to facilities applying for permits or major permit modifications that emit 15 or more tons of PM_{10} annually. The policy states that such a project will be deemed to have a potentially significant adverse impact if the project's maximum impacts are predicted to increase $PM_{2.5}$ concentrations by more than 0.3 micrograms per cubic meter ($\mu g/m^3$) averaged annually or more than 5 $\mu g/m^3$ on a 24-hour basis. Projects that exceed either the annual or 24-hour threshold will be required to prepare an environmental impact statement (EIS) and examine potential measures to reduce or eliminate such potential significant adverse impacts.

In addition, New York City uses *de minimis* criteria to determine the potential for significant adverse $PM_{2.5}$ impacts under CEQR as follows:

- Predicted increase of more than half the difference between the background concentration and the 24-hour standard;
- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.1 $\mu g/m^3$ at ground level on a neighborhood scale (i.e., the annual increase in concentration representing the average over an area of approximately one square kilometer, centered on the location where the maximum ground-level impact is predicted for stationary sources; or at a distance from a roadway corridor similar to the minimum distance defined for locating neighborhood scale monitoring stations); or
- Annual average $PM_{2.5}$ concentration increments which are predicted to be greater than 0.3 $\mu g/m^3$ at a discrete receptor location (elevated or ground level).

5.3.5 MONITORED AMBIENT AIR QUALITY LEVELS

The NYSDEC maintains an air quality monitoring network and produces annual air quality reports that include monitoring data for CO, NO_x, PM_{10}, $PM_{2.5}$, and SO_2. To develop background levels, the latest available pollutant concentrations from monitoring sites located closest to the project site were used.

$PM_{2.5}$ impacts are assessed on an incremental basis and compared with the $PM_{2.5}$ de minimis criteria, without considering the annual background. **Table 5-2: Background Pollutant Concentrations** summarizes the background concentrations for each of the pollutants.

TABLE 5-2: BACKGROUND POLLUTANT CONCENTRATIONS

Pollutant	Averaging Period	Location	Concentration
CO	1-Hour[1]	Queens College 2, Queens	1.9 ppm
	8-Hour[2]	Queens College 2, Queens	0.9 ppm
SO_2	1-Hour[3]	Queens College 2, Queens	7.1 μg/m^3
NO_2	1-Hour[4]	Queens College 2, Queens	59.2 μg/m^3
	Annual[5]	Queens College 2, Queens	17.5 μg/m^3
$PM_{2.5}$	24-Hour[6]	Queens College 2, Queens	18.9 μg/m^3
PM_{10}	24-Hour[7]	Queens College 2, Queens	38.0 μg/m^3

Source: NYSDEC, http://www.dec.ny.gov/chemical/8536.html
USEPA AirData, https://www.epa.gov/outdoor-air-quality-data

Notes:
[1] 1-hour CO background concentration is based on the highest 2nd max value from the latest three years of available monitoring data from NYSDEC (2015-2017).
[2] 8-hour CO background concentration is based on the highest value from the latest available monitoring data from NYSDEC (2017).
[3] 1-hour SO_2 background concentration is based on the maximum 99th percentile concentration averaged over three years of data from NYSDEC (2015-2017).
[4] 1-hour NO_2 background concentration is based on three-year average (2015-2017) of the 98th percentile of daily maximum 1-hour concentrations from available monitoring data from NYSDEC.
[5] Annual NO_2 background concentration is based on the maximum annual average from the latest five years of available monitoring data from NYSDEC (2013-2017).
[6] The 24-hour $PM_{2.5}$ background concentration is based on maximum 98th percentile concentration averaged over three years of data from NYSDEC (2015-2017).
[7] 24-hour PM_{10} is based on the highest 2nd max value from the latest three years of available monitoring data from NYSDEC (2015-2017).

5.4 AIR QUALITY METHODOLOGY

5.4.1 MOBILE SOURCES

The Proposed Action has the potential for significant mobile source air quality impacts from increases in and/or redistribution of traffic. As outlined in the *CEQR Technical Manual*, in this area of Queens, actions that would result in the generation of 170 or more peak-hour vehicle trips at an intersection may result in potential significant, air quality impacts and *require a detailed air quality analysis for CO or* PM_{10}.

Also, NYCDEP, in conjunction with NYSDEC, has promulgated guidance for the screening and assessment of $PM_{2.5}$, which is outlined in the *CEQR Technical Manual*. The mobile source screening portion of the guidelines requires that, if a proposed action would generate fewer heavy-duty diesel vehicles (HDDV) per hour (or its equivalent in vehicular emissions) than listed below, a detailed $PM_{2.5}$ analysis is not required:

- 12 HDDV: for paved roads with < 5,000 vehicles/day
- 19 HDDV: for collector type roads
- 23 HDDV: for principal and minor arterials
- 23 HDDV: or expressways and limited access roads

All mobile source analyses were performed for the 2025 build year.

5.4.1.1 VEHICLE EMISSIONS

CO and PM emission factors are estimated using the USEPA Motor Vehicle Emissions Simulator (MOVES) released in 2010 and updated in 2014 (the latest version is MOVES 2014a). Emissions are supplied for average projected free flow speeds provided by the traffic analysis. Applicable and up-to-date environmental and vehicular traffic data for MOVES are supplied by NYSDEC to accurately model project conditions. Additional link-based data files requirements for MOVES are compiled by obtaining volume, speed and traffic distribution data from the traffic analysis.

Appropriate credits are used to accurately reflect the inspection and maintenance program.[15] County-specific hourly temperature and relative humidity data obtained from NYSDEC are used.

Emissions of fugitive dust are estimated using USEPA's latest Air Pollutant Emission Factor (AP-42) equation for paved roads. Emissions from fugitive dust are dependent upon vehicle weight and the surface silt loading in accordance with the latest NYCDEP guidelines regarding roadway silt loading factors and average fleet vehicle weight. Fugitive road dust is not included in the neighborhood scale $PM_{2.5}$ microscale analyses, because DEP considers it to have an insignificant contribution on that scale.

Mobile source particulate emissions for the JBD fleet were based on specific emissions data from NYCT research of clean diesel buses. These emissions are contained within an official report authorized by the NYCT Department of Buses, Research and Development Division entitled "Comparison of Clean Diesel Buses to CNG Buses" in 2001.[16]

5.4.1.2 TRAFFIC DATA

Traffic data for the air quality analysis are derived from vehicle counts and other information developed as part of the traffic analysis. Peak traffic periods considered in the air quality analysis are the same peak periods selected for the traffic analysis and consist of the weekday AM and PM peak hours. These are the periods when the maximum changes in pollutant concentrations are expected based on overall traffic volumes and anticipated changes in traffic patterns due to the Proposed Actions.

The *2010 Highway Capacity Manual* and Highway Capacity Software is used to develop the traffic data necessary for the air quality analysis. The vehicle classification is determined through field data collection. Existing vehicle speeds are obtained from field measurements for the area and adjusted to estimate future free flow speeds. Where speed data is unavailable, the lowest speed from the nearest intersections or different direction of same intersection is applied to be conservative.

5.4.1.3 DISPERSION MODEL

Maximum CO concentrations, resulting from vehicle emissions are predicted using the Tier 1 CAL3QHC model Version 2. The CAL3QHC model employs a Gaussian (normal distribution) dispersion assumption and includes an algorithm for estimating vehicular queue lengths at signalized intersections. CAL3QHC calculates emissions and dispersion of CO from idling and moving vehicles. The queuing algorithm includes site-specific traffic parameters, such as signal timing and delay (from the *2000 Highway Capacity*

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[15] The inspection and maintenance programs require inspections of automobiles and light trucks to determine if pollutant emissions from each vehicle exhaust system are lower than emission standards. Vehicles failing the emissions test must undergo maintenance and pass a repeat test to be registered in New York State.

[16] Lowell, D., Parsley, W., Bush, C, and Zupo, D. *COMPARISON OF CLEAN DIESEL BUSES TO CNG BUSES*. Source: https://www.osti.gov/servlets/purl/829622

Manual traffic), saturation flow rate, vehicle arrival type, and signal actuation (i.e., pre-timed or actuated signal) characteristics to project the number of idling vehicles. The CAL3QHC model has been updated with an extended module, CAL3QHCR, which allows for the incorporation of hourly meteorological data into the modeling, instead of worst-case assumptions regarding meteorological parameters. This refined (Tier 2) version of the model, CAL3QHCR, is employed if maximum predicted future CO concentrations are greater than the applicable ambient air quality standards or when de minimis thresholds are exceeded using the first level of CAL3QHC modeling.

In addition to CO, motor vehicle generated $PM_{2.5}$ concentrations within the traffic study area would also be determined utilizing the CAL3QHCR model. This refined version of the model can use hourly traffic and meteorology data and is more appropriate for calculating 24-hour and annual average concentrations associated with $PM_{2.5}$.

5.4.1.4 METEOROLOGY

In general, the transport and concentration of pollutants from vehicular sources are influenced by *three principal meteorological factors*: *wind direction; wind speed; and atmospheric stability*. Wind direction influences the direction in which pollutants are dispersed, and atmospheric stability accounts for the effects of vertical mixing in the atmosphere. These factors influence the concentration at a prediction location (*receptor*).

5.4.1.5 TIER I CO ANALYSIS — CAL3QHC

In applying the CAL3QHC model, the wind angle is varied to determine the wind direction resulting in the maximum concentrations at each receptor.

Following the USEPA guidelines, CAL3QHC computations are performed using a wind speed of one meter per second, and the neutral stability class D. The 8-hour average CO concentrations are estimated by multiplying the predicted one-hour average CO concentrations by a factor of 0.7 to account for persistence of meteorological conditions and fluctuations in traffic volumes. A surface roughness of 3.21 meters is chosen to represent a Central Business District (CBD). At each receptor location, concentrations are calculated for all wind directions, and the highest predicted concentration was reported, regardless of frequency of occurrence. These assumptions ensured that reasonable worst-case meteorology was used to estimate impacts.

5.4.1.6 TIER II $PM_{2.5}$ ANALYSIS — CAL3QHCR

Tier II analyses performed with the CAL3QHCR model include the modeling of hourly concentrations based on hourly traffic data and five years of monitored hourly meteorological data. CAL3QHCR is a Gaussian dispersion model that determines pollutant concentrations at specified receptor points. It accounts for pollutant emissions from both free-flowing vehicles and vehicles idling at signalized intersections. However, following USEPA guidance, the queuing algorithm is not used with the CAL3QHCR model. Therefore, average speeds that included intersection delay were calculated for the roadway links. CAL3QHCR was run with five years of meteorological data (2013–2017) from LaGuardia Airport. All hours are modeled, and the highest resulting concentration for each averaging period presented.

5.4.1.7 ANALYSIS YEAR

The microscale analyses were performed for the existing conditions and 2025, the year by which the Proposed Action would be completed. The analysis was performed for both the No-Build Alternative and the Future with the Proposed Action.

5.4.1.8 BACKGROUND CONCENTRATIONS

To represent the total impact of the Proposed Action in the analysis, it is necessary to consider representative background levels for each of the analyzed pollutants. The background level is the component of the total concentration not accounted for through the microscale modeling analysis. Applicable background concentrations are added to the modeling results to obtain the total pollutant concentrations at each receptor site for the analysis year. The CO background values are provided by DEP using the latest NYSDEC procedures based on the most recent ambient monitoring data and future decreases in vehicular emissions. $PM_{2.5}$, PM_{10}, NO_2 and SO_2 background values were obtained from NYSDEC. These values are added to the modeling results, as appropriate, to obtain the total pollutant concentrations at each receptor site for the future analysis year. The background values used in the air quality analyses are provided in **Table 5-2: Background Pollutant Concentrations**.

5.4.1.9 ANALYSIS SITES

To determine locations at which microscale modeling analysis would be required to estimate CO and PM concentration levels at the most heavily congested intersections in the study area, screening procedures described in the *CEQR Technical Manual* are utilized in order to select the worst-case analysis sites. These procedures include a determination as to whether future traffic volumes from the studied traffic intersections would exceed the CEQR CO screening threshold of 170 vehicles during peak traffic hours.

For $PM_{2.5}$, in concert with its interim guidelines, NYCDEP has developed a screening threshold procedure according to roadway type which examines the minimum allowable project-induced Heavy-Duty Diesel (HDD) truck trips per hour that would not result in significant emissions of $PM_{2.5}$.

- 12 or more HDDV for paved roads with average daily traffic fewer than 5,000 vehicles;
- 19 or more HDDV for collector roads;
- 23 or more HDDV for principal and minor arterials; or
- 23 or more HDDV for expressways and limited access roads.

Traffic periods considered in the air quality analysis consist of the weekday AM and PM peak hours. Future conditions for the study year 2025, with and without the Proposed Actions, are considered in the selection process. The screening process concluded that for all three Candidate Alternatives, none of the traffic intersections in the study area would exceed the CEQR screening thresholds for CO. For $PM_{2.5}$, the screening process indicated that for Candidate Alternatives A and B, none of the traffic intersections in the study area would exceed the CEQR screening thresholds. However, for Candidate Alternative D, the screening process indicated that three intersections in the study area would exceed the CEQR incremental screening criteria. Therefore, a detailed analysis was performed at the intersection at 165th Street and Liberty Avenue, which presented as the worst-case scenario for impacts.

5.4.2 STATIONARY SOURCES

A stationary source analysis was conducted to evaluate *potential air quality impacts related to the operation of the proposed JBD*. All three of the Candidate Alternatives were assessed. The major stationary sources of emissions from the proposed JBD includes: boilers; hot water heater; gas-fired rooftop heat recovery ventilation air units (HRUs); emergency generators; and, tail pipe exhaust system, related to the storage and maintenance of buses.

For each of the Candidate Alternatives, the hot water boilers would provide for building heating and a separate water heater would provide hot water for domestic use. The boilers and water heater would be gas fired. The facility would have two boilers, but only one would be operational at any given time. Ventilation for the maintenance and storage areas of the bus depot would be provided by up to 19 roof-mounted gas fired HVAC/HRUs (depending upon the Candidate Alternative). These HVAC/HRU systems would be designed to be more energy efficient than traditional ventilation systems by recovering heat from the air being exhausted from the building to pre-heat intake air, *thereby reducing overall natural gas consumption*. Three gas-fired rooftop HVAC/HRU units would provide heating and cooling of administrative and support areas within the depot.

Two diesel fueled 2-megawatt (MW) generators would be provided to supply the depot with emergency backup power in the event of any temporary Con Edison power outage.

5.4.2.1 EMISSIONS ESTIMATES

Emission rates for the proposed JBD's fossil fuel-fired equipment were calculated based on emission factors obtained from the USEPA's Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources. PM emissions include both the filterable and condensable fractions. Short-term and annual emission rates were estimated based on conservative estimates of equipment size and utilization data provided by NYCT and on other relevant information from other NYCT Bus Depot facilities.

The proposed JBD project would also be required to meet the applicable NYSDEC regulatory requirements for sources of air emissions. As shown in **Table 5-3: Estimated Annual Emissions for the Proposed Project**, all three Candidate Alternatives would result in annual emissions that would categorize the proposed JBD as a *minor source* and as a result, *would be eligible to obtain a state facility permit*.

TABLE 5-3: ESTIMATED ANNUAL EMISSIONS FOR THE PROPOSED PROJECT

Pollutants	Estimated Facility Emissions (Tons/year)			Major Source Threshold (Tons/Year)
	Alternative A	Alternative B	Alternative D	
NOx	6.8	9.8	12.2	25
CO	6.2	10.1	11.7	100
PM_{10}	0.5	0.7	0.9	100
$PM_{2.5}$	0.5	0.7	0.9	100
SO_2	0.1	0.1	0.1	100
VOC's	1.2	1.7	1.9	25

Additional key assumptions for pollutant emissions determinations included:

- Emergency generators would run/operate during emergencies and periodic testing; therefore, emissions would be insignificant and were not included as part of the impact assessment.
- Only Low NO_x Boilers would be used for the facility.
- Only one boiler would be utilized during peak one-hour periods.
- Unless otherwise specified, all rooftop emissions sources assume 100 percent load conditions.
- For boilers, short-term emission rate for 24-hour averaging period is based on one boiler operating for three hours in the morning and three hours in the evening at 100 percent load, and one boiler operating at 50 percent load for the rest of the day (18 hours).
- For HRU's, short-term emission rate for 24-hour averaging period is based on the operation of the heat recovery units. Heat recovery units operating for three hours in the morning and three hours in the evening at 100 percent load and operating at two-thirds of the maximum load for the rest of the day (18 hours).
- All future diesel buses associated with the proposed JBD are assumed to be at least Tier 4 compliant. As a result, USEPA MOVES emission factors were adjusted to reflect emissions reduction technology such as diesel particulate filters.

5.4.2.2 DISPERSION ANALYSIS

A detailed dispersion modeling analysis using the USEPA AERMOD model was conducted for the proposed JBD. AERMOD is a versatile model capable of predicting pollutant concentrations from continuous point, area, and volume sources. AERMOD uses enhanced plume and wake dispersion algorithms that are capable of estimating pollutant concentrations in a building's cavity and wake regions.

The AERMOD model calculates pollutant concentrations from one or more points (e.g., exhaust stacks) based on hourly meteorological data, and has the capability to calculate pollutant concentrations at locations where the plume from the exhaust stack is affected by the aerodynamic wakes and eddies (downwash) produced by nearby structures. The analyses of potential impacts from exhaust stacks were made assuming stack tip downwash, urban dispersion and surface roughness length, and elimination of calms. AERMOD was run with and without building downwash (the downwash option accounts for the effects on plume dispersion created by the structure the stack is located on, and other nearby structures). This ensures that the highest estimates of pollutant concentrations when assessing the impact of elevated sources on elevated receptor locations are produced.

The refined dispersion modeling analysis was performed for 1-hour SO_2 and NO_2; 24-hour $PM_{2.5}$; and annual $PM_{2.5}$ and NO_2.

One-hour average NO_2 concentration increments associated with the proposed JBD were estimated using AERMOD model's Ozone Limiting Method (OLM) module to analyze chemical transformation within the model. The OLM module incorporates hourly background ozone concentrations to estimate NO_x transformation within the source plume. Ozone concentrations were taken from the NYSDEC Queens College monitoring station that is the nearest ozone monitoring station and has five years of hourly data available.

5.4.2.3 METEOROLOGICAL DATA

Based on their proximity to the project, the most recent five-year period (2013 to 2017) of available representative hourly meteorological data from LaGuardia Airport was used in the analysis along with upper air data from Brookhaven, located in Long Island, New York. Meteorological data represents a key input into the AERMOD model that helps determine local pollutant transport.

5.4.2.4 RECEPTOR LOCATIONS

A comprehensive receptor network (i.e., locations with continuous public access or residential land use) was developed for the modeling analyses. The receptor network included numerous discrete receptors to simulate impacts on elevated receptors (e.g., windows, balconies, air intakes) from the proposed JBD. Receptors were placed at multiple locations for buildings in the immediate vicinity of the project site. Locations included ground level and upper floors up to the maximum building heights, representative of intake vents or operable windows.

5.5 AIR QUALITY IMPACT ASSESSMENT

5.5.1 THE FUTURE WITHOUT THE PROPOSED PROJECT

Under the No-Build Alternative (also referred to as "the future without the proposed project"), it is assumed that the depot would continue to operate without any improvements. For mobile sources, no analysis was conducted since impacts associated with $PM_{2.5}$ are assessed by their incremental effect on existing conditions. For stationary sources, the No Build Alternative would include the same bus maintenance facilities as described in the existing conditions section of **Chapter 1.0: Purpose and Need**. No new major stationary emission sources are currently proposed within the study area.

5.5.2 THE FUTURE WITH THE PROPOSED PROJECT

5.5.2.1 MOBILE SOURCES

Based on the estimated incremental traffic projected for the three Candidate Alternatives, only Candidate Alternative D would not pass the CEQR $PM_{2.5}$ screening criteria. Therefore, the CEQR $PM_{2.5}$ analysis was then conducted for Candidate Alternative D. Maximum impacts from vehicular emissions were calculated at the intersection of Liberty Avenue and 165th Street. This intersection represents the worst-case scenario for intersections affected by the proposed action. Concentrations were predicted for the 24-hour and annual time periods, which were then used for comparison with the NYCDEP criteria. The predicted results presented below in **Table 5-4: Highest Predicted Pollutant Concentrations – Alternative D**, represent the highest incremental concentrations for both AM and PM peak traffic periods.

TABLE 5-4: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE D ($P_{2.5}$ – MOBILE SOURCES)

Pollutant	Time Averaging Period	Intersection	Maximum Concentration Increment ($\mu g/m^3$)	*De Minimis* Criteria ($\mu g/m^3$)
$PM_{2.5}$	24-Hour [1]	Liberty Avenue & 165th Street	0.052	8.0
	Annual		0.004	0.10

Notes: [1] $PM_{2.5}$ *de minimis* criteria – 24-hour average, not to exceed more than half the difference between the background concentration 24 $\mu g/m^3$ and the 24-hour NAAQS of 35 $\mu g/m^3$

The values shown are the highest predicted concentrations for any of the time periods analyzed. The results indicate that the proposed action would be well below the NYCDEP interim guidance criteria. Therefore, ***the proposed JBD would not result in significant adverse $PM_{2.5}$ impacts*** at the studied intersection locations.

5.5.2.2 STATIONARY SOURCES

For all three Candidate Alternatives, a stationary source analysis was conducted to evaluate potential air quality impacts from the Proposed Action's: onsite activities; heating; and, hot water systems. The analysis focused on the critical pollutants NO_2, SO_2, and $PM_{2.5}$. As shown in **Table 5-5: Highest Predicted Pollutant Concentrations – Alternative A**, **Table 5-6: Highest Predicted Pollutant Concentrations – Alternative B** and **Table 5-7: Highest Predicted Pollutant Concentrations – Alternative D**, the total NO_2 and SO_2 concentrations that would result from combining project-generated stack emissions with background levels ***would be below the NAAQS***.

TABLE 5-5: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE A (NO_2/SO_2 – STATIONARY SOURCES)

Pollutant	Time Averaging Period	Maximum Modeled Build Concentration (ppm)	Background Concentration (ppm)	Total Concentration (ppm)	NAAQS (ppm)
NO_2	1-Hour [1]	185.83	59.2	185.83	188
	Annual	15.54	17.5	33.04	100
SO_2	1-Hour	0.69	7.1	7.8	197

Notes: [1] Seasonal-hourly background concentration was added to the modeled one-hour NO_2 concentrations to predict the maximum total concentration.

TABLE 5-6: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE B (NO_2/SO_2 – STATIONARY SOURCES)

Pollutant	Time Averaging Period	Maximum Modeled Build Concentration (ppm)	Background Concentration (ppm)	Total Concentration (ppm)	NAAQS (ppm)
NO_2	1-Hour [1]	141.60	59.2	141.60	188
	Annual	3.35	17.5	20.85	100
SO_2	1-Hour	0.5	7.1	7.8	197

Notes: [1] Seasonal-hourly background concentration was added to the modeled one-hour NO_2 concentrations to predict the maximum total concentration.

TABLE 5-7: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE D (NO_2/SO_2 – STATIONARY SOURCES)

Pollutant	Time Averaging Period	Maximum Modeled Build Concentration (ppm)	Background Concentration (ppm)	Total Concentration (ppm)	NAAQS (ppm)
NO_2	1-Hour [1]	113.13	59.2	113.13	188
	Annual	3.24	17.5	20.74	100
SO_2	1-Hour	0.66	7.1	7.7	197

Notes: [1] Seasonal-hourly background concentration was added to the modeled one-hour NO_2 concentrations to predict the maximum total concentration.

Likewise, for $PM_{2.5}$ the results shown in **Table 5-8: Highest Predicted Pollutant Concentrations – Alternative A**, **Table 5-9: Highest Predicted Pollutant Concentrations – Alternative B**, and **Table 5-10: Highest Predicted Pollutant Concentrations – Alternative D** indicate that the maximum discrete and annual $PM_{2.5}$ concentration increments *would be below the updated NYCDEP interim guidance criteria*.

TABLE 5-8: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE A ($P_{2.5}$ – STATIONARY SOURCES)

Pollutant	Time Averaging Period	Maximum Concentration Increment ($\mu g/m^3$)	***De Minimis*** **Criteria ($\mu g/m^3$)**
$PM_{2.5}$	24-Hour [1]	1.34	8.05
	Annual [2]	0.27	0.3

Notes: [1] The 24-hour $PM_{2.5}$ impacts are assessed on an incremental basis without considering the background. The 24-hour $PM_{2.5}$ background concentration is used to develop the De Minimis criteria.
[2] Annual $PM_{2.5}$ impacts are assessed on an incremental basis and compared with the $PM_{2.5}$ de minimis criteria of 0.3 µg/m3, without considering the annual background. Therefore, the annual $PM_{2.5}$ background is not presented in the table.

TABLE 5-9: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE B ($P_{2.5}$ – STATIONARY SOURCES)

Pollutant	Time Averaging Period	Maximum Concentration Increment ($\mu g/m^3$)	*De Minimis* Criteria ($\mu g/m^3$)
$PM_{2.5}$	24-Hour [1]	1.46	8.05
	Annual [2]	0.22	0.3

Notes: [1] The 24-hour $PM_{2.5}$ impacts are assessed on an incremental basis without considering the background. The 24-hour $PM_{2.5}$ background concentration is used to develop the De Minimis criteria.
[2] Annual $PM_{2.5}$ impacts are assessed on an incremental basis and compared with the $PM_{2.5}$ de minimis criteria of 0.3 µg/m3, without considering the annual background. Therefore, the annual $PM_{2.5}$ background is not presented in the table.

TABLE 5-10: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS – ALTERNATIVE D ($P_{2.5}$ – STATIONARY SOURCES)

Pollutant	Time Averaging Period	Maximum Concentration Increment ($\mu g/m^3$)	*De Minimis* Criteria ($\mu g/m^3$)
$PM_{2.5}$	24-Hour [1]	2.27	8.05
	Annual [2]	0.23	0.3

Notes: [1] The 24-hour $PM_{2.5}$ impacts are assessed on an incremental basis without considering the background. The 24-hour $PM_{2.5}$ background concentration is used to develop the De Minimis criteria.
[2] Annual $PM_{2.5}$ impacts are assessed on an incremental basis and compared with the $PM_{2.5}$ de minimis criteria of 0.3 µg/m3, without considering the annual background. Therefore, the annual $PM_{2.5}$ background is not presented in the table.

For all three Candidate Alternatives studied, ***the analyses in this chapter represent worst-case scenario conditions both for mobile and stationary sources***. *It is anticipated that potential future detailed design and/or operational refinements, not assessed in this analysis, could further reduce future estimated emissions.* These design and/or operation refinements could include:

- using 30 to 60 buses operating within the proposed JBD that would be electric powered;
- the increased size and efficiency of the facility could facilitate better servicing and maintenance of buses; and,
- employees could park inside the facility instead of on the street thus eliminating employees driving around on the streets near the depot to find parking.

6.0 NOISE AND VIBRATION

6.1 INTRODUCTION

Noise can cause stress-related illnesses, disrupt sleep, and interrupt activities requiring concentration; and, high noise levels have the potential to cause hearing loss. *This chapter assesses the potential for noise and vibration impacts from the* ***operation*** *of the* ***Proposed Action*** (Construction noise and vibration impacts are discussed in **Chapter 17.0: Construction Methods and Activities**.). This chapter includes: a discussion of noise and vibration fundamentals, standards, impact criteria, and analysis methodology; a description of the affected environment (i.e., existing conditions); an assessment of probable impacts of the No-Build Alternative and the three Candidate Alternatives; and, an ***evaluation of the feasibility of implementing noise and vibration mitigation measures***. Project noise and vibration impacts are evaluated using: the impact criteria of the Federal Transit Administration (FTA) contained in the FTA guidance manual, *Transit Noise and Vibration Impact Assessment* (September 2018); and, elements of the NYC *CEQR Technical Manual*.

The initial noise impact screening criteria provided in both CEQR and the FTA guidance manual identify whether the potential exists for the proposed action to generate a significant noise impact at a receptor (e.g., residences, house of worship, community facilities, etc.), or result in significantly high ambient noise levels along the bus travel network (i.e., from stationary sources or mobile sources as described below). If the basic analysis does not identify the potential for significant impacts, no further noise analysis is necessary and the proposed action would not generate a significant noise impact.

6.2 SUMMARY AND CONCLUSIONS

The major sources of ***existing community noise*** come primarily from automobile traffic, which includes buses accessing the existing JBD. ***In addition to roadway noise, onsite bus noise from the existing JBD may affect some nearby residents along 107th Avenue and 165th Street***. To determine the influence of existing traffic noise, noise measurements were conducted at five locations representative of existing sensitive locations and were situated along roadways where the greatest increases in traffic volumes that could be generated by the project are likely to occur. In addition to the short-term noise measurements, measurements were also taken at three locations to determine the 24-hour day-night average sound level (L_{dn}) within the proposed study area.

The Proposed Action would generate both stationary and mobile source noise. *Stationary source noise* would be generated by rooftop mechanical equipment, as well as by bus parking activities within the depot building. *Mobile source noise* would be generated *off-site* by buses and passenger vehicles driving to and from the proposed JBD.

For the three Candidate Alternatives being evaluated, the operation of the proposed JBD ***would not result in any significant mobile (from moving buses) or stationary (from the depot itself) noise impacts to sensitive noise receptors such as residences and community facilities in the vicinity of the Proposed Action***. Noise from the proposed JBD ***would not exceed the Federal Transit Administration (FTA) noise criteria*** at adjacent sensitive noise receptors. In addition, the increase in the number of buses maintained at the proposed action would not result in any exceedance of the *CEQR Technical Manual* noise criteria at nearby sites along the local traffic network.

Because buses are rubber-tired vehicles, there would be ***no significant vibration effects*** to any nearby vibration sensitive receptors such as residences and community facilities.

The conceptual designs for the Candidate Alternatives include a minimum 20-foot-high security/sound barrier walls, which is similar to the height of the existing wall that borders the properties along 165^{th} Street. For Candidate Alternative A, the height of the security/sound barrier wall along 165^{th} Street would be *increased to 31 feet so that the noise exposure levels for the Proposed Action would not exceed the FTA's threshold criteria level*. Compared to the other Candidate Alternatives, Candidate Alternative A has the most outdoor bus parking, thereby creating the highest bus noise emission levels and requiring a taller security/sound barrier wall.

Therefore, since noise and vibration impacts are not predicted to occur for the proposed action based on bus depot operations and conceptual site designs***, no additional mitigation measures would be required***.

The Proposed Action (all three Candidate Alternatives) would not result in any significant adverse noise or vibration impacts from both stationary and mobile sources to surrounding land uses. The conceptual site designs for the Candidate Alternatives include security/sound barrier walls and rooftop parapet walls; these would control noise emissions and no further mitigation would be warranted.

6.3 NOISE FUNDAMENTALS

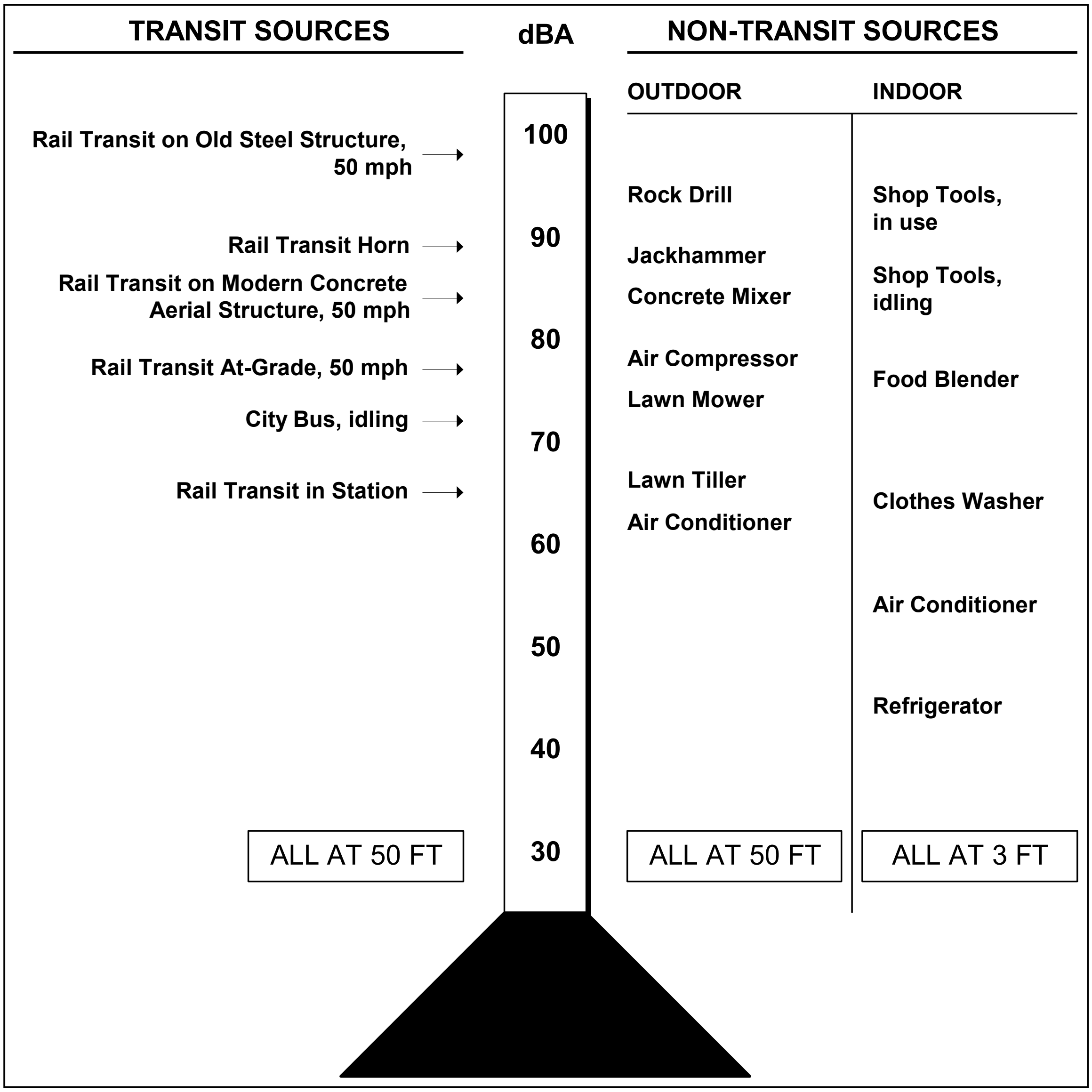
Noise in a community can come from man-made sources such as automobiles, trucks, buses, aircraft, and construction equipment as well as from industrial, commercial, transportation, and manufacturing facilities. **Figure 6-1: Common Indoor and Outdoor Noise Levels** lists typical activities and their associated noise levels. Noise levels, which are measured in units called decibels (dB), relate the magnitude of the sound pressure to a standard reference value. Although the noise values of certain activities can approach 135dB, sounds typically encountered in the environment are within the 40 to 120dB range.

Noise of any kind contains sound energy that occurs at several different frequencies. The frequency range of this sound energy depends on the nature of the individual noise activity or source. The way humans interpret noise is important because the human ear does not register the sound levels of all noise frequencies equally; humans automatically reduce the impression of high- and low-pitched sounds. Over the normal range of hearing, humans are most sensitive to sounds produced with frequencies in the range of 200 hertz to 10,000 hertz. To quantitatively replicate this response of the human ear to noise, the noise levels at different frequencies must be adjusted using a process referred to as A-weighting. Under this process, the resulting noise level commonly expressed as an A-weighted decibel (dBA) will automatically compensate for the non-flat frequency response of human hearing.

Noise levels from environmental and man-made activities also vary widely over time. Distinctive noise descriptors are used so that that these variations can be represented within a proper context. For example, the equivalent noise level, represented by the L_{eq} descriptor, characterizes a time-varying noise level produced over a random period of time, as a single number represented over a specified period of time. This represents the equivalent steady noise level, which, over a given period, contains the same energy as the time-varying noise during the same period.

A common time period used in environmental noise studies is one hour, represented as L_{eq} (h). This descriptor is used to express the results of noise monitoring, predictions, and impact assessments at sensitive receptors where sleep is not an issue. 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 L_{dn}. The L_{dn} is defined as the cumulative noise exposure from all events occurring over a 24-hour period, but with a 10dB penalty imposed on noise occurring between 10 PM to 7 AM. This added penalty takes into consideration the fact that people tend to be more sensitive to noises during these late night and early morning hours. Both the L_{dn} and the L_{eq} descriptor are used here, as it would be most relevant in describing the study area's noise environment.

FIGURE 6-1: COMMON INDOOR AND OUTDOOR NOISE LEVELS



Because changes in the decibel scale are represented logarithmically, increases or decreases in the decibel levels of a noise source are often misunderstood. The following general relationships are helpful in understanding the decibel scale with respect to noise:

- An increase of one dBA cannot be perceived by the human ear.
- A 3 dBA increase represents a doubling of sound energy and is normally the smallest change in sound level perceptible to the human ear.
- A 10 dBA increase in noise level corresponds to a tenfold increase in noise energy; however, a listener would only judge a 10 dBA increase as being twice as loud.
- A 20 dBA increase would result in a dramatic change in how a listener would perceive the sound.

6.4 REGULATORY FRAMEWORK

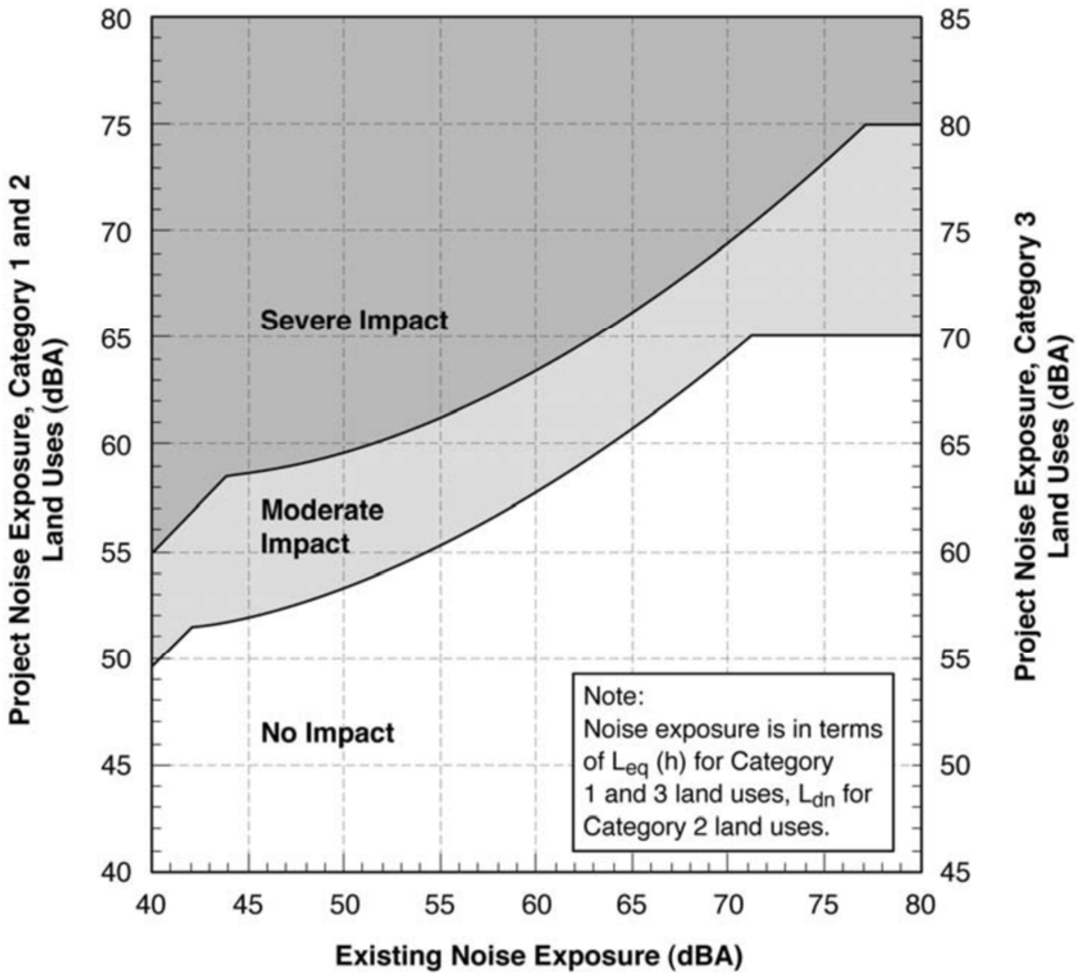
6.4.1 FTA NOISE IMPACT CRITERIA

With respect to transit related bus facilities, the FTA guidance manual presents procedures for predicting and assessing noise and vibration impacts of proposed mass transit projects. Procedures for assessing noise and vibration impacts are provided for different stages of project development, from early planning through preliminary engineering and final design. Both for noise and vibration, there are three levels of analysis described. The framework acts as a screening process, reserving detailed analysis for projects with the greatest potential for impacts while allowing a simpler process for projects with little or no effects. This guidance manual contains noise and vibration impact criteria that are used to assess the magnitude of predicted impacts. A range of mitigation measures are described for dealing with adverse noise and vibration impacts. The FTA Manual contains established methods, shown on **Figure 6-2: Allowable Transit Noise Increases** to assess potential noise affects. These criteria group noise sensitive land uses into three categories:

- Category 1 – Buildings or parks where quiet is an essential element of their intended purpose. This category includes National Historic landmarks with significant outdoor usage, as well as recording studios and concert halls.
- Category 2 – Residences and buildings where people normally sleep. This includes residences, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance.
- Category 3 – Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

Stationary source noise impacts resulting from a proposed action are determined by comparing the existing and future project-related outdoor noise levels, as illustrated in the graph provided on **Figure 6-2**.

FIGURE 6-2: ALLOWABLE TRANSIT NOISE INCREASES



As the level of existing *ambient noise* increases, the allowable level of transit noise also increases, but the total amount by which a community's noise can increase without an impact is reduced. *This accounts for the unexpected fact that a project noise level lower than the existing noise level can still result in an impact*. This fact is also demonstrated below in **Table 6-1: Noise Levels Defining Impact for Transit Projects**. Noise level increases, defined by the FTA Manual as "moderate impacts" or "severe impacts," occur when the existing levels are surpassed by more than the allowable increase by project-related noise.

TABLE 6-1. NOISE LEVELS DEFINING IMPACT FOR TRANSIT PROJECTS

Existing Noise Exposure* $L_{eq}(h)$ or L_{dn} (dBA)	Project Noise Impact Exposure,* $L_{eq}(h)$ or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	< Ambient+10	Ambient + 10 to 15	>Ambient+15	<Ambient+15	Ambient + 15 to 20	>Ambient+20
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67
57	<57	57-62	>62	<62	62-67	>67
58	<57	57-62	>62	<62	62-67	>67
59	<58	58-63	>63	<63	63-68	>68
60	<58	58-63	>63	<63	63-68	>68
61	<59	59-64	>64	<64	64-69	>69
62	<59	59-64	>64	<64	64-69	>69
63	<60	60-65	>65	<65	65-70	>70
64	<61	61-65	>65	<66	66-70	>70
65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

* L_{dn} is used for land use where nighttime sensitivity is a factor; L_{eq} during the hour of maximum transit noise exposure is used for land use involving only daytime activities.

Source: FTA, Transit Noise and Vibration Impact Assessment, September 2018.

6.4.2 NYC CEQR NOISE CRITERIA

While NYCT is not required to adhere to the New York City noise standards and criteria that are described below, they are used as guidelines to assess noise levels associated with the operation of on-street mobile sources related to the Proposed Action.

The *NYC CEQR Technical Manual* has established standards for noise exposure at sensitive receptors resulting from the implementation of a project. During daytime hours (between 7 AM and 10 PM), nuisance levels for noise are generally considered to be more than 45 dBA indoors and 70 to 75 dBA outdoors. Indoor activities are subject to task interference above this level, and 70 to 75 dBA is the level at which speech interference occurs outdoors. Typical noise attenuation techniques used in the past (including typical single-glazed windows) provide a minimum of approximately 20 dBA of noise attenuation from outdoor to indoor areas. As a result, CEQR noise standards are based on a daytime threshold noise level of 65 dBA, which should not be significantly exceeded. The impact thresholds are described below:

- A significant impact would occur if the daytime period noise level significantly exceeds 65 dBA.
- An increase of five dBA or greater over the No Build noise level would be an impact if the No-Build noise level is 60 dBA or less.
- If the No-Build noise level is 62 dBA or more, a three dBA increase or greater would be considered significant.
- A significant impact would occur during the nighttime period (defined by CEQR standards as being between 10 PM and 7 AM) if there is a change in noise levels of three dBA or more.

Many areas of NYC, including portions of the Proposed Action study area, experience ambient noise levels that are currently greater than 65 dB. In these cases, a significant increase would occur if the No-Build noise level is increased by three dbA $L_{eq(1)}$ or greater.

6.4.2.1 CEQR NOISE EXPOSURE STANDARDS

NYCDEP has established four categories of acceptability based on receptor type and land use for vehicular traffic, rail, and aircraft-related noise sources. The categories include “generally acceptable,” “marginally acceptable,” marginally unacceptable,” and “clearly unacceptable.” Listed in **Table 6-2: Noise Exposure Standards for Use in City Environmental Impact Review** are attenuation values and external noise exposure standards as they relate to traffic, aircraft, and rail noise.

TABLE 6-2: NOISE EXPOSURE STANDARDS FOR USE IN CITY ENVIRONMENTAL IMPACT REVIEW[1]

Receptor Type	Time Period	Acceptable General External Exposure	Airport Exposure[3]	Marginally Acceptable General External Exposure	Airport Exposure[3]	Marginally Unacceptable General External Exposure	Airport Exposure[3]	Clearly Unacceptable General External Exposure	Airport Exposure[3]
1. outdoor area requiring serenity and quiet[2]	na	$L_{10} \leq$ 55dBA	$L_{dn} \leq 60$ dBA						
2. hospital, nursing home	na	$L_{10} \leq$ 55dBA		$55 < L_{10} \leq$ 65dBA	$60 < L_{dn} \leq 65$ dBA	$65 < L_{10} \leq$ 80dBA	(I) $65 < L_{dn} \leq 70$ dBA; (II) 70 dBA $\leq L_{dn}$	$L_{10} >$ 80dBA	$L_{dn} \leq 75$ dBA
3. residence, residential hotel/ motel	7AM - 10PM	$L_{10} \leq$ 65dBA		$65 < L_{10} \leq$ 70dBA		$70 < L_{10} \leq$ 80dBA		$L_{10} >$ 80dBA	
	10PM - 7AM	$L_{10} \leq$ 55dBA		$55 < L_{10} \leq$ 70dBA		$70 < L_{10} \leq$ 80dBA		$L_{10} >$ 80dBA	
4. school, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient health facility	na	Same as Residential Day (7AM - 10PM)		Same as Residential Day (7AM - 10PM)		Same as Residential Day (7AM - 10 PM)		Same as Residential Day (7AM - 10 PM)	
5. commercial or office	na	Same as Residential Day (7AM - 10PM)		Same as Residential Day (7AM - 10PM)		Same as Residential Day (7AM - 10PM)		Same as Residential Day (7 AM - 10 PM)	
6. industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Source: New York City Department of Environmental Protection (adopted by DEP for use in CEQR-1983)

Notes: In addition, any new activity shall not increase the ambient noise level by three dBA or more:

1. Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by ANSI Standards; all values are for the worst hour in the time period.

2. Tracts of land where serenity and quiet are extraordinarily important and serve an important public need and where the preservation of these qualities is essential of the area to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and old-age homes.

3. One may use FAA-approved land contours supplied by the Port Authority of New York and New Jersey, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority.

4. External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

6.4.2.2 NYC NOISE CODE

Listed in **Table 6-3: New York City Noise Control Code** are allowable noise levels by octave band. According to the noise code, no person shall cause or permit a sound source operating with any commercial or business enterprise to exceed these designated decibel levels within the assigned octave bands. These criteria, as they relate to the Proposed Action, would apply to noise from the project's rooftop HVAC and HRU systems or other outdoor machinery.

TABLE 6-3: NEW YORK CITY NOISE CONTROL CODE

Octave Band Frequency (Hz)	Maximum Sound Pressure Levels (dB) as measured within a receiving property as specified below	
	Residential Receiving Property for mixed-use buildings and residential buildings (as measured within any room of the residential portion of the building with windows open, if possible)	Commercial Receiving Property (as measured within any room containing offices within the building with windows open, if possible)
31.5	70	74
63	61	64
125	53	56
250	46	50
500	40	45
1,000	36	41
2,000	34	39
4,000	33	38
8,000	32	37

Source: Section 24-232 of the Administrative Code of the City of NY, as amended 12-05.

6.5 NOISE METHODOLOGY

The Proposed Action project would generate both *stationary* and *mobile source noise*. Stationary source noise would be generated by rooftop mechanical equipment, as well as by bus parking activities taking place within the depot building, including bus parking. Mobile source noise would be generated off-site by buses and passenger vehicles driving to and from the proposed depot.

6.5.1 STATIONARY SOURCES

Noise associated with the Proposed Action was determined using FTA's recommended quantitative assessment methodology. The noise evaluation involved the following steps:

- Representative noise-sensitive receptors (i.e., residences, churches) that could be potentially affected by the Proposed Action are identified utilizing FTA screening procedures.

- Existing noise levels were determined through measurement. For purposes of assessing potential noise impacts, 24-hour noise measurements are typically conducted for residential receptors and peak period short-term measurements are collected for institutional land uses.
- Determine noise FTA impact threshold levels based on existing noise levels.

For selected representative receptors, the FTA Manual noise assessment procedures were used to predict future noise levels from the operation of the JBD. The principal assessment inputs include, onsite bus activity, source-to-receiver distances and site geometry.

To determine potential noise impacts, project-related noise resulting from the Proposed Action was compared to the FTA Manual impact threshold level. Impact occurs only if the project-related total noise exposure exceeds the FTA Manual impact threshold criteria level.

6.5.2 MOBILE SOURCES

A screening analysis (per CEQR guidelines) for noise impacts was conducted for the AM, PM, and Late PM traffic periods to determine whether a significant noise impact would occur (requiring the implementation of a more rigorous noise analysis). According to CEQR guidelines, to cause a significant noise impact, the project would have to induce traffic that would at least double the existing Passenger Car Equivalents (PCEs) near any sensitive receptor. PCEs are used to account for the different types of motor vehicles (i.e., cars, trucks etc.) and their varying levels of sound. According to the *CEQR Technical Manual*, the relationships used for calculating PCEs are as follows: one automobile is equivalent to one PCE; one medium truck is equivalent to 13 PCEs; one bus is equivalent to 18 PCEs; and one heavy truck is equivalent to 47 PCEs. In other words, the noise level produced by a medium truck would be the same as that from 13 cars and the noise level from a heavy truck would be equivalent to that of 47 cars. If the PCEs more than doubled along studied traffic routes from the Existing to the Build scenario, then the site was selected for further analysis. This doubling of PCEs is the minimum increase in traffic volume that would result in a three-dB increase in the corresponding noise level.

To determine future noise levels without the Proposed Action (No Build), noise from existing conditions and expected traffic generated by No-Build projects were combined. To determine future noise levels with the proposed project, noise from existing conditions, No-Build traffic, and the proposed project itself were combined. This procedure is simply expressed, with a logarithmic equation which utilizes existing noise levels and existing PCEs along with future PCEs. The equation is described below:

F NL = 10Log (F PCE/E PCE) + E NL
Where:

- F NL = Future Noise Level
- F PCE = Future PCEs
- E PCE = Existing PCEs
- E NL = Existing Noise Level

Locations are modeled for the weekday AM, PM, and Late PM time periods.

6.6 EXISTING CONDITIONS

The neighborhood surrounding the existing JBD consists mainly of low density residential and some small commercial land uses. However, the seven storied Allen Cathedral Senior Residence also exists directly across from the JBD on 107th Avenue. There are no surface rail lines in the immediate vicinity of this project. As a result, the major sources of existing community noise come primarily from automobile traffic, which includes buses accessing the existing depot. The highest existing traffic volumes exist along Merrick Boulevard and Liberty Avenue, but roadway noise is also audible along Tuskegee Airman Way. In addition to roadway noise, onsite bus noise from the existing JBD facility does affect some nearby residents along 107th Avenue and 165th Street.

6.6.1 AMBIENT NOISE MEASUREMENTS

To determine the influence of existing traffic noise, noise measurements were conducted at five locations representative of existing sensitive locations and were situated along roadways where the greatest project-generated increases in traffic volumes are likely to occur. Locations were monitored for the three weekday time periods corresponding to the peak periods of bus traffic entering and leaving the depot and when the majority of future project-generated traffic would be passing noise sensitive locations. Short-term monitoring was conducted for the 7-8 AM, 5-6 PM and 10-11 PM peak time periods during November 2018. The duration of all measurements was 20 minutes to ensure that representative measurements were obtained. During measurements, simultaneous traffic counts were also taken. The noise descriptors recorded during field measurements included L_{eq} (i.e. defined as the average sound pressure level during a period of time) and L_{10} (i.e., defined as the noise level exceeded for 10 percent of the time of the measurement duration). **Table 6-4: 2018 Short-Term Noise Monitoring Levels** lists the results of the short-term noise monitoring program.

TABLE 6-4: 2018 SHORT-TERM NOISE MONITORING LEVELS

Site #1: 166-12 Douglas Avenue (residential building)				
Time of Day	L_{eq}	L_{10}	L_{50}	L_{90}
AM	62.9	65.9	61.3	57.8
PM	65.0	67.2	61.1	56.1
Late PM	65.1	68.0	63.3	54.4
Site #2: 107-01 Merrick Boulevard (residential building)				
Time of Day	L_{eq}	L_{10}	L_{50}	L_{90}
AM	68.5	71.5	67.2	60.0
PM	64.5	67.8	62.3	58.0
Late PM	66.8	65.4	58.1	54.3
Site #3: 107-36 Merrick Boulevard (Allen Cathedral Senior Residence)				
Time of Day	L_{eq}	L_{10}	L_{50}	L_{90}
AM	73.1	76.8	68.1	59.0
PM	68.6	72.1	66.7	56.8
Late PM	68.4	73.5	60.5	53.5

Source: STV Incorporated 2018

In addition to the short-term noise measurements, measurements were also taken at three locations to determine the 24-Hour L_{dn} within the proposed study area. These measurements take into account existing noise, not only during the peak-hour periods, but also during off-peak periods. The measured noise levels are representative of noise conditions nearby the three residential clusters bordering the project site. These include residences on the southern, western, and eastern site boundaries along 107th Avenue (Allen Cathedral Senior Residence), 165th Street (single-family homes) and Merrick Boulevard (single-family homes), respectively. Measurements were taken on November 7th, 2018 and January 16th, 2019. Based on these measurements, the resulting L_{dn} values were 73 dB for the representative properties along 107th Avenue, 65 dB for the representative properties along 165th Street, and 70 dB for the representative properties along Merrick Boulevard.

Figure 6-3: Noise Monitoring Site Map shows the location of both short-term (ST) and long-term (LT) noise monitoring sites in relationship to the surrounding existing land uses. These sites were subsequently utilized as analysis sites for the JBD noise study.

All noise measurements were taken with a Larson & Davis Model LXt Type I sound level meter. A windscreen was placed over the microphone for all measurements. The meter was properly calibrated for all measurements using a Larson & Davis Model Cal250 calibrator. There were no significant variances between the beginning and ending calibration measurements. All measurements taken during the monitoring program were conducted during acceptable wind and weather conditions.

Source: New York City Department of City Planning, NYC GIS Zoning Features, February 2019; STV Incorporated, 2019.

Figure 6-3

Noise Monitoring Site Map

Reconstruction and Expansion of Jamaica Bus Depot

6.7 IMPACTS AND MITIGATION

6.7.1 THE FUTURE WITHOUT THE PROPOSED ACTION

With respect to the JBD facility, no significant changes in operation would be expected. As a result, nearby noise sensitive receptors, such as residences along 165th Street and at the Allen Cathedral Senior Center, are expected to experience similar levels of noise as they currently do under existing conditions.

For mobile sources, the No-Build condition, as noted in the traffic analysis, would not result in a sufficient number of new vehicular trips to double the passenger car equivalents through any intersection and the *2014 CEQR Technical Manual* threshold for detailed analysis would not be met. As shown in **Table 6-5: 2025 Future No-Build Levels (dBA)**, the difference in noise levels between the No-Build and existing conditions would be less than 2 dBA at all sites. As a result, the No-Build condition is not expected to result in any substantial change to noise conditions beyond the existing conditions.

TABLE 6-5: 2025 FUTURE NO-BUILD LEVELS (DBA)

Mobile Source Analysis Site	Period	Existing L_{eq}	No Build L_{eq}	Difference
ST1	AM	62.9	63.1	0.2
	PM	65.0	65.2	0.2
	Late PM	65.1	65.4	0.3
ST2	AM	68.5	68.7	0.2
	PM	64.5	64.7	0.2
	Late PM	66.8	67.0	0.2
ST3	AM	73.1	73.3	0.2
	PM	68.6	68.8	0.2
	Late PM	68.4	68.5	0.1

Source: STV Incorporated 2018

6.7.2 THE FUTURE WITH THE PROPOSED PROJECT

Three building design concepts (Candidate Alternatives) were developed for the Proposed Action. From a noise assessment perspective, these Candidate Alternatives present varying amounts of outdoor bus parking (i.e., Principally Open Parking, Partially Open Parking, and Principally Enclosed Parking) and design features such as rooftop parapet walls and ground-level security/sound barrier walls for controlling bus noise emissions.

The MTA NYCT *Unified Buses Planning and Design Guidelines* note that controlling access to the bus depot is necessary to protect the bus fleet, equipment, and personnel. This security is typically provided through the use of perimeter fencing or masonry walls. The *minimum height* requirement for a security wall or fence is twelve feet. The conceptual design for the proposed action includes 20-foot-high security/ sound barrier walls, which is similar to the height of the existing wall that borders the properties along 165th Street.

The site design concepts for the Candidate Alternatives to meet security and FTA's threshold noise levels are as follows:

- *Candidate Alternative A*, which has outdoor bus parking, would consist of a single-story structure providing maintenance space on the ground level with rooftop parking. The site design would include: a *31-foot-tall security/sound barrier wall along the depot's 165th Street property line; a 20-foot-tall security/sound barrier wall along 107th Avenue; and, a 10-foot-tall parapet wall surrounding the rooftop parking level* to reduce bus noise emissions.
- *Candidate Alternative B*, which has inside and outside bus parking, would be a two-story structure with maintenance space and bus parking on the ground level, enclosed bus parking on the second level, and rooftop parking on the third level. The site design would include: *a 20-foot-tall security/sound barrier wall along the depot's 165th Street property line and along 107th Avenue;* and, a 10-*foot-tall parapet wall surrounding three sides of the rooftop parking level* (north, east, and west) to reduce bus noise emissions.
- *Candidate Alternative D* would be a two-story structure that provides maintenance space and enclosed parking on the first level and enclosed bus parking on the second level. The site design would include *a 20-foot-tall security/sound barrier wall along the depot's 165th Street property line and along 107th Avenue*.

Figure 6-4: Jamaica Bus Depot Cross Sectional Comparison of Candidate Alternatives provides a graphical presentation of the existing bus depot and the conceptual designs of the Candidate Alternatives to illustrate the relative scale and elevations of the depot buildings and security/sound barrier wall elements along the western (165th Street) reconstructed depot border.

6.7.2.1 STATIONARY SOURCE ANALYSIS

For the assessment of noise from the proposed action as shown in **Table 6-6: Alternative A Stationary Source Analysis, Table 6-7: Alternative B Stationary Source Analysis, and Table 6-8: Alternative D Stationary Source Analysis**, the results of the assessment indicate that the *nearby noise sensitive receptors (residential land use) would not experience any significant impacts generated from maintenance activities at the proposed action*.

Source: STV Incorporated, 2019.

Figure 6-4

Jamaica Bus Depot Cross Sectional Comparison of Candidate Alternatives

TABLE 6-6: ALTERNATIVE A STATIONARY SOURCE ANALYSIS

Stationary Source Analysis Site #	Location	Land Use	Ambient Total Noise Level (L_{dn})	FTA Impact Threshold Levels (dBA)		Total Project Noise Exposure (L_{dn} or L_{eq})	Noise Impacts?
				Moderate	Severe		
LT1	165th Street Between 107th Avenue and Tuskegee Airman Way (1st Floor)	Residential	65	61	66	55	N
	165th Street Between 107th Avenue and Tuskegee Airman Way (2nd Floor)	Residential	65	61	66	55	N
	165th Street Between 107th Avenue and Tuskegee Airman Way (3rd Floor)	Residential	65	61	66	59	N
LT2	Allen Cathedral Senior Building (1st Floor)	Residential	73	65	72	45	N
	Allen Cathedral Senior Building (Elevated)	Residential	73	65	72	56	N
C1	Rose of Sharon Baptist Church	Church	65	66	71	56	N
LT3	Merrick Boulevard (1st Floor)	Residential	70	64	69	45	N
	Merrick Boulevard (2nd Floor)	Residential	70	64	69	46	N

TABLE 6-7: ALTERNATIVE B STATIONARY SOURCE ANALYSIS

Stationary Source Analysis Site #	Location	Land Use	Ambient Total Noise Level (L_{dn})	FTA Impact Threshold Levels (dBA)		Total Project Noise Exposure (L_{dn} or L_{eq})	Noise Impacts?
				Moderate	Severe		
LT1	165th Street Between 107th Avenue and Tuskegee Airman Way (1st Floor)	Residential	65	61	66	44	N
	165th Street Between 107th Avenue and Tuskegee Airman Way (2nd Floor)	Residential	65	61	66	51	N
	165th Street Between 107th Avenue and Tuskegee Airman Way (3rd Floor)	Residential	65	61	66	57	N
LT2	Allen Cathedral Senior Building (1st Floor)	Residential	73	65	72	40	N
	Allen Cathedral Senior Building (Elevated)	Residential	73	65	72	53	N
C1	Rose of Sharon Baptist Church	Church	65	61	66	44	N
LT3	Merrick Boulevard (1st Floor)	Residential	70	64	69	41	N
	Merrick Boulevard (2nd Floor)	Residential	70	64	69	42	N

TABLE 6-8: ALTERNATIVE D STATIONARY SOURCE ANALYSIS [1]

Stationary Source Analysis Site #	Location	Land Use	Ambient Total Noise Level (L_{dn})	FTA Impact Threshold Levels (dBA)		Total Project Noise Exposure (L_{dn} or L_{eq})	Noise Impacts?
				Moderate	Severe		
LT2	Allen Cathedral Senior Building (1st Floor)	Residential	73	65	72	40	N
	Allen Cathedral Senior Building (Elevated)	Residential	73	65	72	53	N

[1] With the exception of the entrance corridor along 107th Avenue, Alternative D would be fully enclosed structure, as a result the only sensitive receptor that would be exposed to any onsite bus activity would be the Allen Cathedral Senior Center Building along 107th Avenue.

6.7.2.2 MOBILE SOURCE ANALYSIS

In the Build condition, no detailed mobile source analysis would be required as the incremental number of new vehicle trips would not exceed the *2014 CEQR Technical Manual* screening threshold. As shown in **Table 6-9: 2025 Future Build Levels (dBA)**, ***the difference in noise levels between the Build and No-Build conditions would be less than 0.5 dBA at all sites***. Table 6-9 represents the results for Candidate Alternative D. The incremental traffic volumes associated with the operation of Candidate Alternatives A and B are lower than Candidate Alternative D; therefore, ***the Build project for all three Candidate Alternatives is not expected to result in any substantial change to noise conditions over the No-Build condition***.

TABLE 6-9: 2025 FUTURE BUILD LEVELS (DBA)

Mobile Source Analysis Site	Period	No Build L_{eq}	Build L_{eq}	Difference
ST1	AM	63.1	63.1	0.0
	PM	65.2	65.2	0.0
	Late PM	65.4	65.4	0.0
ST2	AM	68.7	68.7	0.0
	PM	64.7	64.7	0.0
	Late PM	67.0	67.1	0.1
ST3	AM	73.3	73.3	0.0
	PM	68.8	68.8	0.0
	Late PM	68.5	68.7	0.1

Source: STV Incorporated 2018

6.7.2.3 ROOFTOP HVAC EQUIPMENT

Only conceptual designs of the building's rooftop heating, ventilation and air conditioning (HVAC) and Heat Recovery Unit (HRU) systems are available at this time. However, those systems would meet all applicable NYC Noise Code regulations and requirements with respect to noise impact to nearby/adjacent sensitive receptors (residences). Based on typical manufacturing data, the proposed JBD rooftop HVAC and HRU systems *would result in project-generated noise level increments of less than 3 dBA*. Noise level increments of this magnitude *are generally considered imperceptible and would not be* significant according to CEQR impact criteria.

6.8 VIBRATION

Operation of the proposed JBD would not produce any perceptible vibration levels. The rubber tires and suspension systems on buses and passenger vehicles provide vibration isolation. With proper roadway maintenance to prevent large potholes, bumps, etc. in the roadways surrounding the project site and the internal bus paths within the proposed depot, perceptible vibration levels are not expected from the buses and passenger vehicles that would operate outside of the proposed depot. In addition, the proposed JBD would be ***designed to avoid discontinuities on the floor***, or operational conditions that would result in generating perceptible vibration levels.

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7.0 HISTORIC AND CULTURAL RESOURCES

7.1 INTRODUCTION

7.1.1 CONTEXT AND KEY ISSUES

Historic and cultural resources are divided into two main categories: *archaeological resources* and a*rchitectural resources*. *Archaeological resources* are physical remains of past activities that generally are found below ground. These archaeological resources may date to the Native American, or "precontact" period, or the historic period, which includes the period from the European colonization of the area through the recent past. *Architectural resources* can include buildings, structures, sites, districts, and objects.

As part of the environmental review process, a Phase IA Cultural Resources Assessment was prepared to *identify known and potential archaeological and* a*rchitectural resources* within the Area of Potential Effect (APE).

This chapter discusses:

- Whether any archaeological and architectural resources have been *previously identified within the APE*;
- Whether based on the site history and disturbance record, *any previously unknown archaeological resources could exist* within the APE;
- Whether any previously *unidentified architectural resources are present* within the APE; and
- Whether there will be any *potential impacts to these archaeological and architectural resources* from the Proposed Project.

7.1.2 SUMMARY AND CONCLUSIONS

The Phase IA Cultural Resources Assessment (**Appendix D: Cultural Resources**) identified the APE for archaeological resources as limited to the locations of proposed ground disturbance, consisting of the 19 lots on Block 10164, which comprise the project site. An approximate 400-foot radius from the project site was considered to be the architectural APE, which *the CEQR Technical Manual* indicates is typically adequate for assessment of historic resources in terms of physical, visual, and historical relationships in New York City (SEQRA Handbook 2019; CEQR 2014). The Phase IA Cultural Resources Assessment complied with the standards of the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) (New York Archaeological Council 1994, NYSOPRHP 2005, 2010).

From what is known of precontact period settlement patterns in New York City and Long Island, most habitation and processing sites are found in sheltered, elevated sites close to wetland features, major waterways, and with nearby sources of fresh water. In its natural condition, the project site originally had a small creek running through it. Combined with its level terrain, the project site would have represented a favorable location for Native American settlement. However, the project site has experienced substantial disturbance that appears to have destroyed much, if not all, of the soils in the upper reaches of the soil column, where precontact period archaeological sites are normally located. Based on these factors, ***the project site is considered to have a low potential for hosting precontact cultural remains, no additional archaeological investigations are recommended, and it was concluded that that there are no additional historic resource concerns for the project site***. Given the level of disturbance across the project site lots, *it was concluded that there is little to no historic period archaeological sensitivity on the project site*.

It was also concluded that there are no architectural resources on or within a 400-foot radius of the project site that are eligible or listed on the State/National Register of Historic Places (S/NRHP) or are a New York City Landmarked resource. The existing JBD does not appear to meet criteria for S/NRHP eligibility, nor do any of the buildings or structures within a 400-foot radius of the project site.

7.2 METHODOLOGY

The ***National Historic Preservation Act (NHPA)*** and related legislation establishes a process to determine how and where impacts are determined from an undertaking. The APEs serve as the guidance plan for determining impacts.

Once the APEs are determined, any potential resources in the APEs are identified. These resources include listed, eligible, or potentially eligible sites for inclusion in the ***State/National Register of Historic Places (S/NRHP)***. Impacts on historic resources should be mitigated or avoided under the auspices of the NHPA and related legislation. The impacts can be direct or indirect and can occur during construction or after construction during operation.

7.2.1 DOCUMENTARY SUMMARY

The present study entailed *review of various resources*, including:

- *Primary and secondary sources* concerning the general history of Jamaica, Queens and specific events associated with the project site and vicinity were reviewed using materials at the Archives at Queens Library, the New York Public Library, the library of Historical Perspectives Inc. (HPI), and online resources.
- *Historic maps and atlases* were reviewed using materials at the Archives at Queens Library, the New York Public Library, the library of HPI, and using various online websites. These cartographic sources provided an overview of the topography and a chronology of land usage for the project site. A selection of these maps and atlases has been reproduced for Phase IA Cultural Resources Assessment (refer to **Appendix D**).
- *Department of Building records* were reviewed using online resources.
- Information about *previously recorded archaeological and historic sites and surveys* in the area was compiled from data available at the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), the New York City Landmarks Preservation Commission (LPC), and the library of HPI.
- MTA NYCT provided a number of Phase I Environmental Site Assessment reports for lots within the project site (STV 2012, 2015a-f[17]).
- MTA NYCT provided building and renovation plans for the JBD.
- MTA NYCT provided soil borings for the JBD.

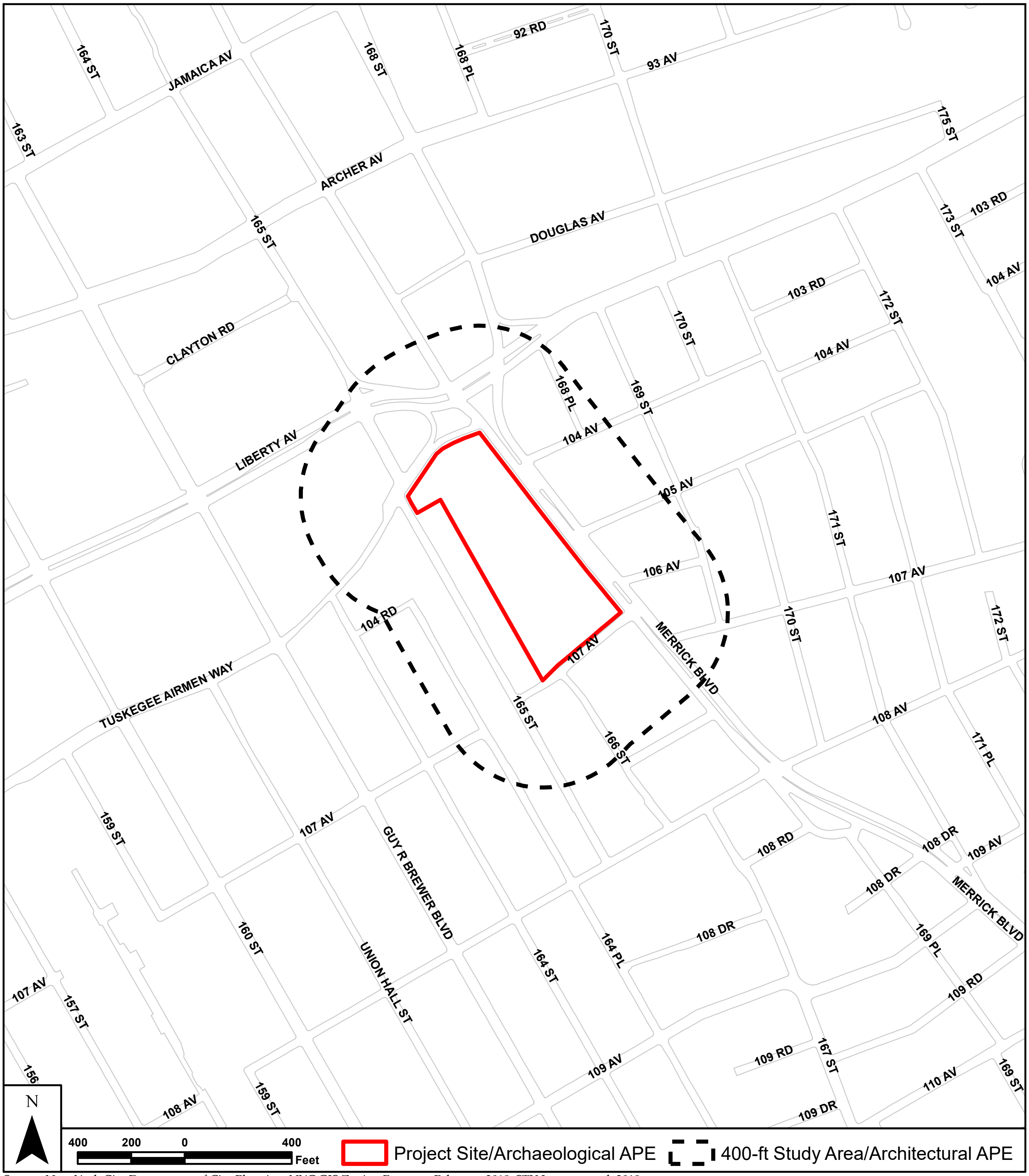
Additionally, a *site visit* was conducted on August 2, 2016, to assess any obvious or unrecorded subsurface disturbance and to document buildings in the architectural APE. The interiors of those buildings within the project site that are owned by NYCT were accessed during the site visit to ascertain conditions and any additional disturbance. Those buildings on lots not presently owned by NYCT were viewed from the exterior only. Updated conditions were photographed on March 13, 2019.

[17] STV 2012, 2015a-f- *Phase 1A Cultural Resources Assessment* (Revised March 2019)

7.2.2 ANALYSIS UNIT AND STUDY AREA

The MTA NYCT proposes to reconstruct and expand of the JBD, located at 165-18 Tuskegee Airmen Way (formerly South Road), in the Jamaica neighborhood of Queens County, New York (**Figures 7-1: Archeological APE and 7-2: Historic Resources**). The JBD property includes Block 10164, Lots 46, 80, 84, 97, and 103. The project site for the JBD reconstruction and expansion additionally includes adjacent Lots 41, 53, 60, 61, 63, 66, 68, 72, 74,76, 79, 89, 90, and 95. In total, the JBD project site consists of 19 lots on Block 10164, including the frontage on Merrick Boulevard (**Figure 8-3: Acquisitions, located in Chapter 8.0: Social and Economic Conditions**). Lots 41, 53, 60, 61, 63, 66, 68, and 72 have been acquired by NYCT and others would be acquired in the future. Block 10164 is bounded by Tuskegee Airmen Way on the northwest, 107th Avenue on the southeast, Merrick Boulevard on the northeast, and 165th Street on the southwest. The present JBD was constructed in 1939 and was expanded eastwardly to add a bus wash area and provide an additional storage area in 1950. In 1968, offices and locker rooms were constructed on the north side of the facility on an upper mezzanine level.

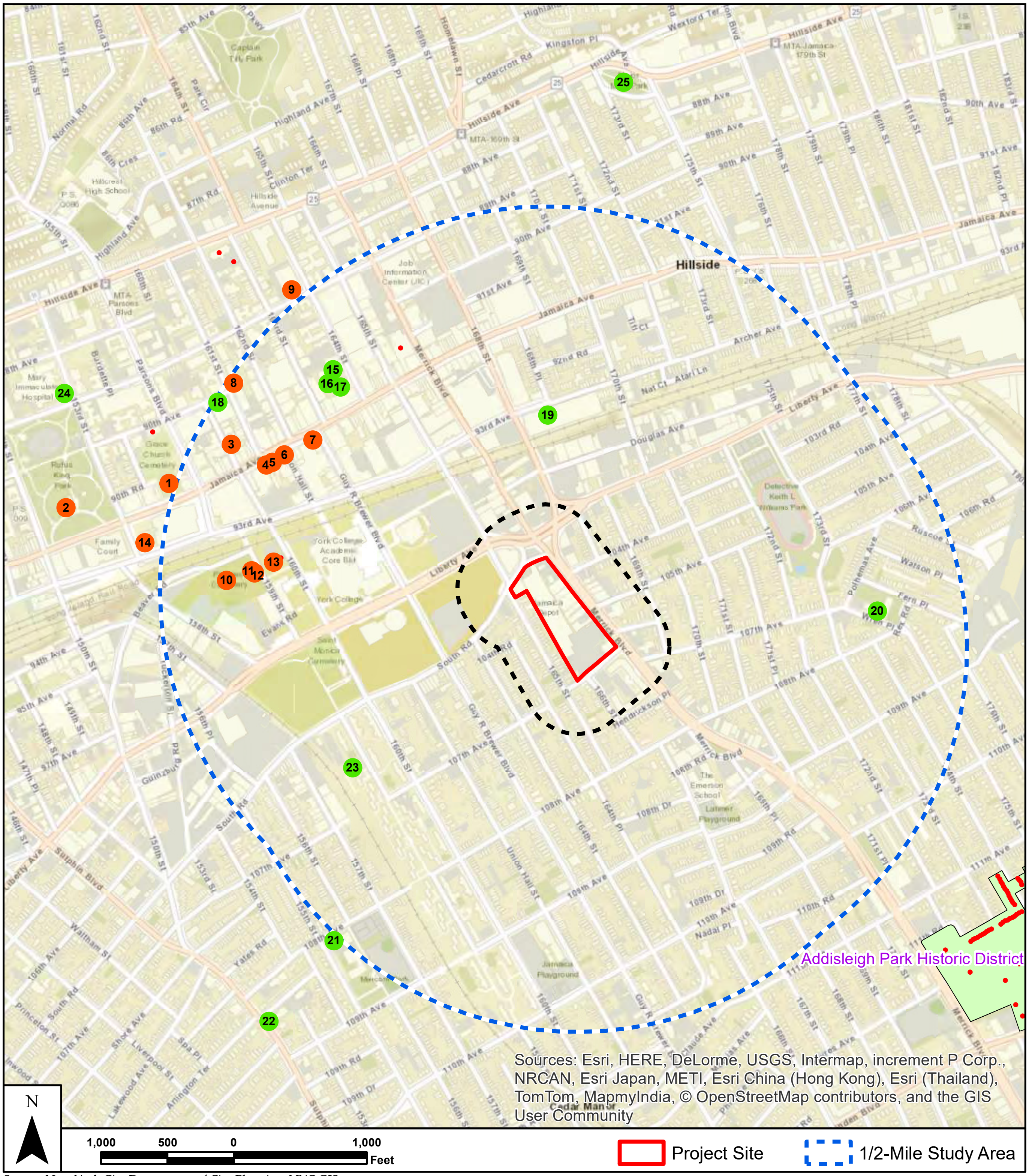
Table 7-1: National Register of Historic Places Eligible and Listed Resources depicts the resources identified in **Figure 7-2: Historic Resources.**



Source: New York City Department of City Planning, NYC GIS Zoning Features, February 2019; STV Incorporated, 2019.

Figure 7-1

Architectural and Archaeological APE



Source: New York City Department of City Planning, NYC GIS Zoning Features, February 2019; STV Incorporated, 2019..

National Register - Listed
National Register - Eligible
NYC LPC Landmarks
Architectural Resource APE/400-ft Study area
NYC LPC Historic Districts

Figure 7-2

Historic Resources

Reconstruction and Expansion of Jamaica Bus Depot

TABLE 7-1: NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE AND LISTED RESOURCES

Item	Last Action	Name	Within ½-Mile of Project Site
1	Listed	Grace Episcopal Church Complex	
2	Listed	King Manor (Rufus King House)	
3	Listed	La Casina Nightclub – Roxanne Swimsuit MFG	X
4	Listed	Jamaica Savings Bank	X
5	Listed	Office of the Register/Jamaica Arts Center	X
6	Listed	Sidewalk Clock 16-11 Jamaica Ave	X
7	Listed	J. Kurtz & Sons Store Building	X
8	Listed	Jamaica Chamber of Commerce Building	X
9	Listed	US Post Office – Jamaica Main	
10	Listed	Prospect Cemetery	X
11	Listed	Prospect Cemetery: Chapel of the Three Sisters	X
12	Listed	Prospect Cemetery Chapel of the Sisters	X
13	Listed	St. Monica's Roman Catholic Church	X
14	Listed	First Reformed Dutch Church of Jamaica	
15	Eligible	Magill Memorial Building	X
16	Eligible	Presbyterian Manse	X
17	Eligible	First Presbyterian Church of Jamaica	X
18	Eligible	Suffolk Title & Guaranty Co.	X
19	Eligible	Fourth Regiment Armory (204th Field Artillery) – Jamaica Armory	X
20	Eligible	PS 116 William C. Hughley School, ca. 1924	X
21	Eligible	P.S. 48 Queens	
22	Eligible	St. Joseph's Roman Catholic Parish	
23	Eligible	South Jamaica Houses I	X
24	Eligible	Mary Immaculate Hospital	
25	Eligible	Soldiers' and Sailors' Monument (SRB approved but not listed)	

7.2.2.1 ANALYSIS ELEMENTS WITHIN THE STUDY AREA

Archaeological Area of Potential Effect (APE)

The APE for *archaeological resources* is limited to the locations of proposed ground disturbance and consists of the 19-project site lots on Block 10164 (described below), known as the project site. The lot numbers generally ascend in clockwise order around the block from the corner of Tuskegee Airmen Way and 165th Street, as shown on **Figure 7-1: Archeological APE**. Photographs and historic map figures can be found in the Phase IA Archaeological Documentary Study for the project, located in **Appendix D: Cultural Resources.**

Lot 41

The entire footprint of Lot 41 is covered by a one-story brick and concrete warehouse building, which was constructed in 1994. It contains a concrete slab floor and no basement. It is currently used to store buses and other materials related to the JBD.

Lot 46

Lot 46 contains the existing JBD. The main part of the building was constructed in 1939 with the bus wash area, which is a long, narrow section on the northeast side of the structure, erected in 1950. The JBD is a brick and metal structure. Most of the building is one-story high, with a second floor and mezzanine located near the Tuskegee Airmen Way entrance. There formerly was a basement level (approximately 18 feet deep) within a section of the interior of the building, which contained the boiler room. In 2010 a new boiler room was created within the one-story section of the JBD along Tuskegee Airmen Way. At that time, the old boilers were removed, and the basement section was backfilled.

In addition to the former basement area, there are multiple below grade components within Lot 46 including underground fuel and other utility tanks; buried fuel, water, sewer, and other utility conduits; bus wash drainage lines; and long, narrow subsurface pits for bus washing and servicing.

Lot 46 also includes a portion of the asphalt-paved driveway along 107th Avenue.

Lot 53

Lot 53 is presently an asphalt-paved parking area. It formerly contained Kelly's Family Restaurant, a one-story concrete building. The structure was originally an auto repair shop during the second half of the twentieth century. Patches across the paving attest to the location of fuel tank that was located on the lot when there was a filling station located on it in the mid-twentieth century, the status of the tank is unknown but is presumed that it has been removed. The lot is enclosed by chain link fencing along Merrick Boulevard.

Lots 60 and 61

These two lots are presently vacant, paved with asphalt and, with adjacent Lots 53, 63, and 66, are used for parking; all five lots are enclosed by chain link fencing along Merrick Boulevard. Lots 60 and 61 formerly contained two one-story iron structures used as an auto repair shop.

Lots 63 and 66

These two lots are presently vacant, paved with asphalt and used for parking and enclosed by chain link fencing along Merrick Boulevard, along with Lots 53, 60, and 61. Until recently, they contained one-story brick warehouse buildings that were joined on the interior and covered the entire footprint of the lots. The buildings did not have basements. The buildings, which all dated to the mid- to late-twentieth century, were owned most recently by Hadco, a metal wholesale distribution company.

Lot 68

This lot contains a one-story brick warehouse building that covers the entire footprint of the lot. The building was constructed in 1969 and has a partial basement.

Lot 72

This lot contains a one-story brick warehouse from the 1930s. It has a partial basement.

Lot 74

Lot 74 is a one-story brick building that currently contains an automobile tire business. Department of Buildings records indicate that it has a cellar with a boiler room, although the depth of the cellar was not given.

Lot 76
Lot 76 is a parcel that until 2018 was vacant, but now has a one-story building being constructed on it. The lot abuts the L-shaped Lot 79.

Lot 79
Lot 79 contains a one-story building that covers its entire footprint. Currently, the building is vacant but until recently contained a Domino's Pizza establishment.

Lots 80, 84, 97 and 103
These four lots are part of the JBD parking lot and are paved with asphalt. Buses enter and exit the parking lot through the gate on 107th Avenue and the gate on Merrick Boulevard. There is a small one-story brick office building on Lot 80. Architectural drawings and plans for the Jamaica Bus Depot property show that numerous subsurface fuel tanks have been located on these lots over time. Some are still in-service, and many were closed-in-place or are out-of-service. These diesel and heating oil tanks are located in the eastern part of the property (Lot 80). Lot 97 formerly contained residences, which were razed in the 1980s.

Lot 89
Lot 89 contains a three-story, with basement, brick apartment building and a small rear yard. It dates to the 1910s.

Lot 90
Lot 90 contains a one-story brick and concrete block commercial building, which covers the entire footprint of the lot. It dates to the first decades of the twentieth century.

Lot 95
Lot 95 presently is a vacant lot, fronting 107th Avenue. Until circa 1987, it contained a dwelling that for a time was used as a church.

Architectural APE

The APE for *historic (architectural) resources* is considered to include the entire Block 10164 project site as well as the area substantially contiguous to the project site. According to SEQRA, the term "substantially contiguous" is intended to cover situations where a proposed activity is not directly adjacent to a sensitive resource but is in close enough proximity that it could potentially have an impact. Generally, this would include resources that could be seen from "long vistas" at ground level, until project development heights are finalized and an official viewscape can be determined. For the purposes of this study, the architectural APE was an approximate 400-foot radius from the project site, which New York City Environmental Quality Review (CEQR) regulations indicate is typically adequate for assessment of historic resources in terms of physical, visual, and historical relationships in New York City (SEQRA Handbook 2019; CEQR 2014). Areas within the Architectural APE are discussed below.

165th Street and 164th Place
The northeast side of 165th Street abuts the project site on Block 10164. The street, as well as 164th Place to the southeast, is primarily residential, with many houses dating to the first two decades of the twentieth century. One building abutting the project site on 165th Street (104-19 165th Street) presently contains the Rose of Sharon Baptist Church. The church was constructed as an apartment building in the early twentieth century and was converted for religious use in the 1990s.

Tuskegee Airmen Way

Tuskegee Airmen Way, formerly South Road, is one of the oldest thoroughfares in the area. However, the section of Tuskegee Airmen Way within the Architectural APE generally contains structures dating to the early decades of the twentieth century. The south side of Tuskegee Airmen Way, west of 165th Street, contains a series of attached rowhouses from this period. York College owns undeveloped property on the north side of Tuskegee Airmen Way, diagonally across from the project site.

Liberty Avenue

The portion of Liberty Avenue within the Architectural APE contains mostly commercial buildings, such as the multiple-story brick warehouse at 165th Street, directly across from the project site. Retail establishments are located on both sides of Liberty Avenue as well.

Merrick Boulevard

Merrick Boulevard is a commercial strip, with many low-rise buildings on the northeast side of the street, across from the project site. Many of the buildings/lots contain automobile repair businesses.

The cross streets intersecting Merrick Boulevard to the east are mainly residential in nature, and the buildings are similar in age to those in other parts of the Architectural APE.

107th Street

Immediately southeast of the project site, on 107th Street, is a large, seven-story senior citizen complex, Allen Cathedral Senior Residence, which covers most of an entire block. The complex was constructed within the last 18 years.

7.3 POTENTIALLY AFFECTED RESOURCES

7.3.1 HISTORIC CONTEXT

The following information is excerpted from the Phase IA Cultural Resources Assessment (**Appendix D**) and provides a general history of the project site.

The project site is within the original boundaries of the Town of Jamaica, chartered in 1660, whose jurisdiction extended from the southern foothills of the Ronkonkoma glacial moraine, to the meadowlands and shores of Jamaica Bay (Munsell 1882:195). What is now known as Jamaica Avenue was originally a Native American trail and provided early east-west access through the area; the former Rockaway Turnpike (now portions of 150th Street and Sutphin Boulevard) was a north-south road that began at Jamaica Avenue and extended, roughly paralleling Beaver Creek, to Jamaica Bay. *Both Tuskegee Airmen Way and Merrick Boulevard were in place by the late eighteenth century* (Taylor and Skinner 1781).

A former unnamed creek that ran through the project site formed the division between two large land parcels located southwest of the intersection of Tuskegee Airmen Way and Merrick Boulevard prior to the creation of the present city street grid. On the west side of the creek were the large landholdings of the Denton family, who were some of the earliest settlers in Jamaica. These lands were subdivided over time to create smaller parcels. The project site lots located west of the creek belonged to Jonathan Denton until 1762, when the area was sold to Thomas Blaine. Land on the east side of the creek belonged to the members of the Smith family, for whom nearby Smith Street was named (Topographical Bureau 1935).

Historic maps, as reproduced in the Phase IA Cultural Resources Assessment (**Appendix D**), indicated that there was one structure within the project site during the late eighteenth and nineteenth centuries, at the corner of what would become Tuskegee Airmen Way and 165th Street on Lot 41, but which during the historic era was part of a larger parcel that included several of the modern city blocks. This structure appeared on numerous maps, beginning with the 1781 Taylor and Skinner map, and continuing on the 1837 U.S.C.S. map, the 1849 Sidney map, the 1852 Conner map, the 1859 Walling map, the 1873 Beers atlas, the 1891 Wolverton atlas, and the 1891 and 1897 Sanborn maps. When labeled, the building was attributed to Powell (1852), Jno Phruner (1859), Jno. Case estate (1873), and J. Case estate (1891). The building, a frame dwelling, continued to be shown on twentieth century historic maps through the 1950s (Bromley 1909; Sanborn 1901, 1912, 1926, 1951). Several outbuildings associated with the house were present as well, one in or near what is now Lot 46 and the other outside of the project site boundaries, prior to creation of 165th Street in the late 1890s. The house was demolished by the 1960s.

The remainder of the project site stayed undeveloped through most of the nineteenth century. By the 1890s, however, a saloon had been constructed at the southwest corner of Tuskegee Airmen Way and Merrick Boulevard within Lot 53 of the project site, and a blacksmith shop had been constructed on Lot 60 (Sanborn 1891). The 1891 Wolverton atlas showed that by this period, some of the other lots along Merrick Boulevard were beginning to be developed with small frame buildings which, on later Sanborn maps, were labeled as dwellings.

After Queens became a borough of New York City in 1897, a new street grid was imposed, and development increased in the vicinity. *What is now 165th Street was originally called Highview Avenue and was opened after 1897. The initial name of 107th Avenue was Sampson Street*; it was laid out after the turn of the twentieth century but originally ran only from Merrick Boulevard (then called the Merrick Plank Road) to the creek that bisected the project block (Sanborn 1901; Bromley 1909). The remaining portion of 107th Avenue west of the creek to 165th Street was not opened until the early 1920s (Ullitz 1918, Sanborn 1926).

During the twentieth century, the project site was divided into individual relatively uniform building lots, each of which had its own history. These lots generally contained residential and commercial buildings. The specific lot histories are detailed in the Phase IA Cultural Resources Assessment (**Appendix D**).

The JBD itself was built in 1939 and later was expanded, in 1950, to add the bus wash area and provide additional storage area. In 1968, Transportation Offices and locker rooms were constructed on the north side of the facility on an upper mezzanine level. The JBD was rehabilitated in the mid-1980s and the present boiler room was constructed in 2010, replacing a basement-level boiler room that has been filled in and sealed.

7.3.2 ARCHAEOLOGICAL AND HISTORIC RESOURCES

Research conducted using materials from the NYS OPRHP, the NYCLPC, and the library of HPI revealed *no precontact archaeological resources specifically mapped within the project site*. However, the project site falls within the large Historic Jamaica Village archaeological site, which is mapped as extending over multiple blocks in the downtown Jamaica area. The boundaries of this area are roughly 108th Avenue on the south, Merrick Boulevard on the east, Sutphin Boulevard on the west, and Hillside Avenue on the north. Several other archaeological sites also have been documented within a one-mile radius of the project site.

Additionally, Archaeologist/Historian Robert S. Grumet noted the *presence of a Native American trail along modern Jamaica Avenue and the former Rockaway Turnpike*, both located several blocks from the project site (Grumet 1981). Last, the NYS OPRHP Geographic Information System (GIS) database identifies the project site as within an area of archaeological sensitivity, based on proximity to other known sites, as does the archaeological sensitivity study of Queens prepared for the NYCLPC (Boesch 1997).

7.3.3 ARCHITECTURAL RESOURCES

In order for an architectural resource to be considered eligible for the S/NRHP, at least one criterion for evaluation must be met. The S/NRHP Criteria for Evaluation explains:

- The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and,
- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of significant persons in our past; or
- 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; or
- That have yielded or may be likely to yield, information important in history or prehistory.

There are no previously recorded architectural resources within a 400-foot radius of the project site that are eligible or listed on the S/NRHP or are a New York City Landmarked resource. *The present Jamaica Bus Depot, although greater than fifty years old, does not appear to be eligible for the S/NRHP*, as it does not meet any of the above criteria.

The project site neighborhood contains housing stock and commercial buildings dating to the first decades of the twentieth century. Based on the site visit conducted for this project, no buildings or structures were observed that appear to meet the above criteria for individual listing in the S/NRHP or as a NYC Landmark. Additionally, there are no groups of buildings or structures that appear to meet criteria for eligibility as an S/NRHP historic district.

7.4 POTENTIAL IMPACTS

Given the level of disturbance across the project site lots, as described above, it was determined that *there is no remaining precontact or historic period archaeological sensitivity on the project site.* No additional archaeological investigations are recommended and there are no additional historic resources concerns for the project site.

There are no architectural resources on or within a 400-foot radius of the project site; that are eligible or listed on the S/NRHP or are a New York City Landmarked resource. The JBD does not appear to meet criteria for S/NRHP eligibility, nor do any of the buildings or structures within the Architectural APE.

7.4.1 NO BUILD ALTERNATIVE

Historic and cultural resources conditions related to the project site and study area are anticipated to resemble existing conditions in the future without the proposed action.

7.4.2 ACTION ALTERNATIVE

Given the level of disturbance across the project site lots, it was determined that *there is little to no historic period archaeological* sensitivity on the project site. In addition, it was determined that there are no *architectural* resources on or within a 400-foot radius of the project site that are eligible or listed on the

State/National Register of Historic Places (S/NRHP) or are a New York City Landmarked resource. The JBD does not meet criteria for S/NRHP eligibility, nor do any of the buildings or structures within the Architectural APE. *There would be no impacts as a result of the construction activities.*

In addition, because there is no remaining *precontact* or *historic* period archaeological sensitivity on the project site*, there would be no impacts to archeology as a result of the construction activities.*

8.0 SOCIAL AND ECONOMIC CONDITIONS

8.1 INTRODUCTION

8.1.1 CONTEXT AND KEY ISSUES

This chapter analyzes the *potential impact of the proposed action on social and economic conditions*. Social and economic conditions comprise ***land use, zoning, and public policy; socioeconomics; community facilities; open space/parklands; and environmental justice***. The socioeconomic character of an area includes its population, housing, and economic activity. Socioeconomic changes may occur when a project directly or indirectly changes any of these elements.

8.1.2 SUMMARY AND CONCLUSIONS

With regards to land use, all three Candidate Alternatives would involve the reconfiguration and expansion of the existing bus depot such that the current transportation use at the project site would be maintained and expanded to adjacent, vacant, commercial and industrial lots. As such, existing land use patterns at the project site and within the study area would be maintained. ***With regards to zoning***, the project site is owned by the MTA, a New York State public benefit corporation, and is therefore not subject to local zoning controls. Further, implementation of the proposed project would not change existing zoning controls in the study area, and therefore, it would not affect zoning at the project site or within the study area. ***With regards to public policy***, the project site and study area are not subject to any public policies such as a Coastal Zone, a Historic District or any other Federal or State planning district areas; therefore, implementation of the proposed action does not have the potential to affect public policy. Additionally, although the site is located within a FRESH (Food Retail Expansion to Support Health) program designated-area, the nature of the project is such that it is not subject to nor would it be affected by this program. *Lastly, implementation of the proposed action would be consistent with the purpose of the OneNYC plan as it would represent an investment in existing infrastructure to better serve New York City's transit needs as well as better complement the surrounding community.*

The Proposed Action would not result in any significant adverse impacts to ***socioeconomics***. The proposed expansion of the JBD would increase the number of employees by up to 165 employees (total staffing of approximately 720 employees). This influx of new employees could present a benefit to local businesses with an increase in patronage. Because there would be no introduction of residential populations that would affect schools, fire/police or other community facilities, *no significant adverse impacts to community facilities and services would occur* as a result of the Proposed Action, and no further analysis is required.

The proposed action would ***not result in any significant adverse direct or indirect impacts to open space/parklands***. The proposed action would not result in the physical loss or displacement of publicly accessible open space, and would not cause increased emissions, odors, or shadows to a public open space or parkland; therefore, the ***proposed action would not result in any direct effects on open space***. Further, the proposed action does not reach the threshold for assessment of indirect effects outlined in the *CEQR Technical Manual*; thus, no significant impacts to open space are anticipated and no further analysis is warranted.

The proposed action would not result in any significant adverse impacts concerning environmental justice. In the future with the proposed action, the identified adverse impacts in this FEIS are generally capable of being mitigated and are expected to be reduced significantly with appropriate measures. There would be no unmitigated significant adverse impacts and there would be no cumulative impacts resulting from the proposed action. Therefore***, the potential effects associated with the project would not represent any potential for significant adverse impacts that would affect the surrounding environmental justice community(ies)***. Importantly, the Proposed Action would represent an improvement to MTA NYCT bus operations in Queens. Therefore, the Proposed Action ***would not result in any disproportionate burden*** to Environmental Justice communities but ***would result in benefits*** to the communities served by MTA NYCT buses in Queens.

8.2 LAND USE, ZONING, AND PUBLIC POLICY

According to the *CEQR Technical Manual*, a preliminary land use and zoning assessment includes a basic description of existing and future land uses and zoning information and describes any changes in zoning that could cause changes in land use. It also characterizes the land use development trends in the area surrounding the project site that might be affected by the proposed action and determines whether the proposed action is compatible with those trends or may affect them.

8.2.1 METHODOLOGY

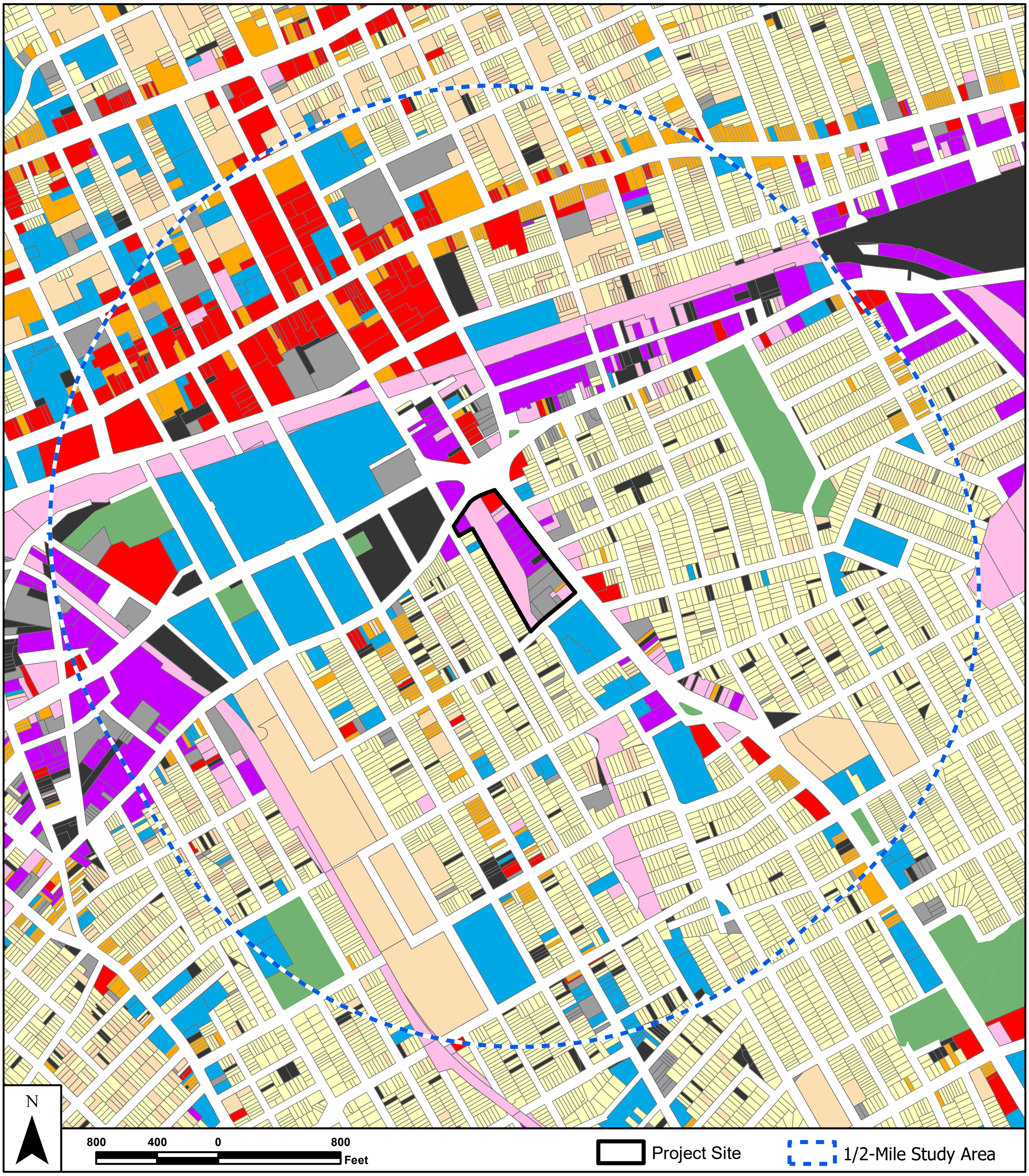
This analysis of land use, zoning, and public policy follows the guidelines set forth in the *CEQR Technical Manual* for a preliminary assessment (Section 320).

This preliminary assessment includes a basic description of the proposed action in order to determine whether a more detailed assessment would be appropriate. For public policy, the *CEQR Technical Manual* stipulates that a preliminary assessment should identify and describe any public polices (formal plans, published reports) that pertain to the study area, and should determine whether the proposed action could alter or conflict with identified policies. If so, a detailed assessment should be conducted, if not, no further assessment is needed.

The following land use, zoning, and public policy assessment follows this guidance and provides a description of existing conditions of the project site and surrounding area. This is followed by an assessment of the future with and without the proposed action (No-Build and Future with the Proposed Action Alternatives, respectively).

8.2.2 STUDY AREA

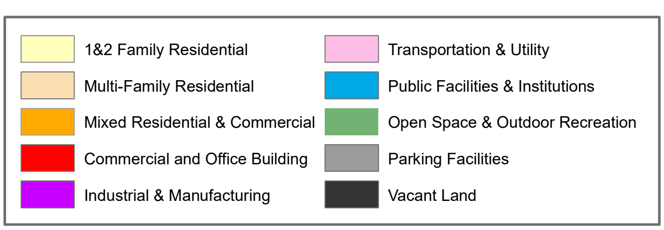
The land use study area is defined as the area within 400 feet of the project site, which is generally bounded by 164th Street to the west, Hendrickson Place to the south, mid-block between Merrick Boulevard and 169th Street to the east, and mid-block between Tuskegee Airmen Way/ Liberty Avenue and Douglas Avenue to the north (**Figure 8-1: Land Use Study Area**). This is the area in which the Proposed Action would be most likely to have effects in terms of land use, zoning, or public policy.



Source: New York City Department of City Planning, MapPLUTO 18v2, 3/8/2019; STV Incorporated, 2019.

Figure 8-1

Land Use Study Area



Reconstruction and Expansion of Jamaica Bus Depot

8.2.3 EXISTING CONDITIONS

8.2.3.1 LAND USE

The JBD is located within the Jamaica neighborhood of Queens, which is generally bounded by the Hillside Avenue to the north; Sayres Avenue and Linden Boulevard to the south; Jamaica Avenue, Hollis Avenue, and Dunkirk Street to the east; and Van Wyck Expressway to the west.

The neighborhood of Jamaica is generally characterized by low- to mid-density residential uses; with concentrations of commercial, industrial, institutional, and transportation/utility uses along the Long Island Railroad (LIRR) corridor, which bisects the northern third of the neighborhood from east to west. This LIRR corridor runs through the MTA LIRR Jamaica Station, located in the northwestern portion of the Jamaica neighborhood, a major transit hub for both New York City and Long Island, providing transit access to John F. Kennedy Airport as well. Concentrations of commercial and institutional uses are also found in the northwestern portion of the neighborhood, generally defining the location of the Downtown Jamaica area. Several large parks and open spaces (or portions thereof) are found within the Jamaica neighborhood, including the Detective Keith L. Williams Park, Rufus King Park, St. Albans Park, and Marconi Park.

As shown on **Figure 8-1: Land Use Study Area**, *land uses within the study area are generally characterized by one- and two-family residential uses in the southern, western, and far eastern portions of the study area, with various commercial, industrial, and parking facility uses along Merrick Boulevard and Liberty Avenue/Tuskegee Airmen Way*. The observed commercial and industrial uses are generally automotive-related (e.g., repair services and parts supply stores), with the observed parking facility uses serving as vehicle storage for the repair facilities. Additionally, *there are several institutional uses throughout the study area, with the most notable being York College*, located along Liberty Avenue, and the Allen Cathedral Senior Residence at the southern end of the study area along Merrick Boulevard, located on the opposite side of 107th Avenue from the project site.

The project site comprises 19 tax lots on one tax block, including the following:

- **Existing MTA NYCT Bus Depot** – Block 10164, portion of Lot 46
- **Outdoor Parking** – Block 10164, Lots 80, 84, 97, 103, and portion of 46
- **Recently Acquired Lots –** Block 10164, Lots 41, 53, 60, 61, 63, 66, 68, and 72
- **Lots to Be Acquired** – Block 10164, Lots 74, 76, 79, 89, 90, and 95

The project site is bounded by Tuskegee Airmen Way to the north, 107th Avenue to the south, Merrick Boulevard to the east, and 165th Street and residential/religious uses to the west. The project site contains: approximately 854 feet of frontage along the west side of Merrick Boulevard; approximately 387 feet of frontage along the north side of 107th Avenue; approximately 372 feet of frontage along the south side of Tuskegee Airmen Way; and, approximately 72 feet of frontage along the east side of 165th Street. Existing development at the project site includes the existing JBD building, outdoor parking facilities associated with the JBD, and commercial, industrial, and vacant uses either on properties that have been acquired, or are in the process of being acquired, to accommodate the proposed JBD.

The southeast corner of Tuskegee Airmen Way and 165th Street contains a vacant building that is owned by MTA and was previously occupied by a light industrial or commercial use. The entrance to the JBD building is located to the east of this vacant building on Tuskegee Airmen Way. The bus depot building is located in the middle of the block and is adjacent to the residences and a church on 165th Street.

The JBD is flanked to the west on the corner of Merrick Boulevard and Tuskegee Airmen Way by a large vacant property, owned by the Dormitory Authority of the State of New York and is part of CUNY York College's campus, that has been fenced off. This vacant parcel previously contained a restaurant with surrounding parking on the corner lot, and a tire shop with two metal structures on Merrick Boulevard. Other uses on Merrick Boulevard that are part of the project site include four vacant buildings in a row that were previously occupied by light industrial or commercial uses, a tire shop, a pizzeria, a vacant deli with two upper floors of vacant residential or commercial uses, and two auto repair businesses located on the corner of Merrick Boulevard and 107th Avenue. A gated bus entrance to the JBD lot is also located on Merrick Boulevard, between the pizzeria and vacant deli. Another gated entrance to the JBD lot is located on 107th Avenue.

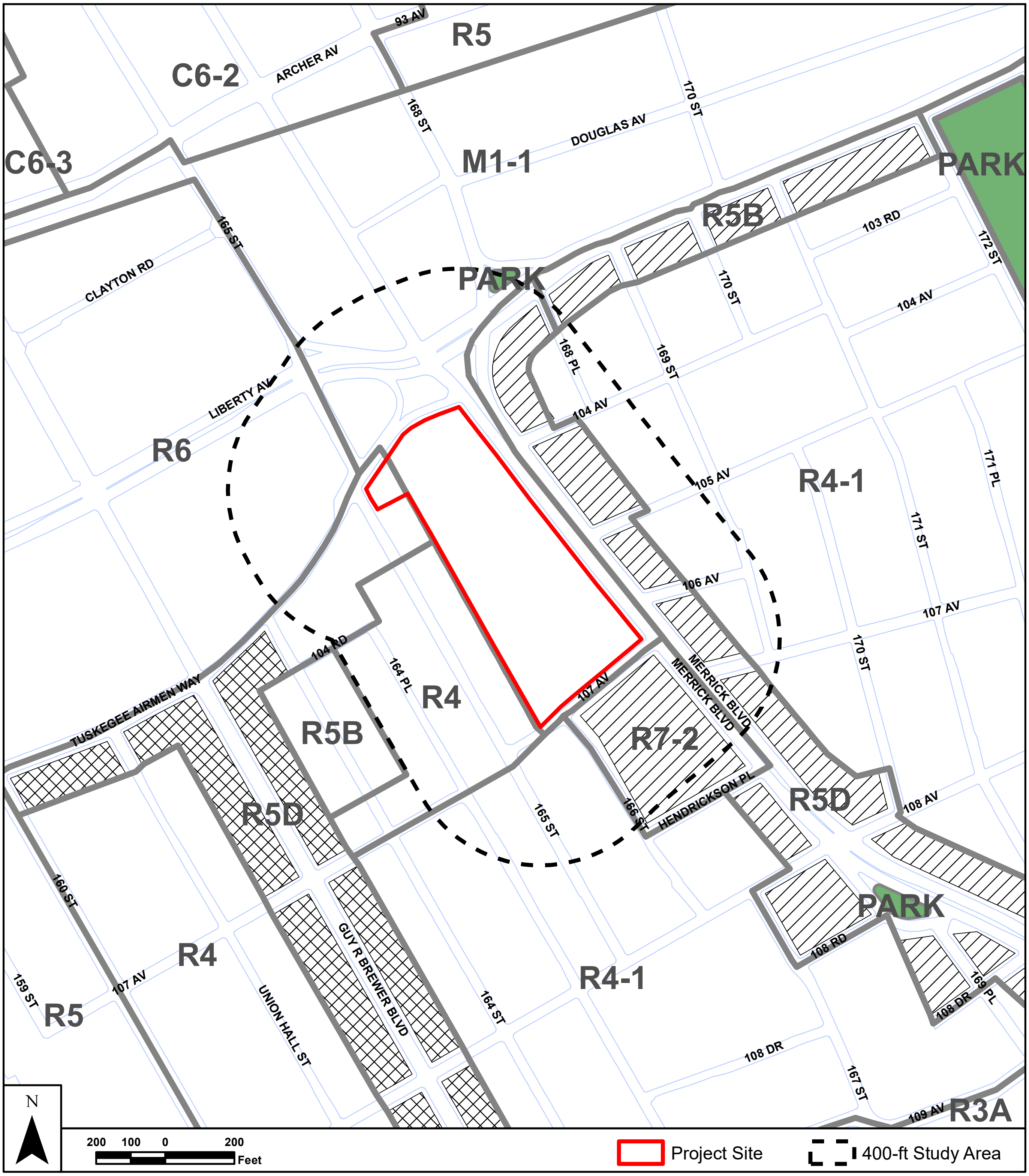
8.2.3.2 ZONING

The majority of the project site is situated within the M1-1 zoning district, with the exception of Lot 41, which is situated within the R5D zoning district (**Figure 8-2: Zoning**). *M1 districts, mapped throughout the city (e.g., the Garment District in Manhattan, Port Morris in the Bronx, Red Hook in Brooklyn, and College Point in Queens, etc.), promote the development of light industrial uses (e.g., woodworking, repair shops, storage facilities, etc.) to serve as buffers between residential uses and more intensive industrial uses permitted by M2 and M3 districts*. The M1-1 district features a floor area ratio (FAR) of 1.0 for manufacturing and commercial uses and a FAR of 2.4 for community facility uses. Building height and setbacks are governed by sky exposure planes.

The R5D district is a moderate density residential district designed to encourage growth along major corridors in auto-dependent areas of the city (e.g., the Jamaica and Rockaway Park neighborhoods of Queens). The R5D district features a maximum FAR of 2.0, with permissible lot coverages of 60 and 80 percent for interior/through lots and corner lots, respectively. The maximum permitted building height within the R5D district is 40 feet. The R5D is a contextual zoning district, which requires that development be consistent with and complementary to the existing built character of the surrounding neighborhood. Further, the district incorporates certain aspects of the Quality Housing Program (relating to interior building amenities, planting, and the location of accessory parking), the intention of which, in conjunction with lot area, lot width and building envelope requirements, is to facilitate development that serves as a transition between lower and moderate intensity districts. Block 10164, Lot 41 at the project site is currently developed with a vacant industrial use (a pre-existing non-conforming use).

It is noted that the project site is owned and operated by the MTA NYCT, a public benefit corporation of New York State, and is therefore not subject to local zoning controls.

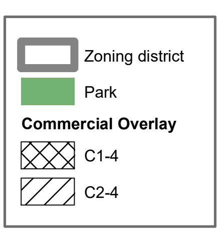
As shown on **Figure 8-2: Zoning**, the south side of Liberty Avenue and east side of the Merrick Boulevard corridor within the study area are zoned R5B and R5D, respectively, and feature the C2-4 commercial overlay (which is reflected by the previously described commercial and industrial automotive uses in these areas). *The area located directly south of the project site along the west side of the Merrick Boulevard corridor is zoned as R7-2 (at the site which houses the Allen Cathedral Senior Residence)*. With the exception of the M1-1 zoning district, which is found north of the project site along the Liberty Avenue corridor, the remainder of the zoning within the study area is characterized by residential districts, including the R4, R4-1, R5B, R5D, R6, and R7-2 districts (six individual residential districts total).



Source: New York City Department of City Planning, NYC GIS Zoning Features, February 2019; STV Incorporated, 2019.

Figure 8-2

Zoning



Reconstruction and Expansion of Jamaica Bus Depot

8.2.3.3 PUBLIC POLICY

The project site and study area are not situated within a Coastal Zone, historic district, or other local, New York, or Federal special planning districts. Both the project site and study area are situated within the Food Retail Expansion to Support Health (FRESH) program-designated area for zoning and tax incentives. This program is open to grocery store operators renovating existing retail space or developers seeking to construct or renovate retail space in underserved neighborhoods that will be leased by a line grocery store operator. Stores that benefit from the FRESH program must meet specific criteria related to minimum levels of fresh produce and grocery products intended for home preparation. Zoning incentives available through the program include development density bonuses and relaxation of parking requirements. Discretionary tax incentives available include real estate tax reductions, sales tax exemptions, and mortgage recording tax deferrals.

In April 2015, Mayor Bill de Blasio released *OneNYC*, a comprehensive plan for a sustainable and resilient city, which considers the significant social, economic, and environmental challenges faced. *OneNYC* is the update to the sustainability plan started under the Bloomberg administration (i.e., *PlaNYC 2030: A Greener, Greater New York*). Growth, sustainability, and resiliency remain at the core of *OneNYC*, but with the poverty rate remaining high and income inequality continuing to grow, equity was added as a guiding principle throughout the plan. In addition to the focuses of population growth, aging infrastructure, and global climate change, *OneNYC* brings new attention to ensuring the voices of all New Yorkers are heard and to cooperating and coordinating with regional counterparts. Since the 2011 and 2013 updates of *PlaNYC*, the City has made considerable progress towards reaching original goals and completing initiatives. *OneNYC includes updates on the progress towards the 2011 sustainability initiatives and 2013 resiliency initiatives and also sets additional goals and outlines new initiatives under the organization of four visions: growth; equity; resiliency; and, sustainability.*

Goals of the *OneNYC* plan are to make New York City:

- A growing, thriving city by fostering industry expansion and cultivation, promoting job growth, creating and preserving affordable housing, supporting the development of vibrant neighborhoods, increasing investment in job training, expanding high-speed wireless networks, and investing in infrastructure.
- A just and equitable city by raising the minimum wage, expanding early childhood education, improving health outcomes, making streets safer, and improving access to government services.
- A sustainable city by reducing greenhouse gas emissions, diverting organics from landfills to attain zero waste, remediating contaminated land, and improving access to parks.
- A resilient city by making buildings more energy efficient, making infrastructure more adaptable and resilient, and strengthening coastal defenses.

Other than zoning, these are the only public policies in place that are relevant to the project site and study area.

8.2.4 ENVIRONMENTAL IMPACTS

8.2.4.1 LAND USE

No-Build Alternative

In the future without the proposed project (the "No-Build Alternative"), the project site would continue to operate with its current use as a bus depot for the MTA with the previously described functional deficiencies. The lots to be acquired would remain in their current uses as automotive related businesses and a pizzeria.

There are two known projects currently under construction within the study area. One is an 89-unit mixed-use affordable housing development at 92-61 165th Street. The other is a single-story structure with a mezzanine that is located at 104-32 Merrick Boulevard and is currently under construction. These developments are not anticipated to significantly change the makeup of the study area's land use by the year 2025.

Future With The Proposed Action

As previously discussed in **Chapter 3.0: Alternatives**, the MTA NYCT would establish a Preferred Alternative from among three Candidate Alternatives that have been developed to provide a reasonable range of depot design alternatives with respect to engineering, economic, and environmental characteristics, which would allow for a comparative environmental evaluation.

With the three Candidate Alternatives, all currently active businesses on the project site along Merrick Boulevard would be vacated by 2021. All buildings on the project site, including the existing MTA Bus Depot, would be demolished.

The three Candidate Alternatives are described as follows:

<u>Candidate Alternative A – Principally Open Parking</u>
Candidate Alternative A would be a new one-story depot building positioned along Merrick Boulevard, and extend southward from Tuskegee Airmen Way to 107th Avenue, which would have a depot building approximately 125,000 sf in size, with two levels of parking. The recently acquired properties along Merrick Boulevard have increased the JBD's storage capacity to 200 standard buses; however, the existing JBD does not service/maintain the longer articulated or express bus types. With the Proposed Action, the number of physical buses parked on-site would increase from 200 to 240 physical buses for Candidate Alternative A. Approximately 7,600 sf of administrative space would be provided on the first and second levels and 19,700 sf on the third level near Tuskegee Airmen Way. The construction period would be approximately 42 months.

The new bus depot building would front Tuskegee Airmen Way and Merrick Boulevard. The new depot building would replace all of the existing vacant, commercial, and light industrial buildings on Merrick Boulevard as well as the vacant building and portion of the existing bus depot building located on Tuskegee Airmen Way. Several of the uses on Merrick Boulevard are, or previously were, automotive related. Therefore, the new bus depot facility would not represent a new or incompatible land use to the area.

Candidate Alternative A would also include a surface parking lot behind the depot building and adjacent to the residences and church on 165th Street. A 31-foot-tall security/sound barrier wall would be constructed on the west side of the property, between the residences/church and the depot, and 20-foot-tall security/sound barrier wall would be constructed on the south side of the depot, adjacent to 107th Avenue. A surface parking lot would replace the existing bus depot building. The surface parking lot would not represent a new or incompatible land use to the area.

Candidate Alternative B – Partially Open Parking
Candidate Alternative B would consist of a 321,000 sf depot building with three levels of parking. Candidate Alternative B would increase the bus capacity from 200 to 244 physical buses. Over three-quarters of the buses would be parked indoors, and the rest would be parked on the roof. Construction duration is approximately 46 months.

The new bus depot building would front Tuskegee Airmen Way and Merrick Boulevard, replacing the existing bus depot and existing vacant, commercial, and light industrial buildings. A paved open area would be located behind the bus depot building and adjacent to the residences and church on 165th Street. This parking area would be used for the storage of buses for emergency events only. A 20-foot-tall security/sound barrier wall would be constructed on the west and south sides of the JBD. The new facility would be consistent and compatible with surrounding land uses in the area.

Candidate Alternative D – Principally Enclosed Parking
Candidate Alternative D would consist of two two-level buildings including Building A, which would be situated along Merrick Boulevard, and Building B, which would be located adjacent to and west of Building A. This alternative would provide an increased capacity of 266 physical buses, all indoors. Construction duration is approximately 48 months.

Building A would be constructed along Merrick Boulevard, replacing existing vacant, commercial, and light industrial buildings. Building B would be constructed west of Building A and closer to the residences and church located on 165th Street than Building A. A 20-foot-tall security/sound barrier wall would be constructed on the west and south sides of the JBD. Although Buildings A and B would be larger than the existing bus depot building, the uses would be the same and would be consistent with the land uses (vacant, automotive related, commercial and industrial) that currently exist on Merrick Boulevard and Tuskegee Airmen Way. It is anticipated that the new facility would be compatible with the surrounding land uses in the area.

As described above, all three Candidate Alternatives would involve the reconfiguration and expansion of the existing bus depot such that the existing transportation use at the project site would be maintained and expanded to adjacent, vacant commercial and industrial sites. *As such, existing land use patterns at the project site and within the study area would be maintained. Further, the redesign of the existing bus depot would expand capacity of the current use in order to address deficiencies with its current operation*. Additionally, in each of the Candidate Alternatives, vehicle access/egress to/from the facility would be provided via Tuskegee Airmen Way, 107th Avenue and Merrick Boulevard. Merrick Boulevard was previously identified as a corridor characterized by auto-related commercial and industrial uses. *Overall, the proposed action is not expected to have significant adverse land use impacts at the project site or within the study area.*

8.2.4.2 ZONING

No-Build Alternative

With the No-Build Alternative, there are no known zoning changes that are anticipated to affect the project site or study area as compared to the existing conditions.

Future With the Proposed Action

As previously discussed, the project site is owned by the MTA, a New York State public benefit corporation, and is therefore not subject to local zoning controls. *Further, implementation of the proposed action would not change existing zoning controls in the study area*. As such, the proposed action is not expected to affect zoning at the project site or within the study area.

8.2.4.3 PUBLIC POLICY

No-Build Alternative

With the No-Build Alternative, there are no known public policy changes that are anticipated to affect the project site or study area.

Future With the Proposed Action

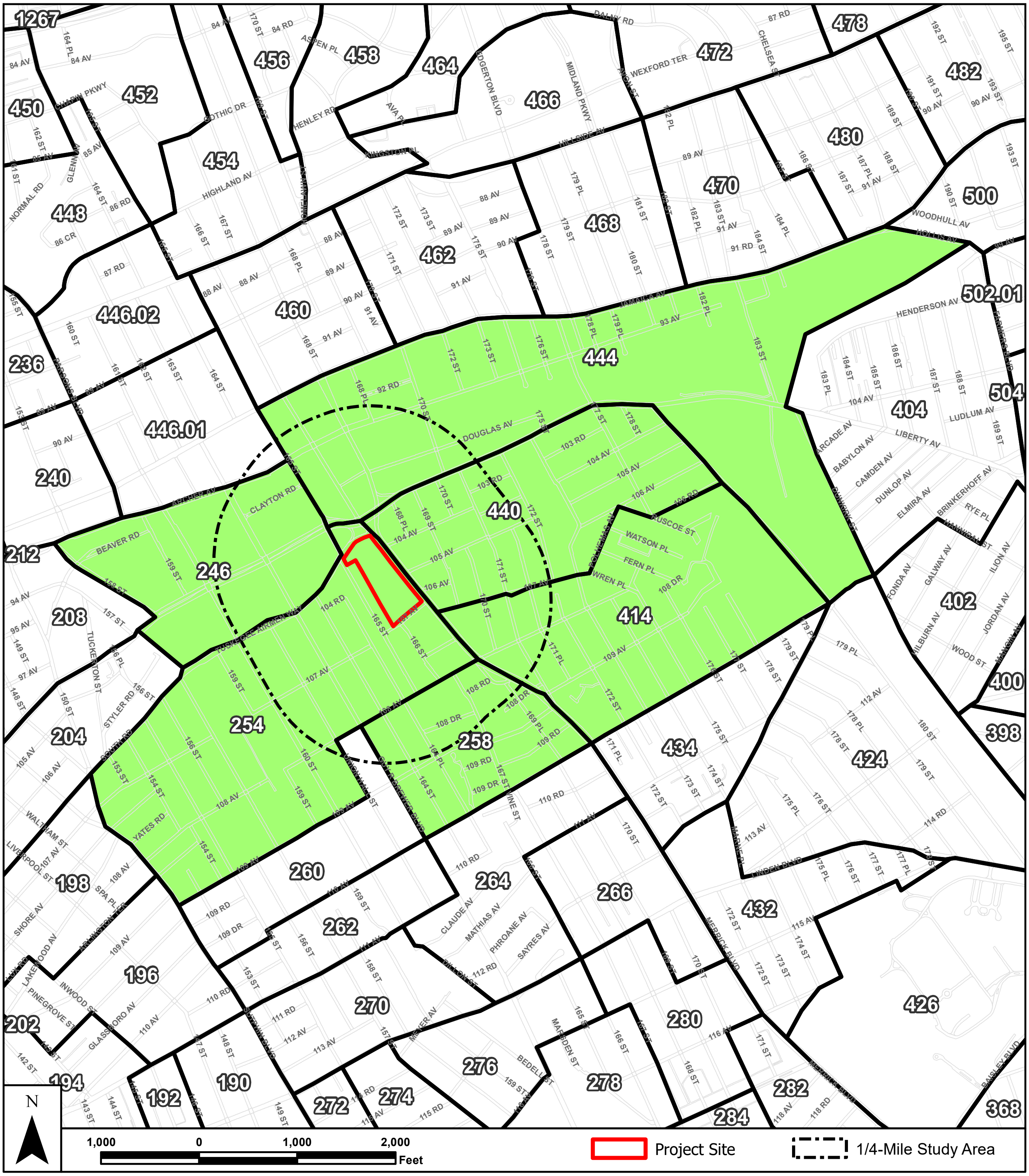
As the project site and study area are not subject to any public policies such as the Coastal Zone, a Historic District or any other Federal or State planning district areas, *implementation of the proposed action does not have the potential to affect public policy*. Additionally, although the site is located within a FRESH program designated-area as noted above in **Section 8.4.3.3: Public Policy**, the nature of the project is such that it is not subject to nor would it be affected by this program. Finally, *the proposed action would be consistent with the purpose of the OneNYC plan as it would represent an investment in existing infrastructure to better serve New York City's transit needs as well as better complement the surrounding community*. Therefore, there is no potential for significant adverse impacts related to public policy.

8.3 SOCIOECONOMICS

This section analyzes potential effects from the construction and operation of the Proposed Action on businesses and residences within the study area (**Figure 8-3: Socioeconomic Conditions**).

8.3.1 METHODOLOGY

Per the guidance of the *CEQR Technical Manual*, *an assessment of socioeconomic conditions is warranted when a project would result in direct displacement of an existing residential population, businesses or institutions on a project site; or if it would result in indirect residential or business displacement in a study area; or if it would result in adverse effects on specific industries.*



Source: New York City Department of City Planning, 2019; STV Incorporated.

Figure 8-3

Socioeconomic Conditions Study Area

Reconstruction and Expansion of Jamaica Bus Depot

Census Tract

Census Tract Study Area

Existing development at the project site includes the depot building, outdoor parking facilities associated with the JBD, and vacant, commercial, and industrial uses either on properties that have been acquired for bus parking or would be acquired for the proposed bus depot. There are six lots on the block that would be acquired and it is estimated that 33 workers would be displaced (which is below the *CEQR Technical Manual* threshold of 100 displaced employees) for direct commercial displacement impacts. Commercial displacement is discussed in more detail in **Chapter 18.0: Displacement and Relocation**. No residential uses are on the project site, and therefore no direct residential displacement impact.

The Proposed Action could result in effects to businesses in the study area during operation; therefore, an *assessment of socioeconomic conditions was performed, which includes a description of local land uses and business types, as well as a determination of how those uses would be affected by operation of the Proposed Action*.

8.3.2 STUDY AREA

This section analyzes potential effects from the operation of the Proposed Action on businesses and residences within the study area. The study area is a half mile from the project site and generally encompasses Census Tracts 246, 254, 258, 260, 414, 440, 444, 446.01, and 460. The study area is generally bounded by 89th Avenue to the north, 111th Avenue to the south, 177th Street to the east, and 155th Street to the west.

8.3.3 EXISTING CONDITIONS

As described in **Section 8.4: Land Use, Zoning, and Public Policy,** land uses within the study area include one- and two-family residential uses in the southern, western, and far eastern portions of the study area, with various commercial, industrial, and parking facility uses along Merrick Boulevard and Liberty Avenue/Tuskegee Airmen Way. The commercial and industrial uses generally include automotive-related businesses. Additionally, there are several institutional uses in the study area, including the Allen Cathedral Senior Residence on the south side of 107th Avenue at Merrick Boulevard.

The businesses on the eastern side of Merrick Boulevard from Liberty Avenue to 107th Avenue are almost all automotive-related businesses (i.e., auto repair, a gas station, a tire company, and a truck rental business); there is also a printing shop, a laundromat, and two buildings of indiscernible use. The eastern side of Merrick Boulevard from Liberty Avenue to Archer Avenue contains an auto repair and parts supply store, a small commercial strip with two beauty salons/supply stores and second floor residential units, the Greater Bethel Community Development Corporation, a vacant lot and vacant building, a clean fill transfer station, and business that rents construction equipment. The western side of Merrick Boulevard from Liberty Avenue to Archer Avenue contains a commercial area with fast food restaurants, a moving and storage business, a cluster of auto repair shops, an indiscernible light industrial use, a scrap iron/recycling facility/transfer station, and a car wash.

On the south side of 107th Avenue, between Merrick Boulevard and 166th Street are the Allen Cathedral Senior Residences. Adjacent to the bus depot on 165th Street between 107th Avenue and Tuskegee Airmen Way are single and two-family residences, except for a church located closer to Tuskegee Airmen Way. On the southeast corner of Tuskegee Airmen Way and 165th Street is a vacant building which has been acquired by MTA NYCT for bus parking. On the north side of Tuskegee Airmen Way, between 165th Street and Merrick Boulevard, is a self-storage business and a traffic island.

The uses on the eastern side of Merrick Boulevard, between 107th Avenue and 108th Avenue, are primarily auto-related (various types of car repair and a car wash). There is also an electrician, a scrap metal business, a vacant storefront, and a deli. The western side of Merrick Boulevard between these avenues is the front of the Allen Cathedral Senior Residences.

According to the 2010 U.S. Census, the study area had a population of 21,123 people and 6,597 households (**Table 8-1: Population and Demographic Characteristics for Queens Community District 12 and Study Area**). The population in the study area is primarily Black non-Hispanic (67.0 percent) with a notable portion of the population being of Hispanic origin (18.5 percent). White non-Hispanic (1.1 percent), Asian and Pacific Islander non-Hispanic (6.4 percent), Other non-Hispanic (3.8 percent), and people of two or more races non-Hispanic (3.2 percent) percentages are notably smaller. The demographics in the study area parallel those in Community District 12 as a whole, where 67.0 percent of the population is Black non-Hispanic, 18.5 percent are of Hispanic origin, 1.1 percent are White non-Hispanic, 6.4 percent are Asian and Pacific Islander non-Hispanic, and 3.2 percent are two or more races non-Hispanic.

The percentages of population under twenty-five years of age were higher in the study area than in Community District 12. Conversely, the percentages of population over 25 years of age were lower in the study area than in Community District 12.

The median household income in Queens is $62,008, as shown in **Table 8-2: Median Household income Per Census Tract**. The median household income is lower in each of the census tracts that make up the study area with a median household income of $37,103 in Tract 254, $60,3658 in Tract 258, $51,190 in Tract 414, $60,400 in Tract 440, and $44,388 in Tract 444. The residential population in Tract 246, where York College is located, is too small to calculate the median household income.

As shown in **Table 8-3: Individuals Below the Poverty Levels Per Census Tract,** the percentage of population in the study area that is considered below the poverty level is greatest in Census Tract 444 (20.4 percent), which has the second lowest median income of census tracts in the study area. This level is higher than the percentage of Queens residents below the poverty level (13.7 percent) but is approximately equal to the level in Community District 12 (20 percent). The rest of the study area has a percentage of individuals below the poverty level that is higher than Queens but lower than Community District 12.

TABLE 8-1: POPULATION AND DEMOGRAPHIC CHARACTERISTICS FOR QUEENS COMMUNITY DISTRICT 12 AND STUDY AREA

Population	Queens		Community District 12		Study Area	
	2010 Census SF1		2010 Census SF1		Census Tracts 246, 254, 258, 414, 440, 442	
	Number	Percent	Number	Percent	Number	Percent
Total	2,230,722	100%	225,919	100%	21,123	100%
White non-Hispanic	616,727	27.6%	3,813	1.7%	238	1.1%
Black non-Hispanic	395,881	17.7%	147,550	65.3%	14,161	67.0%
Asian and Pacific Islander non-Hispanic	509,428	22.8%	20,323	9.0%	1,346	6.4%
Other non-Hispanic	38,829	1.7%	7,526	3.3%	801	3.8%
Two or More Races non-Hispanic	56,107	2.5%	7,581	3.4%	666	3.2%
Hispanic Origin	613,750	27.5%	39,126	17.3%	3,911	18.5%
Female	1,150,919	51.6%	121,274	53.7%	11,449	54.2%
Male	1,079,803	48.4%	104,645	46.3%	9,674	45.8%
Under 5 years	132,464	5.9%	14,232	6.3%	1,529	7.2%
5 to 9 years	123,766	5.5%	14,431	6.4%	1,539	7.3%
10 to 14 years	123,406	5.5%	15,307	6.8%	1,576	7.5%
15 to 19 years	139,096	6.2%	17,411	7.7%	1,776	8.4%
20 to 24 years	160,875	7.2%	17,477	7.7%	1,810	8.6%
25 to 29 years	184,917	8.3%	16,184	7.2%	1,680	8.0%
30 to 34 years	177,213	7.9%	15,327	6.8%	1,391	6.6%
35 to 39 years	164,355	7.4%	14,910	6.6%	1,403	6.6%
40 to 44 years	161,924	7.3%	16,153	7.1%	1,460	6.9%
45 to 49 years	163,851	7.3%	17,270	7.6%	1,440	6.8%
50 to 54 years	159,033	7.1%	16,350	7.2%	1,416	6.7%
55 to 59 years	137,184	6.1%	13,361	5.9%	1,110	5.3%
60 to 64 years	116,492	5.2%	11,030	4.9%	792	3.7%
65 to 69 years	83,917	3.8%	8,292	3.7%	657	3.1%
70 to 74 years	66,707	3.0%	6,318	2.8%	586	2.8%
75 to 79 years	51,227	2.3%	4,743	2.1%	425	2.0%
80 to 84 years	42,120	1.9%	3,685	1.6%	281	1.3%
85 years and over	42,175	1.9%	3,420	1.5%	252	1.2%
Number of Households	780,117	-	70,647	-	6,597	-
Total Housing Units	835,127	-	76,426	-	7,563	-

TABLE 8-2: MEDIAN HOUSEHOLD INCOME PER CENSUS TRACT

Location	Income
Queens	$62,008
Tract 246	*
Tract 254	$37,103
Tract 258	$60,368
Tract 414	$51,190
Tract 440	$60,400
Tract 444	$44,388

* - To few residents to calculate

TABLE 8-3: INDIVIDUALS BELOW THE POVERTY LEVEL PER CENSUS TRACT

Location	Number	Percent
Queens	305,609	13.7%
Community District 12	45,184	20.0%
Tract 246	0	0%
Tract 254	1,338	16.3%
Tract 258	283	14.3%
Tract 414	682	16.9%
Tract 440	576	15.7%
Tract 444	660	20.4%

8.3.4 ENVIRONMENTAL IMPACTS

8.3.4.1 NO-BUILD ALTERNATIVE

In the future without the Proposed Action, the existing JBD would continue to operate with all of its inadequacies and require extensive repair and upgrades in order to meet current and future bus service demands. The acquired lots would be used by the MTA for off-street bus parking. The six lots on the project site would not be acquired and continue to be used by their current, or similar, uses.

There are two known projects currently under construction within the study area. One is an 89-unit mixed-use affordable housing development at 92-61 165th Street. The other is a single-story structure with a mezzanine that is located at 104-32 Merrick Boulevard and is currently under construction. These developments are not anticipated to significantly change the economic conditions in the study area by the year 2025.

8.3.4.2 FUTURE WITH THE PROPOSED ACTION ALTERNATIVE

In the future with the proposed action, the bus depot would be expanded and fully operational.

The proposed action would employ approximately 138 additional workers. This influx of new employees could benefit local businesses with an increase in patronage.

Three separate bus route/queuing strategies are under consideration for the proposed action These three routes are analyzed cumulatively in **Chapter 4.0: Traffic and Transportation Conditions**.

Proposed expansion of the existing bus depot with any of the three Candidate Alternatives would require permanent acquisition of occupied properties (**Figure 8-4: Property Acquisitions**). The MTA acquired several surrounding lots through previous actions to provide off-street bus parking. The acquired lots (Block 10164, Lots 41, 53, 60, 61, 63, 66, 68, and 72) are currently being used to accommodate the bus parking. Six adjacent lots would be acquired for the Proposed Action (Block 10164, Lots 74, 76, 79, 89, 90, and 95). (Refer to **Chapter 18.0: Displacement and Relocation**.) Within these lots are three auto-related businesses, an appliance repair business, a pizzeria, a vacant lot and a vacant building. Assuming industry standards of one employee per 1,000 square feet of auto-related and industrial uses and three employees per 1,000 square feet of restaurant use, there are an estimated 33 workers employed by these businesses who would be displaced. The estimated 33 displaced employees is below the *CEQR Technical Manual* threshold of 100 displaced employees in determining whether a socioeconomic assessment is appropriate. The *CEQR Technical Manual* also recommends a socioeconomic assessment if the project would displace a business that is uniquely dependent on its location, result in substantial new development markedly different from existing uses, create a retail concentration that substantially competes with existing businesses, or would be expected to affect conditions within a specific industry. *The Proposed Action would not meet any of these analysis criteria, therefore, a socioeconomic assessment due to direct displacement is not necessary and no significant impacts are anticipated.*

Source: New York City Department of City Planning, MapPLUTO 18v2, 3/8/2019; STV Incorporated, 2019.

Figure 8-4

Property Acquisitions

Reconstruction and Expansion of Jamaica Bus Depot

Existing Property Line
Previously Acquired By MTA
To Be Acquired By MTA

8.4 COMMUNITY FACILITIES AND SERVICES

This section analyzes potential effects from the construction and operation of the Proposed Action on community facilities within the study area (**Figure 8-5: Community Facilities** and **Table 8-4: Map Key to Community Facilities and Services**).

8.4.1 METHODOLOGY

According to the *CEQR Technical Manual, "…community facilities are public or publicly funded schools, libraries, child care centers, health care facilities and fire and police protection."* The *CEQR Technical Manual* calls for analysis of impacts on community facilities where there are direct effects (a physical alteration or displacement) or indirect effects (addition to population of an area and a concomitant increase in demand for community services). *The proposed action would not directly displace a community facility or introduce new resident population or otherwise increase demand on facilities; therefore, no direct or indirect effects to community facilities are expected and a detailed analysis is not required.*

Community facilities within ½-mile of the project site are listed and described within this section. Information regarding community facilities was gathered from New York City Department of City Planning's (NYCDCP) MapPLUTO via New York City's Zoning and Land Use Map (ZoLa) and NYCDCP's Capital Planning Platform.

8.4.2 EXISTING CONDITIONS

Public Schools. The project site is located within Community School District 28. The New York City Department of Education operates five public elementary and/or intermediate schools within the project study area. P.S./I.S. 116 – the William C. Hughley School is located at 107-25 Wren Place, approximately 0.4 mile east of the project site. J.H.S. 008 -the Richard Grossley Middle School is located at 108-35 167th Street, approximately 0.3 mile south of the project site. P.S. 40 – the Samuel Huntington School is located at 109-20 Union Hall Street, approximately 0.5 mile south of the project site. P.S./I.S. 268 is located at 92-07 175th Street, approximately 0.5-mile northeast of the project site. P.S. 48 is located at 155-02 108 Avenue, approximately 0.5 mile southwest from the project site.

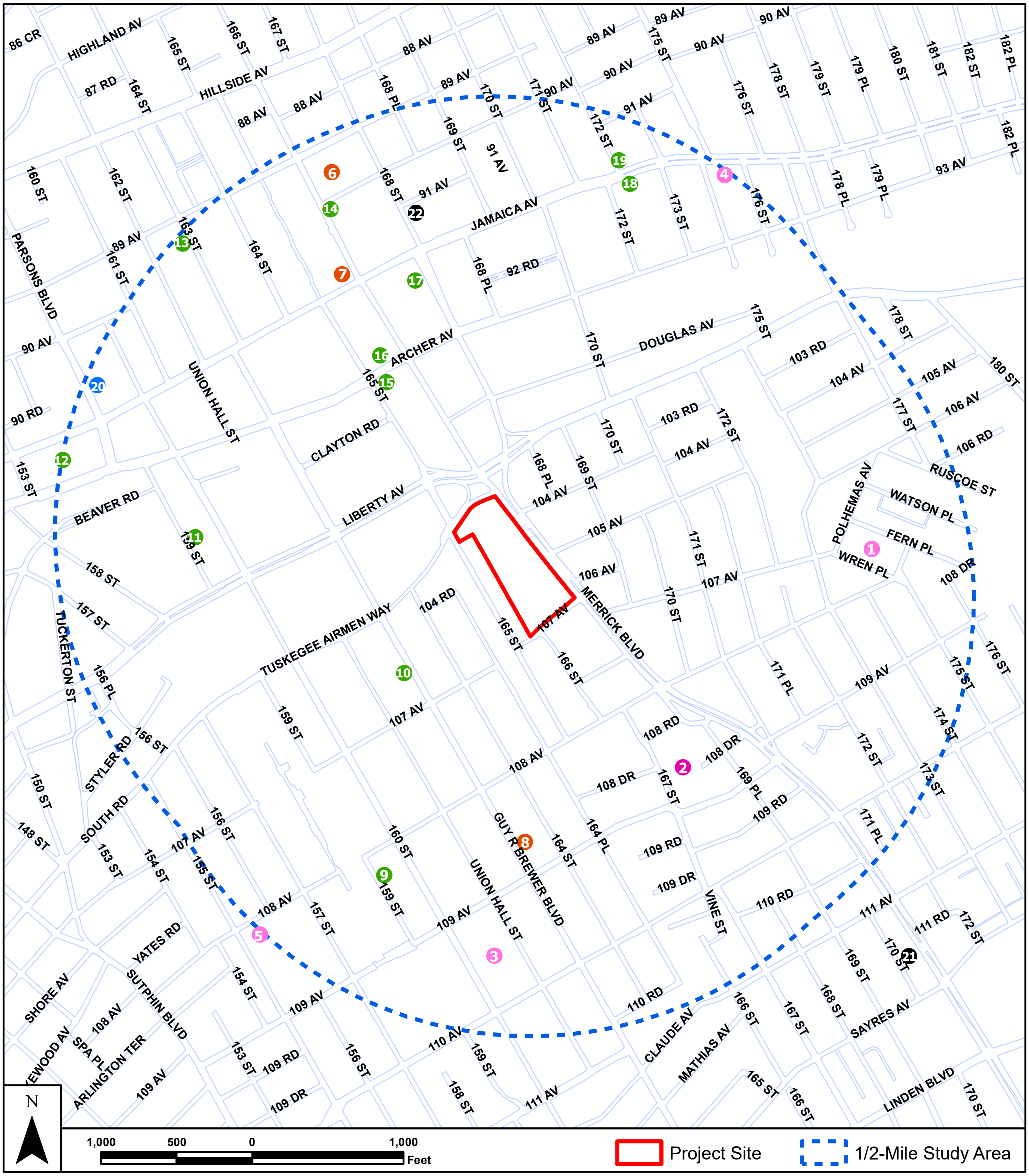
Libraries. The Queens Borough Public Library is the public library for the Borough of Queens. Within the ½-mile study area there are three library facilities. Queens Library Central is located at 89-11 Merrick Boulevard, approximately 0.5 mile north of the project site. Lafrak City Branch Library is located at 16517 Jamaica Avenue, approximately 0.4 mile north of the project site. Queens Library at South Jamaica is located at 108-41 Guy R Brewer Boulevard, approximately 0.4 mile south of project site.

Child Care Centers. There are several child care centers in the study area. Jamaica Day Nursery is located at 108-17 159th Street, approximately 0.4 mile south of the project site. Nee Cee Cares Day Care is located at 106-38 Guy R Brewer Boulevard, approximately 0.2 mile west of the project site. South Jamaica Center for Children and Parents is located at 94-43 159th Street, approximately 0.4 west of the project site. Jamaica Kids Pre-School is located at 1 Jamaica Center Plaza, approximately 0.5 mile west of the project site. A Special Place for Kids is located at 89-14 163rd Street, approximately 0.5 mile west of the project site. Jamaica Montessori Associates is located at 90-01 Merrick Boulevard, approximately 0.4 mile northwest of the project site. Little People's Day Care is located at 92-61 165th Street, approximately 0.3 mile north of the project site. Clifford Glover/Starlight Day Care is located at 165-15 Archer Avenue, approximately 0.3 mile north of the project site. Bessie & Nora's Place is located at 92-12 168th Street, approximately 0.4 mile north of the project site. New Deal Day Care & Learning Center is located at 172-12 Jamaica Avenue, approximately 0.5-mile northeast of the project site. New Millennium Day Care is located at 172-07 Jamaica Avenue, approximately 0.5-mile northeast of the project site.

Health Care Facilities. Jamaica Health Center is located within the project study area at 90-37 Parsons Boulevard approximately 0.5-mile northwest of the project site.

Fire Protection. Fire protection services are provided by the Fire Department of the City of New York (FDNY). The facility closest to the project site that would serve the proposed JBD is Engine Company 275, located approximately 0.7 mile south of the project site, outside of the study area, at 111-36 Merrick Boulevard.

Police Protection. Police protection is provided by the New York City Police Department (NYPD) 103rd Precinct, which has jurisdiction over the project site. Its headquarters are located at 168-02 91st Avenue, approximately 0.5-mile north of the project site.



Source: New York City Department of City Planning, 2019.; STV Incorporated, 2019.

Figure 8-5

Community Facilities

Reconstruction and Expansion of Jamaica Bus Depot

- Day Care Center
- Library
- Elementary School
- Intermediate School
- Health and Social Services
- Public Safety and Criminal Justice

TABLE 8-4: MAP KEY TO COMMUNITY FACILITIES AND SERVICES

Key #	Facility	Address
	Public Schools	
1	P.S./I.S. 116 - The William C. Hughley School	107-25 Wren Place
2	J.H.S. 008 – The Richard S. Grossley Middle School	108-35 167th Street
3	P.S. 40 - The Samuel Huntington School	109-20 Union Hall Street
4	P.S./I.S. 268	92-07 175th Street
5	P.S. 48	155-02 108 Avenue
	Libraries	
6	Queens Library Central	89-11 Merrick Blvd, Jamaica, NY 11432
7	Lefrak City Branch Library	16517 Jamaica Avenue
8	Queens Library at South Jamaica	108-41 Guy R Brewer Blvd, Jamaica, NY 11433
	Child Care Centers	
9	Jamaica Day Nursery	108-17 159th Street
10	Nee Cee Cares Day Care	106-38 Guy R Brewer Boulevard
11	South Jamaica Center for Children and Parents	94-43 159th Street
12	Jamaica Kids Pre-School	1 Jamaica Center Plaza
13	A Special Place for Kids	89-14 163rd Street
14	Jamaica Montessori Associates	90-01 Merrick Boulevard
15	Little People's Day Care	92-61 165th Street
16	Clifford Glover/Starlight Day Care	165-15 Archer Avenue
17	Bessie & Nora's Place	92-12 168th Street
18	New Deal Day Care & Learning Center	172-12 Jamaica Avenue
19	New Millennium Day Care	172-07 Jamaica Avenue
	Health Care Facilities	
20	Jamaica Health Center	90-37 Parsons Boulevard
	Fire Protection	
21	FDNY Engine Company 275	111-36 Merrick Boulevard
	Police Protection	
22	NYPD 103rd Police Precinct	168-02 91st Ave, Jamaica, NY 11432

8.4.3 ENVIRONMENTAL IMPACTS

The Proposed Action would construct a new and expanded bus facility on the site currently occupied by the existing bus depot, as well as several commercial and industrial buildings. *The proposed action would not introduce new residents to the area, therefore creating little new demand for community facilities and services.*

Public Schools. As the project would not introduce school-age children to the area, the proposed action would have no significant impact on public schools.

Libraries. As the project would not introduce residential population to the area, the proposed action would have no significant impact on libraries.

Child Care Centers. As the project would not introduce residential population to the area, the proposed action would have no significant impact on child care centers.

Health Care Facilities. It is expected that the proposed action would have no significant impact on health care facilities in the community as a result of this project.

Fire Protection. The proposed action would be constructed to meet all existing fire code regulations and would generate a negligible increase to the potential workload of the FDNY. It is expected that the proposed action would not adversely impact the FDNY's ability to provide fire protection to its service area.

Police Protection. It is expected that the proposed action would have no significant impact on police protection in the community as a result of this project.

No significant adverse impacts to community facilities and services would occur as a result of the proposed action, and no further analysis is required.

8.5 OPEN SPACE/PARKLAND AND RECREATIONAL FACILITIES

8.5.1 METHODOLOGY

According to the *CEQR Technical Manual*, an open space analysis may be necessary if the project could potentially have a direct or indirect effect on open space. A direct effect on an open space resource occurs when the proposed JBD results in the physical loss of open space or a change of use so that it no longer serves the same user population, limits public access, or causes increased noise or air pollutant emissions, odors, or shadows on a public open space, thus affecting its usefulness (whether on a permanent or temporary basis). An indirect effect may occur when population generated by the proposed JBD would be sufficiently large to noticeably diminish the ability of an area's open space to serve the future population.

8.5.1.1 APPROACH

The public open space and parkland assessment considers the potential impacts that would be expected to result from proposed changes to the project site, including any potential indirect impacts that may result to public open space and parkland off-site.

8.5.1.2 STUDY AREA AND DATA SOURCES

A study area has been defined to include the project site and the area within ¼-mile of the project site (the *CEQR Technical Manual* recommends a ¼-mile study area for commercial projects) that provides for the opportunity to assess potential indirect impacts off-site, to the extent that the proposed action may be expected to affect either directly or indirectly the built and natural environs of the project site (**Figure 8-6: Open Space/Parkland**). The public open space and parkland assessment includes a review of publicly available data sources, including NYC Department of City Planning Maps, NYC Department of Parks & Recreation (NYCDPR) website search, and available aerial photography.

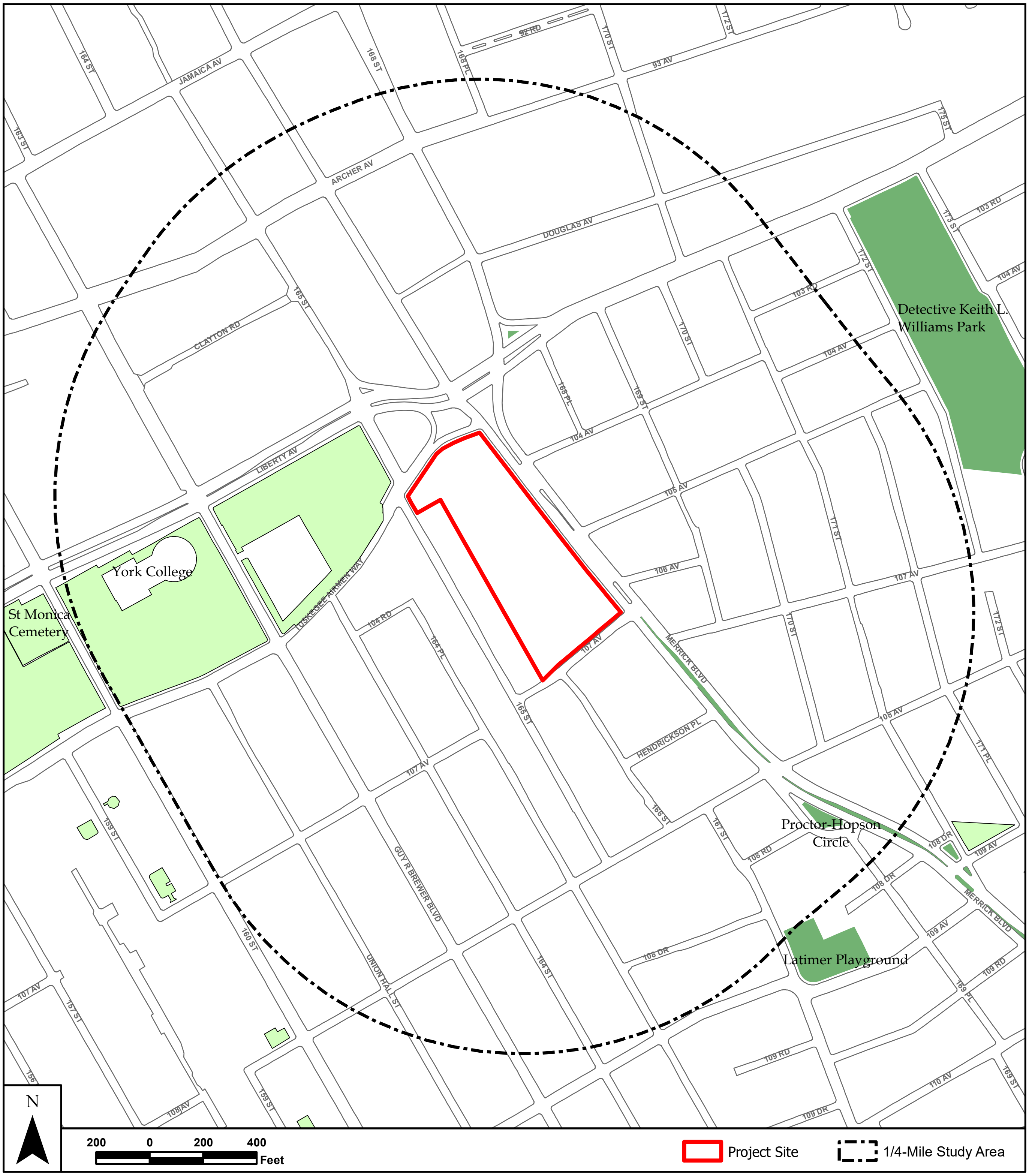
8.5.2 EXISTING CONDITIONS

The project site does not contain any publicly accessible open space. The ¼-mile study area contains three publicly accessible open spaces including Latimer Playground, Proctor-Hopson Circle, and a portion of the York College campus. Latimer Playground, a New York City Department of Parks and Recreation (NYCDPR) operated schoolyard adjacent to New Preparatory Middle School, is located southeast of the project site and contains basketball courts, benches, handball courts, playground equipment, a paved open area, and mature trees. Proctor-Hopson Circle is a public plaza located southeast of the project site, consisting of a grassy area with mature trees bordered by Merrick Boulevard and 169th Place. York College Campus is located west of the project site. The portion of York College Campus that is located within the ¼-mile study area comprises of several landscaped areas with mature trees, two parking lots, a paved plaza with outdoor seating, and academic buildings.

8.5.3 ENVIRONMENTAL IMPACTS

The Proposed Action would not result in the physical loss or displacement of publicly accessible open space, and would not cause increased emissions, odors, or shadows to a public open space or parkland (as described in **Chapter 5.0: Air Quality,** and **Chapter 6.0: Noise and Vibration**). Therefore, *the proposed action would not result in any direct effects on open space and no further analysis is required.*

An indirect effect on open space may occur when a project adds enough population to the area to noticeably diminish the ability of an area's open space to serve the population. For most projects (those located in neither a well-served nor underserved area for open space), if the proposed action would result in the introduction of 200 or more residents or 500 or more workers to an area, an assessment is performed to determine if the project would have an indirect effect on open space. The project site is located in neither a well-served nor underserved area for open space. There would be no residential population increase as a result of the proposed action. The proposed expansion of the action would increase the number of employees by up to 165 employees to a total staffing of approximately 720 employees for Candidate Alternative D. The number of projected employees for Candidate Alternatives A and B would be less than for Candidate Alternative D. *Therefore, the proposed action does not reach the threshold for assessment outlined in the CEQR Technical Manual; no significant impacts to open space are anticipated and no further analysis is warranted.*



Source: New York City Department of City Planning, MapPLUTO 18v2, 3/8/2019; STV Incorporated, 2019.

Figure 8-6

Open Space/Parkland

Reconstruction and Expansion of Jamaica Bus Depot

Park
Open Space

8.6 ENVIRONMENTAL JUSTICE

The environmental justice analysis has been undertaken to identify and evaluate any disproportionate and adverse project impacts on minority or low-income populations. The concept of performing an environmental justice analysis is related to the establishment of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994). The order requires federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations. Executive Order 12898 also requires federal agencies to work to ensure greater public participation in the decision-making process. *Guidance on addressing environmental justice (EJ) and providing analysis to determine potential effects to communities is also provided in New York State Department of Environmental Conservation (NYSDEC) Commissioner Policy 29 (CP 29).* An environmental justice analysis addresses environmental justice concerns and ensures community participation in the NYSDEC permit review process and the NYSDEC application of SEQRA, when applicable.

8.6.1 METHODOLOGY

The assessment of environmental justice for the Proposed Action involves three steps:

a. *Identify potential environmental justice areas* within the Proposed Action's area of potential effect, based on population and economic characteristics;
b. *Identify the Proposed Action's potential adverse effects* on environmental justice communities and areas; and,
c. *Evaluate the Proposed Action's potential adverse effects* on minority and low-income communities relative to its overall effects, in *order to determine whether any potential adverse impacts on those communities would be disproportionate.*

8.6.1.1 DELINEATION OF STUDY AREA

The study area for environmental justice analysis encompasses the area most likely to be affected by the Proposed Action and considers the area where potential impacts resulting from construction and operation of the Proposed Action could occur. The environmental justice study area includes the census tracts having at least 50 percent of total physical area within ¼-mile of the project site. As shown in **Figure 8-7: Potential Environmental Justice Areas**, the study area includes five census tracts.

For the purposes of this EJ analysis, census tract data have been determined appropriate as a unit of data to represent the potential presence of EJ population located within ¼-mile of the project site. (The ¼-mile radius is consistent with the study areas employed for respective technical analyses reported in this EIS that may experience project impacts.) Census tracts, by definition, contain at least one Block Group. Given that the census tracts comprising the study area for this EJ analysis and the larger vicinity, as shown on **Figure 8-7** all qualify as potential EJ community(ies), the use of census tracts is reasonably conservative (i.e., there would be no small enclave consisting of EJ population that is masked by a proportionally larger non-EJ population in a census tract).

A community is considered to be an environmental justice community if minority and/or low-income communities are present. Minority and low-income communities are defined as follows:

- ***Minority Communities**:* minority populations are defined as including persons identified by the U.S. Census Bureau as American Indian, Asian and Pacific Islanders, African-American or Black, or Hispanic. For the purposes of this environmental justice analysis, Alaskan Natives and persons of some other race or two or more races as minority populations are conservatively considered to represent minority population. Following NYSDEC guidance for urban areas, this analysis defines minority communities as a census block group, or contiguous area with multiple block groups, e.g., a census tract, which by definition contains at least one block group, with a minority population equal to or greater than 51.1 percent of the total population.

- ***Income****:* A "low-income community" is defined as a census block group, or contiguous area with multiple census block groups, e.g., census tract(s), having a low-income population equal or greater than 23.59 percent of the total population. A low-income population is a population having an income that is less than the poverty threshold, as defined by the U.S. Census Bureau. The 2018 US Census federal poverty level is defined as $25,707 for a family of four.

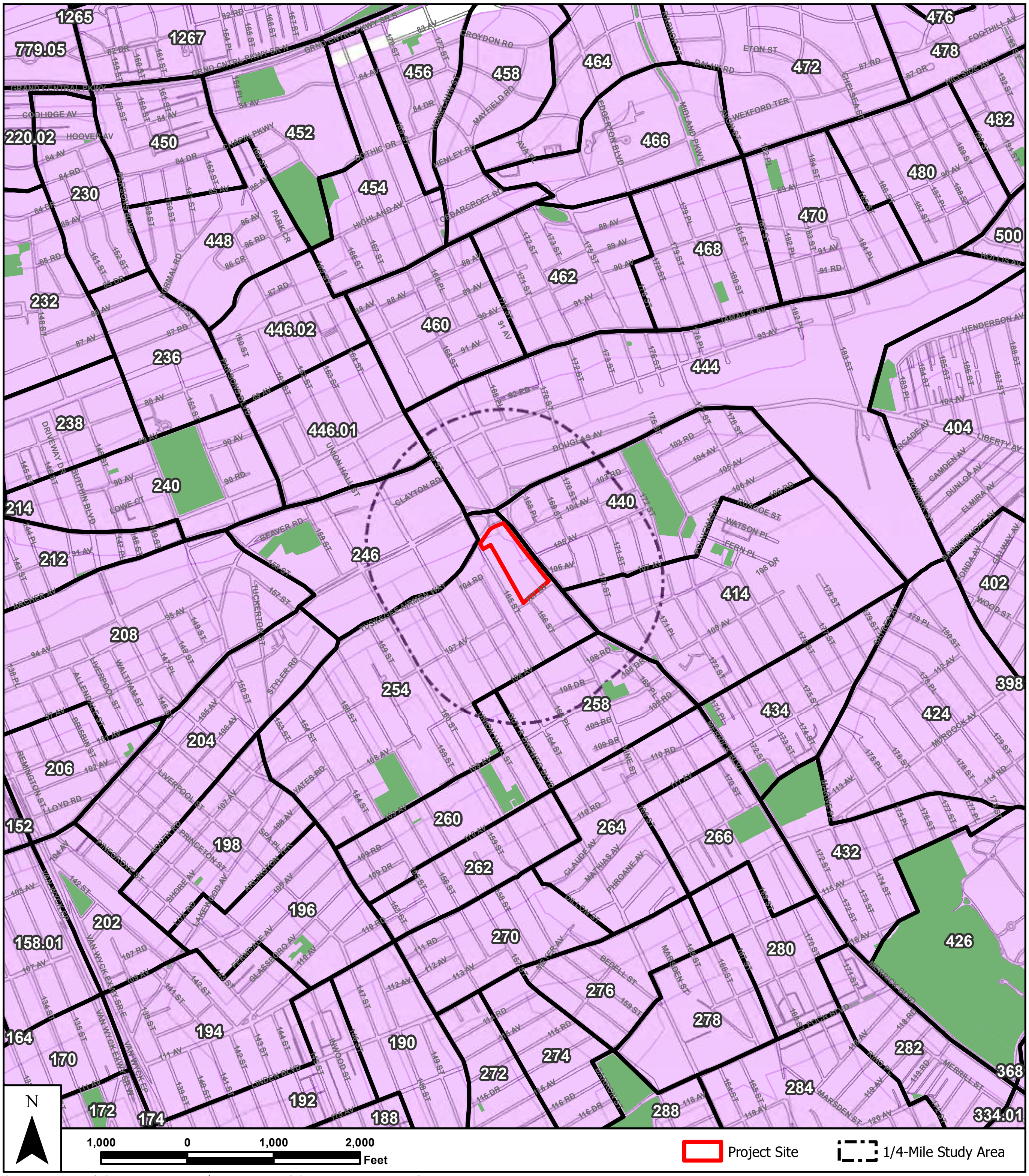
8.6.2 EXISTING CONDITIONS

U.S. Census Bureau race, ethnicity and poverty status data were gathered for the five census tracts comprising the study area. In addition, census data were compiled for Queens Community District 12, Queens County, and New York City in order to permit comparison of the study area's characteristics to those of larger reference areas.

<u>Identification of Populations of Concern within the Study Area</u>

Based on the methodology described above, the data describing population in all of the study area's five census tracts exceed thresholds for definition as minority and/or low-income communities. As shown in **Table 8-1: Population and Demographic Characteristics for Queens Community District 12 and Study Area**, more than 67.0 percent of the population in the study area as a whole, is minority, similar to the proportion of minority population, to total population, of Community District 12, which is also reported as approximately 67.0 percent.

As shown in **Table 8-3: Individuals Below the Poverty Levels Per Census Tract**, the percentage of the population living below the poverty threshold is higher in the study area (approximately 16.8 percent) than in Queens (approximately 13.7 percent), though lower than Community District 12 (approximately 20.0 percent). Given these data, the entire study area is considered to comprise one or more communities subject to EJ analysis and consideration, as shown in **Figure 8-7: Potential Environmental Justice Areas**.



Source: New York State Department of Environmental Conservation, Potential Environmental Justice Areas, 12/14/2009; STV Incorporated, 2019.

Figure 8-7

Potential Environmental Justice Areas

Census Tract
Park
Potential EJ Area

Reconstruction and Expansion
of Jamaica Bus Depot

8.6.3 IMPACTS AND MITIGATION

One key criterion for an environmental justice analysis is whether or not adverse impacts identified in each of the environmental analysis categories are disproportionate within communities of concern, i.e., would the impacts within the study area (within a minority or low-income community) be appreciably more severe or greater in magnitude than those that would be experienced in non-minority or non-low-income communities. In the future with the proposed project, the identified adverse impacts in this FEIS are generally capable of being mitigated and are expected to be reduced significantly with appropriate measures. As described in **Chapter 20.0: Commitments to Mitigating Adverse Effects**, there would be no unmitigated significant adverse impacts. Further, as described in **Chapter 19.0: Secondary and Cumulative Effects Assessment**, there would be no cumulative impacts resulting from the proposed JBD. *Therefore, the potential effects associated with the project would not represent any potential for significant adverse impacts that would affect the surrounding environmental justice community(ies) in any way that would be appreciably more severe or greater in magnitude than non-EJ community areas*. Finally, the proposed JBD would represent an improvement to NYCT bus operations in Queens. ***Therefore, the proposed action would not result in any disproportionate burden to EJ communities, but would result in benefits to the communities served by NYCT buses in Queens***.

9.0 URBAN DESIGN AND VISUAL RESOURCES

9.1 INTRODUCTION

9.1.1 CONTEXT AND KEY ISSUES

Urban design concerns the physical appearance of a neighborhood**,** including building bulk, use, type; building arrangement; block form, street pattern, and street hierarchy; streetscape elements; and natural features. ***Visual resources concern the unique or important public view corridors, vistas, or natural or built features of an area.*** The assessment of urban design and visual resources is concerned with the potential changes to the pedestrian experience that may result from a proposed action. The *CEQR Technical Manual* recommends *a preliminary assessment to determine whether physical changes proposed by the project could rise to the level of potential significant adverse impact. A detailed assessment of urban design and visual resources may be appropriate when a project would have substantially different bulk or setbacks than currently exist in an area, and when substantial new, above-ground construction would occur in an area that has important views, natural resources, or landmark criteria*.

9.1.2 SUMMARY AND CONCLUSIONS

A preliminary assessment of urban design and visual resources was performed that examined how the three Candidate Alternatives would affect urban design, as defined above, and visual resources in the study area. Based on the preliminary assessment, it was determined that ***none of the three Candidate Alternatives would result in significant adverse impacts to most elements of urban design or visual resources*****. In addition,** ***the proposed project would comply with NY Public Buildings Law §143 requires State agencies to use shielded lights to reduce glare, sky glow, and light trespass to the greatest extent possible*****; therefore, a light pollution analysis was not conducted.** However, a detailed urban design and visual impact assessment of the Candidate Alternatives was performed because they present ***significantly different*** (new security sound barrier wall) ***and taller*** (up to 64 feet in height) site structures than the existing JBD structure. Specifically, the proposed JBD would be enclosed by a security/sound barrier wall ranging from 20 to 31 feet depending on the Candidate Alternative, which the current JBD does not have; the site buildings would range from 39 to 64 feet in height while the current building is between 20 and 25 feet tall.

The *detailed assessment determined* that although the difference in the security/sound barrier wall heights and building height would be visible from the ***sidewalks and adjacent properties*** along 165th Street, *the form and use of the project site with each of the Candidate Alternatives would generally resemble the condition today, and the condition if the project was not constructed in the future. It was determined that the overall pedestrian experience would remain fundamentally unchanged*. The opportunity for architectural treatment of the proposed JBD structures and the security/sound barrier walls will be considered in the post-FEIS design phase.

9.2 METHODOLOGY

9.2.1 URBAN DESIGN AND VISUAL RESOURCES

The urban design and visual resources assessment is conducted per the guidance of the *CEQR Technical Manual* in three basic steps. *First*, the Proposed Action is reviewed to determine whether such an assessment is warranted, based on whether the proposed action would be expected to result in changes to elements particular to urban design, such as streets, buildings, visual resources, open space, and/or natural features. When such changes, or "effects," could be expected with the Proposed Action, a *preliminary assessment* of urban design and visual resources is then conducted to determine which particular *effects* expected with the Proposed Action may warrant further investigation in the detailed analyses. It is within the *detailed analyses* that the effects are characterized in greater detail and a determination is made as to *whether any changes to the urban design and visual resources of an area would alter the experience of public space in a significant way*.

Information pertinent to the assessment of the urban design and visual resources analyses includes data collected and analytical information prepared as part of other analyses included in this FEIS, specifically: **Section 8.2: Land Use, Zoning, and Public Policy**; **Section 8.5: Open Space / Parkland and Recreational Facilities**; and **Chapter 7.0: Historical and Cultural Resources**. In addition, the study of existing urban design and visual resources conditions has been informed by field visits and photography, publicly available data and maps; and aerial imaging. *Consideration of the future conditions with and without the Proposed Action relies on computer imaging*.

The assessment of urban design and visual resources for the Candidate Alternatives focuses on how the potential on-site changes may affect the urban form and visual character of surrounding area. For the purposes of this assessment, the study area is the area within an approximately 400-foot radius of the project site. Given that the project site is located within an area of Queens that is fully developed, this study area generally represents the maximum distance from which any of the Candidate Alternatives may be experienced by the pedestrian and may be clearly visible from publicly accessible areas, including streets, sidewalks, and parks, for example.

The detailed assessment of urban design and visual resources relies on massing diagram (volumetric renderings of the Candidate Alternatives) overlaid onto photographs in order to represent the future conditions with the proposed JBD and support evaluation of the anticipated visible changes to the project site, and determination of potential for effects to urban design and visual resources.

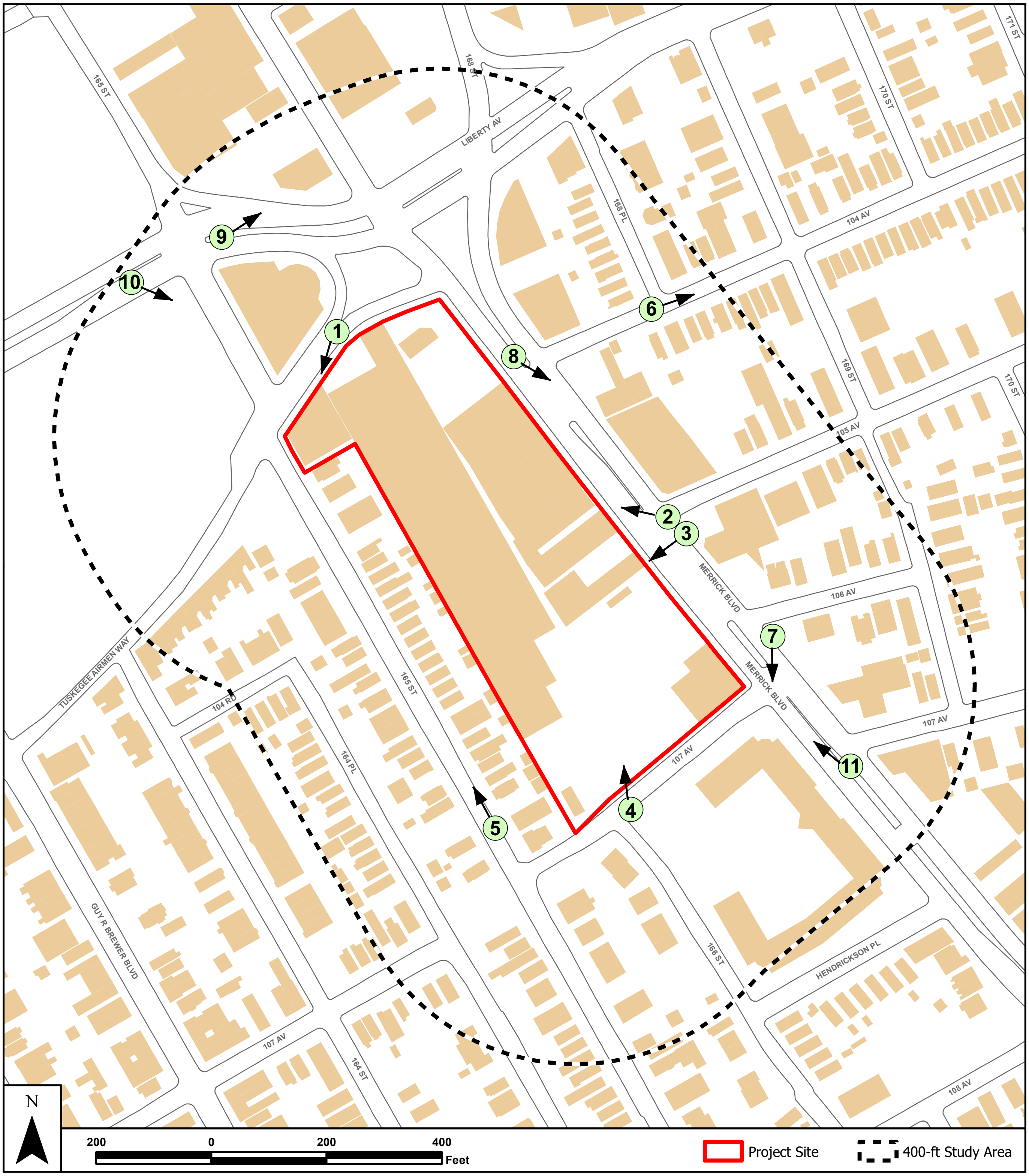
As part of the visual resource analysis, it should be noted that *the proposed action would comply with NY Public Buildings Law §143 requires State agencies to use shielded lights to reduce glare, sky glow, and light trespass to the greatest extent possible; therefore, a separate light pollution analysis was not conducted.*

9.3 EXISTING CONDITIONS

9.3.1 URBAN DESIGN AND VISUAL RESOURCES

9.3.1.1 PROJECT SITE

Photographs of the project site and of streetscapes throughout the study area are provided to illustrate the urban design characteristics of the project site and surrounding neighborhood. The location from which each photograph was taken is identified on **Figure 9-1: Existing Conditions Photo Key**. The project site comprises of the existing JBD facility, including adjacent lots owned by MTA NYCT.



Source: New York City DoITT, Building Footprints, 2019; STV Incorporated, 2019.

Figure 9-1

Existing Conditions Photo Key

Reconstruction and Expansion of Jamaica Bus Depot

View/Photo Location

The lots are used to support depot operations, including surface parking for buses (See **Photo 9-1**, **Photo 9-2, Photo 9-3**, and **Photo 9-4**). The project site also includes several lots along Merrick Boulevard, which, as described in **Section 8.2: Land Use, Zoning and Public Policy**, are developed as commercial and light industrial/warehouse buildings. The project site (Block 10164, Lots 41, 46, 53, 60, 61, 63, 66, 68, 72, 74, 76, 79, 80, 84, 89, 90, 95, 87, 103) is bounded by Tuskegee Airmen Way to the north, 107th Avenue to the south, Merrick Boulevard to the east, and residential / religious uses to the west. The entrance to the JBD building is located on Tuskegee Airmen Way. The existing bus depot is a one-story structure (26 feet) and has a large footprint (93,000 square feet), is situated on Block 10164, Lot 46 and is surrounded by paved areas used for bus storage and bus circulation. Directly west of the project site are residences and a church, which face onto 165th Street. The residences are predominantly one- and two-family detached homes, standing approximately 2-½ stories, with front, side, and back yards. The church is likewise surrounded by a yard area. As such, the residences and church are separated from the project site and the existing depot facility by their back yards. The existing JBD directly abuts the eastern edges of the residential and church property back yards, blocking pedestrian views into the project site. The JBD, itself, is currently visible from the publicly accessible areas of 165th Street west of the houses and church (viewed between houses). The existing depot building and the parking area that surrounds it are clearly visible from the streets to the north, east, and south.

Photo 9-1: View of the north side of the project site and the existing JBD looking south from Tuskegee Airmen Way

Photo 9-2: View of the project site, looking north on Merrick Boulevard from 107th Avenue

Photo 9-3: View of the project site, looking west on Merrick Boulevard

Photo 9-4: View of the project site, looking northeast on 107th Avenue

9.3.1.2 STUDY AREA

As described in **Section 8.2: Land Use, Zoning, and Public Policy**, the project site is located within the neighborhood of Jamaica, Queens and is surrounded by and contains a mix of low-rise residential, institutional, commercial, industrial/manufacturing, auto-related, and transportation/utility uses, as well as vacant properties. The study area includes two main commercial/industrial corridors, Merrick Boulevard and Liberty Avenue. Residential streetscapes are present on local streets in the eastern and western portions of the study area.

9.3.1.3 ASSESSMENT

The Proposed Action would require acquisition and demolition of the properties located along Merrick Boulevard. The maintenance building/structure for all three Candidate Alternatives would be situated on the eastern portion of the project site, extending approximately 1,000 feet along Merrick Boulevard from Tuskegee Airmen Way to 107th Street. The design of Candidate Alternative A would generally be a 36-foot-tall maintenance building/structure with a footprint that occupies the entire eastern half of the project site, while the remaining western half of the project site would be paved for use for an outdoor bus storage area. The southern portion of the building would be taller, up to 51 feet, with an enclosed bus ramp to the roof level. The design of Candidate Alternative B would generally be a 56-foot-tall maintenance building/structure with a footprint that would occupy the entire eastern half of the project site and a small portion of the western half. The remaining western half of the project site would be paved for use for outdoor bus storage during an emergency event. The southern portion of the building would be taller, up to 61 feet, with an enclosed bus ramp to the roof level. The design of Candidate Alternative D would be a 50-foot-tall maintenance building/structure with a footprint that would occupy the entire project site.

A security/sound barrier wall would be constructed along the western perimeter of the project site for all three Candidate Alternatives, though its height would vary with respect to the alternative. For each Candidate Alternative the security/sound barrier wall would be situated at the lot line adjacent to the rear yards of the residences/church located along 165th Street. The wall would be approximately the same total length as the existing wall and positioned in approximately the same location as the existing wall that currently stands on the project site adjacent to the same rear yards of the residences/church along 165th Street. With Candidate Alternative A, the security/sound barrier wall height would be approximately 31 feet between the residential properties/church along 165th Street and the project site. Along 107th Avenue the security/sound barrier wall would be approximately 20 feet high. With Candidate Alternatives B and D, the security/sound barrier wall along 165th Street and 107th Avenue would be a uniform height of approximately 20 feet.

Building Bulk, Use, and Type

The study area surrounding the project site consists of low-rise residential buildings (predominantly one- and two-family detached homes); the seven-story Allen Cathedral Senior Residence directly south of the project site; low-rise industrial/warehouse, auto-related, and commercial buildings; and a vacant property that is part of CUNY York College.

Low-rise residential buildings are present in the western, southern, and eastern portions of the study area along 164th Place, 165th Street, 166th Street, 104th Avenue, 105th Avenue, 106th Avenue, 107th Avenue, and 168th Place. This type of development comprises primarily of two-story detached one- and two-family homes. Although, some attached and semi-detached homes are also present (**Photo 9-5** and **Photo 9-6**).

The Allen Cathedral Senior Residence is a seven-story building directly south of the project site that fronts Merrick Boulevard and 107th Avenue. It is the largest building in the study area in terms of height and bulk and has a parking lot that faces the project site (**Photo 9-7**) on 107th Avenue.

Low-rise industrial/warehouse, auto-related, and commercial uses are present east of the project site along Merrick Boulevard and north of the project site on Liberty Avenue. Along Merrick Boulevard the buildings are primarily one-story auto-related uses, such as auto-body shops and a gas station; although there is a two-story institutional building at the corner of 104th Avenue. North of the project site along Liberty Avenue there are one- and two-story commercial uses, such as a Popeyes franchise, a Dunkin Donuts franchise, and a Pep Boys auto store (**Photo 9-8** and **Photo 9-9**).

Northwest of the project site is a portion of CUNY York College's campus. This portion of the campus is vacant property that comprises a grassy area and a parking lot used by York College (**Photo 9-10**).

Building Arrangement

The arrangement of buildings throughout the study area varies according to building typology. Low-rise residential uses in the study area are predominantly detached and have small setbacks and small landscaped areas that contribute to generally uniform streetscapes. Driveways are common along the sides of residences; however, there are some residences that have a driveway in front of the residence.

The Allen Cathedral Senior Residence is located on a block bordered by 107th Avenue to the north, Hendrickson Place to south, Merrick Boulevard to the east, and 166th Street to the west. It fronts Merrick Boulevard, Hendrickson Place, and portions of 107th Avenue and 166th Street, where it forms a continuous streetwall. The interior of the block comprises a parking lot that fronts portions of 107th Avenue and 166th Street.

Low-rise industrial/warehouse and commercial buildings on Merrick Boulevard tend to be attached structures with little to no setback. Although, some auto-related uses have parking areas that front the street and disrupt the streetwall. The low-rise industrial/warehouse and commercial buildings on Liberty Avenue tend to be detached structures with ample front parking lots.

Street Hierarchy, Block Form, and Street Pattern

The street patterns surrounding the project site forms an irregularly-shaped grid within the study area. The main corridors in the study area are Merrick Boulevard and Liberty Avenue, which intersect north of the project site. The remaining streets are local in character and tend to be much narrower than the main corridor streets.

Photo 9-5: View of low-rise residences on 165th Street looking north from 107th Avenue

Photo 9-6: View of low-rise residences on 104th Avenue looking east from Merrick Boulevard near 168th Place

Photo 9-7: View of Allen Cathedral Senior Residences looking west from the intersection of Merrick Boulevard and 107th Avenue

Photo 9-8: View looking south on east side of Merrick Boulevard across the street to the JBD. Low-rise auto-related businesses are visible on the left. The project site and Allen Cathedral Senior Residences are visible in the distance to the right.

Photo 9-9: View of low-rise commercial buildings looking northeast from Liberty Avenue

Photo 9-10: View of the project site from a vacant parcel on CUNY York College's Campus looking southeast from Liberty Avenue

Streetscape Elements

Moderately-well maintained sidewalks serve most residential uses in the study area, as well as along Merrick Boulevard and Liberty Avenue. Curbing is not continuous surrounding the project site. While curbing is present on Merrick Boulevard and Tuskegee Airmen Way, there is no sidewalk or curbing bordering the project site on 107th Avenue.

Visual Resources

No identified historic properties or districts, or view corridors related to such resources, have been identified in the study area. The project site is not located within close proximity to the waterfront or a waterfront view. The project site is not located within close proximity to a significant natural resource or view of a natural resource.

There is one publicly accessible open space within the study area, a NYC Greenstreets property median on Merrick Boulevard (**Photo 9-11).** There is also a portion of CUNY York College's campus located in the study area, adjacent to the project site (**Photo 9-10**).

Photo 9-11: View of NYC Greenstreets property median looking northwest from Merrick Boulevard. Allen Cathedral Senior Residences are visible in the background.

9.4 IMPACTS AND MITIGATION

9.4.1 THE FUTURE WITHOUT THE PROJECT

In the future without the proposed project (the "No-Build Alternative"), the project site would continue to operate with its current use as a bus depot for the MTA NYCT with the previously described functional deficiencies. The lots to be acquired would remain in their current uses as automotive-related businesses and a pizzeria. The vacant lots on Merrick Boulevard and Tuskegee Airmen Way that are part of the project site would either remain vacant or would be re-occupied by commercial or industrial uses in the No-Build Alternative. MTA would continue to use acquired parcels on the project site for parking.

There are two known projects currently under construction within the study area. One is an 89-unit mixed-use affordable housing development at 92-61 165th Street. The other is a single-story structure with a mezzanine that is located at 104-32 Merrick Boulevard and is currently under construction. These developments will represent discrete visible changes, as experienced by the pedestrian in their immediate surroundings, but these developments will not substantially alter the study area's urban design and visual resources by the 2025 build year.

9.4.2 PRELIMINARY URBAN DESIGN AND VISUAL RESOURCES ANALYSIS OF THE POTENTIAL EFFECTS OF THE PROPOSED PROJECT

9.4.2.1 CANDIDATE ALTERNATIVE A

Candidate Alternative A would consist of two building. The main depot building would consist of two structures be a one-story structure (125,000 sf) with rooftop parking (generally 36 feet tall), positioned along Merrick Boulevard, and extend southward from Tuskegee Airmen Way to 107th Avenue. A three-story administrative building would be located along Tuskegee Airmen Way and would extend from 165th Street to Merrick Boulevard. The Proposed Action would replace the existing bus depot and existing vacant, commercial, and light industrial buildings. Candidate Alternative A would also include a surface parking lot behind the depot building extending to the security/sound barrier wall abutting the property limits of the residences and church on 165th Street. The surface parking lot would replace the existing bus depot building. *An approximately 20-foot-tall security/sound barrier wall would be constructed between the new depot and residential properties on the south property line and a 31-foot-tall security/sound barrier wall would be constructed between the new depot and residential properties on the west property line.*

Building Bulk, Use, and Type

Candidate Alternative A would introduce a 125,000 sf reconstructed bus depot and a security/sound barrier wall between the depot and residential properties on the south and west property lines. At its tallest, the new bus depot building would stand approximately 50 feet tall with rooftop bus parking. The security/sound barrier wall between the project site and nearby residences/church along 165th Street would stand approximately 31 feet tall. The added bulk to the project site would be noticeable to pedestrians from the surrounding streetscapes and residents in nearby residential areas. As such, the potential impact of the added bulk to the project site will be analyzed in detail in **Section 9.4.3: Detailed Urban Design and Visual Resources Analysis of the Potential Effects of the Proposed JBD**.

Building Arrangement

The proposed depot building along Merrick Boulevard would extend southward from Tuskegee Airmen Way to 107th Avenue, requiring the acquisition and demolition of industrial/warehouse and commercial buildings along Merrick Boulevard (refer to **Chapter 18: Displacement and Relocation**). The new structure would be built to the lot line on Merrick Boulevard and with slight setbacks on Tuskegee Airmen Way and 107th Avenue. A surface parking lot would be present in the rear of the proposed depot building. The proposed JBD would have more frontage along Merrick Boulevard than the existing mix of bus depot, commercial, and industrial/warehouse buildings. Further, the proposed structure would provide continuity along the surrounding streetscapes. As such, the proposed expansion and reconstruction of the JBD would not represent a negative impact to building arrangement in the study area.

Street Hierarchy, Block Form, and Street Pattern

The proposed JBD would not alter the street hierarchy of the study area. The proposed JBD would not alter the arrangement or configuration of blocks, nor would it affect the current street pattern and prevailing form of blocks in the study area.

Streetscape Elements

New sidewalks and curbing would be installed around the perimeter of the project site, substantially improving the current streetscapes surrounding the one-block site. If any are affected by the proposed construction, new street trees would also be planted along the surrounding sidewalks, which would be replaced and/or repaired as appropriate as part of the proposed JBD. These improvements to sidewalks and curbing would enhance the attractiveness of all surrounding streetscapes and would improve the aesthetic character of the area.

Visual Resources

Changes to the project site, which would include the demolition of four existing structures and the construction of one comprehensive structure along Merrick Boulevard, would not result in visual impacts to the NYC Greenstreets property median on Merrick Boulevard. The character and form of the NYC Greenstreets property is not dependent on its relationship to the project site. Although the NYC Greenstreets property would continue to afford views toward the proposed project site, the proposed JBD would not result in any significant or adverse impact to the visual quality or enjoyment of the NYC Greenstreets property; rather the proposed JBD would represent a change of view, from one type of depot facility in the Existing and No-Build Conditions to a newer depot facility, providing consistency of streetwall and improving the contribution of the project site to the streetscape as experienced in the vicinity of this visual resource.

9.4.2.2 CANDIDATE ALTERNATIVE B

Candidate Alternative B would consist of two buildings. The main depot building would consist of two structures, the first (Building A) would be located along Merrick Boulevard and would extend from Tuskegee Airmen Way to 107th Avenue. The second structure (Building B) would be connected to the northern portion of Building A to the west. These three-story buildings would generally be 56 feet tall and provide 321,000 sf of maintenance/bus parking space. The new depot would replace the existing bus depot and existing vacant, commercial, and light industrial buildings. An administrative building would be located along Tuskegee Airmen Way and would extend from 165th Street to Merrick Boulevard. A paved outdoor area would be located west of the building and extending to the security/sound barrier wall abutting the property line the residences and church on 165th Street for emergency bus storage. *An approximately 20-foot-tall security/sound barrier wall would be constructed between the depot and residential properties on the south and west property lines.*

Building Bulk, Use, and Type

The proposed reconstruction and expansion of Candidate Alternative B would introduce a 321,000 sf reconstructed bus depot and a security/sound barrier wall to be constructed between the depot and residential properties on the south and west property lines. At its tallest, the new bus depot building would stand approximately 61 feet tall with rooftop bus parking. The security/sound barrier wall between the project site and nearby residences would stand approximately 20 feet tall. The added bulk to the project site would be noticeable to pedestrians from the surrounding streetscapes and residents in nearby residential areas. As such, the potential impact of the added bulk to the project site will be analyzed in detail in **Section 9.4.3: Detailed Urban Design and Visual Resources Analysis of the Potential Effects of the Proposed JBD**.

Building Arrangement

The proposed reconstructed depot building would front Merrick Boulevard and Tuskegee Airmen Way, requiring the acquisition and demolition of industrial/warehouse and commercial buildings along Merrick Boulevard. The new structure would be built to the lot line on Merrick Boulevard and with a slight setback and an entranceway for buses on Tuskegee Airmen Way. A paved open area would be located behind the bus depot building and extending to the security/sound barrier wall abutting the property line of the residences and church on 165th Street. The Candidate Alternative B would have more frontage along Merrick Boulevard than the existing mix of bus depot, commercial, and industrial/warehouse buildings. Further, the proposed structure would provide continuity along the surrounding streetscapes. As such, the proposed expansion and reconstruction of the JBD would not represent a negative impact to building arrangement in the study area.

Street Hierarchy, Block Form, and Street Pattern

The proposed JBD would not alter the street hierarchy of the study area. The proposed JBD would not alter the arrangement or configuration of blocks, nor would it affect the current street pattern and prevailing form of blocks in the study area.

Streetscape Elements

New sidewalks and curbing would be installed around the perimeter of the project site, substantially improving the current streetscapes surrounding the one-block site. If any are affected by the construction, new street trees would also be planted along the surrounding sidewalks, which would be replaced and/or repaired as appropriate as part of the proposed JBD. These improvements to sidewalks and curbing would enhance the attractiveness of all surrounding streetscapes and would improve the aesthetic character of the area.

Visual Resources

Changes to the project site, which would include the demolition of four existing structures and the construction of one comprehensive structure along Merrick Boulevard, would not result in visual impacts to the NYC Greenstreets property median on Merrick Boulevard. The character and form of the NYC Greenstreets property is not dependent on its relationship to the project site. Although the NYC Greenstreets property would continue to afford views toward the proposed project site, the proposed JBD would not result in any significant or adverse impact to the visual quality or enjoyment of the NYC Greenstreets property; rather the proposed JBD would represent a change of view, from one type of depot facility in Existing and No-Build Conditions to a newer depot facility, providing consistency of streetwall and improving the contribution of the project site to the streetscape as experienced in the vicinity of this visual resource.

9.4.2.3 CANDIDATE ALTERNATIVE D

Candidate Alternative D would consist of two buildings. The main depot building would consist of two structures, the first (Building A) would be located along Merrick Boulevard and would extend from Tuskegee Airmen Way to 107th Avenue. The second structure (Building B) would be connected to Building A to the west. The new bus depot would replace the existing bus depot and existing vacant, commercial, and light industrial buildings. *The height of the buildings is anticipated to be approximately 50 feet.* An administrative building would be located along Tuskegee Airmen Way and would extend from 165th Street to Merrick Boulevard. *A 20-foot-tall security/sound barrier wall is proposed to be constructed between the depot and residential properties on the south and west property lines.*

Building bulk, use, and type. The proposed reconstruction and expansion of the Candidate Alternative D would introduce a reconstructed bus depot and a security/sound barrier wall to be constructed between the depot and residential properties on the south and west property lines. The security/sound barrier wall between the project site and nearby residences would stand approximately 20 feet tall. The added bulk to the project site would be noticeable to pedestrians from the surrounding streetscapes and residents in nearby residential areas. As such, the potential impact of the added bulk to the project site will be analyzed in detail in **Section 9.4.3: Detailed Urban Design and Visual Resources Analysis of the Potential Effects of the Proposed JBD**.

Building Arrangement

The proposed reconstructed depot building would front Merrick Boulevard and Tuskegee Airmen Way, requiring the acquisition and demolition of industrial/warehouse and commercial buildings along Merrick Boulevard. The new structure would be built to the lot line on Merrick Boulevard and with a slight setback and an entranceway for buses on Tuskegee Airmen Way. The building would comprise approximately the entire project site. The Candidate Alternative D would have more frontage along Merrick Boulevard than the existing mix of bus depot, commercial, and industrial/warehouse buildings. Further, the proposed structure would provide continuity along the surrounding streetscapes. As such, the proposed expansion and reconstruction of the JBD would not represent a negative impact to building arrangement in the study area.

Street Hierarchy, Block Form, and Street Pattern

The proposed JBD would not alter the street hierarchy of the study area. The proposed new JBD would not alter the arrangement or configuration of blocks, nor would it affect the current street pattern and prevailing form of blocks in the study area.

Streetscape Elements

New sidewalks and curbing would be installed around the perimeter of the project site, substantially improving the current streetscapes surrounding the one-block site. If any are affected by construction, new street trees would also be planted along the surrounding sidewalks, which would be replaced and/or repaired as appropriate as part of the proposed JBD. These improvements to sidewalks and curbing would enhance the attractiveness of all surrounding streetscapes and would improve the aesthetic character of the area.

Visual Resources

Changes to the project site, which would include the demolition of four existing structures and the construction of one comprehensive structure along Merrick Boulevard, would not result in visual impacts to the NYC Greenstreets property median on Merrick Boulevard. The character and form of the NYC Greenstreets property is not dependent on its relationship to the project site. Although the NYC Greenstreets property would continue to afford views toward the proposed project site, the proposed JBD would not result in any significant or adverse impact to the visual quality or enjoyment of the NYC Greenstreets property; rather the proposed JBD would represent a change of view, from one type of depot facility in Existing and No-Build Conditions to a newer depot facility, providing consistency of streetwall and improving the contribution of the project site to the streetscape as experienced in the vicinity of this visual resource.

9.4.2.4 SUMMARY

Based on the above preliminary assessment of the proposed JBD and its effects on urban design and visual resources, it is determined that none of the three Candidate Alternatives would result in any significant adverse impact to most elements of urban design, including: building bulk, use, and type; street hierarchy, block form, and street pattern; streetscape elements; or visual resources. However, a detailed assessment of the proposed JBD's bulk is provided in **Section 9.4.3: Detailed Urban Design and Visual Resources Analysis of the Potential Effects of the Proposed JBD** for further clarity.

9.4.3 DETAILED URBAN DESIGN AND VISUAL RESOURCES ANALYSIS OF THE POTENTIAL EFFECTS OF THE PROPOSED JBD

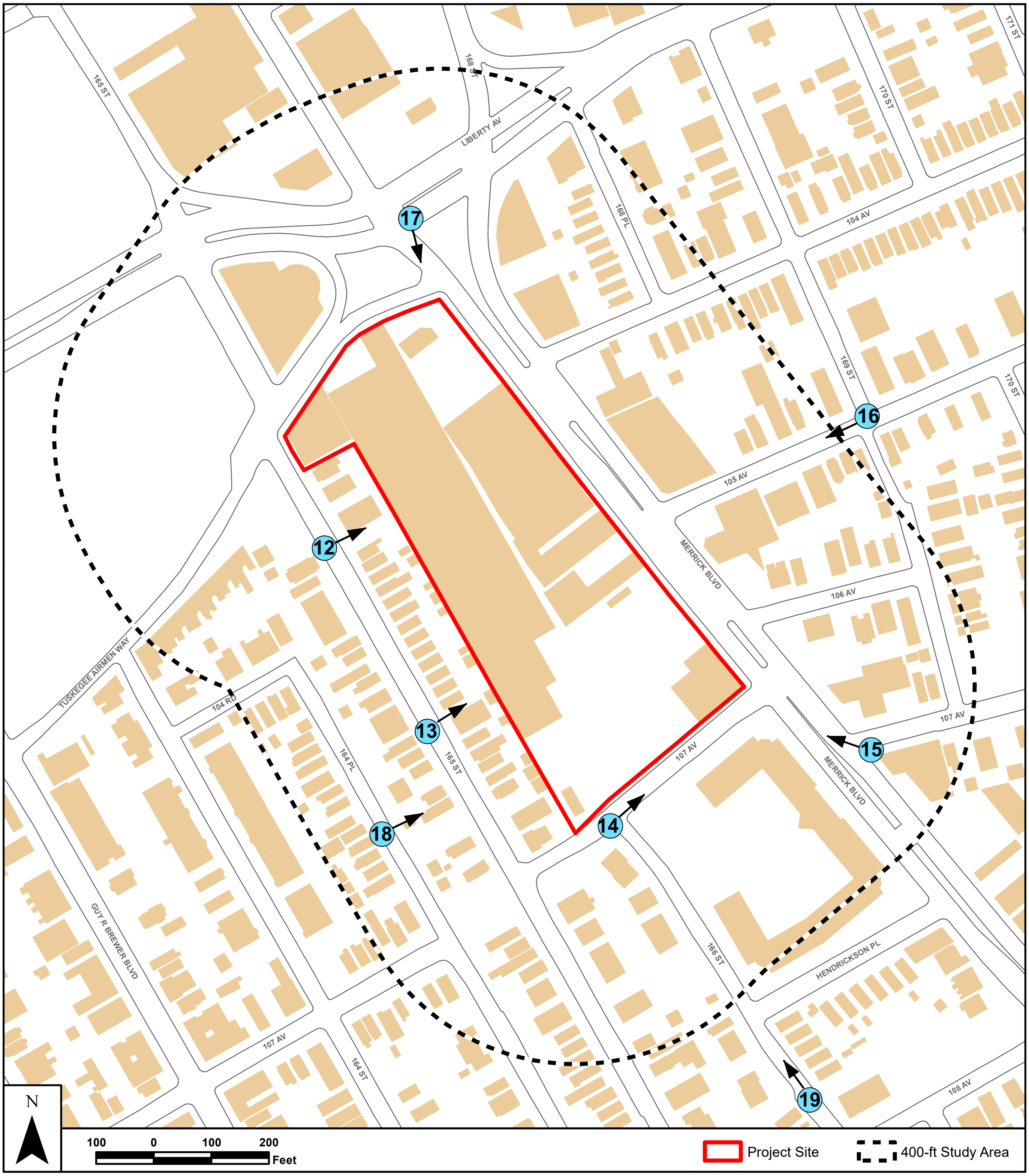
*The preliminary assessment of urban design and visual resources determined that none of the Candidate Alternatives would result in significant impacts on urban design or visual resources. However, the proposed reconstruction of the JBD and construction of a new security/sound barrier wall between the depot and residential properties on the south and west property lines would be visible from 165th Street by residents and pedestrians under each of the Candidate Alternatives, as shown in **Figure 9-2: Jamaica Bus Depot Cross Sectional Comparison of Candidate Alternatives**.* Therefore, to demonstrate the potential effects to the surrounding streetscapes and pedestrian experience, *a detailed analysis was conducted*. Renderings of various locations within the study area under each of the Candidate Alternatives were generated to visually represent future conditions both without the project (No-Build conditions) and with each of the Candidate Alternatives. The location for each of these renderings is represented on **Figure 9-3: Massing Diagram Photo Key Map**.[18]

[18] The photos used for the massing diagrams were taken on the morning of Thursday February 28, 2019.

Source: STV Incorporated, 2019.

Figure 9-2

Jamaica Bus Depot Cross Sectional Comparison of Candidate Alternatives



Source: New York City DoITT, Building Footprint, 2019; STV Incorporated, 2019.

Figure 9-3

Massing Diagram Photo Key Map

Reconstruction and Expansion of Jamaica Bus Depot

View/Photo Location

9.4.3.1 VIEW FROM 165TH STREET NEAR TUSKEGEE AIRMEN WAY LOOKING EAST

The proposed JBD would be visible to pedestrians and residents from 165th Street. To account for the view with each of the Candidate Alternatives, massing diagrams were created to show the view from 165th Street near Tuskegee Airmen Way (**Photo 9-12.1, Photo 9-12.2, Photo 9-12.3,** and **Photo 9-12.4**).

The existing conditions, as represented in **Photo 9-12.1**, shows the existing, approximately 20-foot-tall, JBD as visible between the Rose of Sharon Baptist Church and a private residence.

Candidate Alternative A, as represented in **Photo 9-12.2**, shows the proposed, approximately 31-foot-tall, security/sound barrier wall as visible between the Rose of Sharon Baptist Church and a private residence. While there is a new structure visible, the proposed security/sound barrier wall is in approximately the same location as the existing wall of the JBD and represents an increase in height from approximately 20 feet for the existing wall.

Candidate Alternative B, as represented in **Photo 9-12.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot behind an approximately 20-foot-tall security/sound barrier wall. The security/sound barrier wall is slightly shorter than the existing JBD structure and does not represent a significant change in bulk of itself. The proposed approximately 56-foot-tall bus depot in the distance is noticeable. However, due to the distance between the proposed JBD structure and the buildings on 165th Street, the incremental increase in height from existing conditions roughly approximate to that of Candidate Alternative A.

Candidate Alternative D, as represented in **Photo 9-12.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot behind an approximately 20-foot-tall security/sound barrier wall. The security/sound barrier wall is slightly shorter than the existing JBD structure and does not represent a significant change in bulk of itself. The proposed 50-foot-tall bus depot in the distance is noticeable, and from this view, is the most noticeable of the three Candidate Alternatives because of the proposed depot's proximity to the properties on 165th Street. Despite this, the incremental increase in height over the existing JBD does not represent a significant change in the character of the streetscape.

Although the difference in wall height and building height would be visible from the streetscape at some locations along 165th Street in between houses, the form and use of the project site with each of the Candidate Alternatives would generally resemble existing and No-Build conditions as viewed from the public streetscape; the overall pedestrian experience would remain fundamentally unchanged.

Photo 9-12.1: Existing Conditions from 165th St near Tuskegee Airmen Way

Photo 9-12.2: Candidate Alternative A from 165th St near Tuskegee Airmen Way

Photo 9-12.3: Candidate Alternative B from 165th St near Tuskegee Airmen Way

Photo 9-12.4: Candidate Alternative D from 165th St near Tuskegee Airmen Way

9.4.3.2 VIEW FROM 165TH STREET MIDBLOCK BETWEEN 107TH AVENUE AND TUSKEGEE AIRMEN WAY

The proposed JBD would be visible to pedestrians and residents from 165th Street. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view from 165th Street between 107th Avenue and Tuskegee Airmen Way (**Photo 9-13.1, Photo 9-13.2, Photo 9-13.3,** and **Photo 9-13.4**).

The existing conditions, as represented in **Photo 9-13.1**, shows the existing JBD as visible between two private residences on 165th Street.

Candidate Alternative A, as represented in **Photo 9-13.2**, shows the proposed approximately 31-foot security/sound barrier wall as visible between two private residences. The proposed security/sound barrier wall would be visible in approximately the same location as the existing wall of the JBD and would be taller than the existing JBD.

Candidate Alternative B, as represented in **Photo 9-13.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot behind an approximately 20-foot-tall security/sound barrier wall. The security/sound barrier wall would be slightly shorter than the existing JBD structure and does not represent a significant change in bulk of itself. The proposed approximately 56-foot-tall bus depot in the distance would be visible between the two private residences.

Candidate Alternative D, as represented in **Photo 9-13.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot behind an approximately 20-foot-tall security/sound barrier wall. The security/sound barrier wall would be slightly shorter than the existing JBD structure and would not represent a significant change in bulk of itself. The proposed approximately 50-foot-tall bus depot in the distance would be noticeable, and from this view, would be the most distinctly visible of the three Candidate Alternatives because of the proposed depot's proximity to the properties on 165th Street.

Although the difference in wall height and building height would be visible from the streetscape at some locations along 165th Street in between houses, the form and use of the project site with each of the Candidate Alternatives would generally resemble existing and No-Build conditions as viewed from the public streetscape; none of the Candidate Alternatives would result in significant adverse impacts to the pedestrian experience, which would remain fundamentally unchanged.

Photo 9-13.1: Existing Conditions from 165th Street

Photo 9-13.2: Candidate Alternative A from 165th Street

Photo 9-13.3: Candidate Alternative B from 165th Street

Photo 9-13.4: Candidate Alternative D from 165th Street

9.4.3.3 VIEW FROM 107TH AVENUE AND 166TH STREET

The proposed JBD would be visible along 107th Avenue. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view from 107th Avenue, looking east towards the project site (**Photo 9-14.1, Photo 9-14.2, Photo 9-14.3,** and **Photo 9-14.4**).

The existing conditions, as represented in **Photo 9-14.1**, shows the entrance to the existing JBD parking lot along 107th Avenue. The structure of the existing JBD is not visible from this view.

Candidate Alternative A, as represented in **Photo 9-14.2**, shows the proposed approximately 36-foot-tall reconstructed bus depot along 107th Avenue looking towards Merrick Boulevard. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but it also would define the streetscape in a way that the existing entrance and parking lot do not, by contributing uniform mass and bulk to the project site. Overall, the presence of the reconstructed bus depot would add to the visual quality of the 107th Avenue streetscape.

Candidate Alternative B, as represented in **Photo 9-14.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot along 107th Avenue looking towards Merrick Boulevard. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but as with Candidate Alternative A, it also would define the streetscape in a way that the existing entrance and parking lot do not, by contributing uniform mass and bulk to the project site. Overall, the presence of the reconstructed bus depot would add to the visual quality of the 107th Avenue streetscape.

Candidate Alternative D, as represented in **Photo 9-14.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot along 107th Avenue looking towards Merrick Boulevard. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but as with Candidate Alternative A and B, it also would define the streetscape in a way that the existing entrance and parking lot do not, by contributing uniform mass and bulk to the project site. Overall, the presence of the reconstructed bus depot would add to the visual quality of the 107th Avenue streetscape.

The development of the project site with each of the Candidate Alternatives would represent a substantial change to the building bulk at the project site where the new depot structure would establish a new and uniform streetwall, thus representing a positive improvement to the streetscapes experienced from this location.

Photo 9-14.1: Existing Conditions facing east from 107th Avenue

Photo 9-14.2: Candidate Alternative A facing east from 107th Avenue

Photo 9-14.3: Candidate Alternative B facing east from 107th Avenue

Photo 9-14.4: Candidate Alternative D facing east from 107th Avenue

9.4.3.4 VIEW FROM MERRICK BOULEVARD NEAR 107TH AVENUE

The proposed action would be visible along Merrick Boulevard near 107th Avenue. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view from Merrick Boulevard, looking north towards the project site (**Photo 9-15.1, Photo 9-15.2, Photo 9-15.3,** and **Photo 9-15.4**).

The existing conditions, as represented in **Photo 9-15.1**, shows the existing streetscape along Merrick Boulevard, facing north towards the project site. The existing JBD and various commercial and industrial/warehouse buildings on the project site are visible in the distance.

Candidate Alternative A, as represented in **Photo 9-15.2**, shows the proposed approximately 36-foot-tall proposed action with rooftop parking from Merrick Boulevard near 107th Avenue. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but it also would define the streetscape in a way that the existing mix of commercial and light industrial/manufacturing buildings do not. Overall, the presence of the reconstructed bus depot would add to the visual quality of the Merrick Boulevard streetscape, establishing a uniform and coherent bulk and relationship of the developed project site to the overall streetscape.

Candidate Alternative B, as represented in **Photo 9-15.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot from Merrick Boulevard near 107th Avenue. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but as with Candidate Alternative A, it also would define the streetscape in a way that the existing parking lot does not. Overall, the presence of the reconstructed bus depot would add to the visual quality of the Merrick Boulevard streetscape, establishing a uniform and coherent bulk and relationship of the developed project site to the overall streetscape.

Candidate Alternative D, as represented in **Photo 9-15.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot from Merrick Boulevard near 107th Avenue. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but as with Candidate Alternative A and B, it also would define the streetscape in a way that the existing parking lot does not. Overall, the presence of the reconstructed bus depot would add to the visual quality of the Merrick Boulevard streetscape, establishing a uniform and coherent bulk and relationship of the developed project site to the overall streetscape.

The development of the project site with each of the Candidate Alternatives would represent a substantial change to the building bulk at the project site, primarily as a result of the new depot building being built to the Merrick Boulevard lot line; with the building bulk position in this way on the project site, the new depot structure would establish new and uniform streetwalls along these streetscapes, thus representing a positive improvement to the streetscape in the immediate vicinity of the project site.

Photo 9-15.1: Existing Conditions from Merrick Boulevard near 107th Ave

Photo 9-15.2: Candidate Alternative A from Merrick Boulevard near 107th Ave

Photo 9-15.3: Candidate Alternative B from Merrick Boulevard near 107th Ave

Photo 9-15.4: Candidate Alternative D from Merrick Boulevard near 107th Ave

9.4.3.5 VIEW FROM 105TH AVENUE

The proposed action would be visible from 105th Avenue. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view looking west from 105th Avenue near 169th Street towards the project site (**Photo 9-16.1, Photo 9-16.2, Photo 9-16.3,** and **Photo 9-16.4**).

The existing conditions, as represented in **Photo 9-16.1**, shows the existing streetscape along 105th Avenue, facing west towards the project site. The existing JBD and associated parking lot is slightly noticeable in the distance.

Candidate Alternative A, as represented in **Photo 9-16.2**, shows the proposed approximately 36-foot-tall reconstructed bus depot with rooftop parking from the residential streetscape of 105th Avenue. Although, the JBD is noticeable from this location, it does not significantly change streetscape or fundamentally alter the pedestrian experience along 105th Avenue.

Candidate Alternative B, as represented in **Photo 9-16.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot with rooftop parking from the residential streetscape of 105th Avenue. Although, the JBD is noticeable from this location, it does not significantly change streetscape or fundamentally alter the pedestrian experience along 105th Avenue.

Candidate Alternative D, as represented in **Photo 9-16.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot from the residential streetscape of 105th Avenue. Although, the JBD is noticeable from this location, it does not significantly change streetscape or fundamentally alter the pedestrian experience along 105th Avenue.

Although the difference in building height would be visible from the 105th Avenue streetscape, the form and use of the project site with each of the Candidate Alternatives would generally resemble existing and No-Build conditions as viewed from the public streetscape; the overall pedestrian experience would remain fundamentally unaffected by any of the Candidate Alternatives.

Photo 9-16.1: Existing Conditions from 105th Avenue

Photo 9-16.2: Candidate Alternative A from 105th Avenue

Photo 9-16.3: Candidate Alternative B from 105th Avenue

Photo 9-16.4: Candidate Alternative D from 105th Avenue

9.4.3.6 VIEW FROM LIBERTY AVENUE

The proposed action would be visible near the intersection of Liberty Avenue and Merrick Boulevard. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view from Liberty Avenue, looking south towards the project site (**Photo 9-17.1, Photo 9-17.2, Photo 9-17.3,** and **Photo 9-17.4**).

The existing conditions, as represented in **Photo 9-17.1**, shows the existing JBD and a parking lot at the corner of Merrick Boulevard and Tuskegee Airmen Way looking south.

Candidate Alternative A, as represented in **Photo 9-17.2**, shows the proposed approximately 36-foot-tall reconstructed bus depot at the corner of Tuskegee Airmen Way and Merrick Boulevard. The entrance for buses is visible on Tuskegee Airmen Way. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but it also would define the streetscape in a way that the existing parking lot does not. Overall, the presence of the reconstructed bus depot would add to the visual quality of the Merrick Boulevard streetscape.

Candidate Alternative B, as represented in **Photo 9-17.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot at the corner of Tuskegee Airmen Way and Merrick Boulevard. The entrance for buses is visible on Tuskegee Airmen Way. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but as with Candidate Alternative A; it also would define the streetscape in a way that the existing parking lot does not, as it would introduce a uniform streetwall.

Candidate Alternative D, as represented in **Photo 9-17.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot at the corner of Tuskegee Airmen Way and Merrick Boulevard. The entrance for buses is visible on Tuskegee Airmen Way. The proposed depot would provide greater bulk to the project site than would be there in the No-Build Alternative, but as with Candidate Alternative A and B, it also would define the streetscape in a way that the existing parking lot does not.

Specifically, the development of the project site with each of the Candidate Alternatives would represent a substantial change to the building bulk at the project site, particularly from the new depot building being built to the lot lines (Merrick Boulevard and Tuskegee Airmen Way), where the new depot structure would establish a new and uniform streetwall, thus representing a positive improvement to the streetscapes experienced from this location.

Photo 9-17.1: Existing Conditions from Liberty Avenue

Photo 9-17.2: Candidate Alternative A from Liberty Avenue

Photo 9-17.3: Candidate Alternative B from Liberty Avenue

Photo 9-17.4: Candidate Alternative D from Liberty Avenue

9.4.3.7 VIEW FROM 164TH PLACE

The proposed action would be visible to pedestrians and residents from 164th Place. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view from 164th Place (**Photo 9-18.1, Photo 9-18.2, Photo 9-18.3,** and **Photo 9-18.4**).

The existing conditions, as represented in **Photo 9-18.1**, shows the existing JBD as visible between two private residences on 164th Place.

Candidate Alternative A, as represented in **Photo 9-18.2**, shows the proposed approximately 31-foot security/sound barrier wall as visible between two private residences.

Candidate Alternative B, as represented in **Photo 9-18.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot behind an approximately 20-foot-tall security/sound barrier wall.

Candidate Alternative D, as represented in **Photo 9-18.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot behind an approximately 20-foot-tall security/sound barrier wall.

Although the difference in wall height and building height would be visible from the streetscape at some locations along 164th Street, with portions of the wall visible between houses, the form and use of the project site with each of the Candidate Alternatives would generally resemble existing and No-Build conditions as viewed from the public streetscape; none of the Candidate Alternatives would result in significant adverse impacts to the pedestrian experience, which would remain fundamentally unchanged.

Photo 9-18.1: Existing Conditions from 164th Place

Photo 9-18.2: Candidate Alternative A from 164th Place

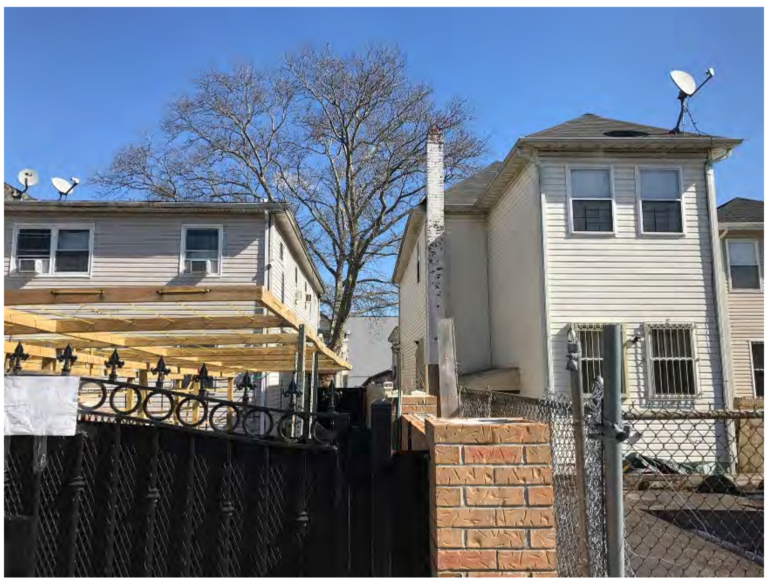


Photo 9-18.3: Candidate Alternative B from 164th Place

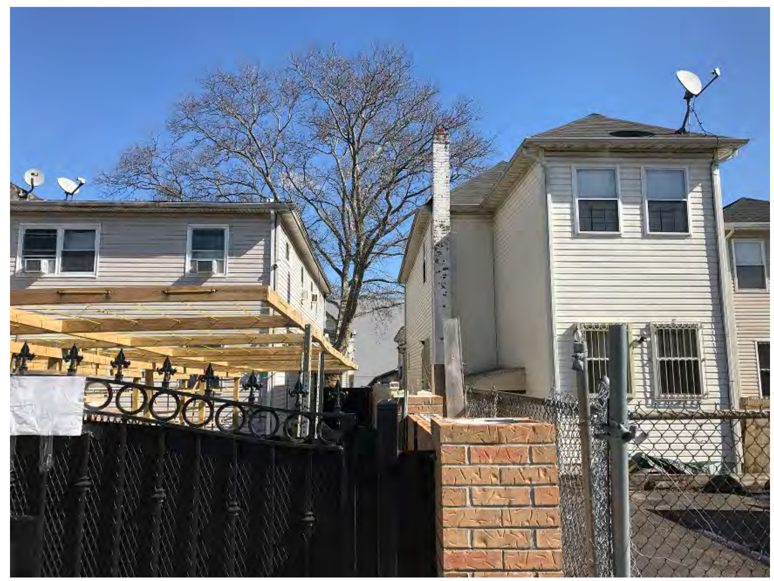


Photo 9-18.4: Candidate Alternative D from 164th Place

9.4.3.8 VIEW FROM 166TH STREET

The proposed action would be visible to pedestrians and residents from 166th Street. To account for what future conditions may look like with each of the Candidate Alternatives, massing diagrams were created to show the view from 166th Street facing north towards the project site (**Photo 9-19.1, Photo 9-19.2, Photo 9-19.3,** and **Photo 9-19.4**).

The existing conditions, as represented in **Photo 9-19.1**, shows the view looking north along 166th Street towards the project site. The existing JBD is visible in the distance.

Candidate Alternative A, as represented in **Photo 9-19.2**, shows the proposed approximately 36-foot-tall reconstructed bus depot from the residential streetscape of 166th Street. Although, the JBD would be visible from this location, it would not change streetscape of or the pedestrian experience along 166th Street.

Candidate Alternative B, as represented in **Photo 9-19.3**, shows the proposed approximately 56-foot-tall reconstructed bus depot from the residential streetscape of 166th Street. Although, the JBD would be noticeable from this location, it would not change streetscape of or the pedestrian experience along 166th Street.

Candidate Alternative D, as represented in **Photo 9-19.4**, shows the proposed approximately 50-foot-tall reconstructed bus depot from the residential streetscape of 166th Street. Although, the JBD would be noticeable from this location, it would not change streetscape of or the pedestrian experience along 166th Street.

Although the differences in building heights for each of the Candidate Alternatives, compared to the existing and No-Build conditions would be visible from the 166th Street streetscape, the form and use of the project site with each of the Candidate Alternatives would generally resemble existing and No-Build conditions as viewed from the public streetscape; none of the Candidate Alternatives would result in significant adverse impacts to the pedestrian experience, which would remain unchanged.

Photo 9-19.1: Existing Conditions from 166th Street

Photo 9-19.2: Candidate Alternative A from 166th Street

Photo 9-19.3: Candidate Alternative B from 166th Street

Photo 9-19.4: Candidate Alternative D from 166th Street

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10.0 SHADOWS

10.1 INTRODUCTION

10.1.1 CONTEXT AND KEY ISSUES

This chapter discusses the potential impacts of the Proposed Action with regard to shadows and focuses on *the interaction between the proposed action and the shadows it may cast on open space, historic and cultural resources, and natural areas*. Per the guidance of the *CEQR Technical Manual*, *a shadow is defined as "…the condition that results when a building or other built structure blocks the sunlight that would otherwise directly reach a certain area, space or feature."* An *adverse impact* may occur if a proposed action would result in a new structure (or addition to an existing structure of 50 feet or more) or is located adjacent to, or across the street from, *a resource* ***that has been identified as sunlight-sensitive***.

The *CEQR Technical Manual defines* sunlight-sensitive resources as those resources that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity, such as:

- ***Public Open Space*** – parks, playgrounds, plazas, schoolyards, landscaped medians with seating.
- ***Architectural Resources*** – those features of architectural resources that depend on direct sunlight for their enjoyment by the public. Only the features that are sunlight-sensitive should be considered, for example: buildings with stained glass windows or with design elements that are part of a recognized architectural style that depends on the contrast between light and dark design elements.
- ***Natural Resources*** – surface water bodies, wetland resources.
- ***Greenstreets*** – planted areas within the unused portions of roadbeds that are part of the NYC Greenstreets program.

For the purposes of CEQR shadow analyses, the following are not considered to be sunlight-sensitive resources and their assessment for shadow impacts is not required:

- City streets and sidewalks.
- Buildings or structures other than those defined above.
- Private open space that is not publicly accessible such as front and back yards, stoops, and vacant lots.

Only one resource meeting the CEQR Technical Manual's definition of a sunlight-sensitive resource was identified within the study area: the NYC Greenstreets property located in the median southeast of the intersection of Merrick Boulevard and 107th Avenue. However, based on scoping comments received during the Public Comment period in 2016, MTA NYCT recognizes that the Rose of Sharon Baptist Church and adjacent residential properties along 165th Street are of particular concern to the public for potential shadow effects. Even though these resources do not qualify as sunlight receptors or sunlight-sensitive resources, given this context and sensitivity to community concerns, ***a screening study as well as detailed shadow impacts analysis has been prepared based on the Candidate Alternative representing the reasonably conservative "worst case" scenario (the building height associated with Candidate Alternative B, describe in detail below), with regard to potential to cast incremental new shadows on any of these properties.***

The *screening study and detailed analysis* were been performed in order to assess *the incremental shadow effects that would be attributable to the* proposed action. Specifically, the study area comprises the area within 275 feet of the proposed action project site boundary[19]. The ***incremental shadow effect is that extent of shadow coverage that is** in excess of the shadow that would otherwise be cast by the existing JBD facility and security wall in the No-Build condition*. The *detailed analysis*, conducted to represent changes in sun position throughout the day and over the course of the year, allows for a clearer demonstration of shadow extent, coverage, and duration, as shadows change over the course of each day throughout the year.

For shadow analysis purposes, the height of the proposed action Candidate Alternatives was conservatively assumed to equal the highest point on the proposed building. Specifically, for *Candidate Alternative A*, t*he proposed bus depot would be approximately 51 feet tall and the proposed security/sound barrier wall would be approximately 31 feet tall* on the west side of the property line, and 20 feet tall on the south side of the property. For *Candidate Alternative B*, *the proposed bus depot would be approximately 64 feet tall and the proposed security/sound barrier wall would be approximately 20 feet tall on both the west and south property lines.* For *Candidate Alternative D*, *the proposed bus depot would be approximately 58 feet tall* and the proposed *security/sound barrier wall* would be approximately 20 feet tall at both the west and south property lines.

Any resource that is considered a potential sunlight sensitive receptor per the guidance of the *CEQR Technical Manual* that is located near the project site would be eligible for screening. Based on the screening study, the Proposed Action has the potential for incremental shadow impact and detailed analysis would be required.

10.1.2 SUMMARY AND CONCLUSIONS

CEQR Technical Manual defines *sunlight-sensitive resources* as those resources that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity. Such resources include: public open space; features of historic architectural resources that depend on sunlight for their enjoyment by the public; and, natural resources where the introduction of shadows could alter the resource's condition or microclimate.

The *screening assessment* consists of various tiers of analysis. The *first tier* (Tier 1) determines a simple radius around the proposed buildings representing the longest shadows that could be cast. If there are sunlight sensitive resources within the radius, the analysis proceeds to the *second tier* (Tier 2), which reduces the area that could be affected by project-generated shadows by accounting for a specific range of angles that can never receive shade due to the path of the sun in the northern hemisphere. If the second tier analysis does not eliminate the possibility of new shadows on sunlight-sensitive resources, a *third tier* of screening analysis further refines the area that could be reached by new shadows by assessing specific representative days of the year and determining the maximum extent of shadow over the course of each representative day.

Following both Tier 1 and Tier 2 screenings for shadow effects, it has been determined that the ***NYC Greenstreets property along Merrick Boulevard is the only potentially sunlight-sensitive resource within the 275-foot radius study area.*** However, in response to public comments received during the scoping process in 2016, consideration has also been given to the potential increase of shadow that could occur on private properties, the Rose of Sharon Baptist Church and residential properties that are adjacent to the

[19] The maximum height of Candidate Alternative B was conservatively estimated to be 64 feet for the purposes of the shadow analysis. This height would cast a shadow approximately 275 feet (based on calculations performed per the *CEQR Technical Manual*).

project site. To reiterate guidance from the *CEQR Technical Manual,* ***these private properties do not*** *constitute potential sunlight-sensitive receptors.*

Based on the detailed shadows analysis, the *incremental shadow* that would extend onto a portion of the *NYC Greenstreets property to the southeast of the project site would primarily fall on a* ***concrete, non-vegetated portion*** *in the middle of Merrick Boulevard*. The vegetation on the NYC Greenstreets property would still receive ample sunlight during the growing seasons, and so the proposed JBD would result in no shadow impact to the NYC Greenstreets property.

The detailed shadows analysis determined that, compared to the No-Build conditions, *the* ***Rose of Sharon Baptist Church*** *would not be deprived of sunlight in any significant way* by the combination of the building and security/sound barrier wall of the proposed JBD. Notably, the Rose of Sharon Baptist Church contains no stained glass, nor exterior architectural features, nor windows on its east façade, facing the project site. Thus, the concern of shadowing is limited to coverage of yard area, which is also representative of the nearby residential uses; for which it is considered to be reasonable to conclude that shadow effects on residential properties (rear yards) would be the same as the effects modeled for the church. Thus, the residential yards would likewise be nominally unaffected by shadows cast by the proposed JBD; they would receive somewhat more shadow at certain times of the year and in certain seasons than they would in No-Build conditions, but the ***incremental increase*** *in shadow would not be expected to affect the use of the residential properties or their rear yards*.

In summary, while incremental shadows attributable to the proposed action would reach the NYC Greenstreets property and a portion of the Rose of Sharon Baptist Church, *the increase in shadows attributable to the proposed action, compared to the existing JBD building: would be minor; would not represent any substantial shadow effect; and, would not extend to sunlight sensitive portions of the NYC Greenstreets property or any other potentially sunlight sensitive resource.* Therefore, based on the detailed shadow analyses performed, the ***proposed action would not result in significant adverse shadow impacts***.

10.2 METHODOLOGY

According to the *CEQR Technical Manual*, the longest shadow a structure will cast in New York City, except for periods close to dawn or dusk, is 4.3 times the height of the structure. For projects or actions resulting in structures less than 50 feet tall, a shadow assessment is generally not necessary, unless the site is adjacent to the park, historic resource, or important natural feature (if the feature that makes the structure significant depends on sunlight).

First, a preliminary screening assessment must be conducted to ascertain whether shadows resulting from a project could reach any sunlight-sensitive resource at any time of year. The *CEQR Technical Manual* defines sunlight sensitive resources as those resources that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity and includes public open space, features of historic architectural resources that depend on sunlight for their enjoyment by the public, and natural resources where the introduction of shadows could alter the resource's condition or microclimate.

The preliminary screening assessment consists of tiers of analysis. The first tier determines a simple radius around the proposed site representing the longest shadows that could be cast. If there are sunlight sensitive resources within the radius, the analysis proceeds to the second tier, which reduces the area that could be affected by project-generated shadows by accounting for a specific range of angles that can never receive shade in New York City due to the path of the sun in the northern hemisphere. If the second-tier analysis does not eliminate the possibility of new shadows on sunlight sensitive resources, a third tier of screening analysis further refines the area that could be reached by new shadows by looking at specific representative days of the year and determining the maximum extent of shadow over the course of each representative day.

If it is determined from the preliminary screening that a sunlight sensitive resource may be impacted, a detailed shadows analysis is required to determine the extent and duration of the incremental shadow resulting from the Proposed Action. The detailed analysis provides the data needed to assess the shadow impacts. The effects of the new shadows on the sunlight sensitive resources are described, and their degree of significance is considered.

In general, a significant adverse shadow impact occurs when the incremental shadow added by a proposed action falls on a sunlight sensitive resource and substantially reduces or completely eliminates direct sunlight exposure, thereby significantly altering the public's use of the resource or threatening the viability of vegetation or other resources.

For the purposes of this EIS, the detailed shadows analysis represents a conservative and supplemental analysis that is beyond (in excess of) what would be required per the guidance of the *CEQR Technical Manual*, primarily given that there is no qualifying sunlight sensitive receptor per the guidance of the *CEQR Technical Manual* that the screening analyses indicate could be reached by project shadow. A portion of a NYC Greenstreets property, which is considered a potential sunlight sensitive receptor per the guidance of the *CEQR Technical Manual,* is located near the project site. The property is located southeast of the intersection of Merrick Boulevard and 107th Avenue. In order to provide a conservative analysis, *this NYC Greenstreets property has been subjected to a full shadows analysis*. In addition, based on scoping comments received, the potential for increased shadow on the Rose of Sharon Baptist Church and adjacent residential properties are of particular concern to the community; these properties, however, do not qualify as sunlight sensitive receptors per the guidance of the *CEQR Technical Manual*. Nevertheless, for the purposes of this EIS, the Rose of Sharon Baptist Church has been subjected to a detailed shadow analysis. Notably, the Rose of Sharon Baptist Church contains no stained glass, nor exterior architectural features, nor windows on its east façade, facing the project site; thus, the concern of shadowing is limited to coverage of yard area, and is therefore representative of the nearby residential uses.

10.3 EXISTING CONDITIONS

There are no historic buildings surrounding the project site, and the project site is not part of a historic district. Further, there are no natural resources surrounding the project site. As noted in the open space analysis, a NYC Greenstreets property is located across Merrick Boulevard, approximately 75 feet southeast of the project site (at the intersection of Merrick Boulevard and 107th Avenue) (see **Photo 10-1**). The NYC Greenstreets property is a planted median with grass, mature trees, and shrubbery, planted along Merrick Boulevard. The northern approximately 170 feet of the NYC Greenstreets property does not have any plantings, but rather is a concrete median.

The Rose of Sharon Baptist Church is located adjacent to the project site's western property line (**Photo 10-2**). The existing JBD is visible from the two-story property and its surrounding yard. This analysis represents a conservative consideration of the church as a sunlight sensitive resource, given that the church is not of historical significance and does not contain any sunlight-sensitive architectural features, such as sculpture or stained glass. The eastern façade of the church, which faces onto the church's rear yard and toward the project site, does not have windows; the windows on the church building that could be affected by shadow, which are those located on the south side of the church building, are double-hung windows, typical of the residential buildings in the vicinity.

Photo 10-1: View of the NYC Greenstreets property looking south along Merrick Boulevard. The northern approximately 170 feet of the NYC Greenstreets property is concrete pavement.

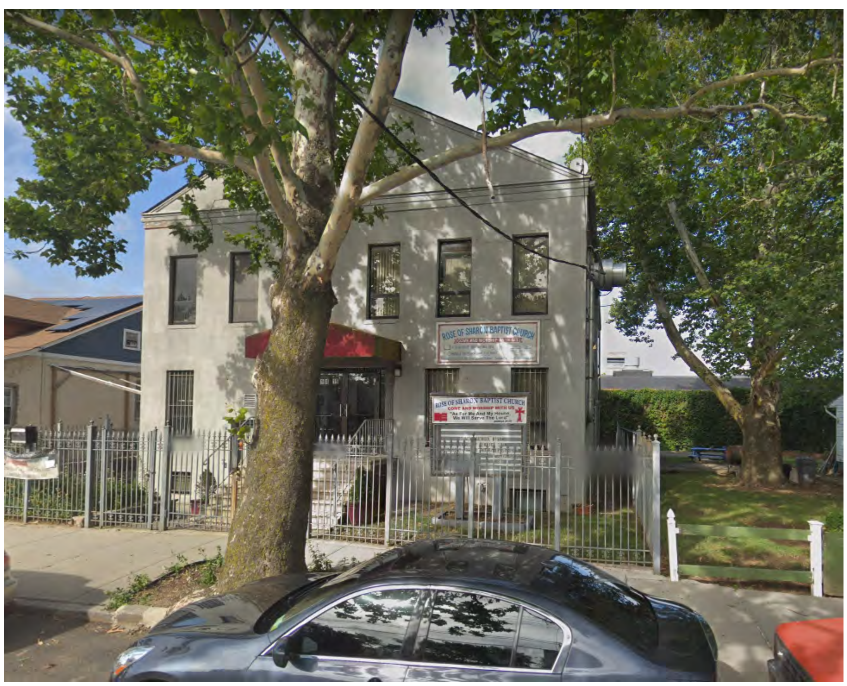

Photo 10-2: View of the Rose of Sharon Baptist Church from 165th Street. The existing JBD is visible behind the church.

10.4 IMPACTS AND MITIGATION

10.4.1 THE FUTURE WITHOUT THE PROJECT

As described in **Section 8.4: Land Use, Zoning, and Public Policy** there are two known projects currently under construction within the study area. One is an 89-unit mixed-use affordable housing development at 92-61 165th Street. This development is not close enough proximity to the project site to alter shadow conditions in the immediate vicinity of the project site. The other is a single-story commercial structure with a mezzanine that is located at 104-32 Merrick Boulevard and is currently under construction. As this development would occur on the project site, it may alter shadow conditions in the immediate vicinity, including on and near the Rose of Sharon Baptist Church and the NYC Greenstreets property on Merrick Boulevard.

10.4.2 PRELIMINARY SHADOW ANALYSIS

Following the Tier 1 and Tier 2 screenings for shadows, performed in the manner prescribed by the *CEQR Technical Manual*, it has been determined that ***the NYC Greenstreets property along Merrick Boulevard is the only potentially sunlight-sensitive resource within 275 feet of the project site***. However, comments received during scoping indicate that potential increase of shadow on private properties, including the Rose of Sharon Baptist Church and residential properties that are adjacent to the project site, is of concern to the community. Per the *CEQR Technical Manual,* these private properties do not constitute potential sunlight sensitive receptors; however, for the purposes of this EIS, the shadows analysis gives special consideration to the Rose of Sharon Baptist Church, specifically, and provides a surrogate understanding of similar effects on the residential properties to the north and south. Please refer to **Figure 10-1: Tier 2 Shadow Screening**, which illustrates the maximum possible extent of shadow (approximately 275 feet) with the proposed JBD, extending from the project site boundary.[20]

10.4.3 DETAILED SHADOWS ANALYSIS

A detailed shadows analysis was performed to determine the extent and duration of the incremental shadow resulting from the Proposed Action. The detailed analysis provides the data needed to assess the shadow impacts by analyzing the shadow impacts on four representative analysis dates: December 21st; March 21st/September 21st; May 6th/August 6th; and June 21st. The effects of the new shadows on the NYC Greenstreets property and the Rose of Sharon Baptist Church are described, and their degree of significance is considered.

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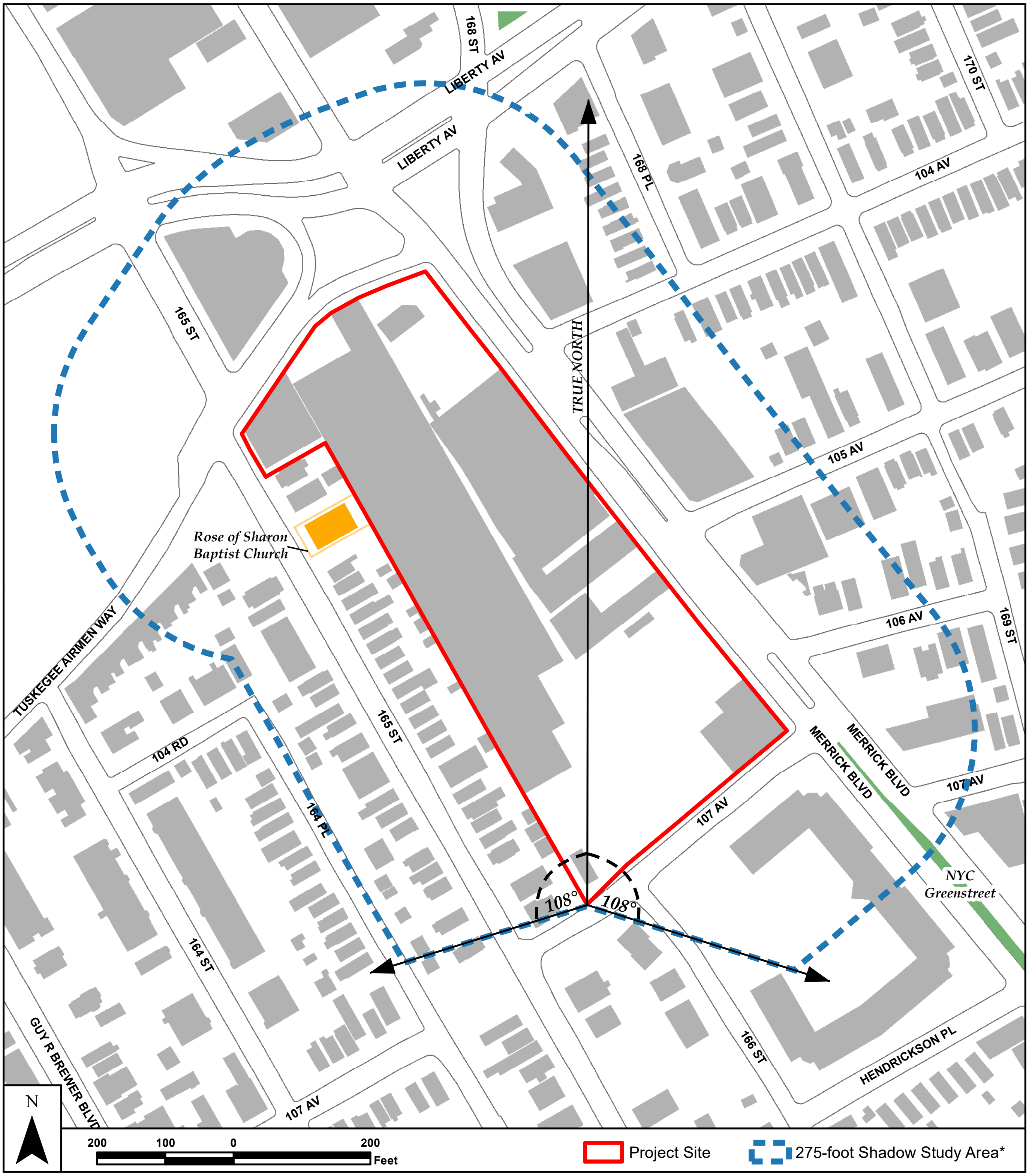
[20] As Candidate Alternative A and Candidate Alternative D would be modeled with lesser maximum extent of shadows, and as the Tier 1 and Tier 2 shadow screening consider the entire project site rather than the individual placement of the building on the project site, Candidate Alternative B, inclusive of operations/maintenance building and sound barrier wall represents a reasonably worst case scenario for the shadow analysis (i.e., Candidate Alternative A and Candidate Alternative D are not separately evaluated, as lesser shadow would be attributable to them than to Candidate Alternative B).



Sources: NYCDCP; NYCDOITT; STV Incorporated, 2019.

Figure 10-1

Tier 2 Shadow Screening

*Per CEQR Technical Manual Guidance the Tier II Shadow Study Area is equal to: 4.3 * max. building height. Candidate Alternative B presents the potential for the maximum building height at 64'. Candidate Alternative B yields a 275' Shadow Study Area.

Reconstruction and Expansion of Jamaica Bus Depot

When assessing the significance of shadow impacts on the Rose of Sharon Baptist Church, it must be determined *whether the incremental shadow added by the proposed action substantially reduces or completely eliminates direct sunlight exposure*, thereby significantly altering the public's use of the resource or threatening the viability of vegetation or other resources. For the Rose of Sharon Baptist Church, it is important to consider the effect of incremental shadows on the properties windows that may alter its function as a house of worship. Notably, the Rose of Sharon Baptist Church contains no stained glass, nor exterior architectural features, nor windows on its east façade, facing the project site; thus, the concern of shadowing is limited to coverage of yard area, which is also therefore representative of the nearby residential uses. (For the purposes of this analysis, the plate-glass windows on the southern façade of the building are considered.) For the NYC Greenstreets property, it is important to consider the effect of incremental shadows on the viability of vegetation.

10.4.3.1 MARCH 21ST / SEPTEMBER 21ST

On the March 21st/September 21st analysis day, *incremental shadows from the proposed JBD would enter the Rose of Sharon Baptist Church property at 7:36 AM* (the start of the analysis day) *and would exit the resource at 7:54 AM, for a total of 18 minutes* (**Figure 10-2A: Detailed Shadows Analysis**). At its greatest extent the shadow would cover 28 sf of the Rose of Sharon Baptist Church Property. It would not extend over the building's windows. As the incremental shadows resulting from the proposed JBD would not affect the Rose of Sharon Baptist Church property, in particular its windows, in a way that would alter its function as a house of worship, *there would be no significant shadows impact on this analysis date*.

On the March 21st/September 21st analysis day, incremental shadows from the proposed JBD would enter the NYC Greenstreets property at 4:25 PM and would exit the resource at 5:18 PM (the end of the analysis day), for a total of 53 minutes (**Figure 10-2A: Detailed Shadows Analysis**). At its greatest extent, the incremental shadow would cover the northern 80 feet of the NYC Greenstreets property. This area has no vegetation; therefore, the proposed JBD *would not result in a significant shadows impact to the NYC Greenstreets property on this analysis date*.

10.4.3.2 MAY 6TH / AUGUST 6TH

On the May 6th/August 6th analysis day, *incremental shadows from the proposed JBD would enter the Rose of Sharon Baptist Church property at 6:27 AM* (the start of the analysis day) *and would exit the resource at 7:10 AM, for a total of 43 minutes* (**Figure 10-2B: Detailed Shadows Analysis**). At its greatest extent the shadow would cover 385 sf of the Rose of Sharon Baptist Church property. The incremental shadow would extend along the south wall of the church and may briefly extend over a window. However, due to the short duration of the shadow, the proposed JBD would not affect the Rose of Sharon Baptist Church property in a way that would alter its function as a house of worship; *there would be no significant shadows impact on this analysis date*.

On the May 6th/August 6th analysis day, there would be no incremental shadows from the proposed JBD on the NYC Greenstreets property.

Source: STV Incorporated, 2019.

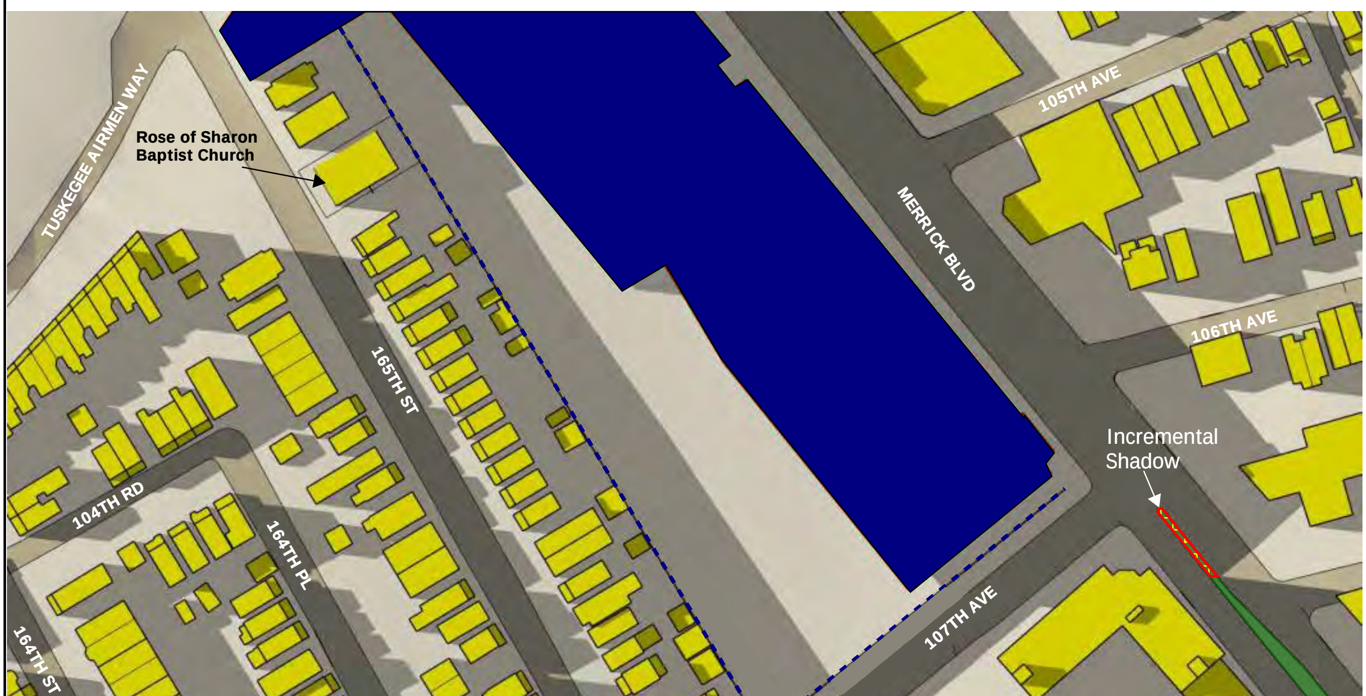
Figure 10-2A

Detailed Shadow Analysis

Maximum Incremental Shadow on March 21

Reconstruction and Expansion of Jamaica Bus Depot

Shadow at Rose of Sharon Baptist Church at 6:27 AM, no additional incremental shadow at NYC Greenstreets Property.



Shadow at NYC Greenstreets Property at 5:18 PM, no additional incremental shadow at Rose of Sharon Baptist Church

Source: STV Incorporated, 2019.

Figure 10-2B

Detailed Shadow Analysis

Maximum Incremental Shadow on May 6

Reconstruction and Expansion of Jamaica Bus Depot

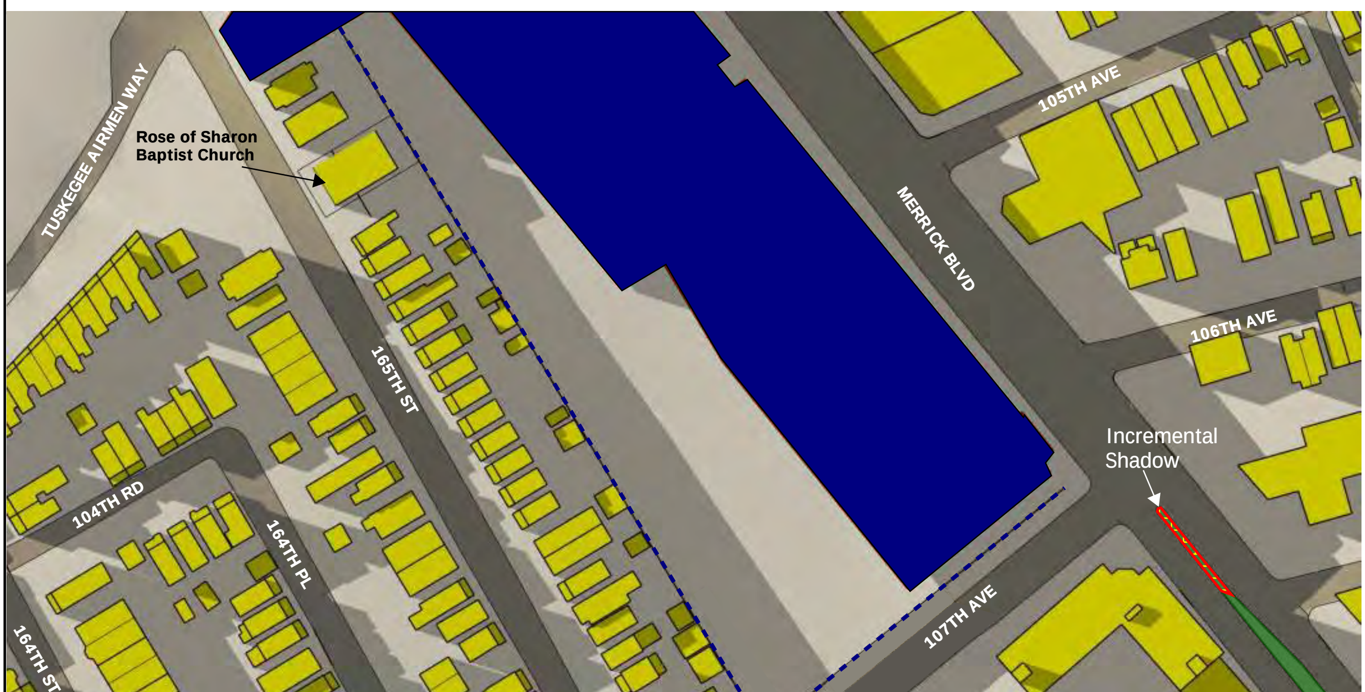
- Proposed JBD Building
- Proposed Sound Barrier Wall
- Sunlight-Sensitive Open Space
- Incremental Shadow

10.4.3.3 JUNE 21ST

On the June 21st analysis day, *incremental shadows from the proposed JBD would enter the Rose of Sharon Baptist Church property at 5:57 AM* (the start of the analysis day) *and would exit the resource at 7:13 AM, for a total of 1 hours 28 minutes* (**Figure 10-2C: Detailed Shadows Analysis**). At its greatest extent, the shadow would cover 496 sf of the Rose of Sharon Baptist Church property. The incremental shadow would extend along the south wall of the church and may briefly extend over a window. However, *the incremental shadow resulting from the proposed JBD would not affect the Rose of Sharon Baptist Church property in a way that would alter its function as a house of worship; there would be no significant shadows impact on this analysis date*.

On the June 21st analysis day, incremental shadows from the proposed JBD would enter the NYC Greenstreets property at 4:33 PM and would exit the resource at 6:01 p.m. (the end of the analysis day), for a total of 1 hour 28 minutes (**Figure 10-2C: Detailed Shadows Analysis**). At its greatest extent, the incremental shadow would cover the northern 100 feet of the NYC Greenstreets property. As this area has no vegetation, the *proposed JBD would not result in a significant shadows impact to the NYC Greenstreets property on this analysis date*.

Shadow at Rose of Sharon Baptist Church at 5:57 AM, no additional incremental shadow at NYC Greenstreets Property.



Shadow at NYC Greenstreets Property at 6:01 PM, no additional incremental shadow at Rose of Sharon Baptist Church

Source: STV Incorporated, 2019.

Figure 10-2C

Detailed Shadow Analysis

Maximum Incremental Shadow on June 21

Reconstruction and Expansion of Jamaica Bus Depot

- Proposed JBD Building
- Proposed Sound Barrier Wall
- Sunlight-Sensitive Open Space
- Incremental Shadow

11.0 NEIGHBORHOOD CHARACTER

11.1 INTRODUCTION

11.1.1 CONTEXT AND KEY ISSUES

*The CEQR Technical Manual defines "neighborhood character" as the amalgam of various elements that give neighborhoods their **distinct personality**, including: land use; urban design; visual resources; historic resources; socioeconomic conditions; traffic; and, noise*. The *CEQR Technical Manual* recommends an assessment of potential impact on neighborhood character when the Proposed Action has the potential to result in any significant adverse impacts in the following areas: land use, zoning, and public policy; socioeconomic conditions; open space; historic and cultural resources; urban design and visual resources; shadows; transportation; or noise. An assessment of neighborhood character is also a means of summarily describing whether the proposed JBD would be compatible with its surroundings.

11.1.2 SUMMARY AND CONCLUSIONS

As described elsewhere in this EIS, *the* Proposed Action ***would not result significant adverse impacts in the areas of land use, zoning, or public policy; socioeconomic conditions; shadows; historic and cultural resources; urban design and visual resources; shadows; transportation; or noise***. Therefore, based on the results of the preliminary assessment, further analysis is not warranted, and ***the proposed JBD would not have a significant adverse neighborhood character impact***.

11.2 METHODOLOGY

Per the guidance of the *CEQR Technical Manual*, the assessment of neighborhood character provides a summary description of the character of the neighborhood of the project site and provides focused attention on the technical areas (findings presented in other sections of this EIS) that comprise salient aspects of neighborhood character. These aspects include: land use, zoning, and public policy; socioeconomic conditions; open space; historic and cultural resources; urban design and visual resources; shadows; transportation; or noise. The potential for impacts to neighborhood character *focuses on the singular and combined effects that are anticipated based on these separate technical analyses and focuses on how the potential on-site changes may affect the urban form and visual character of surrounding area.* In order to reflect the findings of other pertinent technical areas, the study area for neighborhood character is consistent with (i.e., the same as or larger than) the study areas for land use, zoning, and public policy; socioeconomic conditions; open space; historic and cultural resources; urban design and visual resources; shadows; or noise. (Note: The *assessment of transportation relies upon "networks" of transportation infrastructure, rather than a study area defined as a clear radius around the project site*; however, all potential effects related to transportation, as reported in **Chapter 4.0: Traffic and Transportation Conditions**, are considered in the assessment of neighborhood character.)

11.3 EXISTING CONDITIONS

The project site is located in Jamaica, Queens and currently contains the existing JBD and associated parking area, as well as a mix of commercial and light industrial buildings. The study area has two main corridors, Merrick Boulevard and Liberty Avenue that primarily comprise chain commercial, light-industrial, and auto-related uses. The Allen Cathedral Senior Residences are the tallest buildings in the study area at seven stories and are directly south of the project site, fronting Merrick Boulevard and 107th Avenue. The study area also includes portions of well-established residential streets to the west and south of the project site and to the east of Merrick Boulevard.

The existing uses on the project site establish a transportation/utility and industrial setting. The existing JBD comprises the majority of the existing project site and has since the 1930s. The existing commercial and industrial buildings that border Merrick Boulevard on the project site are primarily oriented towards auto-related uses.

Merrick Boulevard, similarly, contains various auto-related uses, commercial, and light industrial/warehouses uses. Liberty Avenue, to the north of the project site, comprises chain commercial uses and auto-related uses, such as car repair facilities and a chain auto parts store. *The wide streetscapes of Merrick Boulevard and Liberty Avenue further serve to establish a transportation/utility and industrial setting.*

The area to the west and south of project site is a well-defined residential area of one- and two-family residences. The streetscapes in this area are well-defined with uniform setbacks and consistent streetwalls. The narrow streetscapes serve as a contrast to the wide transportation/utility and industrial streetscapes of Merrick Boulevard and Liberty Avenue. ***Of particular note are the houses that border the project site on 165th Street, which are currently separated from the project site by a 20-foot-high wall.*** Most homes have small, fenced-in landscaped areas in the front and have larger yards in the back. Driveways are present along the sides of houses and street parking is present throughout the area.

The area east of Merrick Boulevard, similar to the streetscapes south and west of the project site, are residential in character and primarily comprise one- and two-family residence with uniform setbacks that create a consistent "street wall." Where they differ from the streetscapes to the south and west of the project site is these streetscapes look towards Merrick Boulevard to the west and have views of the existing JBD, as well as of existing commercial and light industrial/warehouse uses on Merrick Boulevard.

11.4 IMPACTS AND MITIGATION

11.4.1 THE FUTURE WITHOUT THE PROJECT

In the future without the proposed project (the "No-Build Alternative"), the project site would continue to operate with its current use as a bus depot for the MTA with the previously described functional deficiencies. The lots to be acquired would remain in their current uses as automotive related businesses and a pizzeria. The vacant lots on Merrick Boulevard and Tuskegee Airmen Way that are part of the project site would either remain vacant or would be re-occupied by commercial or industrial uses in the No-Build Alternative. MTA would continue to use acquired parcels on the project site for bus parking.

There are two known projects currently under construction within the study area. One is an 89-unit mixed-use affordable housing development at 92-61 165th Street. The other is a single-story commercial structure with a mezzanine that is located at 104-32 Merrick Boulevard and is currently under construction. These developments will represent discrete visible changes, as experienced by the pedestrian in their immediate surroundings, but these developments will not substantially alter the study area's neighborhood character by the 2025 Build Year.

11.4.2 POTENTIAL EFFECTS OF THE PROPOSED PROJECT

As described elsewhere in this EIS, *the proposed project would not result significant adverse impacts in the areas of land use, zoning, or public policy; socioeconomic conditions; shadows; historic and cultural resources; urban design and visual resources; transportation; or noise. Therefore, based on the results of the preliminary assessment, further analysis is not warranted, and the proposed project would not have a significant adverse neighborhood character impact.*

11.4.2.1 LAND USE, ZONING, AND PUBLIC POLICY

Defining features of the neighborhood would not be adversely affected due to potential effects of the proposed project on land use, zoning and public policy, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Section 8.2: Land Use, Zoning, and Public Policy,** the proposed project would not result in a significant adverse impact on land use, zoning, and public policy.

11.4.2.2 SOCIOECONOMICS

Defining features of the neighborhood would not be adversely affected due to potential effects of the proposed project on socioeconomic conditions, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Section 8.3: Socioeconomics,** the proposed project would not result in significant adverse impacts on socioeconomic conditions.

11.4.2.3 OPEN SPACE/PARKLANDS

Defining features of the neighborhood would not be adversely affected due to potential effects of the proposed project on open space, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Section 8.5: Open Space/Parklands,** the proposed project would not result in significant adverse open space/parklands impacts.

11.4.2.4 SHADOWS

Defining features of the neighborhood would not be adversely affected due to potential effects of the proposed project on shadows, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Chapter 10.0: Shadows,** the proposed project would not result in significant adverse shadow impacts.

11.4.2.5 HISTORIC AND CULTURAL RESOURCES

Defining features of the neighborhood would not be adversely affected due to potential effects of the proposed project on historic and cultural resources, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Chapter 7.0: Historic and Cultural Resources**, the proposed project would not result in any significant adverse impacts on historic and cultural resources, and therefore would not be expected to alter these features of neighborhood character.

11.4.2.6 URBAN DESIGN AND VISUAL RESOURCES

Defining features of the neighborhoods would not be adversely affected due to potential effects of the proposed project on urban design and visual resources, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Chapter 9.0: Urban Design and Visual Resources,** the proposed project would not result in significant adverse impacts on urban design and visual resources.

11.4.2.7 TRANSPORTATION

Defining features of the neighborhoods would not be adversely affected due to potential effects of the proposed project on transportation, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Chapter 4.0: Transportation,** the proposed project would affect traffic volumes on the local study area street network as a result of: an increased number of bus trips to/from the proposed depot; an Increased number of employee trips to/from the proposed depot; and, the rerouting of existing bus movements into and out of the depot due to the relocation of driveways and on-site bus circulation. The traffic analysis findings identified a significant traffic impact at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour for depot design Candidate Alternatives A, B, and D. This intersection is currently a two-way stop-controlled intersection, with Stop signs on the east and westbound Tuskegee Airmen way approaches. However, mitigation measures are proposed by NYCT in this FEIS, including the installation of a traffic signal or rerouting all AM peak hour buses that were originally assigned to exit the depot via Tuskegee Airmen Way to exit via Merrick Boulevard. This mitigation option would require approximate action by NYCT with NYCDOT to implement the removal of the raised center median on Merrick Boulevard opposite the driveway located midblock between Tuskegee Airmen Way and 107th Avenue so that buses may turn left. Further, no significant impacts to parking or transit and pedestrians were identified.

11.4.2.8 NOISE

Defining features of the neighborhoods would not be adversely affected due to potential effects of the proposed project on noise and vibration, either singularly, or in combination with potential impacts in other relevant technical areas discussed in this section. As presented in **Chapter 6.0: Noise and Vibration** the proposed project would not result in significant adverse impacts on urban design and visual resources.

12.0 NATURAL RESOURCES

12.1 INTRODUCTION

A natural resources assessment considers biological components of the environment (i.e., plant and animal species) in the context of the surrounding environment, habitat, or ecosystem. Other natural resources considered in this assessment include those *components of the physical environment*, such as water resources. This chapter describes the natural resources assessment, which includes a preliminary screening of available information to identify natural resources that may be present on the project site or in the vicinity of it. *The natural resources assessment ultimately is concerned with determining whether there would be potential for the proposed project to affect natural resources and, if so, whether any effect would amount to a significant adverse impact to the resources.*

12.2 SUMMARY AND CONCLUSIONS

The natural resources assessment considers the existing conditions of the geology; soils; groundwater; surface waters; wetlands; floodplains; vegetative communities; wildlife habitat; and, threatened and endangered species habitat. These conditions are considered in the primary (within 400 feet) and secondary (within a ½-mile) study areas around the JBD. Information pertaining to the existing conditions was gathered through field investigation, consultation by the NYSDEC Natural Heritage Program, review of the U.S. Fish and Wildlife Service database and review of publicly available data sources. ***On the project site or in the study area, the following were not found***: unique geological features; surface water bodies; state or federally-mapped wetlands or "Adjacent Areas"; records of significant natural communities; or "Significant Coastal Fish and Wildlife Habitat" areas. The project site is *not located* within a 100- or 500-year floodplain. No adverse impacts to natural resources are expected with the proposed project as no biological resources are present; and, there would be no adverse impacts to groundwater or nearby surface water bodies. Habitat area related to water bodies and wetlands would not be adversely impacted, and plant or animal species of concern and significant habitats or ecologically related areas would not be adversely impacted. *Street trees* located within 50 feet of the project site are under the protection of the New York City Department of Parks and Recreation (NYCDPR), and NYCT coordination with NYCDPR will be conducted as part of the project.

As such*, no further analysis of natural resources is warranted*. Without the Proposed Action, it is anticipated that the natural resources conditions within the study area would generally resemble existing conditions.

12.3 METHODOLOGY

12.3.1 APPROACH

The physical and biological components of the site, including geology and soil composition, groundwater levels, surface water quality, floodplains, wetlands, vegetation, wildlife habitats, and threatened/endangered animals and plants are identified and characterized. Information pertaining to biological resources is obtained from the NYSDEC Natural Heritage program, as well as secondary sources of information for New York City, as identified in the *CEQR Technical Manual*.

The natural resources assessment considers the potential impacts that would be expected to result from proposed changes to the project site, including any potential indirect impacts that may result to natural resources off-site, such as surrounding water bodies and naturalized areas that may provide habitat. *The natural resources assessment also considers whether the Proposed Action would be compliant with applicable federal, state, and City policies pertaining to natural resources in the vicinity of the project site.*

12.3.2 STUDY AREA AND DATA SOURCES

A *primary* study area has been defined to include the project site and the area within 400 feet of the project site (i.e., a study area coterminous with the study area considered in the assessment of land use, zoning, and public policy, as described previously in **Section 8.2: Land Use, Zoning, and Public Policy**, of this EIS). This study area provides the opportunity to assess potential direct and indirect impacts off-site.

A *secondary* study area, delineated by ½-mile radius around the project site, is also utilized to identify natural resources in the vicinity that either are: related to applicable federal, state, and City policies governing the management of natural resources; or, which potentially could be affected by changes occurring at the site (such as changes to surface water run-off, habitat alteration, etc.). More specifically, the *secondary* study area facilitates identification of ecological communities and significant habitat as part of the broader context of ecologically related natural resources, such as floodplains, water resources, and wetlands.

The natural resources assessment includes the result of field investigation and review of publicly available data sources, including United States Geological Survey ("USGS") topographic mapping, United States Department of Agriculture ("USDA") soil surveys, National Wetlands Inventory ("NWI") mapping, New York State Department of Environmental Conservation ("NYSDEC") coastal wetlands mapping, NYSDEC freshwater wetlands mapping, USGS water resource mapping, data from NYSDEC's Environmental Mapper (GIS), Federal Emergency Management Agency ("FEMA") floodplain mapping, and available aerial photography. In addition, the NYSDEC Natural Heritage Program has been consulted and the U.S. Fish and Wildlife Service database has been reviewed to identify any endangered, threatened, or special concern terrestrial species in the study area.

12.4 REGULATORY CONTEXT

Various federal and state agencies, as well as local agencies, promulgate programs that relate to the management of natural resources and, as such, provide regulatory context applicable to the assessment of natural resources for the Proposed Action, as presented below:

12.4.1 FEDERAL

- ***Presidential Executive Order 11990*, entitled "Protection of Wetlands,"** requires any projects requiring permits from federal agencies, including the U.S. Army Corps of Engineers, to protect wetlands to the fullest extent possible. This Executive Order has resulted in the promulgation of both state and federal regulations governing disturbance to wetlands.
- ***The Clean Water Act* of 1972** was enacted to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. It regulates point sources of water pollution, such as discharges of municipal sewage, industrial wastewater, and stormwater, and the discharge of dredged or fill material into navigable waters and other waters including wetlands.
- ***Presidential Executive Order 11988* entitled "Floodplain Management"** requires Federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of

floodplain development wherever there is a practicable alternative. FEMA has the primary federal jurisdiction for administration of EO 11988. FEMA guidance for compliance with EO 11988 is found at 44 CFR 9.

- ***Presidential Executive Order 13690* entitled "Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input"** amended EO 11988 and established the Federal Flood Risk Management Standard (FFRMS) to improve the nation's resilience to current and future flood risks, which are anticipated to increase over time due to the effects of climate change and other threats. EO 13690 reinforces the important concepts outlined in EO 11988, such as avoiding adverse impacts in a floodplain and minimizing potential harm if an action must be located in a floodplain. EO 13690 and the FFRMS expand upon these tenets and concepts by requiring agencies to use a higher vertical flood elevation and corresponding horizontal floodplain than the base flood for federally funded projects to address current and future flood risk and so that projects last as long as intended.
- **The *Endangered Species Act of 1973*** recognizes that endangered species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people. This Act provides for the protection of critical habitats on which endangered or threatened species depend for survival.

12.4.2 NEW YORK STATE

- **The New York State *Tidal Wetlands Act*** (pursuant to ECL Article 25) applies anywhere tidal inundation occurs on a daily, monthly, or intermittent basis. In New York, tidal wetlands occur along the tidal waters of the Hudson River up to the salt line and along the saltwater shore, bays, inlets, canals, and estuaries of Long Island, New York City, and Westchester County. NYSDEC administers the tidal wetlands regulatory program and the mapping of the state's tidal wetlands. A permit is required for almost any activity that would alter wetlands or their buffer zones, otherwise known as "Adjacent Areas" (up to 150 feet inland within New York City).
- **The New York State *Freshwater Wetlands Act*** (pursuant to ECL Article 24) applies to those non-tidally-influenced wetlands within the State of New York that are identified and mapped by the NYSDEC (generally those wetlands greater than 12.4 acres in size). NYSDEC administers the freshwater wetlands regulatory program and the mapping of the freshwater wetlands in New York. A freshwater wetlands permit is required for almost any activity that would alter freshwater wetlands or their adjacent areas (up to 100 feet inland).
- **The *State Pollutant Discharge Elimination System*** ("SPDES") was created to regulate discharges to the State's waters to protect and maintain surface and groundwater resources. The following activities require SPDES permits: constructing or using an outlet or discharge pipe (point source) that discharges wastewater into surface or groundwater of the State; constructing or operating a disposal system (sewage treatment plant); discharge of stormwater; or, any industrial activity. Construction activities that disturb one acre or more also must obtain coverage under the SPDES General Permit for Stormwater Discharges from Construction Activity.

12.4.3 LOCAL

- The New York City Department of Parks and Recreation ("NYCDPR") has implemented the **"Forever Wild" Program** to protect the City's most ecologically important areas. Through this program, NYCDPR designates "Forever Wild" nature preserves that, as part of the City parks system, typically are available for public enjoyment.

12.5 EXISTING CONDITIONS

Per the guidance of the *CEQR Technical Manual*, the natural resources assessment considers subsurface and surface conditions on the project site and in the vicinity, including geology, soils, groundwater, surface waters, wetlands, floodplains, vegetative communities, wildlife habitat, as well as threatened and endangered species habitat.

12.5.1 GEOLOGY AND SOILS

The average depth to bedrock in the proposed site area is 600 feet. **There are no rock outcroppings or unique geological features on the project site or in the study area.** The predominant soil types present on the project site are "Urban land, outwash substratum of 0 to 8 percent slopes" ("UaA," 0-3 percent slope, and "UoB," 3-8 percent slope), which are urban soils. Urban soils are primarily made up of fill soils and tend to be compacted.

12.5.2 GROUNDWATER AND AQUIFERS

The Brooklyn-Queens Aquifer System, which underlies the project site, is designated by United States Environmental Protection Agency ("USEPA") as a ***Sole Source Aquifer ("SSA")***. (Please refer to **Figure 12-1: Water Resources and Wetlands**). By definition, a SSA is an aquifer that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer; however, groundwater is not currently utilized for the potable water supply at the project site or in this part of New York City. Depth to the water table at the project site varies from approximately 11 feet below ground surface to approximately 20 feet below ground surface; this depth is variable, depending on NYCDEP groundwater well pumping activities.

Historically, the privately-owned Jamaica Water Supply Company operated a group of wells that served the communities in southeastern Queens and parts of Nassau County. In 1996, New York City purchased the Queens portion of the Jamaica Water Supply Company and took responsibility for the delivery of drinking water to those communities served by the groundwater wells. After acquiring the JWS wells, the New York City Department of Environmental Protection (NYCDEP) *renamed the group of wells as the groundwater supply system.*[21]

From approximately 1991 to late 2002, the depth to groundwater in the vicinity of the bus depot ranged from approximately 11 to 20 feet below ground surface.[22] *In late 2002, groundwater levels rose approximately 7 feet when the NYCDEP ceased operation of the groundwater supply system in the vicinity of the JBD*[23]*. To date, groundwater elevations have remained at their post-2002 levels,* approximately 4 to 13 feet below ground surface; however, future operation of the NYCDEP's groundwater supply system could lower them.

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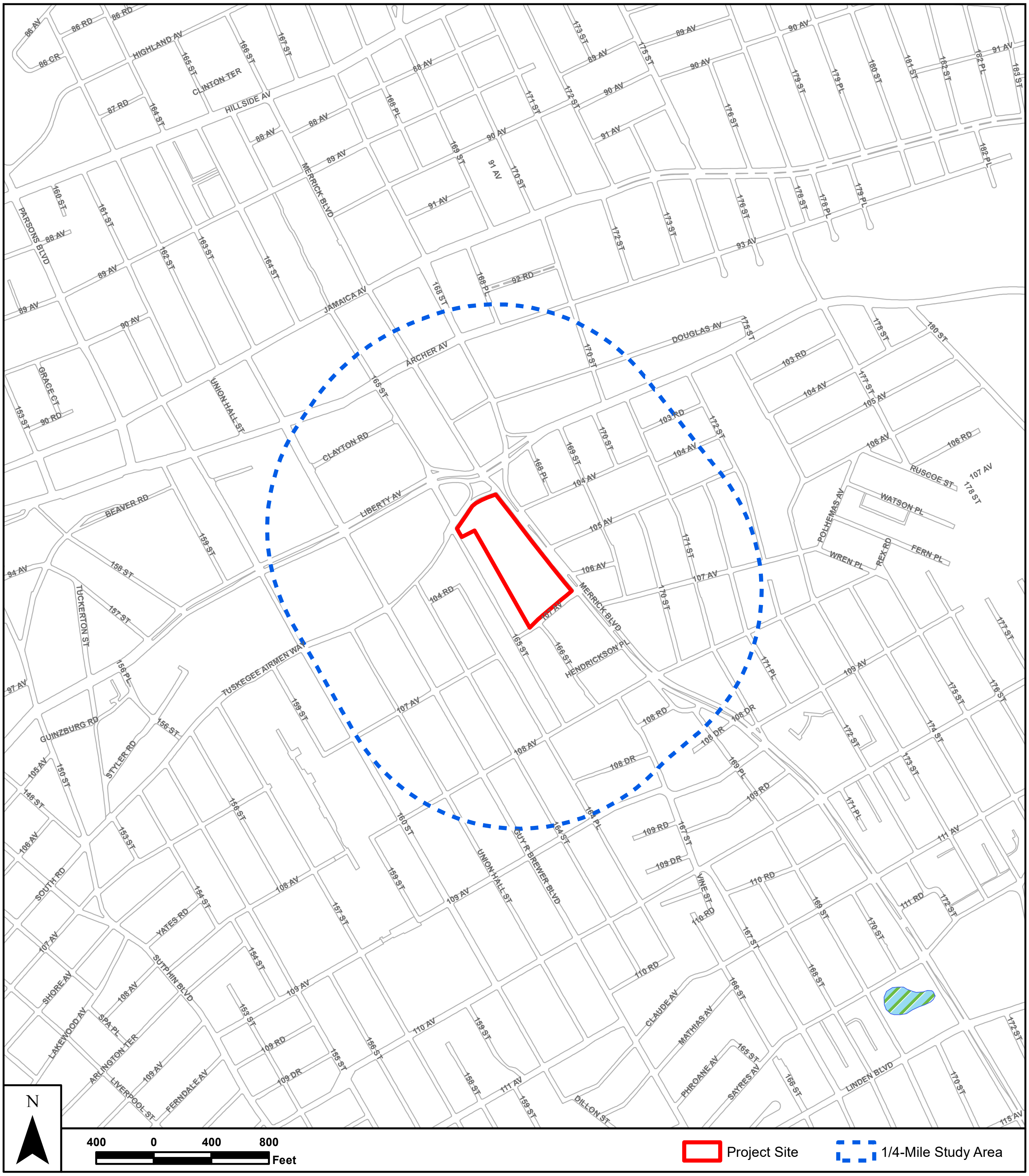
[21] https://www1.nyc.gov/html/dep/html/drinking_water/groundwater.shtml

[22] URS Consultants, Inc. *The Remedial Investigation Report for the Jamaica Bus Depot* prepared for the New York City Transit Authority, February 1993.

[23] NYCT. *Jamaica Bus Depot Spill Investigation and Remedial History*, July 2016.



Source: National Wetlands Inventory, October 15, 2018; STV Incorporated, 2019.

Figure 12-1

Water Resources and Wetlands

Reconstruction and Expansion of Jamaica Bus Depot

12.5.3 SURFACE WATERS AND WETLANDS

The project site is located within the Atlantic Ocean/Long Island Sound Watershed, which drains most of the New York City Metropolitan Area and all of Long Island. However, no surface water bodies are located on or in the immediate vicinity of the project site. No state- or federally-mapped wetlands or “Adjacent Areas” (buffers) are present on the project site. Field inspection confirms *there are no wetland resources present on the project site.* (Please refer to **Figure 12-1: Water Resources and Wetlands**)

12.5.4 FLOODPLAINS

According to the FEMA Flood Insurance Rate Maps, ***the project site is located outside both the designated 100- and 500-year flood zones.*** (Please refer to **Figure 12-2: Flood Zones**)

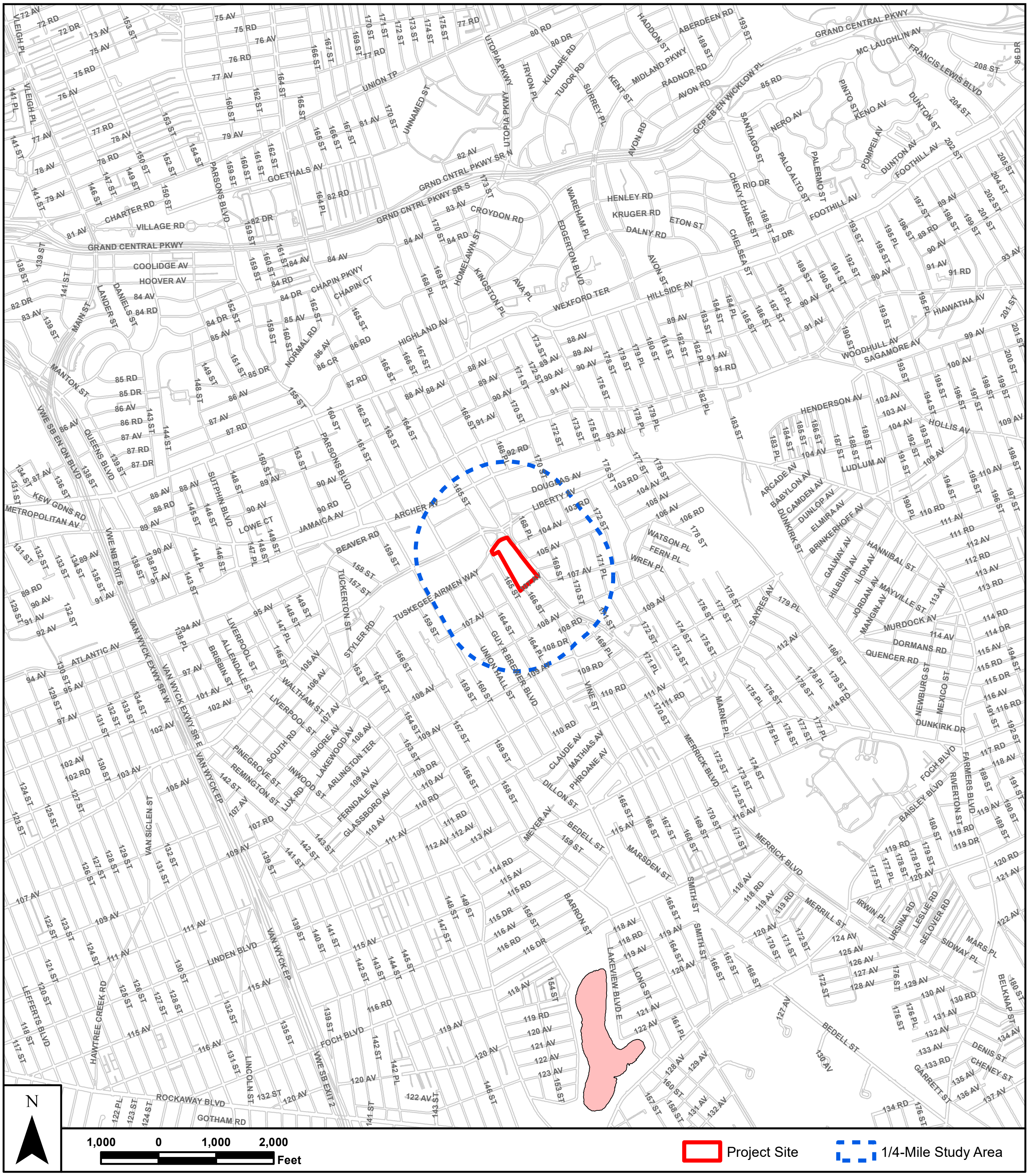
12.5.5 TERRESTRIAL ECOLOGICAL COMMUNITIES AND VEGETATION

The NYSDEC Natural Heritage Program refers to different types of habitats or ecosystems as “*natural ecological communities*.” The NYSDEC Natural Heritage Program documents only those locations of natural communities *where the community type is rare in New York State or*, for more common community types, *where the community at that location is a high-quality example and meets specific, documented criteria* for state significance in terms of size, undisturbed and intact condition, and the quality of the surrounding landscape. These documented natural communities are identified by NYSDEC as “Significant Natural Communities of New York State,” and may include ***areas*** of rare or high-quality wetlands, forests, grasslands, ponds, streams, and other types of habitats, ecosystems, and ecological areas. Consultation with the NYSDEC Natural Heritage Program indicated that ***there are no records of significant natural communities on the project site or in its vicinity.***

In addition, NYSDOS Office of Planning and Development identifies and maps “Significant Coastal Fish and Wildlife Habitat” (SCFWH) in the State of New York. In order to be listed as a SCFWH, NYSDEC evaluates the significance of coastal fish and wildlife habitat areas and, following a recommendation from NYSDEC, NYSDOS designates and maps specific areas as SCFWH. ***No SCFWH are identified on or immediately adjacent to the project site.***

12.5.6 THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES AND SIGNIFICANT HABITAT AREAS

According to the U.S. Fish and Wildlife Service “Federally Listed Endangered and Threatened Species and Candidate Species in New York” database, there are three federally-listed or proposed *endangered* or *threatened species known to exist in Queens County, the three* threatened species are: the *Piping plover* (*Charadrius melodus*); the *red knot* (*Calidris canutus rufa*); and, the *Seabeach amaranth* (*Amaranthus pumilus*), the one endangered species, Roseate tern (*Sterna dougallii*), has been identified in the County. Consultation with the NYSDEC Natural Heritage Program indicated *that no state-listed animals or plants have been documented at the project site or within its immediate vicinity*. Field visits confirm that supportive habitat is not present on the project site or within the study area. (Please refer to copies of agency correspondence provided in **Appendix E: Natural Resources Agency Correspondence**.)



Source: FEMA Flood Hazard Zone, 01-30-2015; STV Incorporated, 2019.

Figure 12-2

Flood Zone

Open Water
1% Annual Chance Flood Hazard
0.2% Annual Chance Flood Hazard

Reconstruction and Expansion
of Jamaica Bus Depot

12.6 IMPACTS AND MITIGATION

12.6.1 THE FUTURE WITHOUT THE PROPOSED ACTION (NO-BUILD CONDITIONS)

Natural resources conditions in the future related to the project site and study area are anticipated generally to resemble existing conditions without the proposed action.

12.6.2 THE FUTURE WITH THE PROPOSED ACTION

12.6.2.1 NATURAL RESOURCES

As described in **Chapter 15.0: Infrastructure, Energy, and Solid Waste**, the Proposed Action would ensure that the appropriate management of solid waste and sanitary wastewater generated by the Proposed Action, and stormwater would be appropriately managed on-site as part of the separate sewerage system (e.g., separate wastewater and stormwater sewers) serving the project site and surrounding area. Therefore, the completed project would not result in significant adverse impacts to groundwater (e.g., the Brooklyn-Queens Sole Source Aquifer) or to nearby surface water bodies. Further, as described in **Chapter 13.0: Coastal Zone**, the Proposed Action would be consistent with the Jamaica Bay Watershed Protection Plan. As described in **Chapter 14.0: Contaminated and Hazardous Materials**, the historic on-site spill would be addressed in a manner consistent with NYSDEC oversight, thereby not further affecting groundwater resources.

As described in **Chapter 17.0: Construction Methods and Activities**, *the proposed project's construction activities would disturb more than one acre and, therefore, would need to meet standards for coverage* under the SPDES General Permit. A Stormwater Pollution Prevention Plan ("SWPPP") will be prepared by the Design/Build contractor. A SWPPP typically includes a description and detail of: 1) the erosion and sediment control measures during construction; 2) post-construction stormwater management strategies; and, 3) periodic certifications, inspections, and reporting (if required). With these measures in place, no significant adverse impacts to wetlands or water resources would result during or following construction.

Lastly, *no biological resources are present on the project site, and no direct effect to natural resources would be expected with the Proposed Action*, which as described in **Chapter 1.0: Purpose and Need**, would be limited to the project site. Further, given that the Proposed Action would not result in any significant adverse impacts to water quality, surface water bodies, or wetlands, either during construction or operation, *the proposed action would not result in significant adverse impacts to habitat areas related to water bodies and wetlands*. As such, the Proposed Action would not result in significant adverse impacts on plant and animal species of concern, significant habitats, or ecologically related areas and, therefore, would not result in significant adverse impacts to natural resources.

In summary, the Proposed Action would not result in any significant adverse impacts related to natural resources, and it would be consistent with all applicable policies related to natural resources. No further analysis of natural resources is warranted.

13.0 COASTAL ZONE

13.1 INTRODUCTION

As described in this chapter*, the project site is not located within, or in close proximity to, a mapped coastal zone*. Therefore, no coastal zone management plans are required for the project.

13.2 SUMMARY AND CONCLUSIONS

No coastal zone management plans are required for this project. The occupancy of the proposed JBD would be limited to the project site. With the P*roposed Action, the study area (which includes the project site and the area within 400 feet of the site) is not located within any coastal zones and would not be inconsistent with any coastal zone policy, nor would the Proposed Action result in significant adverse impacts associated with coastal zones*. In the future without the Proposed Action, the depot operations on the project site would continue to have no effect on the coastal zone and no coastal zone policy would apply to the project site.

13.3 METHODOLOGY

13.3.1 APPROACH

As described in **Chapter 1.0: Purpose and Need**, the construction activities and occupancy of the proposed development that would be implemented with the Proposed Action would be limited to the project site. Therefore, the assessment related to coastal zone considers the potential effects that would be expected to result from proposed changes to the project site, and whether the Proposed Action would be compliant with applicable federal, state, and City policies pertaining to coastal zone management.

13.3.2 STUDY AREA AND DATA SOURCES

A study area has been defined to include the project site and the area within 400 feet of the project site (i.e., a study area coterminous with the study area considered in the assessment of land use, zoning, and public policy, as described previously in **Section 8.2: Land Use, Zoning, and Public Policy**, of this EIS). This study area provides for the opportunity to assess potential indirect impacts off-site, to the extent that the Proposed Action may be expected to result directly or indirectly to the built and natural environs of the project site.

13.3.3 REGULATORY CONTEXT

Various federal and state agencies, as well as local agencies, promulgate programs that relate to the management of natural resources and, as such, provide regulatory context applicable to the assessment of natural resources for the Proposed Action, as described below.

13.3.3.1 FEDERAL

- ***The Coastal Zone Management Act (CZMA) of 1972*** encourages the management of coastal zone areas and provides grants to be used in maintaining coastal zone areas. It requires that federal agencies be consistent in enforcing the policies of state coastal zone management programs when conducting or supporting activities that affect a coastal zone. It is intended so that federal activities are consistent with state programs for the protection and, where possible, enhancement of the nation's coastal zones. The CZMA definition of a coastal zone includes coastal waters extending to the outer limit of state submerged land title and ownership, adjacent shorelines, and land extending inward to the extent necessary to control shorelines. A coastal zone includes islands, beaches, transitional and intertidal areas, and salt marshes.

13.3.3.2 STATE

- ***The New York State Department of State ("NYSDOS") Coastal Management Program*** was developed by the State to implement the Coastal Zone Management Act ("CZMA") which created a set of state coastal policies. These policies are intended to guide the development of the state's coastal waterfronts, and certain inland coastal zones. The CZMA allows municipalities to create local coastal plans setting forth policies specific to their communities, called Local Waterfront Revitalization Plans ("LWRPs"). If a project is located in a coastal area and an approval (or permit) is needed from a state agency, the agency must certify that the proposed action is consistent with the state's coastal policies or with an applicable LWRP.
- ***On September 22, 2014, Governor Cuomo signed the Community Risk Resiliency Act ("CRRA") into law.*** CRRA is intended to ensure that decisions regarding state permits and expenditures consider climate risk, including sea-level rise, and requires NYSDEC to adopt regulations establishing science-based state sea-level rise projections. NYSDEC has proposed to establish 6 NYCRR Part 490, Projected Sea-Level Rise, which will set forth projections in three specified geographic regions, including New York City, for the years 2020, 2050, 2080, and 2100. CRRA requires that implementation guidance be developed by January 1, 2017; although this guidance is not yet available, in recognition of the state policy reflected in the CRRA, this EIS considers available projected 2020 flood zones, developed by the New York City Mayor's Office of Long-Term Planning and Sustainability, on behalf of City University of New York ("CUNY") Institute for Sustainable Cities and the New York Panel on Climate Change.

13.3.3.3 LOCAL

- ***New York State Department of State (NYSDOS) Division of Coastal Resources Local Waterfront Revitalization Program (LWRP)*** is both a plan and a program established by the State of New York, but it is implemented locally. The term refers to both a planning document prepared by a community, as well as the program established to implement the plan. The NYC Waterfront Revitalization Program (WRP) is the City's principal coastal zone management tool. As originally adopted in 1982 and revised in 1999, it establishes the City's policies for development and use of the waterfront and provides the framework for evaluating the consistency of all discretionary actions in the coastal zone with those policies. When a proposed project is located within the coastal zone and it requires a local, state, or federal discretionary action, a determination of the project's consistency with the policies and intent of the WRP must be made before the project can move forward. Because the project site is not within the coastal zone, a detailed assessment of the proposed project's conformance with the City's WRP is not necessary. In addition, no further consultation with NYSDOS is required.

13.4 EXISTING CONDITIONS

According to the New York City Coastal Boundary Map, *the project site is not located within the New York Coastal Zone as shown on* ***Figure 13-1: Coastal Zone.***

When a proposed project is located within the coastal zone and it requires a local, state, or federal discretionary action, a determination of the project's consistency with the policies and intent of the WRP must be made before the project can move forward. Because the project site is not within the coastal zone, *a detailed assessment of the Proposed Action's conformance with the City's Waterfront Revitalization Program (WRP) is not necessary*. In addition*, no further consultation with NYSDOS is required.*

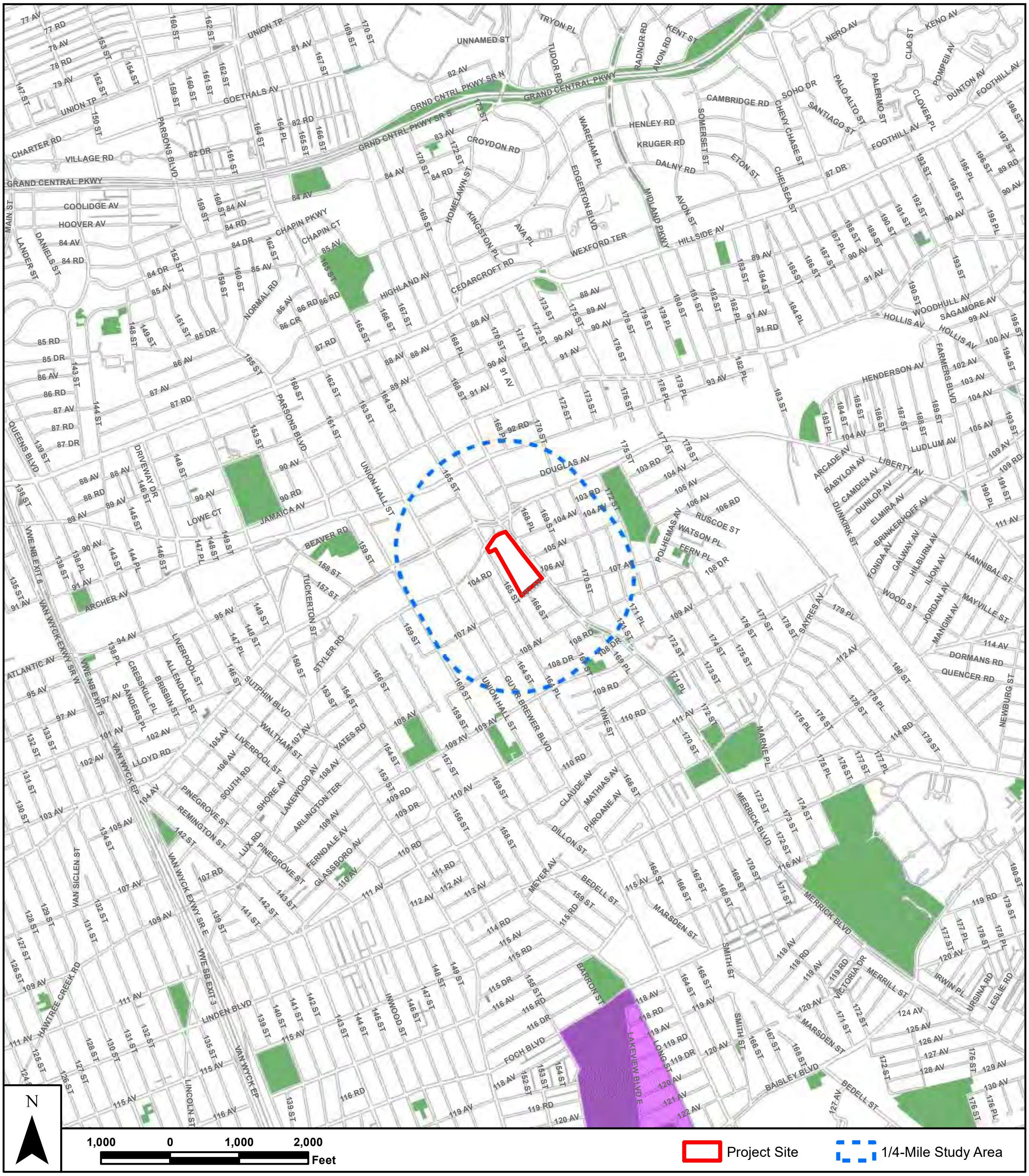
13.5 IMPACTS AND MITIGATION

13.5.1 FUTURE WITHOUT THE PROPOSED ACTION

In the future without the proposed project, the Jamaica Bus Depot will remain in operation, and the project site generally will resemble existing conditions, though potential future efforts to procure and demolish certain buildings to provide additional on-site parking may be implemented. No changes to the mapping of the coastal boundary are anticipated in the future without the proposed action, and so the project site will remain outside any area of mapped coastal zone. The depot operations on the project site would continue to have no effect on the coastal zone and no coastal zone policy would apply to the project site.

13.5.2 FUTURE WITH THE PROPOSED ACTION

As described in **Chapter 1.0: Purpose and Need**, the Proposed Action would be limited to the project site and would be the continuation of a similar use of the project site. The project site is, and will continue to be, located outside any coastal zone. Therefore, *the Proposed Action would not be inconsistent with any policy associated with coastal zones. The Proposed Action would not result in significant adverse impacts associated with coastal zones; rather, the proposed JBD on this site would continue to allow for the storage and service of buses at a location that is outside of any area identified as being within a coastal zone*.



Source: New York City Department of City Planning, MapPLUTO 18v2, 3/8/2019; STV Incorporated, 2019.

Figure 13-1

Coastal Zone

Reconstruction and Expansion of Jamaica Bus Depot

14.0 CONTAMINATED AND HAZARDOUS MATERIALS

14.1 INTRODUCTION

Contaminated materials are defined by their chemical composition and can be potentially toxic and/or harmful substances that may be present in soil, groundwater and building materials. These materials may be encountered during construction activities in urban areas that have been subject to past disturbances from construction, excavation, and industrial activities. ***This chapter analyzes the contaminated materials that may be encountered in the soil, soil gas, groundwater and/or building materials during the demolition, reconstruction, and future operations of the Jamaica Bus Depot (JBD) and discusses whether these activities may lead to increased exposure of hazardous materials to people or the environment***. Methods, practices, and procedures employed by Metropolitan Transit Authority (MTA) New York City Transit (NYCT) to manage the contaminated materials encountered are also discussed.

14.2 SUMMARY AND CONCLUSIONS

The *findings of the Phase I Environmental Site Assessments (ESAs) performed within the study area identified the potential presence of hazardous materials*. Potential contaminates of concern include: petroleum products; polycyclic aromatic hydrocarbons (PAHs); metals; asbestos; lead-based paint (LBP); polychlorinated biphenyls (PCBs); and mercury, among others. Recognized environmental conditions (RECs) derived from the Phase I ESAs include a historic product spill and historic use of the area. Some lots within the study area currently have an open NYSDEC spill case (Spill No. 9010039) that is being remediated under a NYSDEC Global Consent Order (CO2-20000101-3341). ***A free product plume exists beneath the majority of Block 10164 and extends into areas outside of the project site boundaries***. Portions of the project site were historically occupied by the following: auto repair shops with associated filling stations that utilized gasoline storage tanks; an auto parts manufacturing facility; a paint supply company; an upholstery shop; and, a woodworking finishing facility. Other locations within and surrounding the project site where contaminated materials could potentially be present have been identified through usual and customary inspection. ***RECs include***: the potential for buried structures from former buildings; the current and historic use of the site as a bus service station and maintenance garage; an active gasoline filling station and several historical gasoline filling stations; a historic dry cleaner; and, the presence of solid waste management facilities within ½ mile of the project site, among other RECs. ***E- (Environmental) designation areas***, current and historic auto stations, drycleaners and historic drycleaners, properties in the vicinity, and subsurface utilities are also recognized as potential areas of environmental concern.

The ***future with the proposed project,*** through the implementation of the three Candidate Alternatives, has the potential to expose contaminated soil, soil gas, and/or groundwater during excavation activities. Further analysis and investigation will have to be undertaken before construction at the site begins. Some of these actions include: a Phase II Environmental Site Investigation, lead/asbestos surveys, analysis of each site of proposed excavation, and generation of petroleum storage tank removal and closure plans. *The future without the Proposed Action* assumes that the existing JBD will continue to be used in its existing condition, and MTA NYCT will perform ongoing mitigation and monitoring of the free product plume, and implement the requirements of the NYSDEC Consent Order.

All work associated with the construction of the new depot implementing any of the alternatives would be conducted under the provisions of the **CEPP** and **EABP** which would have both project-wide and site-specific components. Elements of the CEPP would include: **Health and Safety Plans (HASPs)**; Soil and Contaminated Materials Management Plans; and, Groundwater Management Plans. The HASPs would be prepared to protect both the workers and the public who may be near the project during the construction phase. *The provision of the HASPs would be mandatory for contractors and subcontractors* engaged in on-site construction activities. Contaminated materials encountered during construction would be removed, stored, transported, and disposed of in accordance with applicable federal and state regulations, including the Resource Conservation and Recovery Act (RCRA), and Toxic Substances Control Act (TSCA). All on-site project personnel would be required to follow all applicable local, state, and OSHA construction codes and regulations.

Contaminated materials would be identified and managed prior to construction. Once construction activities are completed, remaining subsurface contaminated materials would be contained in accordance with NYSDEC requirements using an engineering control such as pavement or other barriers, and would not present a hazard to the public or MTA NYCT workers.

14.3 METHODOLOGY

14.3.1 STUDY AREA

The project site consists of 19 tax lots (Block 10164, Lots 41, 46, 53, 60, 61, 63, 66, 68, 72, 74, 76, 79, 80, 84, 89, 90, 95, 97, and 103), including the entire frontage on Merrick Boulevard. Some of these lots have previously been acquired by MTA NYCT and others are planned to be acquired in the future. Block 10164 is bounded by Tuskegee Airmen Way (formally known as South Road) on the northwest, 107th Avenue on the southeast, Merrick Boulevard on the northeast, and 165th Street on the southwest. The project site is addressed as 165-18 Tuskegee Airmen Way, Jamaica, Queens, New York 11433 and consists of approximately 6.4 acres.

As described in the methodology of the Phase I ESAs prepared for the project site[24], *a radius of up to one mile around the project site was reviewed with respect to available federal, state, and local agency environmental records, which were evaluated to identify sites of potential contamination.*

The list of properties included in the project site, along with the address, area, and current use, are provided in **Table 14-1: Properties Included in the Project Site.** The study area for the Contaminated Materials and Waste Management chapter is also provided in **Figure 14-1: Contaminated and Hazardous Materials Study Area.**

14.3.2 APPROACH AND DATA SOURCES

A combined Phase I ESA was performed for Block 10164, Lots 41, 53, 60, 61, 63, 66, 68, and 72 in February 2012. Individual Phase I ESAs were performed for Block 10164, Lots 74, 76, 79, 89, 90, and 95 and for Block 10164, Lots 46, 80, 84, 97 and 103 in August 2016. *The main objective of a Phase I ESA is to identify recognized environmental conditions (RECs) and environmental concerns that may be encountered at the project site during redevelopment.* RECs are defined in ASTM International (ASTM) Standard Practice E 1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property. Additionally, vapor encroachment conditions (VECs) were evaluated as per ASTM E 2600-10.

As part of the Phase I ESA, federal, state, and local agency environmental records were reviewed to identify sites with a potential for contamination within the search radii specified in the ASTM Standard Practice E

[24] STV Incorporated, Phase I Environmental Site Assessment of Jamaica Bus Depot Reconstruction, 165-18 Tuskegee Airmen Way, Queens, New York, 11433, dated August 24, 2016

1527-13. The U.S. Environmental Protection Agency (USEPA) and New York State Department of Environmental Conservation (NYSDEC) databases reviewed for the assessment include the following:

- USEPA National Priority List for Federal Superfund Cleanup (NPL);
- USEPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list including CERCLIs NFRAP sites;
- Resource Conservation and Recovery Act (RCRA) Program-Treatment, Storage, or Disposal Facilities (TSD) and RCRA Corrective Action (CORRACTs) Activity;
- RCRA-Large and Small Quantity Hazardous Waste Generators/Transporters (RCRA-LQG and RCRA-SQG) and Conditionally Exempt Small Quantity Generators (RCRA-CESQG);
- RCRA- Non-Generators / No Longer Reporting (RCRA-Non-Gen/NLR);
- Federal Institutional Control / Engineering Control Registries;
- Emergency Response Notification System (ERNS) of spills;
- Hazardous Substance Waste Disposal Site Inventory (HSWDS);
- New York State Toxic Release Inventory System (TRIS);
- New York State Inactive Hazardous Waste Disposal Sites (SHWS);
- New York State Solid Waste Facilities and Landfill Sites (SWF/LF);
- New York State Vapor Reopened; New York State Bulk Storage Tanks - including Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs);
- New York State Spills Information Database (NY SPILLS) including Leaking Storage Tank Incident Reports (LTANKS);
- New York State Petroleum Bulk Storage Facilities list (one or more registered ASTs, four USTs with a combined storage capacity over 1,100 gallons);
- New York State Chemical Bulk Storage (CBS) Facilities list (ASTs with capacities of 185 gallons or more and/or in USTs of any size);
- Integrated Compliance Information System (ICIS);
- Facility Index System / Facility Registry System (FINDS);
- Enforcement & Compliance History Online (ECHO);
- New York State Voluntary and Brownfield Cleanup Program Sites (VCP/BCP);
- New York State Registered Recycling Facilities (NY SWRCY);
- New York State Registered Dry Cleaners Database;
- New York State Manifest Database;
- New Jersey State Manifest Database;
- Rhode Island State Manifest Database;
- New York City Environmental Quality Review E-Designation Site Listing (E-Designation);
- NYSDEC listing and mapping of Manufactured Gas Plants (MGP) in New York City, provided by Remedial Bureau C, MGP Section, Division of Environmental Remediation; and
- Environmental Data Resources (EDR) Exclusive Historic Auto Stations (EDR US Hist Auto Stat) and Historic Dry Cleaners (EDR US Hist Cleaners).

TABLE 14-1: PROPERTIES INCLUDED IN THE PROJECT SITE

Block/Lot	Address	Lot Area	Current Use
10164/46	165-18 Tuskegee Airmen Way	114,000 sq. ft.	Depot Building
10164/80	105-12 Merrick Boulevard	14,015 sq. ft.	Diesel and heating oil tank vault and pump room
10164/84	105-14 Merrick Boulevard	19,692 sq. ft.	Parking
10164/97	107th Avenue	18,350 sq. ft.	Parking
10164/103	166-07 107th Avenue	5,404 sq. ft.	Parking
10164/41	104-01 165th Street	9,690 sq. ft.	Warehouse for buses and other materials
10164/53	103-16 Merrick Boulevard	14,000 sq. ft.	Open Parking
10164/60	103-30 Merrick Boulevard	2,920 sq. ft.	Open Parking
10164/61	103-34 Merrick Boulevard	5,490 sq. ft.	Open Parking
10164/63	104-02 Merrick Boulevard	10,400 sq. ft.	Open Parking
10164/66	104-10 Merrick Boulevard	7,050 sq. ft.	Open Parking
10164/68	104-12 Merrick Boulevard	14,836 sq. ft.	Open Parking
10164/72	104-22 Merrick Boulevard	7,915 sq. ft.	Warehouse
10164/74	104-28 Merrick Boulevard	8,230 sq. ft.	Auto repair and auto parts manufacturing
10164/76	104-32 Merrick Boulevard	4,250 sq. ft.	Vacant
10164/79	105-02 Merrick Boulevard	8,800 sq. ft.	Domino's Pizza franchise and appliance repair shop
10164/89	105-22 Merrick Boulevard	2,000 sq. ft.	Residential dwelling with commercial storefront (vacant and closed)
10164/90	106-04 Merrick Boulevard	9,406 sq. ft.	Auto repair
10164/95	166-15 107th Avenue	2,600 sq. ft.	Parking
TOTAL		279,048 sq. ft. (6.4 acres)	

Source: New York City Department of City Planning, MapPLUTO 18v2, 3/8/2019; STV Incorporated, 2019.

Figure 14-1

Contaminated and Hazardous Material Study Area

Freedom of Information Act (FOIA) requests were submitted to the USEPA, as well as various regulatory agencies in New York State and New York City, in order to review files regarding the storage or release of petroleum products and/or hazardous materials at the project site. This agency review was done in addition to the regulatory environmental database search. EDR compiles federal and state information regarding various toxic activities reported at each site. Therefore, the information obtained through FOIA requests to the federal, state, and City agencies can be used to verify the information contained in the EDR reports. Information typically received from the federal, state, and City agencies includes brief descriptions of spills or one-page spill reports. Detailed information regarding individual incidents requires a more comprehensive review of the entire spill file. Regulatory agency correspondence is included in the respective Phase I ESA reports. The following agencies were contacted:

- *USEPA* – responsible for protecting human health and the environment. To that end, the USEPA develops and enforces regulations that implement environmental laws enacted by Congress.
- *NYSDEC* – maintains files of hazardous material spills and/or releases throughout New York State.
- *New York State Department of Health (NYSDOH)* – maintains files of health-related environmental incidents in the State of New York. These incidents may include spills of hazardous chemicals, citizen's complaints regarding asbestos issues, or reports of chemical odors or fumes.
- *New York City Department of Buildings (NYCDOB)* – records were reviewed to determine whether there are references to buildings, tanks or other structures, property use or inspection reports that indicate the presence, past use, or release of hazardous substances, wastes, or petroleum products at the project site.
- *New York City Department of Environmental Protection (NYCDEP)* – maintains files on spills of hazardous chemicals and citizen's complaints on environmental issues.
- *New York City Department of Health and Mental Hygiene (NYCDHMH)* – maintains files of health-related environmental incidents in New York City, including spills of hazardous chemicals, citizen's complaints regarding asbestos issues, and reports of chemical odors or fumes.
- *New York City Department of City Planning (NYCDCP)* – determines if there is an E-Designation assigned to the property. E-Designations for blocks or lots on city zoning maps have been issued since approximately March 2003 and indicate that potential environmental issues are associated with these parcels. The environmental issues may or may not be associated with potential contamination by hazardous or petroleum substances. Parcels with E-Designations require that the fee owner of the site conduct a testing and sampling protocol and remediation where appropriate, to the satisfaction of the New York City Office of Environmental Remediation (NYCOER) before the issuance of a building permit by the NYCDOB pursuant to the provisions of Section 11-15 of the Zoning Resolution (Environmental Requirements).
- *New York City Fire Department (FDNY)* – maintains information on use and storage of flammable and hazardous materials.

In addition to the review of historical records, environmental databases, and interviews, *a site reconnaissance was conducted for each respective property*. The inspection of the project sites included observations of the property and surrounding area (site reconnaissance) to identify potential sources or indications of hazardous substances, including: ASTs; USTs; tank vents and fill ports; transformers and other items that could contain polychlorinated biphenyls (PCBs); waste storage areas; hazardous materials usage, storage, and disposal; stained surfaces and soils; stressed vegetation; leaks; and, odors. In addition, readily-observable portions of the properties immediately adjacent to the project site were viewed from public rights-of-way to identify or determine the likelihood of any of the aforementioned potential sources of contamination being present.

The Phase I ESAs also *included a review of prior ownership information for the project site* at the New York City Department of Finance (DOF) website. In addition, prior ownership information was researched through EDR's Environmental Lien Search and the NYCDOB Automated City Register Information System (ACRIS) online website.

Additionally, historical United States Geological Survey (USGS) Topographic Quadrangles and Sanborn® Fire Insurance Maps were reviewed for information regarding past uses of the project site and surrounding area. Historical aerial photographs of the project site and surrounding areas were reviewed in order to identify historical land use that may have involved hazardous substances and petroleum products such as *gasoline stations, manufacturing, dry cleaners, hazardous waste generating facilities, manufactured gas plants, and other industrial activity* that may have potentially caused contamination of underlying soil, soil gas, and/or groundwater.

14.4 EXISTING CONDITIONS

14.4.1 GENERAL SITE HISTORY

The existing JBD was built in 1939 and expanded in 1950 to add the bus wash area and provide additional storage area. In 1968, Transportation Offices and locker rooms were constructed on the north side of the facility on an upper mezzanine level. The JBD was rehabilitated in the mid-1980s, and the present boiler room was constructed in 2010, replacing a basement-level boiler room that was filled and sealed.

There have been multiple episodes of building construction, demolition, and subsequent construction on most of the project site lots. The Merrick Boulevard frontage of the project site originally contained residences and stores, but now contains nearly all commercial and industrial buildings, including a number of warehouses. During the twentieth century, there were multiple buried fuel tanks associated with filling stations on Lots 53, 60, 80, and 84 (Sanborn Fire Insurance Maps, 1951). Most of the existing buildings fronting Merrick Boulevard do not have basements, with the exception of Lots 68, 74, and 89. The structure on Lot 41 at the corner of Tuskegee Airmen Way and 165th Street also does not have a basement.

14.4.2 POTENTIAL CONTAMINANTS OF CONCERN

The contaminants described in this section are commonly found in urban settings, and certain background concentrations can be expected from both natural and human sources. When concentrations exceed regulatory thresholds, an analysis of potential environmental health effects and the need for mitigation measures may be necessary.

14.4.2.1 SOIL, SOIL GAS, AND/OR GROUNDWATER CONTAMINANTS

The soil, soil gas, and/or groundwater beneath and adjacent to the project site contain contaminants associated with historical uses onsite and offsite. Onsite petroleum products have been released during surface spills and/or from leaking petroleum storage tanks at the former gasoline stations. Contamination such as PAHs, metals, and other hazardous materials may have resulted from spills at the adjacent or surrounding properties. The characteristics of these contaminants are discussed below.

Heavy metals (arsenic, cadmium, chromium, cobalt, lead, mercury, selenium, and silver) – These are used in smelting, foundries, and metal works, and can be present in paint, ink, petroleum products, coal ash, and mechanical waste fluids. Vanadium and sulfur may be present in conjunction with spills of bunker or other heavy oils. Certain heavy metals can be toxic to humans at elevated concentrations and are often found in historic fill common in NYC.

Volatile Organic Compounds (VOCs) – These include aromatic compounds such as benzene, toluene, ethylbenzene, and xylenes, which are found in petroleum products, and chlorinated VOCs such as trichloroethene (TCE) and tetrachloroethene (PCE), which are common ingredients in solvents and commercial cleaners. Naturally occurring VOCs may also be present, such as methane and hydrogen sulfide, which are breakdown products of organic materials. Inhaling toxic VOC vapors can be a health hazard, and some VOCs can be flammable if the circumstances are suitable for combustion. In contrast to contaminants such as metals, PAHs, and PCBs, VOCs generate soil gas vapors that may be a source of exposure even if the source (e.g., VOC-impacted soil or groundwater) is not directly exposed. During construction, soil disturbance, or disturbance of abandoned gas lines, may release VOCs into the air and produce toxic or oxygen-deficient atmospheres. In finished structures, VOCs in soil gas may infiltrate basements and result in indoor air quality concerns.

Semi-Volatile Organic Compounds (SVOCs) – These include PAHs, which are common constituents of partially combusted coal or petroleum-derived products, such as waste oils, creosote, coal and coal ash, wood ash, and asphalt. SVOCs and PAHs can pose a risk to human health.

Polychlorinated Biphenyls (PCBs) – These are commonly present in the dielectric fluid found in electrical transformers and feeder cables and are often associated with electrical generation stations/substations and train yards.

14.4.2.2 ASBESTOS, LBP, PCBS, AND MERCURY

Although not an acute hazard when building materials, equipment, and utilities containing asbestos, lead-based paint (LBP), PCBs, and mercury are properly maintained, these substances are harmful when released to the environment. These materials are commonly found in buildings constructed prior to 1978 and require removal or management if there is a risk of release as a result of construction disturbance.

Asbestos – Building material used in the construction of the existing depot building may contain asbestos-containing materials (ACMs). Asbestos fibers are potentially harmful if they become airborne and are inhaled. The USEPA prohibited the use of asbestos in spray-on fire proofing in 1972 and in thermal insulation in 1978. In addition, normally non-friable ACMs that are typically stable could be damaged during the abatement process and would be considered friable ACMs thereafter. Prior to these dates, the use of ACMs was common in New York City.

Lead-Based Paint (LBP) – It has been determined that dust from LBP may cause potential learning disabilities and other adverse health effects when inhaled or ingested. The use of LBP in residences was banned by the Consumer Products Safety Commission in 1978 and by New York City in 1960; however, it has not been banned from use in commercial properties.

Polychlorinated Biphenyls (PCBs) – PCBs are man-made organic chemicals that were commonly used in industrial and commercial applications due to their non-flammability, chemical stability, high boiling point, and electrical insulating properties. PCBs can be present in transformers, electrical feeder cables, hydraulic equipment, and fluorescent light ballasts. The Toxic Substance Control Act (TSCA) banned the manufacture, processing, and distribution of PCBs in 1978.

Mercury – Mercury light bulbs were historically used in light fixtures and they may exhibit characteristics of hazardous waste. Mercury-containing thermostats may also be present in the existing depot building.

14.4.3 REGULATORY LIMITS AND REGULATIONS

The Federal Occupational Safety and Health Administration (OSHA) has established permissible exposure limits for concentrations of dust-containing contaminants and for levels of certain chemical vapors in the air. Other agencies, such as NYCDEP, NYSDEC, and USEPA, have set enforceable criteria for concentrations of various chemical compounds in different uses. Some formal guidance documents have been developed for various uses. These standards and reference values are generally based on the exposure risks associated with direct contact (ingestion, inhalation, or dermal contact). Relevant standards and guidelines are summarized below. These include federal hazardous waste regulations, various soil reference values promulgated by New York State agencies, New York State groundwater standards, and relevant regulations, standards, and guidelines for the removal of fuel storage tanks, asbestos, and LBP.

14.4.3.1 FEDERAL HAZARDOUS WASTE REGULATIONS

As defined by the RCRA, waste (e.g., excavated soil or building materials removed during demolition/renovation activities) *can be classified as "hazardous waste" if it is one of the federal "listed wastes" or if it possesses one of the four hazardous characteristics ("D" wastes): ignitibility, reactivity, corrosivity, or toxicity*. The USEPA has developed standard tests to measure these four characteristics. The three physical characteristics—ignitibility, reactivity, and corrosivity—are tested using numerical standards of measurement.

The fourth characteristic—toxicity, the one most frequently exceeded by contaminated soils—is tested using the Toxicity Characteristics Leaching Procedure (TCLP), which *provides a conservative estimate of the concentrations of contaminants that would leach into groundwater if the material were disposed in an environmentally unsecured landfill*. To assess whether materials are hazardous wastes, composite samples of the material are collected and submitted to a laboratory for analysis. Composite samples are representative samples of the material that are collected from multiple locations throughout the waste. The samples are analyzed by the laboratory in accordance with the USEPA test methods. *If the results of the laboratory testing indicate that the physical or toxicity characteristics of the sample exceeds the RCRA regulatory limits shown in* ***Table 14-2: RCRA Regulatory Limits****, the material is considered hazardous waste.*

TABLE 14-2: RCRA REGULATORY LIMITS

Volatile Organics	mg/l	Pesticides	mg/l
Benzene	0.5	Chlorodane	0.03
Carbon Tetrachloride	0.5	Endrin	0.02
Chlorobenzene	100.0	Heptachlor	0.008
Chloroform	6.0	Heptachlor epoxide	0.008
1,2 Dichloroethane	0.5	Lindane	0.4
1,1 Dichloroethane	0.7	Metoxychlor	10.0
Methyl ethyl ketone	200.0	Toxaphene	0.5
Tetrachloroethylene	0.7	**Herbicides**	**mg/l**
Trichloroethylene	0.5	2,4-D	10
Vinyl chloride	0.2	2,4,5-TP (Silvex)	1.0
Acid Extractables	**mg/l**	**Metals**	**mg/l**
o-cresol	200.0	Arsenic	5.0
m-cresol	200.0	Barium	100.0
p-cresol	200.0	Cadmium	1.0
Cresol	200.0	Chromium	5.0
Pentachlorophenol	100.0	Lead	5.0
2,4,5-Trichlorophenol	400.0	Mercury	0.2
2,4,6-Trichlorophenol	2.0	Selenium	1.0
		Silver	5.0
Base Neutrals	**mg/l**	**Physical Characteristics**	
1,4-Dichlorobenzene	7.5	Ignitability (oF)	140
2,4-Dinitrotoluene	0.13	Corrosivity (pH units)	2.0-12.5
Hexachlorobenzene	0.13	Reactivity to cyanide (mg/l)	250
Haxachlorobutadiene	0.5	Reactivity to sulfide (mg/l)	500
Hexachloroethane	3.0		
Nitrobenzene	2.0		
Pyridine	5.0		

Source: Environmental Protection Agency: Maximum Concentration of Contaminants; regulatory limits provided in milligrams per liter (mg/l). Except for specific contaminants and circumstances, neither the federal nor the New York State governments have promulgated a comprehensive set of numerical standards for the evaluation of environmental impacts caused by chemical contaminants in soil. Criteria for specific uses, such as land application of sewage sludge, and for specific locations, such as landfills, have been developed, but these do not have general applicability. Therefore, guidance or reference values are used to determine if soil would require management. The reference values have not undergone the rigorous analyses required for regulatory standards and, in many cases, may have limited applicability to the situations found in the vicinity of the study area.

14.4.3.2 NEW YORK STATE GUIDANCE FOR CONTAMINATED SOILS

The Soil Cleanup Objectives (SCOs) found in 6 NYCRR 375-6, Remedial Program Soil Cleanup Objectives, are the appropriate standards for use in evaluating the results of the analyses of soil samples. Soil which is free of contaminants above Unrestricted Use SCOs is suitable for "unrestricted use" which is the land use category without imposed restrictions, such as environmental easements or other land use controls. The Restricted Use category includes SCOs for protection of public health for residential, restricted residential, commercial, and industrial usage and is the appropriate use category for sites with some restrictions (i.e., a site management plan is required, vegetable gardens are prohibited, etc.).

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 are used to evaluate soils data. CP-51 replaced the Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels (January 24, 1994); the Petroleum Site Inactivation and Closure Memorandum (February 23, 1998); and Sections III and IV of Spill Technology and Remediation Series (STARS) #1 (August 1992). The specific compounds listed in Table 1 of CP-51 had been included in former TAGM 4046 but were not included in 6 NYCRR 375-6.

TAGM 4046 addressed contaminants in soil from any potential source and includes guidance values for chemicals of concern. NYSDEC STARS #1 contained soil guidance values and procedures that are applicable for management (disposal/reuse) of spill-related excavated soils and provided guidance on confirmation sampling and management of soils during closure of underground storage tanks in New York State.

14.4.3.3 NEW YORK STATE STANDARDS FOR GROUNDWATER

NYSDEC has promulgated drinking water standards and uses them as reference values for groundwater. These potable groundwater standards (also known as Class GA Standards and Guidance Values) are among the most stringent in the nation. Although these standards are intended for public drinking water supplies, they are generally applied by NYSDEC to other non-saline groundwater and are also used to evaluate overall water quality. New York State has also established the State Pollution Discharge Elimination System (SPDES), which includes permit requirements and effluent limitations for wastewater discharges to the waters of the State. In addition, NYCDEP's Bureau of Wastewater Pollution Control has regulations limiting the concentrations of certain materials in waters discharged into the municipal sewer system. NYCDEP's regulations are based, for the most part, on the effect of the contaminants on the receiving waters or treatment plant. Specific permits must be obtained prior to discharging such waters to the sewer system.

14.4.3.4 NEW YORK STATE GUIDANCE ON PETROLEUM STORAGE TANKS

Removal of certain types of petroleum storage tanks is regulated by NYSDEC under 6 NYCRR Part 613.9, which requires that tanks no longer in use be closed in place or removed. Contaminated soils surrounding the tanks, separate-phase product on the water table, or contaminants dissolved in the groundwater must be removed.

14.4.3.5 ASBESTOS-CONTAINING BUILDING MATERIALS

Prior to construction activities that have the potential to impact asbestos-containing materials, the proper removal and disposal of such materials is required under State of New York Article 30 – Labor Law, Asbestos or Products Containing Asbestos Licensing 12 NYCRR – Part 56 Asbestos Regulations (i.e., ICR #56), and MTA NYCT's policies (i.e., MTA NYCT SPEC #12N), which documents "System Wide Variances" of ICR #56.

14.4.3.6 LEAD-BASED PAINT

Surfaces coated with LBP require proper removal of the paint prior to any construction activity that would generate lead-containing dust or vapors. Lead dust could be generated through mechanical processes (e.g., scraping demolition, scarification, etc.) that disturb surfaces coated with LBP (e.g., plaster, brick, etc.). Lead fumes may be generated through the heating of materials that are coated with LBP, such as structural steel during welding or torching, etc.

In all cases, an exposure assessment would be performed to assess whether lead exposure would be likely to occur during the demolition and reconstruction activities. If the exposure assessment indicates the potential to generate airborne dust or fume lead levels exceeding health-based standards, a higher personal protective equipment standard would be employed to counteract the exposure. In addition, a different application of work practices may be required to protect workers and the public.

14.4.3.7 POLYCHLORINATED BIPHENYLS

Suspect PCB-containing equipment and electrical fixtures would be surveyed and evaluated prior to demolition and reconstruction. PCB-containing equipment that would be disturbed by the work would be removed and disposed of in accordance with applicable federal (e.g., TSCA), state, and local regulations, as well as MTA NYCT protocols.

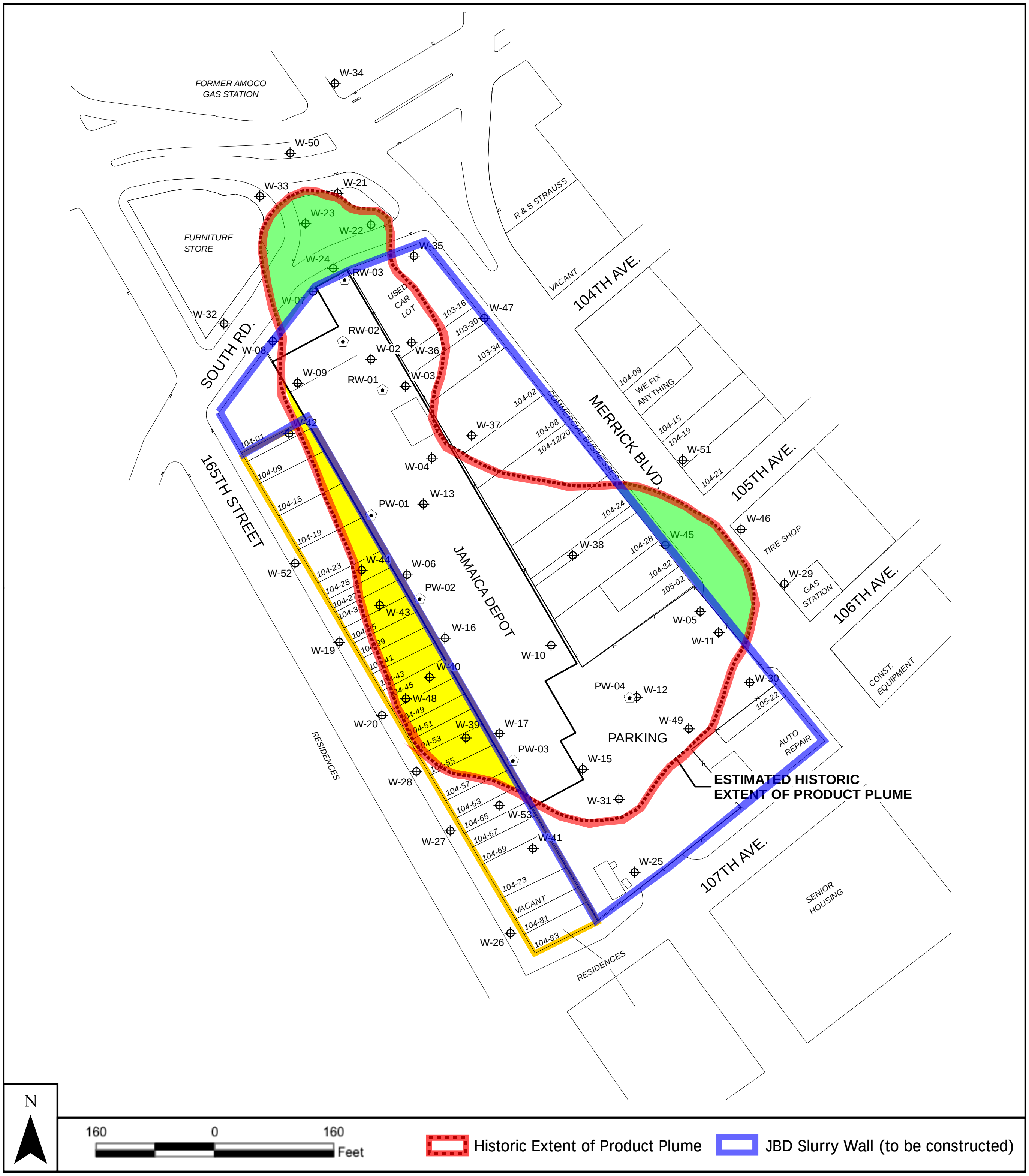
14.4.3.8 MERCURY-CONTAINING LIGHT BULBS AND THERMOSTATS

Mercury-containing light bulbs and thermostats would be identified and removed prior to demolition and reconstruction. The bulbs would be disposed of in accordance with federal (including the RCRA and Universal Waste Regulations), state, and MTA NYCT protocols.

14.4.4 KEY ISSUES

It is noted that Lots 46, 80, 84, 97, and 103 currently have an open NYSDEC spill case (Spill No. 9010039) that is being remediated under a NYSDEC Global Consent Order (CO2-20000101-3341). Since 1995, MTA NYCT has been operating a pump and treat remediation system to recover the heating oil and diesel fuel that was released in the 1990 spill; however, due to the change in the water table, the remediation system is no longer operational. NYSDEC Spill No. 9010039 was initially reported on December 14, 1990 and remains an open case, along with several other spills that occurred thereafter. Several investigations have been performed at the project site to evaluate the extent of product in the subsurface and all possible in-situ remedial measures to address petroleum-impacted soil and groundwater. *A free product plume (hydrocarbon contamination floating on the water table and migrating away from the source) exists beneath the majority of Block 10164 and extends into areas outside of the project site boundaries as shown in* ***Figure 14-2: Estimated Historic Extent of Product Plume****.*

Soil and groundwater within the project site may have also been contaminated by historic operations on the project site (e.g., former use of Lot 84 as a gasoline filling station), and may be contaminated by the migration of contaminants from adjacent sites (e.g., former BP Service Station No. 11009, located approximately 229 feet north-northwest of the project site at 165-25 Liberty Avenue) and/or by subsurface utilities that may contain contaminated materials (e.g., abandoned gas lines). Contamination includes petroleum and other hazardous substances such as VOCs and SVOCs found in gasoline, fuel oils, solvents, waste oils, and historic fill. Media may also contain ACM, LBP, mercury, and PCBs.



Source: STV Incorporated, 2019.

Figure 14-2

Estimated Extent of Product Plume

	Product Plume Outside JBD Limits
	Residential Properties
	Product Plume Within Residential Property Limits

Reconstruction and Expansion of Jamaica Bus Depot

Phase I ESAs were conducted to identify RECs in connection with the properties of interest. The existing product plume at the site was considered a REC in each report:

- *A combined Phase I ESA was conducted for Lots 41, 53, 60, 61, 63, 66, 68, and 72 in February 2012.* These properties historically operated as an auto repair shop with associated filling stations that utilized gasoline storage tanks. The Phase I ESA identified environmental concerns associated with the project site including suspect ACM, LBP on interior and exterior painted surfaces, suspect PCBs, water staining, and mold growth.
- *Individual Phase I ESAs were conducted for Lots 74, 76, 79, 89, 90, and 95 in August 2016.* These reports discussed RECs in connection with the sites including: the historic use of Lot 74 as an auto repair facility and auto parts manufacturing facility; the historic use of Lot 76 as a paint supply company; the historic use of Lot 79 as an auto repair facility; the historic use of Lot 89 as an upholstery shop; and the current and historic use of Lot 90 as an auto repair facility and historic use as a woodworking finishing facility. Lot 95 is currently being used as a parking lot for the business at Lot 90. These six (6) sites were each listed with an E-Designation (CEQR No. 90-087Q) for E-39 (Underground Gasoline Storage Tanks Testing Protocol).

Usual and customary inspection and inquiry for contaminated materials within the project site and at adjacent and surrounding properties have been performed and have indicated locations where contaminated materials could potentially be present. These areas may also be referred to as RECs, VECs, or environmental concerns. The RECs are as follows:

- Lots 46, 80, 84, 97, and 103 have an open spill case (Spill No. 9010039) that was being remediated via a pump and treat remediation system under a NYSDEC Global Consent Order (CO2-20000101-3341). Due to changes in the water table, this system is no longer operational.
- The project site is listed in multiple federal and state regulatory agency databases including Resource Conservation and Recovery Act - Conditionally Exempt Small Quantity Generators (RCRA-CESQG), Air Emissions Data (US AIRS), NY Manifest, NJ Manifest, RI Manifest, Integrated Compliance Information System (ICIS), Facility Index System / Facility Registry System (FINDS), Enforcement & Compliance History Online (ECHO), NY Leaking Storage Tank Incident Reports (LTANKS), NY Spills, NY Chemical Bulk Storage (CBS), NY AST, NY CBS AST, and NY UST databases. The current and historic use of the project site as a bus service station and maintenance garage is considered a REC/VEC.
- The project site was previously developed with multiple low-rise structures. Potential buried structures from former buildings on the project site could contain USTs and/or historic fill materials of unknown origin, and are considered a REC/VEC with respect to the project site.
- Sanborn® Fire Insurance Maps depict that a portion of the project site (Lot 84) was occupied by a gasoline filling station from at least 1951 to sometime before 1981. The historic use of a portion of the project site as a gasoline filling station is considered a REC/VEC.
- The surrounding area historically included a blacksmith, a sign painter's shop, auto painting shops, iron works, auto and truck repair facilities, carpet cleaners, paint shops, parking lots, a junk yard, and gasoline filling stations with USTs. Facilities where petroleum and/or hazardous materials may have been used in operations are considered RECs/VECs.
- Three solid waste management facilities are located within ⅛ mile of the project site and are considered RECs/VECs.
- Two facilities that generate spent halogenated solvents are located within ⅛ mile of the project site and are considered RECs/VECs.
- One facility that historically generated cadmium, lead, and waste oils and received violations is located within ⅛ mile of the project site and is considered a REC/VEC.

- One active gasoline filling station and several historical gasoline filling stations were located within ⅛ mile of the project site. These properties are considered RECs/VECs based on their proximity to the project site.
- Several historic and current auto repair facilities were located in areas within ⅛ mile of the project site. These properties are considered RECs/VECs based on their proximity to the project site.
- One (1) historic dry cleaner is located within ⅛ mile of the project site. This facility is considered a REC/VEC based on the presumed storage and regular use of chlorinated solvents.
- Several lots on the project site block and on the adjacent and surrounding blocks are listed with E-designations for E-39 or E-175 (Underground Gasoline Storage Tanks Testing Protocol) and are considered RECs/VECs.
- Suspect ACM exists throughout the project site.
- Based on the age of the existing buildings on the project site, there is the potential for the presence of suspect LBP identified on interior and exterior painted surfaces.
- Fluorescent lighting fixtures and window caulking identified throughout the project site may contain PCBs.

Given the above information, it is reasonable to assume that typical urban fill with a variety of chemical constituents exists in close proximity to the project site. In order to avoid adverse impacts to workers, the public, and the environment from any known contamination or unexpectedly encountered contamination*, all reconstruction activities involving disturbance of existing soils will be designed and conducted in accordance with a Construction Environmental Protection Program (CEPP) and any related plans including the requirements from MTA NYCT's contract specification Section 12R, applicable to the disposal of contaminated construction and demolition (C&D) debris and contaminated water.*

Erosion and sediment control measures and storm water management measures will be implemented during all subsurface construction activities to protect nearby storm water drains from contaminants potentially entrained in storm water runoff. To eliminate the potential for exposure of future site occupants, a minimum of two (2) feet of clean soil underlain by a demarcation liner will be placed on any areas that are not covered by paved surfaces or permanent structures associated with any new site construction. Prior to or during construction activities, any underground and aboveground storage tank systems will be removed and disposed of in accordance with applicable federal, state, and local regulations. MTA NYCT contract documents will specify that if contaminated soil and/or groundwater are encountered during the tank removal, *impacted areas will be remediated in accordance with NYSDEC Spill Response and Remediation program.* All contaminated materials removed from the site, including C&D debris, will be properly transported off site for disposal of offsite in accordance with all applicable federal, state, and local regulations. Further, any ACM, LBP, and/or PCB-containing materials affected by future renovations, repairs or demolition at the site will be identified and properly managed during such activities.

In order to determine the extent to which soil, soil gas, or groundwater beneath any adjacent properties that are not currently part of the existing JBD may have been affected by contaminated material, and the methods required during construction to manage these materials properly*, a subsurface investigation will be conducted as part of the construction process.*

Such investigations *(Environmental Anticipatory Boring Program [EABP])* are typical of MTA NYCT construction projects and requirements in MTA NYCT's Specification Section 12R - Disposal of Contaminated C&D and Water. *The CEPP requires the EABP to include a Health and Safety Plan, Soil and Contaminated Materials Management Plan, Soil Gas Management Plan, and Groundwater Management Plan.*

14.4.5 LOCATIONS OF POTENTIAL SOURCES OF CONTAMINANTS IN THE STUDY AREA

Potential sources of contaminants present in the study area are discussed below. This section summarizes the findings and visual observations, the review of historic maps, and the review of regulatory databases referenced above.

14.4.5.1 GENERAL STUDY AREA CONDITIONS

Potential areas of environmental concern are discussed below and identified in **Figure 14-3: Potential Areas of Environmental Concern**. Contaminated media that may be affected during demolition and reconstruction of the project site includes building structures, utilities, soil, soil gas, and/or groundwater.

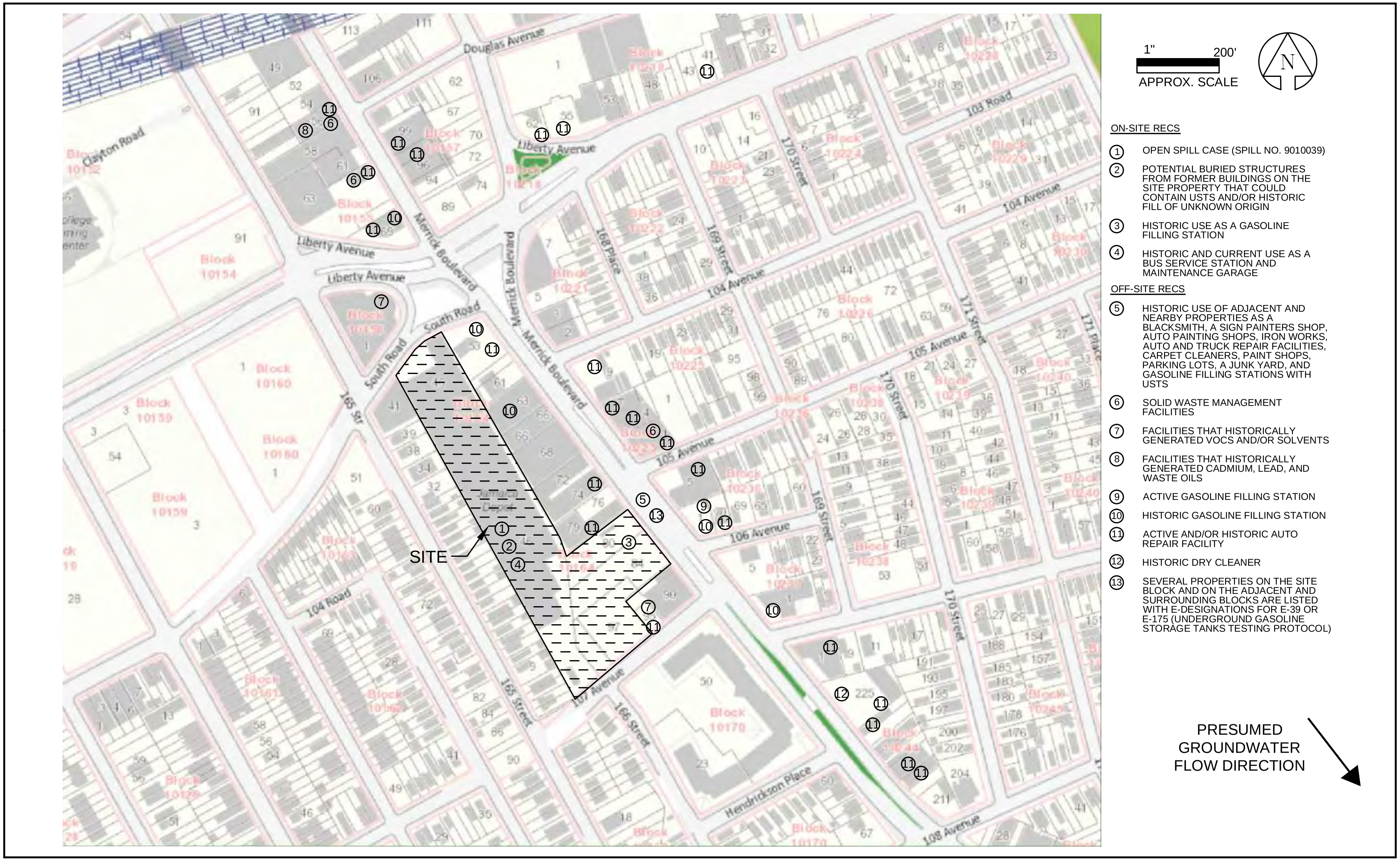
Media within and adjacent to the project site may be contaminated from former uses and operations on the site, by migration of contaminants from adjacent sites, and/or by subsurface utilities that may contain contaminated materials. Further details on utility relocations are provided in **Chapter 15.0: Infrastructure, Energy, and Solid Waste**. Not every adjacent site with potential sources of contamination can be shown on the figure because most residential and commercial properties heat and/or operate their facilities historically with coal/heating oils. Potential sources of contamination include petroleum and hazardous substances such as VOCs and SVOCs that are found in gasoline, fuel oils, solvents, waste oils, and historic fill. Media could also contain ACM, LBP, mercury, and PCBs.

Groundwater in the area is currently located approximately 4 to 13 feet below grade and is anticipated to flow to the south-southwest towards Jamaica Bay. During construction dewatering, groundwater and any dissolved contaminants within a zone of influence could flow from surrounding areas toward the construction site and contaminate the media. Contaminated groundwater and soil gas that do migrate to construction areas will require consideration/management during planning and construction. As necessary, site- specific management plans will be prepared in accordance with all applicable federal, state, and local regulations.

14.4.5.2 E-DESIGNATIONS

Each of the lots on the project site, with the exception of Lots 41 and 63, are E-Designated. The E-(Environmental) Designation would ensure that sampling and remediation take place on the subject properties and would avoid any significant impacts related to hazardous materials at these locations. The E-designations require that the owner of the sites conduct testing and sampling following set protocols, to the satisfaction of city agencies. In addition, the owner must remediate when appropriate.

The EDR database identified 54 E-Designation listings within a ⅛ mile radius of the project site. The listings are associated with E-designation reference No. E-39 (Underground Gasoline Storage Tanks Testing Protocol) and E-175 (Underground Gasoline Storage Tanks Testing Protocol).



Source: OASIS NYC, 2019; STV Incorporated, 2019.

Figure 14-3

Potential Areas of Environmental Concern

Reconstruction and Expansion of Jamaica Bus Depot

14.4.5.3 CURRENT AND HISTORIC AUTO STATIONS

Several current auto repair facilities were located in areas surrounding the project site, primarily on the east side of Merrick Boulevard, which is hydraulically cross-gradient of the proposed JBD. Additionally, the EDR database identified 26 historic auto station facilities within one-quarter mile of the project site in hydraulically up-gradient or cross-gradient locations. The gas stations currently and/or historically located up-gradient or cross-gradient of the project site are considered off-site RECs. Any previous releases from the USTs, associated piping or operations at the historic gas stations are a potential source for petroleum contamination in the soil, soil gas and the groundwater beneath these sites.

14.4.5.4 DRYCLEANERS AND HISTORIC DRY CLEANERS

The EDR database identified one historic dry cleaner within one-half mile of the project site, which is hydraulically down-gradient of the proposed JBD. No currently registered dry cleaners were identified within the one-half mile search radius. Any cleaning solvents released during the operation of the drycleaners or historic dry cleaners could have affected the soil gas and/or groundwater beneath the existing JBD and/or the adjacent properties.

14.4.5.5 PROPERTIES IN THE VICINITY

Three solid waste management facilities (i.e., two facilities that generate spent halogenated solvents and one facility that historically generated cadmium, lead, and waste oils) with violations are located in close proximity to the project site. Additionally, one active gasoline filling station and several historical gasoline filling stations were located in areas surrounding the project site.

The surrounding area historically included a blacksmith, a sign painters' shop, auto painting shops, iron works, auto and truck repair facilities, carpet cleaners, paint shops, parking lots, a junk yard, and gasoline filling stations with USTs. Facilities where petroleum and/or hazardous materials may have been used in operations are considered RECs/VECs. Any releases of petroleum from ASTs or USTs could have affected the soils, soil gas and/or groundwater in the area.

14.4.5.6 SUBSURFACE UTILITIES

Utilities located within areas of proposed excavation may have asbestos insulation. Other utilities may contain LBP, PCB, and mercury.

14.5 ENVIRONMENTAL IMPACTS

14.5.1 THE FUTURE WITHOUT THE PROPOSED ACTION (NO-BUILD CONDITION)

The No-Build Alternative assumes that the existing JBD will be continued to be used in its existing condition. Aside from the proposed project, there are no redevelopment/construction plans for this property; therefore, current conditions will remain as the same as they exist today. As previously noted, the pump-and-treat system on the existing depot property is no longer operational due to the change in the water table.

14.5.2 THE FUTURE WITH THE PROPOSED ACTION

The assessment of potential impacts assumes that the proposed JBD reconstruction will comply with applicable federal, state, and local regulations and other MTA NYCT protocols regarding the abatement, handling, transport, and disposal of contaminated materials. The relevant governing agencies and regulations are discussed in **Chapter 20.0: Commitments to Mitigating Adverse Effects**. The proposed JBD reconstruction will be performed as described in **Chapter 17.0: Construction Methods and Activities**.

The implementation of the proposed JBD Candidate Alternatives has the potential to expose contaminated soil, soil gas, and/or groundwater during excavation activities.

A Phase II Environmental Site Investigation will be conducted prior to construction to delineate the hazardous materials on the project site, and lead/asbestos surveys will be conducted on the portions of the site that would be excavated for the proposed JBD; any asbestos found would be abated when uncovered. These surveys will define the locations and quantity of contaminated materials present. *Contaminated materials identified during these surveys would be removed and/or managed during the construction phase.*

To mitigate potential health concerns, an analysis of each site of proposed excavation would be undertaken by the selected construction contractor, prior to full excavation. This would be performed pursuant to MTA NYCT Standard Specification 12R, which is applicable to contaminated C&D debris and contaminated water. This investigation would include subsurface investigations, on-site surveys, testing, and reviews of records relating to the use, storage, disposal, or transport of hazardous materials. The work would include soil sampling and groundwater sampling at the site. Temporary monitoring wells would be installed to obtain samples of groundwater for laboratory analysis. A subsurface investigation report would be prepared and used to develop construction plans. The objective of these analyses would be to identify, to the extent possible, the contaminants likely to be encountered in each area of excavation.

Petroleum storage tank removal and closure plans, along with soil, soil gas, and groundwater management plans, would be developed prior to the initiation of construction activities. During construction, any unusual conditions that may indicate unexpected contamination, such as odors or discoloration of the soil or groundwater, would be evaluated to ensure that the contaminated materials are properly handled. Contaminated materials encountered during construction would be removed, stored and disposed of in accordance with all applicable federal and state regulations and in compliance with the soil or groundwater management plan. Dust generated from construction activities or excavation would be suppressed by spraying water during dry weather, cleaning vehicles and other equipment prior to leaving the work site, placing gravel on areas of exposed soil used for vehicle activities, and sequencing construction activities to minimize areas of exposed soil.

As with any major construction project in an urban area, care will be taken to control the risks that could be associated with the mobilization of contaminants in soil, soil gas, groundwater, building materials, and equipment. *In particular, it would be necessary to prevent or control exposure to airborne contaminants to construction workers, passersby, nearby properties and workers in the project area.* Many contaminants are bound to soil and are relatively immobile, but they may be transported via airborne dust during construction (see **Chapter 5.0: Air Quality**); others may be transported through air or water. The potential hazards associated with contaminated materials at the project site are discussed below in **Section 14.6: Summary of Adverse Impacts and Mitigation Measures**.

14.6 SUMMARY OF ADVERSE IMPACTS AND MITIGATION MEASURES

All work associated with the construction of the new depot implementing any of the alternatives would be conducted under the provisions of the **CEPP** and **EABP** which would have both project-wide and site-specific components. Elements of the CEPP would include: **Health and Safety Plans (HASPs)**; Soil and Contaminated Materials Management Plans; and, Groundwater Management Plans. The HASPs would be prepared to protect both the workers and the public who may be near the project during the construction phase. *The provision of the HASPs would be mandatory for contractors and subcontractors* engaged in on-site construction activities. Contaminated materials encountered during construction would be removed, stored, transported, and disposed of in accordance with applicable federal and state regulations, including the RCRA, and TSCA. All on-site project personnel would be required to follow all applicable local, state, and OSHA construction codes and regulations.

Contaminated materials will be identified and managed prior to construction. Once construction activities are completed, remaining subsurface contaminated materials will be contained using an engineering control such as pavement or other barriers, and would not present a hazard to the public or MTA NYCT workers.

15.0 INFRASTRUCTURE, ENERGY, AND SOLID WASTE

15.1 INTRODUCTION

This chapter describes the potential impacts that the construction and operation of the proposed expansion of the Jamaica Bus Depot would have on infrastructure, energy consumption, and solid waste production and disposal. The analysis compares the construction and operation of the three Candidate Alternatives against the prevailing future conditions for the analysis year 2025.

15.2 SUMMARY AND CONCLUSIONS

The water supply system, sewer system, solid waste disposal, and energy consumption of the existing JBD were assessed and the anticipated water demand, production of wastewater, and production of solid waste for each Candidate Alternative was estimated. ***Candidate Alternative A shows the lowest demands for water, wastewater production, and solid waste production, whereas Candidate Alternative D shows the highest demands and production***.

Candidate Alternative A is projected to result in approximately 33,000 cubic yards of material to be removed from the site. Construction debris is anticipated to be higher for Candidate Alternatives B and D because these alternatives involve construction of larger buildings than Candidate Alternative A. *The amount of construction debris generated by each Candidate Alternative is not expected to result in significant adverse impacts*.

Energy consumption with the Proposed Action is expected to increase as the total floor area of the building would increase as compared to the existing JBD. ***The site currently consumes approximately 32 billion BTUs of energy per year. Under the Proposed Action, the site is expected to consume: approximately 17.7 BTUs per year for Candidate Alternative A; approximately 37.4 BTUs per year for Candidate Alternative B; and, approximately 50.5 BTUs per year for Candidate Alternative D. Providing energy to the proposed new depot would not have an adverse impact on the utility system serving the area. T***his increase in energy is considered minimal in terms of the annual energy demands of the surrounding area and New York City as a whole. ***Based on conversations with Con-Edison, the proposed JBD can accommodate up to 60 electric buses on the opening day of the reconstructed JBD***. *In the future without the Proposed Action, the current operations of the JBD would continue and there would be no predicted impacts to the future infrastructure*.

15.3 METHODOLOGY

Evaluation of potential infrastructure, energy, and solid waste impacts associated with the Proposed Action involved an evaluation of the infrastructure, energy, and solid waste disposal needs of the bus depot. This evaluation was based on early conceptual engineering designs developed for the Candidate Alternatives. Potential energy, infrastructure, and solid waste impacts of the Proposed Action were evaluated based on typical requirements of similar MTA NYCT facilities as well as on current site needs.

15.4 AFFECTED ENVIRONMENT

15.4.1 WATER SUPPLY

NYCDEP operates and maintains the City's potable water system, which begins in the Delaware, Catskill, and Croton watersheds in upstate New York. These three watersheds constitute an area of almost 2,000 square miles. From these watersheds, water is carried to the City via a conveyance system consisting of aqueducts and tunnels running at depths of 200 to 800 feet below ground. While not presently utilized, groundwater was previously used as a source of drinking water in southeastern Queens. From 1887 to 1996, the privately-owned Jamaica Water Supply Company (JWS) operated a group of wells that served the communities of southeastern Queens and portions of Nassau County. In 1996, New York City purchased the Queens portion of the JWS and took responsibility for the delivery of drinking water to those communities served by the groundwater wells. After acquiring the JWS wells, the NYCDEP renamed the group of wells the groundwater supply system. Located in southeastern Queens, the groundwater supply system consists of 68 supply wells at 44 well stations and several water storage tanks. Most of the system has not operated in more than 14 years, but it is available to augment the upstate surface water sources. When online, residents within the service area received groundwater or a mix of groundwater and surface water depending on demand and supply availability. None of the 68 wells which comprise the groundwater supply system are currently or were used for drinking water distribution in 2018 (most recent date noted in NYCDEP online records).

The City's water system consists of a grid of trunk mains (large pipes) that bring water to residential and non-residential consumers. Trunk mains vary in size, with the largest mains 60 inches in diameter. Distribution laterals (small 2-inch pipes) bring water to individual users.

15.4.2 SEWER SYSTEMS

NYCDEP operates the City's sewage system which is a combined sewer overflow (CSO) system for stormwater and wastewater in most of the city. The project site, however, is located in an area with separate sewer systems in which *sanitary waste is carried to the Jamaica Wastewater Treatment Plant* in Queens while *stormwater is channeled directly to local waterways.*

15.4.3 SOLID WASTE

The New York City Department of Sanitation (DSNY) collects, transports, and disposes of municipal solid waste generated by residences, non-profit institutions, tax exempt properties, City agencies, and other public sites and operations such as street trashcans, lot cleaning, and street sweepers. Approximately 12,000 tons of solid waste is collected daily by DSNY. Private carters collect solid waste from commercial establishments and handle approximately 10,000 tons per day. All refuse is transported to permitted solid waste disposal facilities in accordance with the City's Solid Waste Management Plan. Solid waste is typically hauled to out-of-City facilities.

15.4.4 ENERGY CONSUMPTION

Electricity is generated and delivered to New York City and most of Westchester County by Con Edison as well as various independent power companies. Electrical energy in New York City is drawn from a variety of sources that originate both within and outside the City. These include non-renewable sources, such as oil, natural gas, and coal fuel; and renewable sources, such as hydroelectricity and, to a much lesser extent, biomass fuels, solar power, and wind power. Electricity consumed in New York City is generated in various locations, including sites within New York City, locations across the Northeast, and places as far away as Canada.

In 2014, approximately 56 billion kilowatt hours (KWH), or 192 trillion BTUs were delivered in Con Edison's service area. In addition, Con Edison supplied approximately 155 trillion BTUs of natural gas and approximately 23 billion pounds of steam, which is equivalent to approximately 24 trillion BTUs. Overall, approximately 371 trillion BTUs of energy are consumed within Con Edison's New York City and Westchester

County service area annually. The existing Jamaica Bus Depot consumes approximately 31.9 billion BTUs per year, including electricity and heating.

15.5 IMPACTS AND MITIGATION

15.5.1 FUTURE WITHOUT THE PROPOSED ACTION

Under the No-Build Alternative, the existing Jamaica Bus Depot would continue its current operations, and there would be no impacts to infrastructure. Under the No-Build Alternative, the Depot's current demand for energy, water, sewer, and solid waste disposal capacity would remain the same. Existing utilities would not be affected.

15.5.2 THE FUTURE WITH THE PROPOSED ACTION

The assessment of potential impacts assumes that construction and operation of the bus depot extension would comply with applicable Federal, State, and local regulations concerning the impacts to utilities and energy, solid waste, and infrastructure. Relevant regulations include those which control impacts to water, sewer, gas, steam, electric, and telecommunications services, as well as the effects on solid waste generation, building demolition, and post-construction street restoration. Applicable regulations would include the Clean Air Act, regulations regarding telecommunications, the State Water Pollution Control Act, and the City's Rules and Regulations Relating to the Use of Public Sewers, among others. In addition, the bus depot would be required to comply with the New York State Conservation Code, which requires that new and rehabilitated buildings (both public and private) be designed to ensure adequate thermal resistance to heat loss and infiltration. In addition, it also provides requirements for the design and selection of mechanical, electrical, and illumination systems. As previously discussed in **Chapter 3.0: Alternatives,** the MTA NYCT would establish a Preferred Alternative from among three Candidate Alternatives that have been developed to provide a reasonable range of depot design alternatives. The three Candidate Alternatives are: Alternative A – Principally Open Parking; Alternative B – Partially Open Parking; and, Alternative D – Principally Enclosed Parking.

15.5.2.1 WATER SUPPLY

The site is currently served by the New York City water supply system. The anticipated demand for water per day is 19,470, gallons per day for Candidate Alternative A (15 gpd per employee with 658 projected employees and 40 gpd per vehicle for bus washes with 240 projected buses being washed once daily at the depot). The anticipated demand for water per day is 20,065 gallons per day for Candidate Alternative B (687 projected employees and 244 projected buses), and 21,455 gallons per day for Candidate Alternative D (721 projected employees and 266 projected buses).

15.5.2.2 SEWER SYSTEMS

In addition to the bus wash and water requirements addressed above, the project is estimated to produce an additional 9,870 gallons per day of wastewater for Candidate Alternative A (15 gpd per employee and a projected 658 employees), 10,305 gallons per day of wastewater for Candidate Alternative B (15 gpd per employee and a projected 687 employees), and 10,815 gallons per day of wastewater for Candidate Alternative D (15 gpd per employee and a projected 721 employees).

15.5.2.3 SOLID WASTE

On-site operations are estimated to generate approximately 26.0 tons of solid waste per week for Candidate Alternative A (79 pounds per week per employee with a projected 658 employees), 27.1 tons of solid waste per week for Candidate Alternative B (79 pounds per week per employee with a projected 687 employees), and 28.5 tons of solid waste per week for Candidate Alternative D (79 pounds per week per employee with a projected 721 employees).

Construction and demolition debris as well as operational solid waste would be managed in accordance with MTA NYCT's Asset Recovery program. Fill material removed from the project site during construction would be disposed of at a licensed facility as per NYSDEC guidelines. Excavation is anticipated to result in up to 45,000 cubic yards of material to be removed from the site. The methods to manage and dispose of this material would be developed in coordination with NYSDEC prior to construction.

Construction debris is anticipated to be slightly higher for Candidate Alternatives B and D because these alternatives involve construction of larger buildings than Candidate Alternative A. The amount of construction debris for each alternative, however, is not expected to generate significant adverse impacts.

15.5.2.4 ENERGY CONSUMPTION

The energy requirements for the proposed new depot would be higher than those of the existing depot, because of the increase in total floor area compared to the existing building. However, the increment in energy consumption that the proposed JBD would represent over the existing depot, as well as the overall energy demand for the proposed new building, are considered minimal in terms of the annual energy demands of the area surrounding the project site and New York City as a whole. Con Edison stated that the existing distribution network could support up to 60 electric buses at the proposed JBD. In addition, in accordance with MTA NYCT standard specifications, the proposed JBD will utilize two low emission/low nitrogen oxide (Low NOx) boilers. It is anticipated that these boilers will run a one-half capacity, except for emergency situations, where the boilers may run at full capacity.

The site currently consumes approximately 32 billion BTUs of energy per year. Under the Proposed Action, the site is expected to consume: approximately 17.7 BTUs per year for Candidate Alternative A; approximately 37.4 BTUs per year for Candidate Alternative B; and, approximately 50.5 BTUs per year for Candidate Alternative D. Providing energy to the proposed new depot would not have an adverse impact on the utility system serving the area.

16.0 SAFETY AND SECURITY

16.1 INTRODUCTION

This chapter **identifies safety and security considerations** related to the design, reconstruction, and operation of the proposed Jamaica Bus Depot (JBD). *The construction and operation of the proposed JBD would be implemented in compliance with all relevant federal, state, and City codes, policies, and guidelines, including the Building Code of New York State (BCNYS), the Building Code of the City of New York (BCCNY), the National Fire Protection Association (NFPA) guidance, New York City Transit (NYCT) Design Guidelines and, the NYCT "Unified Buses Planning and Design Guidelines." The safety procedures and security systems that would be implemented to protect the depot site, physical assets, transit patrons, employees, and the general public are described below.*

16.2 SUMMARY AND CONCLUSIONS

Construction and operational safety and security measures would be determined during design development and implemented for the proposed JBD during construction and in coordination with the MTA NYCT Security Development for the depot's perimeter, exterior, interior, equipment and system related to the proposed JBD. All safety and security measures would comply with all relevant federal, state, and local safety regulations. *Construction safety and security measures* to be implemented include the development of an overall Health and Safety Program. *Operational safety and security measures* to be implemented involve coordination with appropriate public safety agencies for creating safety and security plans for the proposed JBD, the continued training of staff and contractors on site, and adherence to state and city building codes and regulations. *Physical security means and methods* will include, at minimum, masonry walls at perimeter property lines and neighbor friendly lighting. With *these measures in place, the proposed JBD is not expected to result in adverse impacts to safety and security* during the operational phase.

Buses departing the depot and destined to the south would likely depart the proposed JBD via the Merrick Boulevard driveway located midblock between 107th Avenue and Tuskegee Airmen Way. NYCT anticipates using flaggers at the Merrick Boulevard driveway to enhance safety and reduce conflicts between pedestrians on the sidewalk and buses at the depot exit. Note that buses may also exit onto Merrick Boulevard from each of the eighteen maintenance bays and pedestrians would be protected by NYCT flaggers if these movements should occur.

16.3 CONSTRUCTION AND OPERATIONAL SAFETY AND SECURITY

MTA NYCT routinely trains its staff and contractors on aspects of the MTA NYCT's safety program that are pertinent to individual staff duties, such as bus safety, emergency communications, fire exit procedures, and security.

As with other MTA NYCT projects, the bus depot design would reflect safety and security considerations. Operational safety measures would include specific security and control and communication systems directed toward maintaining a safe environment during every day and emergency situations. ***The proposed JBD would be designed, built, and operated to comply with all relevant federal, state, and local safety regulations, including the New York State Uniform Fire Prevention and Building Code; American Disabilities Act (ADA) regulations; OSHA regulations; Federal Transportation Authority (FTA) guidelines; and applicable NFPA guidelines and standards; and, the NYCT "Unified Buses Planning and Design Guidelines."***

In conjunction with the facility's physical design, MTA NYCT would coordinate with appropriate public safety agencies such as NYPD and FDNY to develop detailed safety and security plans for all areas of the proposed facility during construction and operation of the project.

In addition, NYCT has regulations to ensure the safety and security of employees, transit riders, and the general public. These regulations are contained in NYCT's Safety Policy/Instruction 10.1.2. NYCT also has a System Safety Program Plan that governs all NYCT facilities, including the proposed JBD. NYCT staff and contractors are trained in all appropriate safety procedures under this plan.

As a result of the above, the bus depot is not expected to result in adverse impacts to safety and security during the construction and operational periods.

The *Unified Buses Planning and Design Guidelines* notes that controlling access to the bus depot is necessary to protect the bus fleet, equipment, and personnel. This security is typically provided through the use of perimeter fencing or masonry walls. The minimum height requirement for a security wall or fence is twelve feet. *The conceptual designs for the proposed JBD* include 20-foot-high security/sound barrier walls, which is similar to the height of the existing wall that borders the properties along 165th Street. One exception is Candidate Alternative A, which would include a 31-foot-high security/sound barrier wall along the 165th Street side of the property.

16.3.1 BUILDING/FIRE CODE AND SYSTEM REQUIREMENTS

The proposed JBD would adhere to all applicable New York State and New York City Building Code regulations or guidelines, in addition to applicable standards and codes specified by the NFPA and NYCT Security Requirements Guidelines.

16.3.2 CODE AND STANDARD REPORT

An assessment of the BCNYS and NFPA guidelines has been initiated by MTA NYCT to compare the applicability and requirements of both regulations, including an evaluation of fire and life safety requirements of each code and the relevance of those requirements to the proposed JBD. The following codes have been identified as relevant to the Proposed Action:

- *NFPA* (multiple codes and standards) – NFPA standards provides guidance for the fire protection of the bus depot.
- *Building Code of New York State (BCNYS)* – The BCNYS is the code that dictates principal requirements applied to bus support facilities.
- *Building Code of the City of New York (BCCNY)* – Although not mandatory, NYCT has a Memorandum of Understanding with NYCDOB to attempt adherence to this set of requirements.
- *NYCT Design Guidelines* – These guidelines address fire and safety in new and existing facilities and are used in the development of fire and life safety strategies. Security requirements are also identified in the Guidelines. In addition, many of these guidelines provide long-time, proven design requirements in the area of structures and electrical. The latest bus depot planning and design guidelines will be followed.

16.4 IMPACTS AND MITIGATION

16.4.1 THE FUTURE WITH THE PROPOSED ACTION

The proposed JBD would be designed, built, and operated to comply with all relevant federal, state, and local safety regulations, including: the New York State Uniform Fire Prevention and Building Code; ADA regulations; OSHA regulations; and, applicable NFPA guidelines and standards. In addition, NYCT has regulations and Design Guidelines to ensure the safety and security of employees, transit riders, and the general public. These regulations are contained in NYCT's Safety Policy/Instruction 10.1.2. NYCT also has a System Safety Program Plan that governs all NYCT facilities, including the proposed JBD. NYCT staff and contractors are trained in all appropriate safety procedures under this plan. *During construction,* written Safe Work Plans will be developed identifying potential hazards, as well as safety measures to be implemented for the protection of workers on the project site and the general public in the surrounding vicinity.

Buses departing the depot and destined to the south would likely depart the proposed JBD via the Merrick Boulevard driveway located midblock between 107th Avenue and Tuskegee Airmen Way. NYCT anticipates using flaggers at the Merrick Boulevard driveway to enhance safety and reduce conflicts between pedestrians on the sidewalk and buses at the depot exit. Note that buses may also exit onto Merrick Boulevard from each of the eighteen maintenance bays and pedestrians would be protected by NYCT flaggers if these movements should occur.

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17.0 CONSTRUCTION METHODS AND ACTIVITIES

17.1 INTRODUCTION

This chapter describes construction activities for the proposed JBD and the potential for those construction activities to result in adverse environmental impacts. Whereas the analyses in Chapters 4 through 16 of this environmental assessment examine the potential for the operations of the proposed JBD to result in adverse environmental impacts, ***this chapter focuses on the potential for adverse impacts as a result of construction activities associated with the proposed JBD.***

The ***duration and intensity*** *of construction activities* were considered in evaluating the potential for adverse environmental impacts. As stated in the *City Environmental Quality Review (*CEQR*) Technical Manual*, determination of the significance of ***construction impacts and need for mitigation is generally based on the duration and intensity of the impacts***. Construction impacts are usually important when construction activity could affect traffic conditions, hazardous materials, archaeological resources, the integrity of historic resources, community noise patterns, and air quality conditions.

According to the *CEQR Technical Manual*, ***construction duration is often broken down into short-term (less than two years) and long-term (two or more years)***. When the duration of construction is expected to be ***short-term***, any impacts resulting from such short-term construction generally do not require detailed assessment. However, the intensity of construction activities may indicate that a project's construction activities, even if short-term, warrant detailed analysis in a specific technical area. For example, further analysis may be warranted if a project's construction period would be short, but construction activities that otherwise would take place over a longer period have been compressed into this shorter timeframe, and therefore increasing the intensity. As described below, *construction of the proposed JBD would be expected to last approximately four years (I.e. l) and requires a detailed assessment.*

To focus the detailed assessment, a preliminary assessment of potential construction impacts was prepared in accordance with the guidelines of the *CEQR Technical Manual* in order to determine *which resource categories may be impacted by construction.* The preliminary assessment considers: *construction stages and activities* (including number and types of equipment and the anticipated duration of each stage or activity); the *number of daily construction vehicles and deliveries* for each stage and activity; and, the *number of daily construction workers* for each stage and activity. *The findings of the preliminary assessment identified the need to undertake more detailed construction* impact assessments for *transportation, air quality, noise and vibration*.

To conduct *detailed assessments,* this chapter describes the City, state, and federal regulations and policies that govern construction, followed by the conceptual construction schedule and the types of activities likely to occur during construction. The types of construction equipment are also discussed, along with the expected number of workers and truck deliveries. Finally, the *potential impacts from construction activity are assessed and the methods that may be employed to avoid significant adverse construction-related impacts are presented.*

Note that the three Candidate Alternatives have been *conceptually developed for the proposed action* (as described in previous chapters), and their respective construction staging planned, so that *the existing JBD would remain operational* (i.e., capable of servicing buses) *throughout the construction period*. Although it may be possible to store some buses on the project site during less intensive periods of construction, there remains *the need to store approximately 170 buses off-site throughout the duration of construction* for all three Candidate Alternatives. Thus, a critical component of the Proposed Action is the need to rely on off-site/off-street bus storage throughout the construction period and a temporary bus storage location(s) must be identified in advance of construction. Further, because the construction period would be expected to last approximately four years and the temporary bus storage would require moving buses between the depot and the off-site parking location(s), therefore the related impacts/effects of travel and use of the off-site location(s) would also need to be analyzed.

NYCT has determined that the off-site bus storage must be sited within an approximate five-mile radius of the JBD. This radius is defined according to the need to provide timely maneuvering of buses between the depot and the temporary bus storage location(s), thus minimizing the logistical and economic complications of bus "deadheading" and employee movement, and without compromising regular bus services.

To date, NYCT has not identified a suitable candidate location(s) for the temporary bus storage. When a suitable location is identified, NYCT will provide supplemental environmental documentation prior to acquisition of the location(s).

17.2 SUMMARY AND CONCLUSIONS

Construction activities for the proposed JBD—consisting of demolition of the existing buildings along Merrick Boulevard, construction of the proposed depot, and demolition of the existing JBD—would begin in 2021 and have a total duration of approximately 42 to 48 months, depending on the Candidate Alternative selected as the Preferred Alternative.

The three Candidate Alternatives have been developed, and their respective construction staging planned, so that *the existing depot facility would remain in use during the course of construction, where buses can be serviced throughout the construction period.* Construction of the proposed JBD would occur *in two primary phases*, described below.

Phase I would be construction of Building A and the Administrative Building. Building A would be the new depot structure that would be constructed on the eastern portion of the JBD property (bordered by Tuskegee Airmen Way to the north, Merrick Boulevard to the east, 107th Avenue to the south, and the existing JBD to the west). Once constructed, Building A would provide all of the maintenance, fueling, and washing operations that are currently provided in the existing JBD.

The Administrative Building would be a three-story office-building type structure that would be constructed on the southeast corner of Tuskegee Airmen Way and 165th Street. This Administrative Building would be connected to Building A at the second and third floors during Phase II of construction.

All of the Phase II construction would occur within the footprint of the existing JBD building. Once Building A is complete and operational, all bus maintenance, fueling, and washing activities would be transferred over to Building A, which would then allow for demolition of the existing JBD building. For all Candidate Alternatives, Phase II construction activities would include connecting the Administrative Building to Building A. As noted below, other construction activities would vary based on the selected Candidate Alternative:

- ***Candidate Alternative A – construction of an outdoor bus parking facility and a 31-foot-high security/ sound barrier wall along the 165th Street side of the property; and, a 20-foot security/sound barrier wall along 107th Avenue.***
- ***Candidate Alternative B – construction of an extension to Building A that would provide two levels of enclosed parking for approximately 80 SBEs which, combined with the 229 SBEs constructed in Building A during Phase I of construction, would provide a total of 309 SBEs. Candidate Alternative B also includes the installation of a 20-foot-high security/sound barrier wall along the 165th Street and 107th Avenue sides of the property.***

- ***Candidate Alternative D – construction of a larger, two-level, 190,000 sf enclosed parking facility for approximately 230 SBEs and installation of a 20-foot-high security/sound barrier wall along the 165th Street and 107th Avenue sides of the property.***

17.2.1 TRANSPORTATION

17.2.1.1 TRAFFIC

Average daily construction worker and truck activities were projected for the full duration of construction. *Construction worker and truck trips were estimated to peak in the second (Q2) and third (Q3) quarters of 2022, during Phase I of construction.* The estimated daily vehicle trips for this peak period were distributed to various hours of the day based on projected work shift allocations and conventional arrival/departure patterns for construction workers and trucks. Vehicles generated by construction activities were then assigned to the street network to determine the increment of construction-related trips. Trucks making deliveries to the project site were assigned using NYCDOT designated local truck routes in the area, which include Merrick Boulevard, 168th Street, and Liberty Avenue.

The analysis of the eight study intersections for the construction AM and PM peak hours indicated *that all movements and intersections would continue to operate at an acceptable level of service (LOS) in the 2022 construction period;* ***therefore, no significant adverse traffic impacts from construction-related trips are expected.***

17.2.1.2 TRANSIT

According to the thresholds specified in the *CEQR Technical Manual*, detailed transit analyses are required if a proposed action is projected to result in an increase of 200 or more passengers at a single subway station or on a single subway line or if a proposed action would result in 50 or more bus passengers being assigned to a single bus route (in one direction) during the AM and PM peak hours.

Construction worker travel demand is expected to generate a total of approximately 50 transit trips in both the 6-7 AM and 4-5 PM construction peak hours. Given that these transit trips would be served by multiple bus routes, no single bus route would experience an increase of 50 or more passenger trips; therefore, detailed analysis of transit conditions are not required, and ***the proposed JBD would not result in any significant adverse transit impacts.***

There is a bus stop located on Merrick Boulevard adjacent to the proposed JBD that serves the Q4, Q5, Q84, Q85, and N4 bus routes. This bus stop may need to be relocated during construction; NYCT will coordinate any bus stop relocations with the contractor and NYCDOT Office of Construction Mitigation and Coordination (OCMC).

17.2.1.3 PEDESTRIANS

During the 2022 (Q2) peak analysis period for construction travel demand, it is estimated that there would be approximately 280 construction workers on-site daily. Approximately ten percent of these workers would be expected to walk to the project site, in addition to the 22 percent whom would be expected to travel to the project site by transit, walking to and from area subway stations and bus stops. Therefore, construction worker travel demand on area sidewalks and crosswalks is expected to total approximately 72 trips in both the 6-7 AM and 4-5 PM construction peak hours

As per the criteria established in the *CEQR Technical Manual*, quantitative pedestrian analyses are warranted if a proposed project results in more than 200 new peak hour pedestrian trips. Based on the increase of 72 new walk trips during construction, a detailed analysis of pedestrian conditions is not warranted, and construction of the proposed action ***would not result in any significant adverse pedestrian impacts***.

It should be noted that appropriate protective measures for ensuring pedestrian safety surrounding the construction site would be implemented in accordance with NYCDOT and New York City Department of Buildings (NYCDOB) requirements.

17.2.1.4 PARKING

Construction workers traveling to the site would increase the on-street parking demand by 173 vehicles, which would create a parking shortfall of 160 spaces. This shortfall is not be considered a significant impact for this project due to the availability and proximity of public transit in the area. As such, construction activities during the 2022 peak construction traffic period ***would not result in a significant adverse parking impact.***

17.2.2 AIR QUALITY

Construction-related increases in both mobile and stationary source emissions of carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and particulate matter less than 10 microns in diameter (PM_{10}) ***would not result in any exceedances of the National Ambient Air Quality Standards (NAAQS) or the NYSDEC*** *de minimis* ***impact criteria*** at any of the studied sensitive receptors. *In order to predict worst case future conditions*, potential impacts related to the proposed JBD were *analyzed for the long-term peak period of construction emissions (2021) and the short-term peak period of construction emissions (2023)* for on-site stationary sources. The analyses included the implementation of MTA NYC transit construction performance requirements.

17.2.3 NOISE AND VIBRATION

17.2.3.1 NOISE

Noise levels at the existing depot were assessed at representative locations (I.e. R1, R2, R3), as shown in **Figure 17-1: Noise Monitoring & Assessment Locations**. Generally, these locations were chosen based on: their ability to represent numerous noise sensitive sites in the area (such as residences); their proximity to the proposed limits of construction; and, the potential for increases in future noise levels.

Projected noise levels for construction equipment related to all of the Candidate Alternatives would not exceed the FTA noise thresholds at any noise sensitive locations adjacent to proposed construction limits. While at times, noise levels may be elevated above ambient noise levels, *these noise increases would be minimized by strict adherence to the revised 2005 NYC Noise Code and prevention measures that would be identified in the construction contracts*. In addition, predicted worst-case noise levels for both Phase I and Phase II of construction would last for only a few months and because the sources of noise would migrate throughout the construction areas, the effects of construction noise on the sensitive receptors would change depending on the location of particular noise sources. Note also that noise-generating activities would be intermittent and of short-term durations. Finally, *the phasing of the JBD construction would include the installation of a security/sound barrier walls that would further reduce noise levels (see Sections 17.4.2.5 through 17.4.2.7), such as the predicted Phase I noise levels for some residents along 165th Street and Phase II noise levels along the east side of Merrick Boulevard.*

Source: STV Incorporated, 2019.

Figure 17-1

Noise Monitoring & Assessment Locations

Reconstruction and Expansion of Jamaica Bus Depot

Noise Monitoring & Assessment Locations

The MTA NYCT construction contract specifications would require the contractor to meet the requirements set forth in the NYCDEP Noise Control Code (e.g., Construction Noise Mitigation Plans). Based on these requirements, the contractor must implement and adhere to the noise mitigation plan measures as required.

17.2.3.2 VIBRATION

Results of the vibration study indicate that projected vibration levels for construction equipment near sensitive receptors adjacent to the construction zones would not exceed the FTA damage criteria of 0.20 ips for the wood framed residential buildings facing the western edge of the construction zone. In addition, vibration criteria **would not be exceeded at the Allen Cathedral Senior Center building.** *However, damage from vibration could potentially occur at one residential building at 104-09 165th Street where the northern façade of the house would be approximately three feet from the JBD construction* ***zone***. In addition, damage from vibration could potentially occur at some of the backyard garages of homes along 165th Street. For the house at 104-09 165th Street and the smaller garage structures, MTA NYCT would use vibration control measures to minimize, to the extent possible, the vibration levels for all properties near the construction site.

The FTA vibration annoyance criteria of 72 VdB (vibration decibels) ***would be exceeded at properties within approximately 80 feet of the construction zones*****. Exceedances would occur at some residential buildings along 165th Street and along 107th Avenue at the Allen Cathedral Senior Center**. However, these activities would be relatively short and intermittent, and the sources of vibration would migrate throughout the larger construction zone. All efforts would be made by the contractor to *schedule these types of activities during the least intrusive times.* In addition*, the contractor would inform the occupants of adjacent buildings in advance* before they proceed with work associated with equipment such as a jackhammer or backhoe.

17.2.4 SOCIOECONOMIC CONDITIONS

According to the *CEQR Technical Manual*, construction impacts to social and economic conditions are possible if the project would entail construction of a long duration (i.e., more than two years) that could affect access to and thereby viability of a number of businesses and if the failure of those businesses has the potential to affect the economic conditions of the community. This, in turn, could affect neighborhood character. Because most construction activities would take place within the project site, which occupies a full-block site that does not contain any neighboring businesses, c*onstruction activities associated with the proposed project would not: significantly block or restrict access to any facilities in the area; affect the operations of any nearby businesses; or, obstruct thoroughfares used by customers or businesses.* Therefore, *no adverse impacts to the economic viability of local businesses* would be anticipated due to construction.

17.2.5 HISTORIC AND CULTURAL RESOURCES

According to the guidelines in the *CEQR Technical Manual*, the assessment of construction impacts on historic and cultural resources considers the possibility of physical damage to any architectural or archaeological resources identified in the historic and cultural resources assessment. A construction assessment is not warranted if a project would not involve construction activities within 400 feet of a historic resource.

As presented in **Chapter 7.0: Historic and Cultural Resources**, there is little to no historic period archaeological sensitivity at the JBD given the level of past disturbance and no historic structures are located within the APE. Therefore, construction of the proposed JBD *does not have the potential to result in significant adverse on archaeological or architectural resources*.

17.2.6 CONTAMINATED AND HAZARDOUS MATERIALS

As stated in **Chapter 14.0: Contaminated and Hazardous Materials,** the assessment identified the presence of contaminated soil and groundwater beneath the JBD and suspect asbestos containing materials (ACMs) and lead-based paint (LBP) in the depot structures.

Subsurface contamination includes impacts from the historic petroleum release that is being remediated in accordance with New York State Department of Environmental Conservation (NYSDEC) requirements under NYSDEC Global Consent Order C02-20000101-3341. The remediation activities for this spill are being conducted as a separate project. However, during construction, *the potential exists for construction workers to encounter these contaminated and hazardous materials, temporarily;* however, the MTA NYCT construction specifications would require the contractor to prepare plans (e.g., health and safety plans, emergency action plan, abatement plans, waste management plan, etc.) and work practices that would prevent exposures of hazardous and contaminated materials to construction workers or the public; therefore, *no significant adverse impacts would result from contaminated and hazardous materials.*

17.2.7 NATURAL RESOURCES

As discussed in **Chapter 12.0: Historic and Natural Resources,** the project site contains impervious surfaces, and is located in an urban environment; therefore, there are few plants or animals located in the vicinity of the JBD are minimal. With the proposed JBD, *no adverse impacts to natural resources is expected as no biological resources are present, and there would be no adverse impacts to groundwater or nearby surface water bodies.*

A Stormwater Pollution Prevention Plan ("SWPPP") will be prepared by the contractor, which would include a description and detail of: 1) the erosion and sediment control measures during construction; 2) post-construction stormwater management strategies; and, 3) periodic certifications, inspections, and reporting (if required). With these measures in place, *no significant adverse impacts to wetlands or water resources would result during construction.*

17.2.8 SAFETY AND SECURITY

The proposed JBD would be designed, built, and operated to comply with all relevant federal, state, and local safety regulations, including: the New York State Uniform Fire Prevention and Building Code; ADA regulations; OSHA regulations; and, applicable NFPA guidelines and standards. In addition, NYCT has regulations to ensure the safety and security of employees, transit riders, and the general public. These regulations are contained in NYCT's Safety Policy/Instruction 10.1.2. NYCT also has a System Safety Program Plan that governs all NYCT facilities, including the reconstruction and expansion of the JBD. NYCT staff and contractors are trained in all appropriate safety procedures under this plan. ***During construction, written Safe Work Plans will be developed identifying potential hazards, as well as safety measures to be implemented for the protection of workers on the project site and the general public in the surrounding vicinity.***

17.3 REGULATORY FRAMEWORK

17.3.1 GOVERNMENTAL COORDINATION AND OVERSIGHT

The governmental oversight of construction in New York City is extensive and involves a number of City, state, and federal agencies. **Table 17-1: Construction Oversight in New York City** identifies the main agencies involved in construction oversight and each agency's areas of responsibility. ***The primary***

responsibilities lie with New York City agencies. The *New York City Department of Buildings (NYCDOB)* has the primary responsibility for ensuring that the construction meets the requirements of the New York City Building Code and that buildings are structurally, electrically, and mechanically safe. In addition, NYCDOB enforces safety regulations to protect both construction workers and the public. The areas of responsibility include the enforcement of regulations pertaining to the installation and operation of construction equipment, such as cranes and lifts, sidewalk sheds, and safety netting and scaffolding. ***The New York City Department of Environmental Protection (NYCDEP)*** enforces the New York City Noise Control Code (also known as Chapter 24 of the Administrative Code of the City of New York, or Local Law 113). The NYCDEP Notice of Adoption Rules for Citywide Construction Noise Mitigation (also known as Chapter 28): *approves* Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs); *regulates* water disposal into the sewer system; and, *oversees* dust control for construction activities. The New York City Fire Department

TABLE 17-1: CONSTRUCTION OVERSIGHT IN NEW YORK CITY

Agency	Area(s) of Responsibility
New York City	
Department of Buildings (NYCDOB)	Primary oversight for Building Code and site safety
Department of Environmental Protection (NYCDEP)	Noise, hazardous materials, dewatering, dust
Fire Department (FDNY)	Compliance with Fire Code, tank operation
Department of Transportation (NYCDOT)	Traffic lane and sidewalk closures
New York City Transit (NYCT)	Bus stop relocation; any subsurface construction within 200 feet of a subway
Landmarks Preservation Commission	Archaeological and historic architectural protection
New York State	
Department of Labor (NYSDOL)	Asbestos workers
Department of Environmental Conservation (NYSDEC)	Dewatering, hazardous materials, tanks, Stormwater Pollution Prevention Plan
United States	
Environmental Protection Agency (USEPA)	Air emissions, noise, hazardous materials, toxic substances
Occupational Safety and Health Administration (OSHA)	Worker safety

(FDNY) has primary oversight for compliance with the New York City Fire Code and for the installation of tanks containing flammable materials. The New York City Department of Transportation (NYCDOT) reviews and approves any traffic lane and sidewalk closures and NYCT is responsible for bus stop relocations. The New York City Landmarks Preservation Commission (LPC) approves studies and testing to prevent loss of archaeological materials and to prevent damage to fragile historic structures.

On the state level, the New York City Department of Environmental Conservation (NYSDEC) regulates discharge of water into rivers and streams, disposal of hazardous materials, and construction, operation, and removal of bulk petroleum and chemical storage tanks. The New York State Department of Labor (NYSDOL) licenses asbestos workers. On the federal level, the U.S. Environmental Protection Agency (USEPA) has wide ranging authority over environmental matters, including air emissions, noise emission standards, hazardous materials, and the use of poisons. Much of the responsibility is delegated to the state level. The U.S. Occupational Safety and Health Administration (OSHA) sets standards for work site safety.

17.4 CONCEPTUAL CONSTRUCTION SCHEDULE AND ACTIVITIES

This section presents a description ***of the construction process for the purposes of quantification of environmental-effect-causing activities only***. It is not intended to describe the precise construction methods that may ultimately be used, nor is it intended to dictate or confine the construction process. Actual construction methods and materials may vary, depending in part on how the contractors choose to implement their work to be most cost effective, within the requirements set forth in bid, contract, and construction documents. Construction specifications will require that contractors comply with applicable environmental regulations and obtain necessary permits for the duration of construction. Construction would follow applicable federal, state, and local laws for building and safety, as well as the city noise ordinances.

17.4.1 CONSTRUCTION METHODS AND ACTIVITIES

Construction activities for the proposed action consisting of ***demolition*** of the existing buildings along Merrick Boulevard, ***construction of the new depot, and demolition of the existing JBD***—would begin in 2021 and have a total duration of approximately 42 to 48 months, depending on the Candidate Alternative selected.

The three Candidate Alternatives have been conceptually developed, and their respective construction staging planned, so that the existing depot facility would remain operational (i.e., capable of servicing buses) throughout the construction period. As previously described, although it may be possible to store some buses on the project site during less intensive periods of construction, there remains the need for NYCT to store approximately 170 buses off-site throughout the duration of construction for all three Candidate Alternatives. To date, NYCT has not identified a suitable candidate location(s) for the temporary bus storage. When a location has been identified, NYCT will provide supplemental environmental documentation prior to the acquisition of the location.

The following section provides a description of the typical construction activities that would take place at the project site, including the *type of construction equipment* that would be used and the *methods for material delivery and disposal*. The potential for adverse environmental impacts due to construction activities at the project site is then evaluated in **Section 17.5: Construction Period Impacts**.

17.4.2 TYPICAL CONSTRUCTION ACTIVITIES

Construction of the proposed JBD would occur over a number of years (ranging between 42 and 48 months varying on which Candidate Alternative, is *selected as the Preferred Alternative*), with construction activities and intensities varying, depending upon the *phase* and *stage* of construction underway at a given time. *Construction of the proposed project would consist of two primary phases.*

Phase I would be the construction of Building A and the Administrative Building. Building A would be the new depot structure that would be constructed on the eastern portion of the JBD property (bordered by Tuskegee Airmen Way to the north, Merrick Boulevard to the east, 107th Avenue to the south, and the existing

JBD to the west). Building A would provide all of the maintenance, fueling, and washing operations that are currently provided in the existing JBD. Building A would be designed and constructed as follows for each Candidate Alternative:

- *Candidate Alternative A* – Building A would consist of single-story structure providing 125,000 square feet (sf) of maintenance space on the ground level with rooftop parking.
- *Candidate Alternative B* – Building A would be a two-story structure with rooftop parking on the third level. A total of 125,000 sf of maintenance space would be provided on the first floor and about 120,000 sf of enclosed bus parking on the second level.
- *Candidate Alternative D* – Similar to Candidate Alternative B, Building A for Alternative D would be a two-story structure that provides a total of 125,000 sf of maintenance space on the first floor and about 120,000 sf of enclosed bus parking on the second level. Alternative D would not have parking on the rooftop level.

The Administrative Building would be a three-story office-building type structure that would be constructed on the southeast corner of Tuskegee Airmen Way and 165th Street. This Administrative Building would be connected to Building A at the second and third floors during Phase II of construction.

All of the Phase II construction *would occur within the "footprint" resulting from the demolition of the currently existing JBD building*. Once Building A is complete and operational, all bus maintenance, fueling, and washing activities would be transferred to the new depot, which would then allow for the demolition of the existing depot building.

Following is a general outline of typical construction tasks that would be performed during Phase I.

17.4.2.1 DEMOLITION

Phase I would begin with the demolition of the existing commercial buildings along the west side of Merrick Boulevard between 107th Avenue and Tuskegee Airmen Way. After the buildings are demolished, heavy construction equipment would be transported to the project site. Work performed during this stage of construction would include removal of demolition debris. Equipment that would likely be used during this construction stage includes: backhoes; excavators; dump trucks; and jack hammers. Material delivery to the site would consist of initial equipment for mobilization, and material disposal from the site would consist of removal of demolition debris. All construction subsurface soil disturbance would be performed in accordance with Remedial Action Plans (RAPs) and Construction Health and Safety Plans (CHASPs) approved by the NYSDEC Office of Environmental Remediation (OER) (see **Section 17.4.6 Hazardous Materials**). Typical demolition requires solid temporary walls to be constructed around the building to prevent the accidental dispersal of demolished building materials into areas accessible to the general public. The estimated duration for this stage of construction *is three to five months.*

17.4.2.2 NEW BUILDING FOUNDATION AND UNDERGROUND UTILITIES

The second stage of construction would include preparation of the site for the construction of the building foundation, which would cover the entire Building A site. The current conceptual design anticipates the use of spread footings[25], which is a shallow foundation system that transmits and distributes the column and wall loads of the structure to the soil beneath it. Spread footings are typically constructed using reinforced concrete.

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[25] If NYCT's Contactor determines that steel pile foundations are preferred for depot construction, NYCT will examine and document the potential environmental effects (i.e., noise, vibration) of installing a pile foundation system prior to construction.

Therefore, the equipment that would likely be used during this period includes: concrete trucks; concrete pumping trucks; tractor trailers delivering reinforcing steel bars for the concrete; and, excavators. Below ground storage tanks, stormwater retention systems, and utilities (i.e., electric, gas, water, etc.) would also be installed during this stage. *The stormwater detention equipment* may include retention tanks and/or detention piping. *The other primary material to be delivered during this construction stage would be concrete via the individual concrete mixing trucks* for the spread footings. Contaminated soil excavated during this time would be managed in accordance with the plans prepared by the contractor and accepted by NYCT and properly disposed off-site. The estimated duration of this stage is *approximately nine months.*

17.4.2.3 ERECTION OF SUPERSTRUCTURE

The next stage of construction would include *erection of the superstructure for Building A*, including placement of structural steel, steel decking, concrete floor fill, and the roof. NYCT would likely "fast track" construction, by phasing multiple construction activities across the project site to minimize construction duration. For example, since the procurement of steel can be a lengthy process, the beginning of this construction stage would overlap with the previous foundation stage so that the necessary steel would be delivered to the site *in a timely manner and construction efficiency would be maximized*. All construction is expected to start *from the north end of the property* adjacent to Tuskegee Airmen Way *and progress south* towards 107th Avenue. The work associated with this stage would occur over the entire site, including the Administrative Building near 165th Street, and include a mobile crane that would progress from north to south along the site installing the steel. The equipment that would likely be used during this period, in addition to the crane, includes: concrete trucks; concrete pumping trucks; tractor trailers delivering steel; and, forklifts. Material disposal during this stage would be minimal and the estimated duration would be *approximately twelve months.*

17.4.2.4 INTERNAL AND EXTERNAL BUILD-OUT

The final construction stage for Building A and the Administrative Building would include construction of: the interior and exterior of the building, including exterior and interior walls; lighting; plumbing; and heating; ventilation; and, air conditioning (HVAC) equipment. All of the interior finishes (e.g. paint, tile, etc.) would also be installed. The facility buildout would also *include the installation of specialty maintenance and repair equipment such as bus lifts, bus washers, fueling equipment, revenue collection equipment, and tire mounting equipment*. The work associated with this phase would occur throughout Building A and the Administrative Building. Equipment that would likely be used during this phase of construction includes: a mobile crane; scissor lifts; and, forklifts. Material delivery during this phase would include: building materials (e.g. floor, wall and ceiling materials; windows; concrete block; mechanical systems; electrical conduit; pre-cast panels; etc.). Material disposal during this phase would include removal of excess building materials. *The estimated duration of this construction stage is approximately twelve months*. This construction stage would also overlap with the steel erection construction stage. As Building A steel erection is completed from north to south, internal and external building fit-outs would progress from north to south. It should be noted that since much of this stage of construction would occur when the building is fully enclosed, *disruption to the surrounding neighborhood would be minimized.*

Once the construction of Building A is completed, the maintenance, fueling, and washing operations would be transitioned to the new depot from the existing depot. *At this point, Phase II of construction would commence and would differ among the three Candidate Alternatives as described below.*

17.4.2.5 CANDIDATE ALTERNATIVE A – PHASE II CONSTRUCTION

For Candidate Alternative A, the existing JBD would be demolished as described in the Phase I Demolition section above. *To the extent possible*, construction and demolition would not encroach on private property. For the demolition of the existing JBD, a three-foot easement may be needed as a protective measure during construction between the western boundary of the project site and the adjacent residential properties along 165th Street. Once the existing depot has been demolished, the security/sound barrier wall along the western edge of the property would be built and could consist of columns placed within a reinforced concrete foundation with prefabricated soundproof wall panels that would be installed between the columns. The security/sound barrier wall along the 165th Street side of the property would be 31 feet tall and the security/sound barrier wall along the 107th Avenue side of the property would be 20 feet tall.

After the security/sound barrier walls are erected, storm sewers would be installed within the site and then concrete paving would commence to construct the outdoor bus parking area. Concurrently, the segment of the Administrative Building that would span over the parking area and connect to Building A would be constructed at the north end of the property adjacent to Tuskegee Airmen Way. The primary equipment that would likely be used during this period would include: a mobile crane; concrete trucks; and, tractor trailers delivering security/sound barrier panels and steel columns. The *estimated duration of this construction stage is approximately ten months.*

17.4.2.6 CANDIDATE ALTERNATIVE B – PHASE II CONSTRUCTION

Phase II construction for Candidate Alternative B similar to that for Candidate Alternative A, except that the security/sound barrier wall along the western edge of the property would be 20 feet tall (not 31 feet as in Alternative A). After this security/sound barrier wall is constructed, Building B would be constructed west of Building A. Building B would be an extension of Building A that would provide approximately 80,000 sf of enclosed parking for approximately 70 SBEs on two levels. Concurrently, the segment of the Administrative Building that would connect to Building A would be constructed along Tuskegee Airmen Way. The primary equipment that would likely be used during this period would include: a mobile crane; concrete trucks; and, tractor trailers delivering security/sound barrier panels, steel columns, and building materials. The *estimated duration of this construction stage is approximately 14 months.*

17.4.2.7 CANDIDATE ALTERNATIVE D – PHASE II CONSTRUCTION

Phase II construction for Candidate Alternative D would be similar to that for Candidate Alternative B, except that Building B would be larger, providing nearly 190,000 sf to provide enclosed parking on two levels for approximately 230 SBEs. The estimated duration of this construction stage is approximately 16 months.

After the security/sound barrier walls are erected on the southern portion of the site, storm sewers would be installed within the site and then concrete paving would commence to construct the outdoor bus parking area deliveries and access.

17.4.2.8 SECURITY DURING CONSTRUCTION

During construction of the proposed JBD, access to the project site would be controlled. The work areas would be fenced off, and limited access points for workers and trucks would be provided. Security guards and flaggers would be posted, as necessary. After work hours, the gates would be closed and locked. Security guards may patrol the site after work hours and over the weekends to prevent unauthorized access.

Material deliveries to the site would be controlled and scheduled to minimize disruptions to the community. To aid in adhering to the delivery schedules, as is normal for building construction in New York City, flaggers would be employed at each of the gates. The flaggers would control trucks entering and exiting the site so that they would not interfere with each other. In addition, the flaggers would provide a traffic aid as the trucks enter and exit the on-street traffic streams.

17.4.3 ESTIMATE OF CONSTRUCTION WORKERS AND CONSTRUCTION PERIOD TRUCKS

Worker and truck projections were based on representative construction projects and experience from the construction of the Mother Clara Hale Bus Depot, located in Upper Manhattan. The resultant estimate of the number of trucks and workers per quarter are summarized in **Table 17-2: Estimated Total Number of Construction Workers and Construction Trucks On-Site Per Day**. As indicated in the table, the number of construction trucks would peak in the second and third quarters of 2022, with an estimated 280 workers and 68 trucks per day. *These represent peak days of work*, and many days during the construction period would have fewer construction workers and trucks on-site.

TABLE 17-2: ESTIMATED TOTAL NUMBER OF CONSTRUCTION WORKERS AND CONSTRUCTION TRUCKS ON-SITE PER DAY

Year	2021				2022				2023				2024			
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Construction Workers	10	22	46	60	80	280	280	260	160	160	80	36	60	84	160	160
Construction Trucks	0	10	30	22	32	68	68	40	8	8	30	45	65	50	48	48

17.4.4 CONSTRUCTION WORK HOURS

Construction activities for buildings in the City generally take place Monday through Friday, with exceptions that are discussed separately below. In accordance with City laws and regulations, construction work at projected project sites would generally begin at 7 AM on weekdays, with workers arriving to prepare work areas between 6 AM and 7 AM. Construction work activities would typically finish around 3:30 PM, but on some occasions, the workday could be extended depending upon the need to complete some specific tasks beyond normal work hours (e.g. finishing a concrete pour for a floor deck; completing the bolting of a steel frame erected that day). The extended workday would generally last until about 6 PM and would not include all construction workers on-site, but just those involved in the specific tasks requiring additional work time.

Occasionally, Saturday or overtime hours may be required to complete some time-sensitive tasks. Weekend work requires a permit from the NYCDOB and, in certain instances*, approval of a noise mitigation plan from NYCDEP under the City's Noise Code*. The New York City Noise Control Code, as amended in December 2005 and effective July 1st, 2007, limits construction (absent special circumstances as described below) to weekdays between the hours of 7 AM and 6 PM and sets noise limits for certain specific pieces of construction equipment. *Construction activities occurring after hours (weekdays between 6 PM and 7 AM or on weekends) may be permitted only to accommodate*: (i) emergency conditions; (ii) public safety; (iii) construction projects by or on behalf of City agencies; (iv) construction activities with minimal noise impacts; and (v) undue hardship resulting from unique site characteristics, unforeseen conditions, scheduling conflicts, and/or financial considerations. In such cases, the number of workers and pieces of equipment in operation would be limited to those needed to complete the particular authorized task. Therefore, the level of activity for any weekend work would be less than that of a normal workday. The typical weekend workday would be on Saturday from 7 AM with worker arrivals and site preparation to 5 PM for site cleanup.

17.4.5 CONSTRUCTION STAGING AREAS, SIDEWALK AND LANE CLOSURES

Construction staging areas, also referred to as *"laydown areas,"* are sites that would be used for the storage of materials and equipment and other construction-related activities. *Work zones* are those areas where the construction is occurring. Staging areas would typically be fenced and lit for security and would adhere to New York City Building Codes.

It is anticipated that construction staging would most likely occur on the project site proper and may, in some cases, extend within the curbside parking lane and sidewalks adjacent to the site. As is typical with construction projects in New York City, the sidewalks immediately adjacent to project site may be closed at times to accommodate heavy loading areas or specific construction activities. During these times, pedestrians would either use a temporary walkway in a sectioned-off portion of the street or be diverted to walk on the opposite side of the street. The NYCT contractor would be required to demonstrate how they intend to reduce disruptions due to vehicle deliveries and staging and the closures of adjacent sidewalks and public streets, *which would be formally reviewed and approved by NYCDOT*. In addition, detailed Maintenance and Protection of Traffic (MPT) plans for any temporary sidewalk and lane closures would be submitted for approval to the NYCDOT Office of Construction Mitigation and Coordination (OCMC), the entity that insures critical arteries are not interrupted, especially in peak travel periods. Builders would be required to plan and carry out noise and dust control measures during construction.

Appropriate protective measures for ensuring pedestrian safety surrounding the project site would be implemented under MPT plans. Construction activities would also be subject to compliance with the New York City Noise Code and by the USEPA noise emission standards for construction equipment. In addition, there would be requirements for street crossing and entrance barriers, protective scaffolding, and compliance with applicable construction safety measures.

17.5 CONSTRUCTION PERIOD IMPACTS

17.5.1 TRANSPORTATION

Average daily construction worker and truck activities were projected for the full duration of construction activities, which is approximately 42-48 months. These projections were further refined to account for: worker modal splits and vehicle occupancy; arrival and departure distribution; and, the passenger car equivalent (PCE) factor for truck traffic.

17.5.1.1 DAILY WORKFORCE AND TRUCK DELIVERIES

For *a conservative reasonable worst-case*, the peak level of construction activity—combination of worker and truck trips—was used as the basis for estimating peak hour construction traffic volumes (see **Table 17-2: Estimated Total Number of Construction Workers and Construction Trucks On-Site per Day**). In terms of truck activity, a maximum of 68 truck deliveries per day are expected to and from the project site during the peak of construction activities during Phase I. At this time, the steel erection and installation of metal decks for Building A would be nearing completion, concrete floor slabs would be poured in sections of Building A where steel erection is finished, and mechanical equipment placement would begin in the areas of Building A were floor slab construction is complete. During the same period, approximately 280 daily construction workers would also be employed at the site. Note that these represent peak days of work; many days during the construction period would have fewer construction workers and trucks on-site.

17.5.1.2 CONSTRUCTION WORKER MODAL SPLITS

Travel demand characteristics for project construction workers were estimated based on the U.S. Census Bureau American Association of Highway and Transportation Officials (AASHTO) Census Transportation Planning Products (CTPP) reverse journey-to-work 5-year (2006-2010) data for census tract 254 where the JBD is located. Based on this information, approximately 65 percent of the construction workers would commute via automobile, with an average auto-occupancy of 1.07.

17.5.1.3 PEAK-HOUR CONSTRUCTION WORKER VEHICLE AND TRUCK TRIPS

The preparation for this construction schedule assumed that all site activities would occur during the typical construction shift of 7:00 AM to 3:30 PM. While construction truck trips would be distributed throughout the day (with a higher concentration of trips during the early morning), and trucks would remain in the area for shorter durations, construction worker travel would typically occur during the hours before and after the work shift. *For estimating the peak construction-generated traffic volumes, each worker vehicle was assumed to arrive in the morning and depart in the afternoon, while each truck delivery was assumed to result in two truck trips during the same hour.* Furthermore, in accordance with *CEQR Technical Manual* guidance, it was assumed that each truck represents two Passenger Car Equivalents (PCEs). Hence, *a truck delivery to the site would result in an equivalent of four vehicle trips (two entering and two exiting) during the same hour.*

The estimated daily vehicle trips were distributed to various hours of the day based on projected work shift allocations and conventional arrival/departure patterns for construction workers and trucks (see **Table 17-3: 2022 (Q2 and Q3) Peak Incremental Construction Vehicle Trip Projections (in PCEs)**). For construction workers, it was assumed that the majority (80 percent) of the arrival and departure trips would take place during the hour before and after the work shift. For construction trucks, deliveries would occur throughout the time period while the construction site is active. However, to avoid traffic congestion, construction truck deliveries usually peak during the hour before the regular day shift (25 percent of shift total), overlapping with construction worker arrival traffic. Based on these assumptions, the peak hour construction traffic was estimated for Phase I of construction during quarters two and three of 2022 ***when the combination of worker and truck trips is expected to result in maximum traffic activity.***

TABLE 17-3: 2022 (Q2 AND Q3) PEAK INCREMENTAL CONSTRUCTION VEHICLE TRIP PROJECTIONS (IN PCES)

Hour	Auto Trips					Truck Trips (PCEs)					Total Vehicle Trips (PCEs)		
	In		Out		Total	In		Out		Total	In	Out	Total
	%	#	%	#		%	#	%	#				
6-7 AM	80%	138	0%	0	138	25%	34	25%	34	68	172	34	206
7-8 AM	20%	35	0%	0	35	10%	14	10%	14	28	49	14	63
8-9 AM	0%	0	0%	0	0	10%	14	10%	14	28	14	14	28
9-10 AM	0%	0	0%	0	0	10%	14	10%	14	28	14	14	28
10-11 AM	0%	0	0%	0	0	10%	14	10%	14	28	14	14	28
11-12 PM	0%	0	0%	0	0	10%	13	10%	13	26	13	13	26
12-1 PM	0%	0	0%	0	0	10%	13	10%	13	26	13	13	26
1-2 PM	0%	0	0%	0	0	5%	7	5%	7	14	7	7	14
2-3 PM	0%	0	5%	9	9	5%	7	5%	7	14	7	16	23
3-4 PM	0%	0	15%	26	26	2.5%	3	2.5%	3	6	3	29	33
4-5 PM	0%	0	80%	138	138	2.5%	3	2.5%	3	6	3	141	144
Total	100%	173	100%	173	346	100%	136	100%	136	272	309	309	618

17.5.1.4 STREET LANE AND SIDEWALK CLOSURES

Temporary curb lane and sidewalk closures are anticipated adjacent to construction sites, similar to other construction projects in New York City, and these would be expected to have dedicated gates, driveways, and/or ramps for access by trucks making deliveries. Truck movements would be spread throughout the day and would generally occur between 6 AM and 5 PM, depending on the stage of construction. As noted above, *no rerouting of traffic is anticipated during construction activities and all moving lanes on streets are expected to be available to traffic at all times. Flaggers are also expected to be present during construction to manage the access and movement of trucks.* As also noted above, *detailed MPT plans for each construction site would be submitted for approval by New York City Department of Transportation (NYCDOT) Office of Construction Mitigation and Coordination (OCMC).*

17.5.1.5 TRAFFIC

Traffic volumes for the 6-7 AM and 4-5 PM construction peak hours were developed from *manual turning movement counts collected at the study area intersections on Tuesday, October 23, 2018*. The counts were collected in 15-minute intervals and classified into three vehicle types: passenger cars; buses; and, heavy-duty trucks. Baseline traffic volumes during peak construction activities in the second quarter of 2022 were established by applying a background growth rate and adding traffic volumes associated with No-Build development projects.

Vehicles generated by construction activities were assigned to the street network to determine the increment of construction-related trips (see **Appendix G: Construction** for traffic network volumes). Trucks making deliveries to the project site were assigned using NYCDOT designated local truck routes in the area, which include Merrick Boulevard, 168th Street, and Liberty Avenue. The following eight study intersections were analyzed for the construction AM and PM period:

- Archer Avenue at 165th Street
- Liberty Avenue at 165th Street
- Archer Avenue/93rd Avenue at 168th Street
- Liberty Avenue at 168th Street
- Merrick Boulevard at 107th Avenue
- Archer Avenue at Merrick Boulevard
- Merrick Boulevard at Liberty Avenue
- 165th Street at Tuskegee Airmen Way

These intersections were analyzed using the traffic analysis methodology and impact criteria described in **Chapter 4.0: Transportation**. The result of the analysis indicated that ***all movements and intersections would continue to operate at an acceptable LOS in the 2022 construction period. No significant adverse traffic impacts from construction-related trips are expected*** **(see Appendix G: Construction for LOS tables).**

17.5.1.6 TRANSIT

It is estimated that approximately 280 construction workers would travel to and from projected development sites each day during the 2022 (Q2) peak analysis period for construction travel demand (see **Table 17-3: 2022 (Q2 and Q3) Peak Incremental Construction Vehicle Trip Projections (In PCES)**. The modal split data indicates that approximately 22 percent of these construction workers are expected to travel to and from the JBD by public transit (subway or bus), because the depot is located in an area that is well served by public transportation, with a total of three subway lines and ten bus routes.

As noted above, it is estimated that approximately 80 percent of all construction workers would arrive and depart in the peak hour before and after each shift. Therefore, construction worker travel demand is expected to generate a total of approximately 50 transit trips in both the 6-7 AM and 4-5 PM construction peak hours. As per the criteria established in the *CEQR Technical Manual*, quantitative transit analyses are warranted if a proposed project results in more than 200 new peak hour transit trips. Based on the increase of 50 new transit trips during construction, transit related trips would not exceed the *CEQR Technical Manual* criteria. Therefore, *a detailed analysis of transit conditions is not warranted, and construction of the proposed action would not result in any significant adverse transit impacts*.

There is a Merrick Boulevard bus stop adjacent to the Proposed Action that serves the Q4, Q5, Q84, Q85, and N4 bus routes. This bus stop may need to be relocated during construction. *NYCT would coordinate any bus stop relocations with the contractor and NYCDOT OCMC.*

17.5.1.7 PEDESTRIANS

As discussed above, during the 2022 (Q2) peak analysis period for construction travel demand, it is estimated that there would be approximately 280 construction workers on-site daily. Approximately ten percent of these workers would be expected to walk to the project site, in addition to the 22 percent whom would be expected to travel to the project site by transit, walking to and from area subway stations and bus stops. These travel mode choice estimates were based on U.S. Census data for the study area.

Construction worker travel demand on area sidewalks and crosswalks is expected to total approximately 72 trips in both the 6-7 AM and 4-5 PM construction peak hours, when 80 percent of construction workers are expected to arrive and depart. As per the criteria established in the *CEQR Technical Manual*, quantitative pedestrian analyses are warranted if a proposed project results in more than 200 new peak hour pedestrian trips. Based on the increase of 72 new walk trips during construction, *a detailed analysis of pedestrian conditions is not warranted,* and construction of the Proposed Action *would not result in any significant adverse pedestrian impacts*. Adequate protection or temporary sidewalks and appropriate signage would be provided in accordance with NYCDOT requirements at locations where temporary sidewalk closures are required during construction activities.

17.5.1.8 PARKING

The 2022 (Q2) peak analysis period for construction travel demand would result in approximately 280 workers on-site daily, approximately 66 percent of whom would be expected to travel to the rezoning area by private auto. Based on an average vehicle occupancy of 1.07 persons per vehicle, the maximum daily parking demand from project site construction workers would total approximately 173 spaces (see **Table 17-4: 2022 (Q2) Construction Worker Parking Accumulation**). As there are relatively few off-street public parking facilities in proximity to projected development sites, *the majority of workers are expected to park on-street*. As discussed in **Chapter 4.0: Transportation** *within a ¼-mile radius of the JBD, there is a surplus of approximately 41 on-street parking spaces of the available 1,443 spaces in the weekday midday period in existing conditions.* The parking demand in the study area was assumed to increase proportionally to the traffic growth in the study area by one-half percent per year, resulting in an approximate increase of two percent. *The on-street parking demand is projected to rise to approximately 1,430 spaces or 99 percent of supply*, thereby decreasing parking space availability from the existing three percent surplus to a one percent surplus in the future 2022 No-Build conditions.

Construction workers traveling to the site would increase the on-street parking demand by 173 vehicles, which would create a parking shortfall of 160 spaces. *This shortfall is not considered a significant impact* due to the availability and proximity of public transit in the area. As such, *construction activities during the 2022(Q2) peak construction traffic period would not result in a significant adverse parking impact.*

TABLE 17-4: 2022 (Q2) CONSTRUCTION WORKER PARKING ACCUMULATION

Hour	2024 (Q2)		
	In	Out	Total Accumulation
6-7 AM	138	0	138
7-8 AM	35	0	173
8-9 AM	0	0	173
9-10 AM	0	0	173
10-11 AM	0	0	173
11 AM-12 PM	0	0	173
12-1 PM	0	0	173
1-2 PM	0	0	173
2-3 PM	0	9	164
3-4 PM	0	26	138
4-5 PM	0	138	0

17.5.2 AIR QUALITY

17.5.2.1 INTRODUCTION

Construction and operation of the proposed JBD may affect local air quality conditions. Based on the construction schedule provided by NYCT, the required construction activities and equipment for ***the three Candidate Alternatives would be similar. As a result, Candidate Alternative D was selected as a worst-case scenario for assessment because it would be the largest of the three Candidate Alternatives in terms of size and would require the longest construction period at 48 months.***

Because the surrounding neighborhood includes both *sensitive residential and commercial land uses,* potential impacts related to both mobile and stationary sources were considered on a *microscale (i.e. local level)*. (A mesoscale, or area-wide assessment of air quality was not required as the project would be restricted to a relatively small footprint and would therefore have no material effect on area-wide emissions.) Mobile source impacts would be related to temporary increases in truck volumes from construction vehicles and potential temporary lane closures or traffic diversions. Stationary source emissions would result from on-site activities related to demolition, excavation, and roadway grading.

This section presents the assessment and findings for the study of pollutant emissions related to the construction of the Proposed Action. Analyses are conducted in accordance with the *CEQR Technical Manual*, as well as other relevant guidance and protocols provided by NYSDEC, NYCDEP, and USEPA. In addition, the air quality characteristics of the Proposed Action are identified and discussed within the context of the Clean Air Act (CAA) requirements and other applicable state and local air quality standards.

17.5.2.2 REGULATORY FRAMEWORK

Information regarding the air quality regulatory framework, including information about criteria pollutants and significant impact thresholds are described in **Chapter 5.0: Air Quality**.

Monitored Ambient Air Quality

NYSDEC operates a network of monitoring stations throughout New York City to measure ambient air quality with the results published on an annual basis. The most recent NYSDEC air-monitoring databases identify existing air quality levels for the study area based on data from the monitoring stations nearest the project site. **Table 17-5: Representative Monitored Air Quality Data** shows background air quality levels for the study area. Selected locations represent available background sites *nearest to the study area*.

TABLE 17-5: REPRESENTATIVE MONITORED AIR QUALITY DATA

Pollutant	Average Period	Location	Concentration	NAAQS
NO_2	Annual[1]	IS 52	20.13 $\mu g/m^3$	100 $\mu g/m^3$
	1-hour[2]		64.3 $\mu g/m^3$	188 $\mu g/m^3$
SO_2	1-hour[3]	IS 52	14.1 $\mu g/m^3$	196 $\mu g/m^3$
	3-hour[4]		89 $\mu g/m^3$	1,300 $\mu g/m^3$
$PM_{2.5}$	24-hour	PS 19	20.3 $\mu g/m^3$	35 $\mu g/m^3$
PM_{10}	24-hour[5]	Division Street	45 $\mu g/m^3$	150 $\mu g/m^3$
CO	1-hour[6]	CCNY	2.3 ppm	35 ppm
	8-hour[6]	CCNY	1.5 ppm	9 ppm

Source: New York State Air Quality Report Ambient Air Monitoring System, NYSDEC Region 2
Notes:
$\mu g/m^3$ – microgram per cubic meter; ppm – parts per million
[1] Annual average NO_2 background concentration is based on the 5-year highest value from 2011–2015.
[2] The 1-hour NO_2 background concentration is based on the maximum 98th percentile 1-hour NO_2 concentration averaged over 3 years of data, from 2013–2015.
[3] The 1-hour SO_2 background concentration is based on the maximum 99th percentile concentration averaged over 3 years of data, from 2013–2015.
[4] The 3-hour SO_2 background concentration is based on the 5-year highest second-highest measured value from NYSDEC for 2008–2012.
[5] PM_{10} is based on the 3-year highest second-highest value from 2013–2015.
[6] CO background concentrations are the highest 2nd max values from the latest 5 years of available monitoring data from NYSDEC (2008–2012).

17.5.2.3 METHODOLOGY

Specific methodology and background information required to analyze potentially significant, adverse pollutant impacts from the proposed JBD construction are discussed below.

Mobile Sources

During construction, the proposed JBD may result in significant mobile source air quality impacts from increases in and/or redistribution of traffic. As outlined in the *CEQR Technical Manual*, in this area of Queens, actions that would result in the generation of 140 or more peak-hour vehicle trips at an intersection may cause significant, adverse air quality impacts and require a detailed air quality analysis for CO or PM_{10}. Also, as described, NYSDEC has developed guidelines for determining potential project-related $PM_{2.5}$ impacts based on the number of project-induced heavy vehicle trips. *Assessment of mobile sources was based on data derived for the peak traffic-related construction year of 2022.*

Screening of Analysis Sites

As described in the *CEQR Technical Manual,* traffic intersections were screened to determine whether any would require further detailed analysis. *Screening procedures are used to select worst case analysis sites* and include a determination of whether traffic volumes related to a proposed action would exceed the CO screening threshold of 140 vehicles at affected intersections during peak traffic hours. Traffic periods considered in the air quality analysis consist of weekday AM and PM peak hours. Although the peak construction years for Stationary Source emissions would be 2021 and 2023 as described in the following "Stationary Sources" section, *the traffic screening was conservatively assessed using the peak traffic period (2022) for mobile sources as this year would result in a worst-case scenario.* As a result, future conditions (2022) with and without the proposed action were considered in the selection process. However, because the Proposed Action would generate very few vehicular trips and would not require any traffic diversions within the traffic network, mobile source *screening did not identify any intersection that would exceed the CEQR CO screening threshold.* In addition, *the $PM_{2.5}$ screening criteria would not be exceeded* because the proposed action would generate only 14 heavy duty trucks at any one intersection during peak traffic periods. Therefore, ***a detailed assessment of mobile source air quality was not required*** because impacts related to mobile sources are not anticipated.

Stationary Sources

Total emissions of $PM_{2.5}$, PM_{10}, NO_2, and CO from construction activities (e.g., excavation, excavated materials removal, concrete pours, superstructure etc.), including fugitive dust emissions and emissions released from diesel-powered equipment and trucks, were *estimated for the entire construction period on an annual basis.* Construction equipment associated with the proposed JBD would include excavators, concrete and dump trucks, hydraulic cranes, backhoes, compactors, and concrete pump trucks, among others. The emissions values represent the estimated annual emissions from all activities for each of the studied pollutants during the construction period from 2021 to 2025. *For the stationary source construction analysis*, the peak construction year was based on the maximum annual emissions generated for $PM_{2.5}$. *$PM_{2.5}$ was selected for determining the worst-case periods because the ratio of predicted $PM_{2.5}$ incremental concentrations to impact criteria related to construction activities is typically higher than for other pollutants.* Overall emissions projections are presented in **Table 17-6: Annual Air Emissions Resulting from Construction;** *the estimated worst-case annual air emissions would occur during the 2021 construction year. That year represents the stage of construction when the bulk of the excavation and demolition work would be completed for Phase I.* However, the estimated annual air emissions for the 2023 construction year would be only slightly less than those projected for 2021, the year which represents the stage of construction when the bulk of the excavation and demolition work would be completed for Phase II. In addition, the peak short-term emissions would also occur during the 2023 construction year. As a result, annual pollutant estimates were based on the peak emissions year 2021 and short-term pollutant estimates were based on the peak short-term period that would occur during the latter part of the 2023 construction year. Particulate emissions for the remaining years (2022 and 2024) would be much less because the majority of construction work after the excavation and demolition stages would be much less intensive with respect to fugitive dust emissions and the use of heavier on-site equipment.

For all pollutants evaluated, the potential emissions released during the peak construction year would be within applicable NYSDEC emissions thresholds; although MTA NYCT is not bound by this threshold. Please note that the information is included here for informational purposes.

TABLE 17-6: ANNUAL AIR EMISSIONS RESULTING FROM CONSTRUCTION

Pollutant	2021 Emissions (Tons)	2022 Emissions (Tons)	2023 Emissions (Tons)	2024 Emissions (Tons)
CO	1.558	0.299	1.533	0.585
NO_2	2.095	0.547	1.306	1.447
PM_{10}	0.106	0.020	0.102	0.041
$PM_{2.5}$	**0.103**	0.019	**0.099**	0.040

For each pollutant identified in Table 17-6, an ambient stationary source air quality analysis was conducted to calculate concentrations resulting from construction activity during which peak construction year. Several air quality models were used in the analyses, including the latest EPA-developed MOVES2014b emissions models; and the EPA's AP-42: Compilation of Air Pollutant Emission Factors. The AERMOD (EPA-454/B-03-001) dispersion model was also used.

Key project analysis assumptions include the following:

- *Sensitive receptors* identified for the analysis typically include locations where the maximum concentration is likely to occur and where the general public is likely to have access. As a result, receptors were distributed along sidewalks near the construction site and at elevated locations along the sides of buildings representative of intake vents, operable windows, and/or balconies.
- *Emissions rates were calculated* for both diesel exhaust from the operation of construction vehicles and the dust resulting from excavation and load out activities.
- *Emission rates of each pollutant from relevant sources were estimated for each type of construction activity*. Given the fact that the length of construction activities could range from a few months to several years, separate analyses were conducted to estimate short-term (24-hours or less) and long-term (annual average) pollutant levels. Short-term emission estimates were based on peak period activity levels at each site (defined as emissions per construction stage) and were used to estimate short-term (i.e., 8-hours, 24-hours) pollutant concentrations (for comparison to short-term NAAQS). Annual average activity levels were used to estimate annual concentrations (for comparison to annual NAAQS).
- *Key factors and assumptions related to the calculation of emission rates included*: a seven hours per day/5 days per week work period, the number of pieces and typical engine HP for each type of equipment, construction schedule (including the number of days of operation per stage), the use of 15 ppm ultra-low sulfur diesel fuel, three minute idling time for trucks loading and unloading, ten truck trips per day for excavates and deliveries during peak operations, fugitive dust emissions from roadways assumed to be negligible within the construction areas (since vehicle speed would be less than 5mph), and dust calculations based on the maximum amount of material assumed to be excavated for each stage.
- *Based on their proximity to the project, the most recent five-year period (2013 to 2017) available of representative hourly meteorological data from La Guardia Airport (LGA) was used* in the analysis along with upper air data from Brookhaven (Long Island, NY). Meteorological data represents a key input into the AERMOD model that helps determine local pollutant transport.
- Because the screening criteria for the detailed assessment of mobile sources *were not exceeded*, a *detailed mobile source analysis was not required; thus, mobile source emissions from trucks would be considered negligible*. Therefore, a cumulative assessment of stationary and mobile sources was not required.

- *Only diesel-powered construction equipment was considered* in the analysis. Electric equipment was not considered.
- *Each construction-related dump truck* was considered a heavy-duty diesel vehicle with a 10-cubic yard capacity.
- *Total daily on-site vehicular emission rates of $PM_{2.5}$, PM_{10}, NO_2 and CO were estimated* by multiplying emission factors for moving vehicles (gram/vehicle-mile) by the distance that an average vehicle would travel within the site and by the number of on-site operating vehicles during the activity period. Emission factors for moving vehicles (i.e., exhaust, brakes, and tires) and queuing vehicles were estimated using the USEPA MOVES2014b vehicular emission factor model.
- *Emission rates* of $PM_{2.5}$, PM_{10}, NO_2 and CO from diesel engines of construction equipment were estimated using the MOVES2014b-NONROAD emission model.
- *Construction scheduling* including equipment usage and engine HP rating was provided by the project engineers and was approved by MTA NYCT.
- *Fugitive dust emission factors* for demolition, excavation, truck loading, and re-entrained dust were based on the equations and factors recommended in USEPA's AP-42 Report "Compilation of Air Pollutant Emission Factors" Sections 13.2.3.1/2/3, Heavy Construction Operations, 11.9.1 Uncontrolled Open Fugitive Dust Sources.
- *Use ultra-low sulfur diesel fuel* in non-road construction equipment with engine HP rating of 50 HP and above. All engines should comply with the federal non-road diesel emissions certification level "Tier 2" or cleaner ("Tier 3" or "Tier 4").
- *Use grid supplied electricity* in lieu of non-road engines, where feasible.
- *Locate diesel powered exhausts away from fresh air intakes* (e.g., the use of specified truck-staging areas for vehicles waiting to load or unload material.
- *Use of diesel engine retrofit technology* in off-road equipment to reduce emissions further. NYCT will require that non-road vehicles of 50 HP and above are retrofitted with diesel oxidation catalysts, diesel particulate filters, or technology that achieves lowest PM emissions. Based on currently available data, diesel particulate filters will be the preferred retrofit technology, with diesel oxidation catalysts as a fallback when the use of diesel particulate filters are not practicable.
- *Reduce dust related to the construction site through a Soil Erosion Sediment Control Plan* that includes, among other things:
    - Spraying of a suppressing agent on dust pile (non-hazardous, biodegradable);
    - Containment of fugitive dust; and,
    - Implementing site adjustments for meteorological conditions as appropriate.

17.5.2.4 IMPACT RESULTS

In order to represent the total impact of the proposed action in the analysis*, it is necessary to consider representative background levels for each of the analyzed pollutants*. The background level is the component of the total concentration not accounted for through the microscale or localized modeling analysis. Applicable background concentrations are added to the modeling results below to obtain the total pollutant concentrations at each receptor site for the analysis year. *The background values used in the air quality analyses are provided above in **Table 17-6: Annual Air Emissions Resulting from Construction.***

Table 17-7: Highest Predicted Pollutant Concentrations shows the results of the emissions analysis. The values represent the highest estimated pollutant concentrations measured at any receptor for the 2020 worst-case construction year. Concentrations are compared to the NAAQS and the relevant standards.

TABLE 17-7: HIGHEST PREDICTED POLLUTANT CONCENTRATIONS

Pollutant (Unit)	Time Period	NAAQS/ STV	Total Highest Predicted Impacts and Concentrations	
			Max Impacts	Max Total Concentration[1]
CO (ppm)	8-hour	9	0.17	1.07
NO_2 (ppb)	Annual	100	2.47	20.0
PM_{10} ($\mu g/m^3$)	24-hour	150	5.99	44.0
$PM_{2.5}$ ($\mu g/m^3$)	24-hour	8	**4.00**	--
	Annual	0.3	**0.25**	--

Notes: [1] Maximum total concentration includes background values where applicable.

17.5.2.5 CONCLUSIONS

The construction of the proposed JBD, with the implementation of MTA NYCT construction-phase emission reduction requirements, would not cause an exceedance of any NAAQS used in this analysis. In addition, the highest predicted project-related impacts are less than the NYSDEC $PM_{2.5}$ STVs, which are used as indicator values in this analysis. Therefore, the air quality impacts of the project, with the implementation of MTA NYCT's construction-phase emission reduction requirements, *are not considered to be significant.*

17.5.3 NOISE AND VIBRATION

17.5.3.1 INTRODUCTION

Potential effects from noise and vibration on the surrounding community due to the construction of the proposed JBD, were evaluated *based on Federal Transit Administration (FTA) transit noise and vibration guidelines.* A detailed review of construction schedules, plans, and existing land usage nearby was also required. Analyses considered: noise emissions generated by construction equipment; the amount of time the equipment would be in use; and, the distance between the equipment and potential receptors. Receptors included noise sensitive buildings such as residences, which would be located adjacent to the proposed limits of construction. Based on the construction schedule provided by NYCT, the required construction activities and equipment for the three Candidate Alternatives would be similar. As a result, *Candidate Alternative D was selected as a worst-case scenario for assessment since it would be the largest of the three Candidate Alternatives in terms of size and would require the longest construction period at 48 months.*

Because *the primary concern with construction vibration as defined by FTA is building damage*, it is generally assessed in terms of peak particle velocity (PPV). Equipment used in construction, such as jackhammers, backhoes, and excavators do not generate significant area-wide vibration, and the impact of such equipment is typically more localized. There are several single-family residential structures that would be adjacent to the proposed limits of construction; however, there are no historic structures within close proximity to the proposed limits of construction.

Potential localized increases in noise and vibration levels are of concern and subject to analysis, which was conducted and is described in this section.

17.5.3.2 NOISE

Acoustic Fundamentals

General noise acoustic fundamentals are described in **Chapter 6.0: Noise and Vibration**.

Guidelines and Criteria

FTA construction guidelines state that a noise assessment may be qualitative or quantitative depending on the scale and scope of a construction project. Qualitative assessments are usually conducted for projects that last for a short period of time or employ equipment that would not create a significant amount of noise. For projects that are lengthier and employ noisier equipment, such as the Proposed Action, a quantitative analysis may be more appropriate. For the proposed construction of the JBD, ***a detailed quantitative assessment methodology using the 8-hour L_{eq} was utilized***.

The detailed FTA noise assessment uses a set of threshold 8-hour L_{eq} levels for various construction activities. The noise criteria and the descriptors used to evaluate project construction noise, depend on the type of land use and the construction operating schedules in the vicinity of the proposed JBD.

Table 17-8: FTA Criteria for Detailed Construction Noise Analysis presents the FTA construction noise criteria for the detailed assessments. Using FTA guidelines, an airborne noise impact would occur if noise levels during construction exceed these FTA-recommended values.

TABLE 17-8: FTA CRITERIA FOR DETAILED CONSTRUCTION NOISE ANALYSIS

Land Use	1-hour L_{eq} (dBA)	
	Day	Night
Residential	80	70
Commercial	85	85
Industrial	90	90

Source: FTA, Transit Noise and Vibration Assessment, September 2018

While NYCT is not bound by the FTA criteria threshold, it is utilized in this report for the purposes of identifying potentially elevated noise conditions so that appropriate noise reduction measures, if required, can be applied.

Existing Conditions

Outdoor A-weighted sound levels were used to measure and analyze the noise effects at sensitive noise receptor locations, because dBA correlates well with the human perception of noise. In this report, noise receptors are defined as locations where human activity could be affected by excessive noise levels. Sensitive noise receptors are typically related to residential land uses. The noise descriptor *selected for this analysis* was the 1-hour equivalent continuous noise level L_{eq} (1h) in dBA.

Measurements were also taken at three locations to determine the maximum 1-hour L_{eq} within the proposed study area. Shown in **Figure 17-1: Noise Monitoring & Assessment Locations**, the measured noise levels are representative of noise conditions at residential clusters bordering the project site construction limits. These include residences on the southern, western, and northern site boundaries along 107th Avenue ***(Allen Cathedral***

Senior Residence) - R1, 165th Street (single-family homes) – R2, and Merrick Boulevard (single-family homes) – R3, respectively. Measurements were taken on November 7th, 2018 and January 16th, 2019. Based on these measurements, the resulting maximum daytime L_{eq}, values were: 72 dB for the representative properties along 107th Avenue (R1); 61 dB for the representative properties along 165th Street (R2); and, 69 dB for the representative properties along Merrick Boulevard (R3). ***All of these existing noise levels are below the FTA criteria for construction noise impact.***

Noise measurements were taken with a Larson & Davis Model LxT and 831 Type I sound-level meters. A windscreen was placed over the microphones for all measurements. The meter was properly calibrated for all measurements using a Larson & Davis Model Cal250 calibrator. There were no significant variances between the beginning and ending calibration measurements. All measurements were taken during acceptable weather conditions (i.e., clear day with no rain or snow) and low wind speeds.

Methodology

Construction of the proposed JBD would occur in two primary phases as described above in **Section 17.4.2: Typical Construction Activities**. Using FTA's recommended quantitative assessment methodology, noise and vibration associated with the proposed JBD construction were analyzed. Three receptors, shown in **Figure 17-1: Noise Monitoring & Assessment Locations**, representative of the typical neighborhood land use and located closest to the Phase I and Phase II construction zones were chosen for the assessment of potential impacts.

Mobile Noise Sources

Noise from mobile source off-site construction vehicles is not included in the project construction noise assessment. The construction of the proposed JBD would not result in street closures and traffic diversions that would generate a significant number of vehicles during any one-hour. It is projected that a maximum of only 14 peak hour project-related truck trips would result from construction requirements. As a result, there would be no doubling of traffic volumes or traffic PCEs for roadways within the studied traffic network, and any increase in noise levels from off-site mobile source construction vehicles would not be perceptible.

Stationary Noise Sources

Stationary noise sources consist of off-road construction equipment that would be employed during construction as well as on-road vehicles operating on-site. Identification of stationary construction equipment to be used during the construction period is the product of a multi-step process that analyzes the foreseeable construction process based on the proposed design and available project information. Construction activities were derived from the construction schedule provided by NYCT that incorporated inputs such as construction: phasing; duration; activity; equipment type; number of pieces of equipment; and, hours worked per day. With the identification of these equipment, typical noise emissions levels from construction equipment, such as excavators, backhoes, cranes, generators, and jackhammers, were used as a basis to evaluate potential noise impacts at sensitive receptor locations in the study area. Because the project would utilize spread footings, no drill rigs or pile driving activity is anticipated.

Another essential input used to calculate construction noise levels at each noise sensitive receptor is the acoustical usage factor (AUF). This is the percentage of time that a particular piece of equipment is expected to be operated at full throttle setting while on-site during construction. Since the construction equipment is not expected to be in operation at full power continuously, an AUF was assigned to each piece of equipment based on equipment usage cycles recommended by the equipment manufacturer. The equipment reference noise levels and AUF, which are shown on **Table 17-9: Noise Emission Levels for Construction Equipment,** are based on data contained in the FTA Transit Noise and Vibration Impact Assessment (September 2018) guidelines and the FHWA's Roadway Construction Noise Model (RCNM) data, and include the equipment expected to be utilized during construction. The ***"Peak Quantity"*** is the number of equipment pieces to be used during peak construction period, such as peak 8-hour period. The ***"Usage Factor"*** is the percentage of time the equipment is expected to be in operation. Stationary construction equipment and their noise emissions were analyzed for the years 2021 through 2024.

TABLE 17-9: NOISE EMISSION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment Description	Usage Factor (%)	L_{max} @ 50 Feet
Back Hoe	440%	880
Dump Truck	440%	884
Excavator	440%	885
Compressor	440%	880
Concrete Pump Truck	220%	882
Concreter Truck	440%	885
Crane	116%	885
Compactor	220%	880
Scissor / Man Lift [1]	220%	663
Jack Hammer	220%	773
Fork Lift [1, 2]	440%	664

Source:
[1] Utilized available noise emission data from NYC DCP East New York Rezoning EIS Study (2016)
[2] Usage Factor % assumed to be similar to a RCNM gradall.
FTA, September 2018
FHWA RCNM, 2006

The quantification of these noise levels was completed using noise prediction equations contained in Section 12.1.1 of the FTA Transit Noise and Vibration Impact Assessment (September 2018). The modeling procedure involves determining the noise level at representative neighborhood receptors for each individual piece of equipment. *The use of decibel addition is then employed* to account for the combination of construction equipment pieces being used. The model equation inputs account for construction equipment noise emissions and AUFs as well as the distance between the equipment and the receiver being analyzed. Per FTA guidance, and for the purposes of analysis, all equipment was assumed to be operating in the center of the Phase I and Phase II construction zones.

Impact Results

For mobile sources, the construction of the Proposed Action would not result in street closures and traffic diversions that would double volumes or PCE's within the traffic network. In addition, it is projected that a maximum of only 14 peak hour project-related truck trips would result from construction requirements. These induced trips would not result in a doubling of traffic PCE's at any location. Therefore*, noise impacts resulting from mobile source traffic are not expected.*

For stationary sources, noise calculations were conducted for the proposed JBD. The maximum 8-hour L_{eq} noise level from both project construction phases was predicted for each of the three representative noise receptors surrounding the proposed JBD construction zone. Results for construction Phases I and II are presented in **Table 17-10: Phase I – Maximum Construction Noise at Receptor Locations** and **Table 17-11: Phase II – Maximum Construction Noise at Receptor Locations**, respectively.

TABLE 17-10: PHASE I - MAXIMUM CONSTRUCTION NOISE AT RECEPTOR LOCATIONS

Noise Receptor Number	Description	Distance from Construction Zone (ft)	FTA Criteria Threshold 8-Hr L_{eq} (dBA)	Predicted Peak 8-Hr L_{eq} (dBA)*	Estimated Construction Year[1]
R1	107-36 Merrick Boulevard (Allen Cathedral Senior Residence)	509	80	65	2021
R2	104-43 165th Street (Residential)	285	80	71	2021
R3	168-11 106th Avenue (Residential)	384	80	67	2021

Notes: [1] Assumes overall JBD construction would begin in 2021

TABLE 17-11: PHASE II - MAXIMUM CONSTRUCTION NOISE AT RECEPTOR LOCATIONS

Noise Receptor Number	Description	Distance from Construction Zone (ft)	FTA Criteria Threshold 8-Hr L_{eq} (dBA)	Predicted Peak 8-Hr L_{eq} (dBA)*	Estimated Construction Year[1]
R1	107-36 Merrick Boulevard (Allen Cathedral Senior Residence)	504	80	65	2024
R2	104-43 165th Street (Residential)	103	80	78	2024
R3	168-11 106th Avenue (Residential)	493	80	65	2024

Notes: [1] Assumes overall JBD construction would begin in 2021

The noise prediction results indicate that ***during construction activities related to excavation and demolition activities, noise would be greatest.*** Noisy equipment such as jackhammers, excavators and backhoes would be used to facilitate the initial breaking up and excavation of sidewalk and the existing JBD structure. *However, during these worst-case periods for both construction phases, the FTA criteria threshold would not be exceeded at any of the representative noise receptor locations*. In addition, the predicted worst-case noise levels for both construction phases would last for a few months and because the sources of noise would migrate throughout the construction areas, the effects of construction noise on the sensitive receptors would change depending on the location of particular noise sources. ***As a result, once the initial excavation and demolition task is completed, it is expected that additional construction tasks associated with the new building foundation, superstructure, and interior fit out components would produce less noise.***

It is important to note that the *phasing of the JBD construction would itself result in a beneficial reduction of noise emissions* for some residents. For example, during Phase I construction, the location of the existing JBD structure would effectively create a *"sound barrier"* between most residential buildings located along 165th Street and Phase I construction activities. *This effective barrier would further reduce the predicted noise levels presented in* **Table 17-11: Phase II – Maximum Construction Noise at Receptor Locations** above. Similarly, for construction of Phase II, the new JBD structure would already be completed and operational. As a result, residences on the east side of Merrick Boulevard such as R3, would be shielded from Phase II construction noise.

Mitigation

MTA NYCT would consider and, where practicable, implement noise control measures to minimize potential noise impacts. MTA NYCT is committed, as explained below, to developing and implementing an extensive mitigation program to reduce and alleviate the project's noise impacts during construction.

Construction Specifications to Reduce Noise Emissions

Contractors will be obligated to comply with all of the requirements and regulations of the New York City Noise Control Code. Devices and activities which are subject to the provisions of the New York City Noise Control Code would be required to be operated, conducted, constructed, or manufactured without causing a violation of the code. All work would be required to be conducted in compliance with the regulations set forth below controlling maximum noise levels from construction work. At the construction site, special precautions and noise abatement measures would be required to be taken by the contractor to reduce public exposure to noise.

Other measures and strategies to reduce noise levels would be considered by MTA NYCT to meet the NYC Noise Code requirements. MTA NYCT would determine which measures are most effective and practicable. These measures and strategies may include:

- Use of OSHA-compliant, quieter, manually adjustable backup alarms set to their low level
- Use of shields and/or impervious fences to inhibit transmission of noise
- Use of noise enclosures or noise insulation fabric on compressors, generators, and other equipment
- Use of effective intake and exhaust mufflers on internal combustion engines and compressors
- Lining or covering hoppers, storage bins, and chutes with sound-absorbing material
- Avoiding the use of pneumatic or gasoline driven saws
- Employing alternative construction methods, using special low noise emission level equipment, and selecting and specifying quieter demolition methods
- Routing construction equipment and other vehicles carrying spoil, concrete, or other materials over streets and routes that will cause the least disturbance to residents in the vicinity of the activity
- Designing considerations and project layout approaches, including measures such as construction of temporary sound barrier walls, 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
- Developing and implementing a noise monitoring program in order to quantify noise levels at nearby sensitive receptors during construction
- Use of the quietest model of jackhammer available such as the Copco model TEX P90s
- Implementing a community liaison and complaint hot line

Conclusions

Projected noise levels for construction equipment related to all of the Candidate Alternatives would not exceed the FTA noise thresholds at any noise sensitive locations (such as residences) adjacent to proposed construction limits. While noise levels may, at times, be elevated above ambient noise levels, these noise increases would be minimized by strict adherence to the revised 2005 NYC Noise Code and mitigation measures identified in the construction contracts. In addition, predicted worst-case noise levels for both phases would last for a few months and because the sources of noise would migrate throughout the construction areas, the effects of construction noise on the sensitive receptors would change depending on the location of particular noise sources. Note also that noise-generating activities would be intermittent and of short-term durations. Finally*, the phasing of the JBD construction would result in the construction of a security/sound barrier wall* that would further reduce: the predicted Phase I noise levels for some residents along 165th Street; and, Phase II noise levels along the east side of Merrick Boulevard.

The MTA NYCT construction contract specification would require the Contractor to meet the requirements set forth in the NYCDEP Noise Control Code (e.g., Construction Noise Mitigation Plans). Based on these requirements, the contractor must implement and adhere to the noise mitigation plan measures as required.

17.5.3.3 VIBRATION

Vibration Level Characteristics

Construction activities have the potential for producing high levels of vibration that may be perceptible or disruptive close to the project site. In some cases, architectural and structural damage could occur if construction activities are not properly managed. However, ground vibrations from most types of construction activities rarely reach the levels that can damage structures.

When evaluating human response, ground-borne vibration is usually expressed in terms of decibels. To avoid confusion with sound decibels, the abbreviation VdB is used for vibration decibels. *To evaluate potential vibration occurrences, vibration is typically expressed in terms of inches per second (ips).*

Although the perceptibility threshold for ground-borne vibration is approximately 65 VdB, human response to vibration is not usually substantial unless the vibration exceeds 70 VdB. Background vibration is usually well below the threshold of human perception, and it is of concern only when the vibration affects very sensitive manufacturing or research equipment. Electron microscopes, high-resolution lithography equipment, and laser and optical equipment are typically sensitive to vibration. Fragile buildings and/or historic buildings may be especially sensitive to vibration. *Within the project area, there are residential receptors, particularly along 165th Street and 107th Avenue, which could be potentially affected by vibration intense activities that would require the contractor to use vibration control measures.* However, there are no historic buildings or districts in close proximity to the JBD construction limits (i.e., within 90 feet, as defined by the NYCDOB). Vibration levels for typical human and structural responses and sources are shown in **Table 17-12: Typical Sources of Ground Bourne-Vibration**. The threshold criteria are based on research experience with human sensitivity and community responses to ground-borne vibration and noise.

TABLE 17-12: TYPICAL SOURCES OF GROUND-BOURNE VIBRATION

Human / Structural Response	VdB	Inch per Second (ips)	Typical Sources (at 50 feet)
Threshold, minor cosmetic damage for fragile buildings	100	0.1	Blasting from construction projects Bulldozers and other heavy tracked construction equipment
Difficulty with vibration sensitive tasks, such as reading a video screen	90	0.03	Commuter rail, upper range
Residential annoyance, infrequent events	80	0.01	Rapid transit rail, upper range Commuter rail, typical range
Residential annoyance, frequent events	70	0.003	Bus or truck over bump Rapid transit rail, typical range
Limit for vibration-sensitive equipment	60	0.001	Bus or truck, typical
Approximate threshold for human perception of vibration	50	0.0003	Typical background vibration

Source: Transit Noise and Vibration Impact Assessment, FTA, September 2018

Guidelines and Criteria

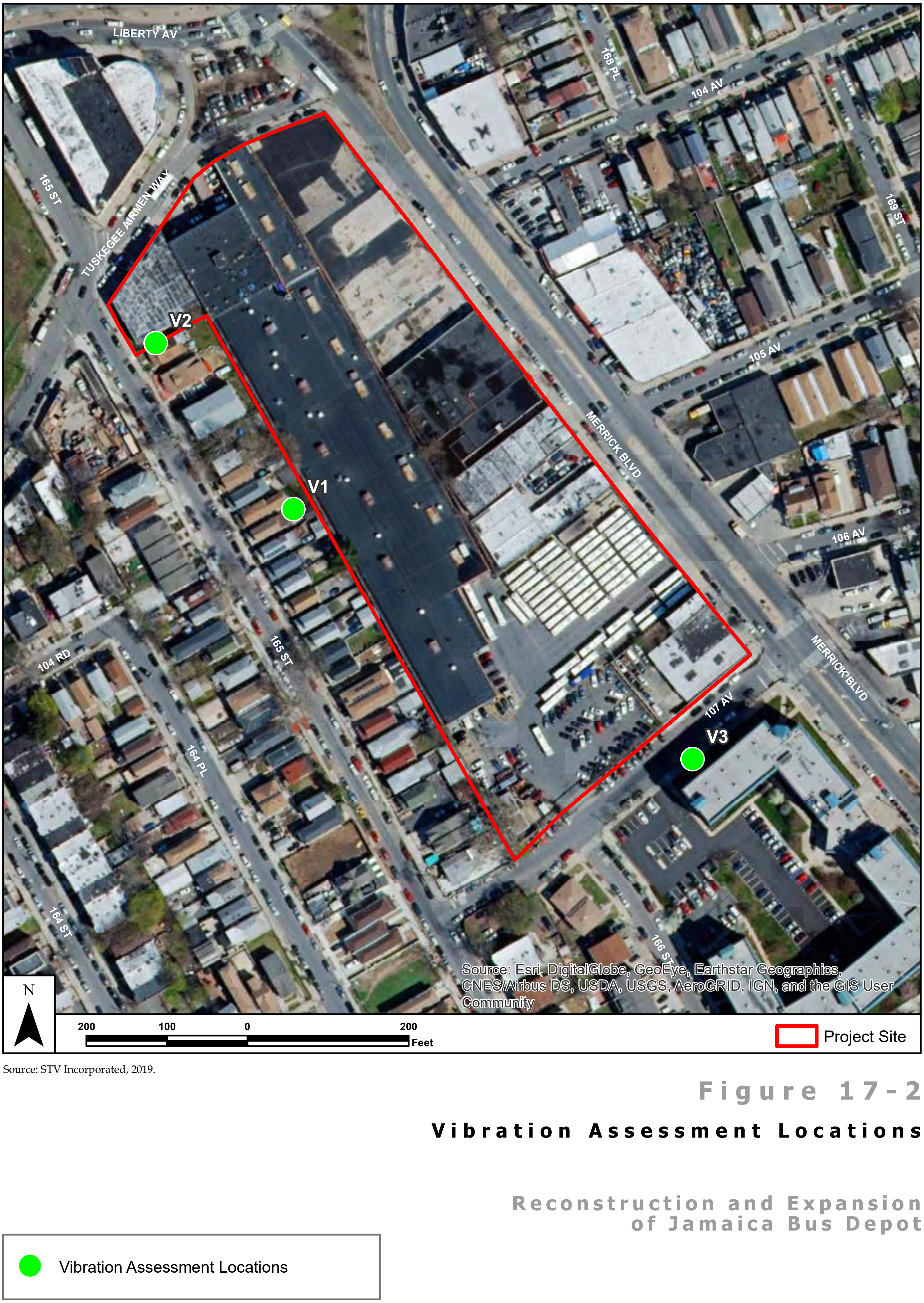
Potential impacts related to construction vibration would be of limited duration. ***Therefore, the primary concern regarding construction vibration would be related to potential damage to buildings.*** Damage criteria are based on the peak particle velocity levels for different types of construction equipment. For structural damage, the FTA identifies criteria for several categories of buildings that could be affected. *In the areas adjacent to the proposed JBD, the most common building type found are wood framed structures. For these buildings, the FTA criteria consider that damage would occur at a vibration level of 0.20 ips (94 VdB). The one exception to this would be the Allen Cathedral Senior Center located along 107th Avenue. This building is considered a reinforced concrete structure where FTA criteria consider that damage would occur at a vibration level of 0.50 ips (102 VdB).*

FTA guidance also provides *human annoyance criteria limits for construction-related vibration.* The FTA annoyance criteria would be 72 VdB for residential land uses. This criterion is associated with events that are likely to occur frequently (such as use of jackhammers) over the course of one day.

Methodology

A *quantitative assessment of vibration impacts* was based on FTA guidelines and the review of project construction plans and schedules. *Potential worst-case impacts related to building damage were assessed for one off-site residential receptor at 104-43 165th Street (V1)*. This location would be representative of the eastern facades of other buildings along 165th Street (V2). *However, one property at 104-09 165th Street would not only be affected on its eastern façade, but also on its northern façade. As a result, it was also assessed for impacts* related to vibration on its northern façade. In addition, the Allen Cathedral Senior Center (V3) located along 107th Avenue was also assessed. The construction information used in assessing vibration included construction activities, equipment types, and vibration emission levels. The proposed JBD would utilize spread footings in place of support piles; consequently, a review of the anticipated construction equipment and activities shows that jackhammers and backhoes (bulldozer) represent the worst vibration-causing construction activities at the construction limits.

The *residential building at 104-43 165th Street* would be located approximately 25 feet west of the closest edge of the JBD construction zone. The *residential building at 104-09 165th Street* would be located approximately three feet south of the closest edge of the JBD construction zone. The *Allen Cathedral Senior Center* would be located approximately 70 feet south of the closet edge of the JBD construction zone. For both assessments, the equipment's reference peak particle velocity levels were adjusted for distance and compared to the FTA damage criteria. The FTA guidance was also used for the vibration-related human annoyance determination. The three studied vibration receptor locations are shown as locations V1, V2 and V3 below in **Figure 17-2: Vibration Assessment Locations**.



Source: STV Incorporated, 2019.

Figure 17-2

Vibration Assessment Locations

Impact Results

As shown in **Table 17-13: Construction Vibration Assessment Results**, the results of the assessment concluded that at sites V1 (104-43 165th Street) and V3 (Allen Cathedral Senior Residence), *project-related construction activities would not result in damage at locations along the JBD construction zone limits.* For both locations, the predicted maximum distance to potential building damage would be less than the actual distance from the studied building to the construction activity. *However, for site V2 (other buildings along 165th Street), since the residential building is located only three feet from the construction zone limits, construction activities could potentially result in damage at the property*. Therefore, while vibration levels at sensitive receptors V1 and V3 would not exceed the FTA vibration damage criteria, vibration levels at sensitive receptor V2 could surpass the vibration damage criteria.

TABLE 17-13: CONSTRUCTION VIBRATION ASSESSMENT RESULTS

Vibration Receptor Number	Representative Building Description	Predicted Vibration Level	Predicted Maximum Distance to Potential Building Damage (feet)[1,2]	Actual Distance from Building to Construction Vibration Activity (feet)
V1	104-43 165th Street	0.193	15	25
V2	104-09 165th Street	> 0.20	15	3
V3	Allen Cathedral Senior Center	0.191	8	70

Notes:
[1] Assumes PPV damage criteria of 0.2 in/sec for wood framed residential buildings and 0.5 in/sec for reinforced masonry buildings. All distances assumed to be measured from edge of vibration-related construction activity to the edge of a building.
[2] Results based on vibration building damage equation in Section 7.2 of the *Transit Noise and Vibration Impact Assessment*, FTA, September 2018.

Because some of the backyard garages of homes along 165th Street would be located directly adjacent to the Phase II JBD construction zone, similar to the property at 104-09 165th Street, construction activities would also be directly adjacent to some of these smaller structures such that building damage due to vibration activities could potentially occur. However, as described below in the **Mitigation** section, MTA NYCT will require the contractor to use vibration control measures to minimize the vibration levels in all neighborhoods near the construction site.

Vibration Annoyance

For all Candidate Alternatives, the FTA vibration annoyance criteria of 72 VdB *would be surpassed at properties within approximately 80 feet of construction zones.* This would include the majority of residential buildings located along 165th Street and the Allen Cathedral Senior Center. However, most of these potential impacts would occur during tasks associated with excavation. The duration of these events would be relatively short and intermittent and would represent a small segment of the total construction period. Given the size of the construction site, activities would also migrate throughout the construction areas, such that the effects of construction vibration on the sensitive receptors would change depending on the location. The contractor *would make all efforts to schedule these types of activities* during times when it would be the least intrusive. In addition, the contractors would inform the occupants of adjacent buildings in advance before proceeding with work associated with jackhammers, backhoes or other vibration intensive activities.

Mitigation

Giving consideration to the potential for both building damage and temporary annoyance to residents, MTA *NYCT would require the contractor to use vibration control measures* to minimize, as much as possible, the vibration levels in all neighborhoods near the construction site. *Types of mitigation measures specific to the site of each type of construction activity, may include, but would not be limited to, the following:*

- Informing people living and working in the vicinity about construction method, possible effects, quality control measures, precautions to be used; and the channels of communication available to them
- A vibration mitigation plan would be prepared once more details regarding construction operations are known. This plan would be initiated at the start of construction and would include a pre-construction survey and post-construction survey in sensitive areas.
- Developing and implementing a vibration-monitoring program during highly disruptive construction activities, that would be immediately adjacent to affected properties
- Routing of truck traffic and heavy equipment to avoid impacts to the more sensitive residential receptors
- To the extent possible, earth moving equipment would be operated far from vibration-sensitive receptors
- Where practicable, utilize smaller sized bulldozers or backhoes.
- Use of deep saw-cuts to minimize the transmission of vibrations from pavement breaking operations to foundations of nearby structures
- Use of concrete cutters on pavement surfaces instead of pavement breakers, where practical
- Minimization of the duration of vibration activities

Conclusions

Based on **Table 17-13: Construction Vibration Assessment Results**, *projected vibration levels for construction equipment near sensitive receptors adjacent to the construction zones would not exceed the FTA damage criteria of 0.20 ips* for the wood framed residential buildings facing the western edge of the construction zone. In addition, vibration criteria would not be exceeded at the Allen Cathedral Senior Center building. ***However, damage from vibration could potentially occur at one residential building at 104-09 165th Street where the northern façade of the house would be approximately three feet from the JBD construction zone.*** In addition, *damage from vibration could potentially occur at some of the backyard garages of homes along 165th Street.* For the house at 104-09 165th Street and the smaller garage structures, MTA NYCT would use vibration control measures to minimize, as much as possible, the vibration levels for all properties near the construction site. The specific vibration control measures to be implemented will be determined during the post-EIS design phase and coordinated between the design-build contractor and MTA NYCT.

The FTA vibration annoyance level would be exceeded at vibration sensitive building locations closer than 80 feet from the JBD construction zones. However, while these impacts could occur, they would be short-term since most construction activities would be intermittent, and the sources of vibration would migrate throughout the larger construction zone.

17.5.4 SOCIAL AND ECONOMIC CONDITIONS, NEIGHBORHOOD CHARACTER, URBAN DESIGN AND VISUAL RESOURCES

According to the *CEQR Technical Manual*, construction impacts to social and economic conditions are possible *if the project would entail construction of a long duration* (i.e., more than two years) that could affect access to and thereby viability of a number of businesses ***and*** *if the failure of those businesses has the potential to affect the economic conditions of the community.* This, in turn, could affect neighborhood character. As noted above, most construction activities would take place within the project site, which occupies a full-block site and, therefore, does not contain any neighboring businesses. Construction activities associated with the proposed JBD would not significantly block or restrict access to any facilities in the area, affect the operations of any nearby businesses, or obstruct thoroughfares used by customers or businesses.

Project construction would result in temporary additional truck traffic in the area. The anticipated route for construction vehicles would be via local truck routes of Liberty Avenue, Merrick Boulevard, and 168th Street. The construction vehicles would likely connect with the regional truck routes on Hillside Avenue and Van Wyck Expressway. The anticipated volume of truck traffic is not expected to impact access to neighboring businesses significantly.

The Proposed Action would require demolition of the existing bus depot building *which is located on the property adjacent to residential uses on 165th Street.* The MTA would likely need both temporary and permanent (subsurface) easements on the residential properties during construction in order to demolish the existing JBD building and build security/sound barrier walls. All applicable construction regulations would be adhered to and no direct impacts to adjacent residences would occur.

Construction of Candidate Alternative A would occur during a 42-month period. Operations within the existing depot building would not be interrupted during construction. The new one-story depot structure would have minimal construction conflicts with the existing depot building, thereby requiring modest construction phasing.

Construction of Candidate Alternative A would have minimal impacts on the surrounding neighborhood. Any temporary roadway lane or sidewalk closures would occur on the west side of Merrick Boulevard; Tuskegee Airmen Way, or 107th Avenue. No businesses or residences are accessed exclusively from these roadways. The businesses on Merrick Boulevard would continue to be fully accessible from Merrick Boulevard. The businesses on Merrick Boulevard are primarily auto-related and rely on vehicular access to their facilities. Access to these auto-related businesses would not be impacted enough to impair the economic viability of these businesses. Traffic in the immediate area may be temporarily impacted due to construction. These impacts, however, would be temporary and would not be significant enough to adversely impact local businesses.

Full sidewalk closures are not anticipated, and the minimum width of sidewalks required by NYCDOT (five-foot width) are expected to be maintained. Any scaffolding or sidewalk narrowing would not occur in front of any businesses or residences and, therefore, pedestrian traffic to local businesses or residences would not be significantly impeded.

The construction for Candidate Alternative B would be similar to Candidate Alternative A, except that the construction duration would be approximately 46 months. Operations within the existing depot building would not be interrupted during construction and no significant impacts to local businesses are anticipated to occur due to construction. Vehicular and pedestrian access to local businesses and residences would not be significantly impacted.

The construction of Candidate Alternative D would be similar to Candidate Alternatives A and B, except that the construction duration would be approximately onths and would require intricate construction phasing so as not to interrupt operations within the existing depot building. While the construction period would be longer and more intricate, access to local businesses and residences is not anticipated be significantly impeded. Additional construction traffic is likely in the immediate area; however, the extra traffic is not anticipated to significantly impact access to local businesses or residents. No adverse impacts to the economic viability of local businesses would be anticipated due to construction.

17.5.5 HISTORIC AND CULTURAL RESOURCES

According to the guidelines in the *CEQR Technical Manual*, the assessment of construction impacts on historic and cultural resources considers the possibility of physical damage to any architectural or archaeological resources identified in the historic and cultural resources assessment. A construction assessment is not warranted if a project would not involve construction activities within 400 feet of a historic resource.

As presented in **Chapter 7.0: Historic and Cultural Resources**, there is little to no archaeological resources given the level of past disturbance across the project site lots. No additional archaeological investigations are recommended and since there are no historic structures located within the APE, there are no additional historic resources concerns for the project site. Therefore, *construction of the proposed JBD does not have the potential to result in significant adverse on architectural resources.*

17.5.6 CONTAMINATED HAZARDOUS MATERIALS

As stated in **Chapter 14.0: Contaminated and Hazardous Materials** the assessment identified *the presence of contaminated soil and groundwater beneath the JBD and suspect asbestos containing materials (ACMs) and lead-based paint (LBP) in the depot structures.* During construction, the potential exists for construction workers to encounter these contaminated and hazardous materials.

Potential contaminants of concern include petroleum products, polycyclic aromatic hydrocarbons (PAHs), metals, asbestos, lead-based paint (LBP), polychlorinated biphenyls (PCBs), and mercury, among others. Recognized environmental conditions (RECs) derived from the Phase I ESAs include a historic product spill and historic use of the area. Some lots within the study area currently have an open NYSDEC spill case (Spill No. 9010039) that is being remediated under a NYSDEC Global Consent Order (CO2-20000101-3341). A free product plume exists beneath the majority of Block 10164 and extends into areas outside of the project site boundaries. Portions of the project site were historically occupied by the following: auto repair shops with associated filling stations that utilized gasoline storage tanks, an auto parts manufacturing facility, a paint supply company, an upholstery shop, and a woodworking finishing facility. Other locations within and surrounding the project site where contaminated materials could potentially be present have been identified through usual and customary inspection performed by NYCT. Recognized Environmental Conditions (RECs) include: the potential for buried structures from former buildings, the current and historic use of the site as a bus service station and maintenance garage, an active gasoline filling station and several historical gasoline filling stations, a historic dry cleaners, and the presence of solid waste management facilities within ½ mile of the project site, among other RECs. E- (Environmental) designation areas, current and historic auto stations, drycleaners and historic drycleaners, properties in the vicinity, and subsurface utilities are recognized as potential areas of environmental concern.

The MTA NYCT construction specifications would require the contractor to prepare plans (e.g., health and safety plans, emergency action plan, abatement plans, waste management plan, etc.) and work practices that prevent exposures of hazardous and contaminated materials to construction workers or the public; therefore, *no significant adverse impacts would result from contaminated and hazardous materials.*

17.5.7 NATURAL RESOURCES

As discussed in **Chapter 12.0: Natural Resources** the project site contains impervious surfaces, and is located in an urban environment; with very little natural resources present within the project area, therefore no adverse impacts to natural resources is expected

A Stormwater Pollution Prevention Plan ("SWPPP") will be prepared by the contractor, and would include a description and detail of: 1) the erosion and sediment control measures during construction; 2) post-construction stormwater management strategies; and, 3) periodic certifications, inspections, and reporting (if required). *With these measures in place, no significant adverse impacts to wetlands or water resources would result during construction.*

17.5.8 SAFETY AND SECURITY

The Metropolitan Transportation Authority (MTA) NYCT has extensive experience managing safety and security in construction projects. In particular, NYCT has extensive experience in safely operating the City's bus system. As an initial and key step in the development of the construction plan for the proposed JBD, NYCT would require the contractor to develop a detailed, overall Health and Safety Program (HASP), which would consist of several HASP plans, to be implemented throughout all aspects of the project's construction.

The HASP plans developed and implemented by each contractor would require that detailed work scopes be reviewed and approved by NYCT to ensure safety in each task, and that equipment, materials, controls, crew size, job responsibilities, operating procedures, and maintenance practices be addressed, implemented, and audited for safety. The HASP plans would identify potential safety concerns and describe methods to protect construction workers. The HASP plans would also set forth the emergency response procedures to be followed. NYCT, through its contractors, would use preventive as well as responsive measures in managing and controlling hazards. These would include inspections, self-assessments, and testing to identify problem areas. Immediate actions to remediate problem areas would be required. NYCT would implement an audit program to ensure all contractors are in conformance with their individual HASP plans and the project-wide HASP. In addition, each contractor will also perform its work in accordance with NYCT System Safety requirements for any construction along or adjacent to active NYCT property. Contractors will also comply with safety aspects as they pertain to U.S. Occupational Safety and Health (OSHA) regulations.

The required HASP plans would ensure compliance with all applicable laws and regulations and would be coordinated in their development and implementation with appropriate state and city agencies and pursuant to other existing MTA NYCT inter-agency coordination mechanisms, such as regular meetings with the New York City Department of Transportation (NYCDOT).

NYCT codifies its requirements for construction safety and security in its Standard Specification "1S" which is included in all construction contracts. **Table 17-14: Key MTA NYCT Safety and Security Requirements**, presents excerpts of key NYCT requirements in this regard. *With these measures in place, the proposed JBD is not expected to result in adverse impacts to safety and security during the construction phase.* Coordination with the New York Police Department (NYPD) and the Fire Department of New York (FDNY) will also be implemented.

TABLE 17-14: KEY MTA NYCT SAFETY AND SECURITY REQUIREMENTS

General Requirements *Safety and security of passengers and other persons, property, Authority employees, and of all employees of the Contractor and Subcontractors working on the job site of this Project shall be a primary responsibility and concern of the Contractor. The Contractor shall maintain safe, clean, and healthy worksites for the entire duration of the Project.* *The Contractor shall comply with this Specification Section and the applicable provisions of the New York State Uniform Fire Prevention and Building Code, OSHA, the Environmental Protection Administration (Federal), Department of Environmental Conservation (State), Department of Environmental Protection (City), NFPA including National Electrical Codes, The New York City Building and Electrical Codes, the New York State Industrial Code, The NYCT "Safety Reference Documents," issued by the Department of Capital Program Management at the Engineer's Safety Orientation meeting, and all other applicable rules and regulations, including Drug and Alcohol Laws.*
Accident Prevention Program/Hazard Communication Program *The Contractor shall develop and maintain a Project specific Accident Prevention Program (APP) and a Hazard Communication Program (HCP) to: a) protect the lives and health of all persons, b) prevent damage to property and environment, and c) avoid work interruptions or any delay due to accidents.*
Safe Work Plan *A Safe Work Plan (SWP) and SWP summary is a written work plan, which identifies the tasks to be completed, including access/egress and set-up/breakdown under all expected environmental conditions. Also included is the method of work for completing these tasks, associated work hazards, and the corresponding equipment and methods that will be used to prevent loss for all contracted work, including that of Subcontractors. The SWP and summary document shall provide the Engineer with a defined plan of action for identified hazards and comprehensive prevention methods for exposures to workers, the public, and property. SWPs shall address all foreseeable exposures to employees, the public, and property for Contract work, including all tiers of Subcontractors. The SWP shall be used as basis for Contract coordination items and safety planning discussions in the Construction Management process.*
Accident Reporting and Investigation *The Contractor shall immediately notify the Engineer of all accidents involving personal injury and damage to property and all near misses. The Contractor shall submit a copy of the Authority's Supervisor's Accident Investigation Report to the Engineer no later than 24 hours following each accident. Near misses shall be reported verbally to the Engineer and lessons learned session should be held.*
Fitness for Duty *Contractor shall ensure that its supervisory staff and the supervisory staff of Subcontractors perform a fitness for duty inspection of all workers when they report for work and throughout the day. Should a worker be found to demonstrate incapacity because of drugs or the use of alcohol, the worker shall be immediately removed from the Project for the entire Project duration.*

TABLE 17-14: KEY MTA NYCT SAFETY AND SECURITY REQUIREMENTS (CONTINUED)

Employee Conduct *The Engineer reserves the right to refuse access to the Project Site or require immediate removal from the Project Site any individual violating or alleged to have violated site safety or security regulations and Contractor agrees to obtain consent of its Subcontractors to a similar provision, and Contractor agrees to hold the Engineer harmless for taking such actions.*
Safety Engineer *The Contractor shall employ and assign a full time Safety Engineer exclusively to this Project within two weeks from Contract award until its physical completion.*
Competent Persons *Competent Person – Per 29CFR Part 1926.32(f):* *One who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.*
Personal Protective Equipment (PPE) *NYCT has PPE requirements for work on the Project. Mandatory items shall be worn at all times while on the Project Site.*
Safety Requirements for Crane Operation *Contractor shall furnish the Engineer with copies of the following documentation indicating compliance with applicable local Authority restriction pertaining to the use of cranes:* *Certification (approved by a Professional Engineer) of pavement and ground support and submittal of grillage design and details. The most current Annual Inspection of the Hoisting Machinery as specified in the ANSI B 30.5 Standard.*
Office of System Safety Design Guideline - Plastic Flexible Barrier/Solid Barrier *Use of Plastic Flexible Warning Fencing is prohibited for use as temporary storage enclosures in all public access areas.* *The Contractor shall build and maintain a solid barrier on a daily basis if the work creates a safety hazard for the public.*
Contractor Equipment and Power Hand Tools *All operators of Power Actuated tools shall be certified in their use in accordance with the manufacturer's instructions. A NYC Fire Department Certificate of Fitness is required.*
Safety Requirements for Confined or Enclosed Spaces *The Contractor may be required to enter confined or enclosed space locations. Confined or enclosed space locations are as defined in OSHA 29 CFR 1910.146 and NYCT Policy Instruction 8.22.1. The Contractor shall ensure that all the requirements for entering a confined space as listed in OSHA 29 CFR 1910.146 and NYCT Policy Instruction 8.22.1 are strictly adhered to.*

TABLE 17-14: KEY MTA NYCT SAFETY AND SECURITY REQUIREMENTS (CONTINUED)

Welding and Cutting *The Contractor shall supply a list of certified operators and fire watch personnel who will be performing cutting and welding and evidence of their training and certification.*
Compressed Gas Cylinder Storage *All compressed gas cylinders shall be transported and properly stored in a safe manner.*
Fire Protection and Prevention *Install and maintain firefighting equipment of suitable types to provide sufficient firefighting protection for any type of fire that may occur. Periodically inspect this equipment, to ensure that it is ready for use. The equipment shall always be filled, in good condition, and placed in readily accessible locations.*
Fall Protection *The Contractor shall enforce a 100% fall protection policy with zero tolerance for noncompliance. It is required to have fall protection for all work areas where a worker or other person is exposed to an unprotected fall from elevation or into an excavation greater than 6 feet.*
Spill Prevention, Leakage Containment, and Clean-Up *The Contractor shall provide for the immediate reporting of each release of hazardous materials into the environment to the Engineer.*
Motor Vehicles and Mobile Construction Equipment *Construction equipment of the Contractor, whether owned or rented, and the equipment of all Subcontractors shall be suitable for safe and efficient performance of the work.*

Source: Proposed Emergency Ventilation Plant for the 8th Avenue Subway Line and 7th Avenue Subway Line, Final Environmental Impact Statement, April 2008, New York City Transit

18.0 DISPLACEMENT AND RELOCATIONS

18.1 INTRODUCTION

As described in **Chapter 3: Alternatives**, the proposed JBD has been designed to avoid and minimize the need for temporary disruptions to the use of private property and permanent acquisitions of private property. However, ***construction and expansion of the proposed JBD would require the acquisition of several commercial properties as well as attainment of temporary and permanent easements on adjoining 165th Street private properties***. In the event that permanent displacement is necessary, relocation assistance would be provided to residents and businesses by the Metropolitan Transportation Authority (MTA) New York City Transit (NYCT), in accordance with applicable federal and state law. These issues are discussed in later sections of this chapter.

18.1.1 CONTEXT AND KEY ISSUES

In order for the proposed JBD to address existing operational deficiencies by constructing any of the three Candidate Alternatives, a series of property acquisitions will be required. These acquisitions would consist of full fee commercial properties as well as temporary and permanent subsurface easements of private properties.

This chapter presents the following information specific to each Candidate Alternative:

- The reasons for and extent of displacements and property acquisitions/easements that would be required for the proposed JBD;
- The potential impacts of such acquisitions/easements on businesses and residents (owners and tenants) of those buildings directly affected (with reference to **Chapter 8: Social and Economic Conditions**);
- The protection afforded under Federal and State law to affected property owners and tenants; and,
- A discussion of compensation and relocation assistance.

18.1.2 SUMMARY AND CONCLUSIONS

18.1.2.1 NO-BUILD ALTERNATIVE

This alternative assumes that the existing JBD would remain as is. As a result, no easements or properties would be acquired, and no occupants or owners would be displaced.

18.1.2.2 CANDIDATE ALTERNATIVES A, B, AND D

Permanent Acquisitions

Expansion of the existing bus depot with any of the three Candidate Alternatives would require acquisition of six adjacent commercial lots and the permanent displacement of the occupants to permit the construction of the depot. Adequate notice for the relocation will be assured by written and verbal distribution of information that explains relocation benefits (i.e., advisory services, moving costs, and reestablishment costs) and eligibility requirements.

Easements

For each Candidate Alternative, a series of temporary and permanent easements would be required in order to facilitate construction of various project elements. During demolition of the existing bus depot and during construction of the security/sound barrier wall, a ten-foot-wide easement would be established on the adjoining 165th Street properties as a protective measure. These easement requirements would be established by NYCT in consultation with the property owners. The estimated duration of construction activities on these properties is approximately 10 months. **Figure 18-1: Property Acquisitions and Easements** presents a summary of properties requiring temporary and permanent easement acquisitions. The figure shows the location of the permanent and temporary easements and the properties that will be acquired for construction of any of the Candidate Alternatives.

After construction, a five-foot-wide permanent subsurface easement would be required on adjoining 165th Street properties to accommodate the foundation elements of the security/sound barrier wall. These easements would be established by MTA NYCT in consultation with the property owners.

Source: New York City Department of City Planning, MapPLUTO 18v2, 3/8/2019; STV Incorporated, 2019.

Figure 18-1

Property Acquisitions and Easements

Existing Property Line
Previously Acquired By MTA
To Be Acquired By MTA
5-ft Wide Permanent Easements
10-ft Wide Temporary Easements

Reconstruction and Expansion of Jamaica Bus Depot

Compensation and Relocation Assistance

Under the No-Build Alternative, no compensation or relocation assistance would be necessary. For the three Candidate Alternatives, all property acquisition would be undertaken within the framework of the ***Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act*** and ***New York State Eminent Domain Procedure Law*** (see **Section 18.4: Compensation and Relocation Assistance**).

Displacements are not expected to adversely impact the character of the local neighborhood given the potential for local relocation. The establishments that would be displaced by the proposed JBD offer goods and services that are similar to those offered by other establishments in the neighborhood. Commercial establishments to be relocated constitute a small part of this larger business district operating on Merrick Boulevard.

It is assumed that most businesses that require relocation will be successful in finding suitable alternative space near their current locations because the inventory of vacant office, retail, warehouse, and other commercial space in Jamaica, Queens is anticipated to be large enough to accommodate the needs of most displaced businesses.

18.2 NO-BUILD ALTERNATIVE

Under this alternative, the proposed JBD would not be built, no displacements would occur, and no properties would be acquired. This alternative assumes that the existing JBD would remain as is, in its existing configuration and operational state.

18.3 CANDIDATE ALTERNATIVES A, B, AND D

18.3.1 PERMANENT PROPERTY ACQUISITIONS

Construction of any of the three Candidate Alternatives would require the acquisition and demolition of six commercial properties (see **Figure 18-1**):

- 104-28 Merrick Boulevard (Block 10164, Lot 74);
- 104-32 Merrick Boulevard (Block 10164, Lot 76);
- 105-02 Merrick Boulevard (Block 10164, Lot 79);
- 105-22 Merrick Boulevard (Block 10164, Lot 89);
- 106-04 Merrick Boulevard (Block 10164, Lot 90); and
- 166-15 107th Avenue (Block 10164, Lot 95).

The occupants of the buildings would be permanently relocated following the acquisition.

The six properties to be acquired consists of a range of commercial owner-occupants and tenants. The buildings range in height from one to three stories and were primarily constructed prior to 1940. It is proposed that the occupants of these buildings would be permanently relocated following the acquisition of these six properties (see **Chapter 3: Alternatives** and **Chapter 17: Construction Methods and Activities** for full details).

As noted previously, properties proposed to be permanently acquired and affected by permanent and temporary easement requirements are shown in **Figure 18-1**.

As discussed in **Chapter 8: Social and Economic Conditions**, it is not expected that the affected businesses would experience substantial adverse impacts from displacement. Appropriate compensation and relocation assistance would be provided to affected businesses (see **Section 18.4: Compensation and Relocation Assistance**).

The commercial displacements are not expected to adversely impact the land uses, zoning or character of the local neighborhood given the potential for local relocation and the fact that expansion of the bus depot would not significantly affect most elements of urban design, as discussed in **Section 9.4.2: Preliminary Urban Design and Visual Resources Analysis of the Potential Effects of the Proposed Project**. The establishments that would be displaced by the proposed JBD offer goods and services that are similar to those offered by other establishments in the neighborhood. Commercial establishments to be relocated constitute a small part of this larger business district operating on Merrick Boulevard.

The following properties would be permanently acquired for the reconstruction of the JBD:

104-28 Merrick Boulevard: This one-story building was constructed in 1937 and includes 50 feet of street frontage. The building is occupied by an automobile repair shop and auto parts manufacturer.

104-32 Merrick Boulevard: A one-story commercial building is under construction on this lot.

105-02 Merrick Boulevard: This one-story building was built in 1937. The 32 feet of street-level frontage houses Domino's Pizza, a restaurant. An appliance repair shop (Automatic Gas & Electric Appliance Repair) is located at the rear of the building and accessed through 104-32 Merrick Boulevard.

105-22 Merrick Boulevard: This three-story building was constructed in 1937 and has a street frontage of 20 feet. The building is currently vacant, but formerly housed a delicatessen on the ground floor with residences on the upper floors.

106-04 Merrick Boulevard: This one-story building was constructed in 1931 and has a street frontage of 80 feet. The building houses automobile repair shops.

166-15 107th Avenue: This lot is used for parking by the automobile repair shops in the adjacent building (106-04 Merrick Boulevard).

18.3.2 DESCRIPTION OF TEMPORARY AND PERMANENT EASEMENT REQUIREMENTS

Under each of the Candidate Alternatives, a number of temporary easements would be required which could impact existing use of properties adjoining the project site. During demolition of the existing bus depot, a 10-foot temporary easement would be required on the adjoining properties along 165th Street. The temporary easement would extend from the JBD property line (approximated by the existing depot building wall) 10 feet onto the properties that adjoin the western perimeter of the project site and front 165th Street. At the western edge of the easement, an approximately 15-foot tall construction safety and security barricade would be constructed. The purpose of the barricade is to define the boundary of the work area and protect residents during construction activities. Structures located with the 10-foot temporary easement would be relocated (if practicable) in consultation with the property owner or removed. Trees located within the 10-foot temporary easement area would also be removed.

During construction, the temporary easements would allow the contractor access to demolish the existing JBD structures, excavate for foundations, pour concrete, and erect the security/sound barrier wall. The estimated duration of construction activities on these properties is approximately 10 months.

These temporary easements would be established by NYCT in consultation with the property owners. Property owners would be compensated within the framework of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act and would conform to the New York State Eminent Domain Procedures Law (see **Section 18.4: Compensation and Relocation Assistance**).

Temporary easements would be required on the properties listed in **Table 18-1: List of Properties Requiring Temporary and Permanent Easements** during construction of the proposed JBD.

TABLE 18-1: LIST OF PROPERTIES REQUIRING TEMPORARY AND PERMANENT EASEMENTS

Address	Block/Lot	Property Type	Easement Type
104-09 165th Street	10164/39	Residential	10-foot Temporary / 5-foot Permanent
104-15 165th Street	10164/38	Residential	10-foot Temporary / 5-foot Permanent
104-19 165th Street	10164/34	Religious	10-foot Temporary / 5-foot Permanent
104-23 165th Street	10164/32	Residential	10-foot Temporary / 5-foot Permanent
104-25 165th Street	10164/31	Residential	10-foot Temporary / 5-foot Permanent
104-27 165th Street	10164/30	Residential	10-foot Temporary / 5-foot Permanent
104-33 165th Street	10164/29	Residential	10-foot Temporary / 5-foot Permanent
104-35 165th Street	10164/28	Residential	10-foot Temporary / 5-foot Permanent
104-39 165th Street	10164/27	Residential	10-foot Temporary / 5-foot Permanent
104-41 165th Street	10164/26	Residential	10-foot Temporary / 5-foot Permanent
104-43 165th Street	10164/24	Residential	10-foot Temporary / 5-foot Permanent
104-45 165th Street	10164/23	Residential	10-foot Temporary / 5-foot Permanent
104-49 165th Street	10164/21	Residential	10-foot Temporary / 5-foot Permanent
104-51 165th Street	10164/20	Residential	10-foot Temporary / 5-foot Permanent
104-53 165th Street	10164/19	Residential	10-foot Temporary / 5-foot Permanent
104-55 165th Street	10164/18	Residential	10-foot Temporary / 5-foot Permanent
104-57 165th Street	10164/17	Residential	10-foot Temporary / 5-foot Permanent
104-59 165th Street	10164/16	Residential	10-foot Temporary / 5-foot Permanent
104-63 165th Street	10164/15	Residential	10-foot Temporary / 5-foot Permanent
104-65 165th Street	10164/14	Residential	10-foot Temporary / 5-foot Permanent
104-67 165th Street	10164/13	Residential	10-foot Temporary / 5-foot Permanent
104-69 165th Street	10164/12	Residential	10-foot Temporary / 5-foot Permanent
104-73 165th Street	10164/9	Residential	10-foot Temporary / 5-foot Permanent
104-77 165th Street	10164/8	Residential	10-foot Temporary / 5-foot Permanent
104-79 165th Street	10164/7	Residential	10-foot Temporary / 5-foot Permanent
104-81 165th Street	10164/6	Residential	10-foot Temporary / 5-foot Permanent
104-83 165th Street	10164/5	Residential	10-foot Temporary / 5-foot Permanent
165th Street	10164/3	Vacant	10-foot Temporary / 5-foot Permanent

18.3.3 DESCRIPTION OF PERMANENT EASEMENT REQUIREMENTS

Under each of the Candidate Alternatives, a number of permanent easements would be required which could impact existing use of properties adjoining the project site. After construction, a 5-foot permanent subsurface easements would be required on the adjoining properties along 165th Street for the buried foundation of the security/sound barrier wall for the buried foundation. The permanent easement would extend from the JBD property line (approximated by the existing depot building wall) 5 feet onto the properties that adjoin the western perimeter of the project site and front 165th Street. The permanent easements would allow NYCT to perform periodic maintenance of the security/sound barrier wall.

These permanent easements would be established by NYCT in consultation with the property owners. Property owners would be compensated within the framework of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act and would conform to the New York State Eminent Domain Procedures Law (see **Section 18.4: Compensation and Relocation Assistance**).

Permanent easements would be required on the properties listed in **Table 18-1: List of Properties Requiring Temporary and Permanent Easements** after construction of the proposed JBD.

18.4 COMPENSATION AND RELOCATION ASSISTANCE

Once the general property needs have been finalized for the proposed JBD, MTA Real Estate and MTA Legal are responsible for acquiring the property interests necessary to complete the project. The acquisition process would consist of the following steps:

- Appraisal and appraisal reviews of required property interests;
- Procurement of title reports to identify owners, lessees, mortgagees, lien holders and any parties with compensable interests in the property to be acquired;
- Acquisition of required property interests, either through negotiation or eminent domain;
- Support MTA Legal with settlement or litigation of any claims for additional compensation or property damage; and,
- Provide advisory and relocation services and assistance to affected and eligible businesses and residents as required under the Uniform Act and applicable regulations.

18.4.1 NEW YORK EMINANT DOMAIN PROCEDURE LAW

With respect to property acquisition, NYCT would adhere to the requirements of the New York Eminent Domain Procedure Law (the "Eminent Domain Procedure Law"). Among other matters, the Eminent Domain Procedure Law requires the condemner, in this case, the MTA, to:

- Hold a public hearing (for all potential acquisitions other than de minimis[26] and emergency acquisitions);
- Inform the public and affected parties about the public use, benefit and purpose of the proposed acquisitions, the reasons for selecting those locations and the general impacts of the acquisition on the surrounding area;
- Issue a determination and findings within 90 days after the close of the public hearing;
- Make written offers in the full amount of NYCT's highest approved appraisal;
- Advise condemnees that, subject to proving title and clearing title objections, the offer may be accepted as payment in full for the property interests to be acquired, or in the alternative, accepted as advance payment with a continuing right on the owners' part to file claims for additional compensation; and,
- If the compensation offer is not accepted, to file a petition with the New York State Supreme Court to acquire the necessary property interests by condemnation.

Compensation for real property generally is determined on the basis of fair market or fair rental value and, in the case of partial takings, diminution (if any) to the value of the remaining property. Compensation for tenant-owned trade fixtures is determined on the basis of "sound value", which under New York State law generally constitutes a fixture's reproduction cost less depreciation.

18.4.2 FEDERAL UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT

NYCT would also adhere to the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as codified in Title 42, Section 4601 et seq. of the United States Code and the applicable implementing regulations set forth in Title 49, Part 24 of the Code of Federal Regulations (collectively, the "Uniform Act") with regard to providing relocation advisory services, business moving expense claims, business reestablishment expense claims, and other allowable reimbursements related to commercial displacement.

The rights of owners and tenants of real property acquired to implement the proposed project are protected under the Uniform Act, which provides for fair, uniform and equitable treatment of persons displaced from their homes, businesses, or farms by federal and federally assisted programs. ("Owner" refers to either the fee owner of the property or the tenant-owner of improvements on it.) Overall, the Uniform Act is designed

[26] According to Article 2 of the New York State Eminent Domain Procedure Law 206 (D), acquisition is *de minimis* in nature when the public interest will not be prejudiced by the construction of the project or when because of an emergency situation the public interest will be endangered by any delay caused by the public hearing requirement. Considering the aforementioned, and the implied minimal nature of the action, the need for a public hearing for a *de minimis* acquisition is evaluated on a case-by-case basis, taking into consideration the value of the proposed taking and the impact of the action.

to ensure that individuals do not suffer disproportionate injuries as a result of programs and projects designed for the benefit of the public as a whole and to minimize the hardship of displacement on such persons. More specific information on the entitlements provided by the Uniform Act is provided on the Internet at https://www.fhwa.dot.gov/real_estate/index.cfm.

Property identification plans would be developed to identify every parcel affected by the proposed JBD and to define the need for property acquisitions (including easements). From property identification plans, preliminary title reports would be obtained to ascertain the owners of record and legal descriptions of the parcels. The parcels would then be certified as needed for the project and the acquisition process initiated.

The above information would form the basis of the property acquisition and relocation plans. All site occupants would be personally interviewed to establish eligibility and determine their specific relocation needs and would be given written information about benefits to which they may be entitled. Owners, tenants and parties with compensable interests in the properties to be acquired would be compensated in accordance with the Eminent Domain Procedure Law. Eligible displaced business owners and commercial tenants would receive relocation benefits and assistance as required under the Uniform Act. Assistance related to temporary relocations will be determined on a case-by-case basis taking into account the provisions of the Uniform Act and subject to negotiation with the tenant or owner.

18.5 SUMMARY OF ADVERSE IMPACTS AND MITIGATION MEASURES

Under the No-Build Alternative, no compensation or relocation assistance would be necessary. ***For each of the Candidate Alternatives, all property acquisitions and easements would be undertaken within the framework of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act and would also conform to the New York State Eminent Domain Procedure Law.***

For The Future With the Proposed Action Alternatives, it is anticipated that most relocated businesses would be successful in finding suitable alternative space near their current locations. Most of these relocating businesses are likely to be successful in finding suitable alternative space near their current locations because the inventory of vacant office, retail, warehouse, and other commercial space in Jamaica, Queens is anticipated to be large enough to accommodate the needs of most displaced businesses.

19.0 SECONDARY AND CUMULATIVE EFFECTS ASSESSMENT

19.1 INTRODUCTION

Secondary effects generally refer to the *potential for a proposed action to trigger additional development in areas outside the project site* that would not occur without the proposed project. These can include growth-inducing effects as well as changes in land use, economic conditions, neighborhood character, traffic congestion, and their associated effects on air quality and noise, water resources, and other natural resources.

Cumulative effects result from the *incremental consequences of an action (the project)* when added to other past and reasonably foreseeable future actions. The cumulative effects of an action may be undetectable when viewed in the individual context of direct and even secondary effects, but when added to other actions, can eventually lead to a measurable environmental change. Summarized in this chapter is the potential for the proposed project to result in secondary and cumulative effects.

19.2 SUMMARY AND CONCLUSIONS

Regardless of the Build Alternative selected from among the three Candidate Alternatives, the ***proposed JBD project would not contribute to any significant result in secondary and cumulative effects related to any of the technical areas for which a potential effect has been indicated in the foregoing and for the following technical areas: traffic and transportation; social and economic conditions; urban design and visual resources; air quality; and, noise and vibration.***

19.3 METHODOLOGY

This assessment was prepared consistent with SEQRA (6 NYCRR 617.7 (c) (2) and (3) and 6 NYCRR 617.9 (b), (iii) (a)). *Construction, rather than the operation, of the JBD project would result in the greatest potential for environmental impact.* Thus, effects during the construction of the proposed JBD are the subject of the *cumulative effects* assessment followed by an assessment of the potential for secondary impacts. For this FEIS, past and present projects/actions were considered in the documentation of the affected environment. Future actions potentially affecting the proposed project and project area were specifically included in the development of the No-Build Alternative. In addition to specific projects, *a population growth factor was included to account for traffic growth related to other smaller development projects* that could occur in the project area by the analysis year. Analysis years for construction were identified based on anticipated levels of activity for the Candidate Alternatives and used to estimate reasonable worst-case environmental impacts in the project area. The incremental change caused by the proposed JBD was then added to the No-Build Alternative, including past and future projects, to determine cumulative impacts, as well as any secondary effects.

Efforts have been made to identify and factor into the future conditions all foreseeable projects whose effects would be evident in the study area.

Aside from background growth, real-estate developments within the study area anticipated to be constructed and occupied prior to the Future With the Proposed Action year of 2025 have the potential to generate trips. Several, No-Build projects (projects that would happen with or without the reconstruction and expansion of the JBD) were identified in the study area and their anticipated vehicle trip generation/assignments were developed and incorporated into the No-Build traffic volume network, including:

- 165-20 Archer Avenue: 10-story, 206-room hotel (87,092 square feet)
- 92-32 Union Hall Street: 110-room hotel
- 92-33 168th Street: Mixed-use development with retail and 350 units of affordable residential housing (450,000 square feet).

Discussions with the Queens office of the New York City Department of City Planning (NYCDCP) indicated that several other projects are expected to be completed in the study area by 2025 and include the following:

- 163-05/25 Archer Avenue: Mixed-use 600-unit building
- 90-75 Sutphin Boulevard: 181-room hotel, 28,103 square feet of office space, and 3,729 square feet of retail
- 93-01 Sutphin Boulevard (The Crossing at Jamaica Station): 669 residential rental units in a 24-story building scheduled for completion in 2019 (669 rental units, 35,000 SF of retail space, and 187 above-grade parking spaces in a two-tower mixed-use complex)
- 93-43 Sutphin Boulevard: 221-room, 27-story hotel
- 148-18 Archer Avenue: 338-room hotel
- 149-03 Archer Avenue: 283-room, 18-story hotel
- United American Land Development Mixed-use Development: 4-story building on Jamaica Avenue between Union Hall Street and 160th Street
- 104-32 Merrick Boulevard: one-story building with mezzanine.

Based on the information identified, the following subject areas were evaluated to assess the potential for cumulative effects, based on the preceding FEIS impact analyses:

- *Traffic and Transportation,*
- *Social and Economic Conditions,*
- *Urban Design and Visual Resources,*
- *Air Quality, and*
- *Noise and Vibration.*

These were identified as having the potential to contribute to interrelated effects, both exclusively as part of the JBD project or in combination with the above-mentioned projects. The construction of the above-mentioned projects is assumed to overlap for at least some portion of time with that of the proposed project or could add to incremental impacts when considered with the proposed project.

19.4 SECONDARY EFFECTS

As a result of changing service demands and operational needs, the existing depot facility presents several critical functional deficiencies. These deficiencies have arisen as the demand for services have increased, necessitating a larger fleet, and as opportunities for improved bus stock have allowed MTA to invest in newer buses. Modern buses include larger buses than those for which the 1939 depot was designed. Modern buses also are designed to operate differently – such as relying upon clean diesel, hybrid-electric and electric buses. As a result**,** *the service needs and the configuration of work space within a depot have evolved*. The current depot cannot be expected to serve the forecast number of buses necessary to provide the density of bus service in this section of the City, nor could it handle new demands resulting from service changes that are not part of current forecasts (i.e., resulting from changes in depot/route assignment reconfigurations).

Therefore, ***the proposed project is intended to facilitate ongoing Queens bus service improvements but would not result in new bus routes or substantial new bus service***. The proposed project is therefore, ***not expected to encourage new residential or commercial growth*** (i.e. secondary effects) in areas where new bus service would be implemented.

19.5 CUMULATIVE EFFECTS

19.5.1 TRAFFIC AND TRANSPORTATION

Traffic and transportation operations within the project study area have been examined to assess the effect of the proposed JBD on local traffic, parking, transit, and pedestrian operations in relationship to other No-Build projects. A detailed analysis on the traffic and transportation conditions within the study area is provided in **Chapter 4.0: Traffic and Transportation Conditions**.

The new JBD will affect traffic operations as the daily number of buses entering/exiting the depot will increase and the number of NYCT employees commuting to/from the facility each day would increase. Some of the new employees may drive to work at the depot, which may increase the demand for on-street parking near the depot.

19.5.1.1 TRAFFIC

The proposed JBD will affect traffic volumes on the local study area street network as a result of:

- *increased number* of bus and employee trips to/from the proposed JBD; and,
- *reconfiguration* of bus movements/bus circulation on the street and within the proposed JBD.

The traffic analysis *findings identified a significant traffic impact at the intersection of Tuskegee Airmen Way and 165th Street during the AM peak hour for depot design Candidate Alternatives A, B, and* D. This intersection is currently a two-way stop-controlled intersection, with stop signs on the east and westbound Tuskegee Airmen Way approaches.

Installing a traffic signal is one potential measure that could mitigate the adverse traffic impact at the unsignalized intersection of 165th Street and Tuskegee Airmen Way. Existing conditions at the intersection of Tuskegee Airmen Way at 165th Street intersection meet the *CEQR Traffic Signal Warrant Analysis* for Warrant 3: Peak Hour traffic volumes.

Another mitigation option, which would limit the volume of future bus traffic through this intersection, and avoid creating a significant impact, is rerouting all AM peak hour buses that were originally assigned to exit the depot via Tuskegee Airmen Way to exit via Merrick Boulevard. *Mitigation measures to avoid this potential impact would be made by NYCT in consultation with NYCDOT.*

19.5.1.2 PARKING

*No significant parking impacts would be expected***.** The reconstructed JBD would increase the on-street parking demand by up to 32 vehicles, which would increase the shortfall in available on-street parking to two percent (34 spaces) on a typical weekday. *This shortfall would not be considered a significant impact for this project*, given the availability and proximity of transit in the area. Additionally, NYCT encourages their employees to use public transit to commute to work by providing a MetroCard as part of their employee compensation package. Alternative travel modes are available for the JBD employees, including six local NYCT bus routes that operate along Merrick Boulevard and Liberty Avenue. *If feasible, and* ***as stated in the Response to Comments in the Final Scoping Document (March 2019)****, future depot management may also identify opportunities to provide some on-site parking for employees during the day when most buses are outside the facility and active on their routes.* ***None of these effects is of a magnitude that would be expected to amplify adverse conditions in a significant, cumulative way.***

19.5.2 SOCIAL AND ECONOMIC CONDITIONS

In the future with the Proposed Action, the bus depot would be enlarged and fully operational and the parking of buses would be accommodated on-site. ***The proposed JBD would result in up to 721 employees daily, an incremental increase of up to 165 new employees. This influx of new employees could also benefit local businesses with an increase in patronage.***

19.5.3 URBAN DESIGN AND VISUAL RESOURCES

Street trees removed for construction of the JBD would be replaced consistent with NYCDPR requirements. The development of the project site with any of the Candidate Alternatives would represent a substantial change to the building bulk at the project site. Given that the new depot building would be built to the lot line at 107th Avenue, the new depot structure would establish a new and uniform street wall, thus *representing a positive improvement to urban design and surrounding the streetscapes*. Although the difference in wall height and building height for the proposed project would be visible from the streetscape at some locations along streets within the study area, and in between houses, *the form and use of the project site with each of the Candidate Alternatives would generally resemble modernized and enlarged version of existing and No-Build conditions as viewed from the public streetscape*. *Thus, none of the Candidate Alternatives would result in significant adverse impacts to the pedestrian experience*.

There are two known projects currently under construction within the study area. One is an 89-unit mixed-use affordable housing development at 92-61 165th Street. The other is a single-story structure with a mezzanine that is located at 104-32 Merrick Boulevard which is currently under construction. These developments will represent discrete visible changes, as experienced by the pedestrian in their immediate surroundings, but these developments will not substantially alter the study area's urban design, visual resources, or neighborhood character.

Based on the results of the preliminary assessment of the proposed project (provided in **Chapter 9.0: Urban Design, Visual Resources, and Neighborhood Character**) ***it is determined that none of the three Candidate Alternatives would result in any significant adverse impact to most elements of current and emerging urban design, including: building bulk, use, and type; street hierarchy, block form, and street pattern; streetscape elements; or visual resources. None of these effects would be of a magnitude that would be expected to amplify adverse conditions in a significant, cumulative way.***

19.5.4 AIR QUALITY

An analysis of air quality was conducted for the three Candidate Alternatives proposed for consideration and a detailed analysis on the air quality within the study area is provided in **Chapter 5.0: Air Quality**. *Because the surrounding neighborhood includes sensitive residential land uses, potential impacts related to both mobile and stationary sources were considered on a microscale (i.e. local level). Mobile source impacts* would be related to increases in bus and other project-related traffic volumes from future operations on the local street network. *Stationary source emissions* would come from on-site depot activities related to exterior bus storage, bus maintenance and other activities within the facility and HVAC and HRU systems designed for the depot building. For all three Candidate Alternatives, increases in both mobile and stationary source emissions would occur, including: carbon monoxide (CO), nitrogen dioxide (NO_2); particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$); and, sulfur dioxide (SO_2) as a result of depot operations. *These emissions, however, would not result in any exceedances of the National Ambient Air Quality Standards (NAAQS) or the NYSDEC de minimis impact criteria at any of the studied sensitive receptor locations*.

Lastly, ***for all the studied Candidate Alternatives, projected emission pollutant burdens for the proposed JBD facility operations would not exceed applicable NYSDEC regulatory requirements for major source air emissions.***

19.5.5 NOISE AND VIBRATION

The proposed JBD project would generate both *stationary* and *mobile source noise*. Stationary source noise would be generated by rooftop mechanical equipment, as well as by bus parking activities taking place within the depot building and related to bus parking. Mobile source noise would be generated off-site by buses and passenger vehicles driving to and from the proposed depot.

For the three Candidate Alternatives being studied, the operation of the proposed JBD would not result in any significant mobile or stationary noise impacts on noise sensitive receptors in the vicinity of the proposed project. Noise from the proposed facility would not exceed the FTA noise criteria at adjacent sensitive noise receptors. In addition, project buses would not result in any exceedance of the CEQR noise criteria at nearby sites along the local traffic network.

In addition*, operation of the proposed project would not produce any perceptible vibration levels*. The rubber tires and suspension systems on buses and passenger vehicles provide vibration isolation. With proper roadway maintenance to prevent large potholes, bumps, etc. in the roadways surrounding the project site and the internal bus paths within the proposed depot, perceptible vibration levels are not expected from the buses and passenger vehicles that would operate at the proposed depot. In addition, the proposed depot would be designed to avoid discontinuities on the building floors or open surfaces, or operational conditions that would result in perceptible vibration levels.

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20.0 COMMITMENTS TO MITIGATING ADVERSE EFFECTS

As noted in each technical analysis chapters in this EIS***, mitigation measures would be implemented by MTA NYCT to reduce or eliminate all potential adverse impacts of the proposed project, during both the construction and operational periods.*** With regard to potential adverse cumulative impacts, or those impacts that are potentially additive or interactive with other resource area impacts, MTA NYCT will maintain routine communication with representatives for the other construction projects identified within the study area (165-20 Archer Avenue, 92-32 Union Hall Street, 92-33 168th Street), as well as for the several other projects identified within the study area that are expected to be completed by 2025***. MTA NYCT will also maintain open and routine communication with residents and businesses and work with all appropriate parties to develop mitigation strategies as necessary.*** Provided business owners are fully informed as to project schedule and the scope of activities that would occur at all phases of the schedule, they may be able to prepare their business strategies accordingly. Similarly, NYCT may be better able to manage nuances of the schedule as construction progresses in order to avoid or reduce impacts; for example, cumulative effects that would be most detrimental to traffic conditions (e.g., concentrated concrete delivery requirements) may be scheduled such that they do not occur simultaneously.

MTA NYCT will continue to implement a public outreach process that includes communication with Queens Community Board 12. MTA NYCT will also initiate communication with local business owners to learn about any specific cumulative impacts that business owners experience, so that MTA NYCT may be able to make specific changes to prevent or reduce such impacts as may occur when construction is underway. *While communication may not prevent all such cumulative impacts, its goal would be to reduce such impacts wherever possible. MTA NYCT would continue to work cooperatively with NYCDOT beyond the EIS process* to best assure minimized impact to traffic and transportation throughout the construction process.

MTA NYCT will develop the ***Construction Environmental Protection Plan (CEPP)*** with specific measures for minimizing or avoiding adverse construction effects. These requirements would be finalized as the design process continues and codified in construction specifications. ***The MTA NYCT Construction Manager, supported by a MTA NYCT Principal Environmental Engineer, will ensure that commitments stipulated in the CEPP are met.***

MTA NYCT is committed to an ongoing effort to minimize adverse effects and maximize construction efficiencies. MTA NYCT's commitment is demonstrated by the success of its past and ongoing efforts throughout New York City, including:

- Implementing design and construction practices consistent with ***NYCT ISO 14000 certification***;
- Developing an effective ***CEPP***;
- ***Routinely interfacing and cooperating*** with nearby construction program representatives to minimize potential for any form of cumulative adverse effects/impacts;
- ***Being proactive*** with adjacent property owners; and,
- ***Responding to*** complaints in a managed manner.

MTA NYCT will continue to develop, document, broadcast, and implement practicable methods, practices, and procedures to manage the environmental effects of its actions, individually and cooperatively with NYCDCP and other local development project representatives. This process will be managed through regular monitoring and routine interface with construction program representatives. MTA NYCT will also ensure routine interface with NYCDOT and any other construction efforts in the JBD project vicinity.

Based on the information presented in this EIS, ***construction and operation of the proposed JBD, considered in conjunction with other projects that are planned or under construction in the vicinity of the project site, would not result in any significant adverse effects.***

21.0 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

This chapter identifies: *irreversible or irretrievable commitments of resources that would occur if the Jamaica Bus Depot (JBD) were constructed; and*, examines the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity, as they relate to the proposed project.

There are a number of resources, both natural and built, that would be expended in the construction and operation of the proposed project, regardless of the Candidate Alternative selected. These resources include: the *building materials* used in construction of the proposed project; *energy* in the form of petroleum, natural gas, and electricity consumed during construction and operation of the depot; and, the *human effort (time and labor)* required to develop, construct, and operate various components of the proposed project. *Resources are considered irretrievably committed because their reuse for some purpose other than the proposed project would be highly unlikely*. In addition, some existing street trees adjacent to the project site would be removed during construction of any of the three Candidate Alternatives (though their replacement would be as directed by NYCDPR, following construction).

Construction of the proposed JBD would require *the irreversible and irretrievable commitment of construction materials such as concrete, steel, wood, and other building materials. Energy in the form of fossil fuels and electricity would be consumed during the construction and operation of the facility*. None of these materials are in short supply and their use for the proposed project would not have an adverse impact on their continued availability for other purposes. In addition to materials, *funding and human labor would be required to design, build, and operate the proposed project*.

NYCT endeavors to minimize the use of irretrievable resources, and conserve and reuse resources for the proposed project wherever practicable. To that end, NYCT has established and implemented an *Environmental Management System (EMS) pursuant to ISO 14001* (an internationally recognized set of guidelines for the management of environmental programs) to demonstrate control over key issues related to: raw materials consumption; energy usage; emissions; waste products; waste reuse; transport; distribution; and, services. The EMS requires *a continuing compliance with relevant legislation*, and *also requires that NYCT remain committed to achieving improvements in these key issue areas*. For the *construction phase*, measures that would aid in the avoidance and/or minimization of adverse construction-related impacts is codified in NYCT's contract specifications and in the Construction Environmental Protection Plan ***(CEPP)***. For the *operational phase*, the goal is that the design of the reconstruction and expansion of the JBD would meet LEED standards and sustainability objectives.

In aggregate and fundamentally, ***NYCT's continuing goal is, and will continue to be, to plan, design, construct, and operate so that a sustainable re-constructed JBD is produced to appropriately serve NYCT bus ridership over the coming decades***.

21.1 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Short-term effects on the environment typically result from construction impacts. ***Long-term effects relate to the maintenance and enhancement of long-term productivity, including consistency of a project with local and regional economic, social, planning, and sustainability objectives***.

21.1.1 SHORT-TERM USES

Construction activities required for the proposed project would have greater short-term impacts on the environment than the No Build Alternative. However, *the temporary environmental impacts that would result from the proposed construction activities would not be significant*, as discussed in greater detail in **Chapter 17.0: Construction Methods and Activities**. NYCT would endeavor to reduce any construction related environmental impacts through the implementation of best management practices and implementation of the Construction Environmental Protection Plan ***(CEPP)***.

21.1.2 LONG-TERM PRODUCTIVITY

A public transportation system that serves major residential and employment centers is essential for economic growth and productivity in cities, as well as a key factor in improving the livability of surrounding neighborhoods. ***The proposed project would be: a component of the long-term modernization of the bus transit system; an initial NYCT entry into the emerging electric bus era; and, would help to maintain and promote the economic vitality of the areas served by the JBD bus routes in Queens***. The operation of the depot under the final design will be required to meet LEED standards for certification at the highest level achievable.; ***thus, the proposed JBD will be more efficient and sustainable.***

21.1.3 SHORT-TERM USES VERSES LONG-TERM PRODUCTIVITY

Based on the information presented above, the localized short-term impacts that would result from construction of the proposed project *would not be significant and would facilitate the maintenance and enhancement of long-term productivity* through the provision of reliable and efficient bus depot operation and transit service.

22.0 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are defined as those that meet the following criteria:

- There are *no reasonably practicable mitigation measures* to eliminate the impacts; and,
- There are *no reasonable alternatives to the proposed project* that would: meet the purpose and need of the action; eliminate the impact; and, not cause other or similar significant, adverse impacts.

Based on the requirements in SEQRA (6 NYCRR Part 617.9(b)(5)(iii)), ***there are currently no unavoidable adverse impacts for the environmental resource categories studied in the proposed project. NYCT is committed to an ongoing effort to minimize adverse effects and will continue to implement a public outreach process so that NYCT may be able to prevent or reduce unforeseen impacts.***

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23.0 GROWTH INDUCING ASPECTS OF THE PROPOSED ACTION

The proposed JBD would meet the key design criteria which are fundamental to ensuring that the proposed, reconstructed depot design and operation meets the overall project purpose and need to:

- *Manage* the operation/maintenance and on-site bus storage of up to 300 Standard Bus Equivalents (SBEs) to serve the projected bus assignments at this depot;
- *Allow additional* capacity due to the density of bus service in this section of the city and the long-range outlook for new service demands; and, accommodate potential route/depot assignment reconfigurations; and,
- *Demonstrate* the greatest potential to minimize adverse effects/impacts of construction/operation based on integrated consideration of engineering, economic, and environmental factors.

The proposed JBD would be a component of the long-term modernization of the bus transit system and would help to maintain and promote the economic vitality of the areas served by the JBD bus routes in Queens. Therefore, ***no significant development is expected to occur as a result of the proposed project***.

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24.0 COORDINATION AND PUBLIC OUTREACH

24.1 INTRODUCTION

This chapter describes ***public outreach activities undertaken to date*** by MTA NYCT in the planning of the reconstruction and expansion of the JBD. The regulatory context for public participation is discussed in Section 24.2. Details of the public outreach program initiated during the scoping phase of the project are included in Section 24.3 Public Scoping Process and Section 24.4, Ongoing Public Participation. *An explanation of the continuing coordination* with local, state, and regional agencies involved in the planning of the project is also presented.

24.2 REGULATORY CONTEXT

The MTA is a Public Authority within the State of New York, and as such, is subject to the Public Authorities Law (PAL). NYCT is a part of MTA and is subject to it as well. PAL Section 1266-C, 11 states that:

> *"No transit project to be constructed upon real property theretofore used for a transit or transportation purpose, or on an insubstantial addition to such property contiguous thereto, which will not change in a material respect the general character of such prior transit or transportation use, nor any acts or activities in connection with such project, shall be subject to the provisions of article eight, nineteen, twenty-four or twenty-five of the environmental conservation law, or to any local law or ordinance adopted pursuant to any such article."*

Article 8, referenced in the PAL section above, is SEQRA. Although MTA is exempt from the SEQRA process, the SEQRA process is being implemented for this project, and this FEIS has been prepared in accordance with the regulations for implementing SEQRA (6 NYCRR Part 617), in compliance with the New York Environmental Conservation Law. SEQRA requires that state agencies evaluate the environmental consequences of proposed actions and their alternatives, identify measures to mitigate any significant, adverse impacts, and conduct the process in coordination with other agencies and the general public. In order for MTA NYCT to approve and fund the construction of the proposed JBD, the project must comply with the public and agency coordination requirements of SEQRA, and evidence of this compliance must be documented in the FEIS.

24.3 PROJECT SCOPING PROCESS

The environmental process for the proposed project officially began on May 18, 2016, when MTA NYCT: *submitted* a *Positive Declaration* and a *Notice of Intent (NOI)* to prepare an EIS for the Proposed Action; and, *published its intentions* in the Environmental Notice Bulletin (ENB). **Although scoping was not required under SEQRA at that time (see 6 NYCRR 617.8(a)), *MTA NYCT chose to implement scoping*.** The NOI invited the public to participate in the project scoping process, including attendance at a project scoping meeting. "Scoping" refers to the process by which the issues to be addressed in the DEIS are identified (6 NYCRR Part 617.8, SEQRA). In addition, the NOI indicated the availability of a *Draft Scoping Document (DSD)* on the MTA NYCT website. Copies of the Draft Scoping Document were made available at *two public libraries* in the area (South Jamaica Library, Queens Central Library) and at the offices of *Community Board 12*.

The Draft Scoping Document provided *an overview of the proposed reconstruction project and the scoping process*, including: the background of the proposed project; the purpose and need for the proposed project; a discussion of alternatives; a general analysis approach for assessing the impacts; and, a summary of public and agency participation efforts to be implemented during the course of the project. The Draft Scoping Document was published on May 18, 2016, and a formal scoping meeting was held on June 15, 2016 at the Junior High School 8 (IS 8) Richard S. Grossley located at 108-35 167th Street in Queens. ***During the meeting, a presentation on the Candidate Alternatives and the scope of the DEIS analyses was given by MTA NYCT, and comments from the public were heard. State and local agencies were invited by letter to participate in the scoping process. The agencies and the general public had an opportunity to review the materials presented, including the Draft Scoping Document, and provide written comments through July 8, 2016.***

Comments were received via posted mail, email, submission to the MTA website, and testimony at the public scoping meeting. Approximately 12 individuals and two resident groups (i.e., 107-36 Merrick Boulevard and 107-02 Merrick Boulevard) provided comments. Many comments expressed concern about potential disruption to the community as a result of constructing the proposed JBD. Others identified the importance of considering potential traffic impacts during construction, and public concerns for air quality (i.e. fumes), noise and vibration during construction and operation of the facility. Lighting and removing bus and staff parking on the streets were also concerns that were expressed.

Those comments were addressed and incorporated as appropriate into the *Final Scoping Document* that was announced in the NYSDEC Environmental Notice Bulletin (ENB) and published on the MTA website on *March 13, 2019. Copies were delivered to the libraries and community district offices identified above, as well as to the Allen Cathedral Senior Residence*.

24.4 ONGOING PUBLIC PARTICIPATION PROCESS

Public involvement has been sought via attendance at the Community Board 12 meetings, the Draft Scoping Document public meeting, and the DEIS Public Hearing to solicit input from the community on the proposed project, and to encourage public participation in the decision-making process. ***Announcements about public meetings have been provided through notifications on MTA NYCT's website ("www.mta.info/), NYSDEC's Environmental Notice Bulletin (ENB), and other means, as appropriate, such as advertising and press releases.***

24.4.1 AGENCY COORDINATION

Substantial *public agency coordination has occurred and is ongoing for the proposed JBD.* These efforts will continue as the project is developed in greater detail during preliminary and final design and during construction. Throughout the environmental review process, MTA NYCT has and will continue, as appropriate, to interface with, and/or account for, the usual and customary requirements of several agencies for feedback, insight, and participation. ***These agencies include NYCDPR, NYSHPO, NYCLPC, NYCDOT, NYCDEP and NYSDEC.*** Approvals, permits and coordination required for the development of the proposed project are provided in **Table 24-1: Approvals, Permits, and Coordination Required**.

TABLE 24-1: APPROVALS, PERMITS, AND COORDINATION REQUIRED

Approval/Permit/Coordination	Resource Agency	Description
Parks Memorandum of Understanding (MOU)	NYCDPR	Agreement between NYCDPR and MTA NYCT regarding temporary impacts on street trees and replacement thereof.
Maintenance and Protection of Traffic (MPT) Plans, sidewalk use permits and general coordination	NYCDOT	Agreement necessary for coordination and assumption by MTA NYCT of utilities relocation, and sidewalk and street work. Approvals for use of sidewalks and street lanes during construction of the project.
Water Discharge (Construction)	NYCDEP	This permit would allow contractor to discharge the water from construction activities after appropriate treatment, including dewatering of excavation, wheel washing.
Water Discharge (Operation) modification	NYCDEP	During operation, this permit would allow MTA NYCT to discharge water from the depot.
Contaminated Material/Pollution Discharge	NYCDEC	Identification and disposal of contaminated materials during construction and protection and control of surface wastewater and stormwater discharges in accordance with the Clean Water Act.

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24.4.2 COMMUNITY BOARD COORDINATION

Queens is divided into 14 Community Boards, each of which represents the interests and concerns of the local community and acts as a coordinator for the residents and employees within its jurisdictional boundaries. Each community board serves to ensure that community needs are taken into account as part of the City's budget process and provides input regarding actions requiring City approval. Each Community Board also forms committees to study special issues such as transportation, land use, and/or historic resources. ***The JBD project is located within the boundaries of Queens Community Board 12, which encompasses Jamaica, Hollis, Saint Albans, South Ozone Park, and Springfield Gardens.***

In addition to the public scoping meeting on June 15, 2016 and the DEIS Public Hearing on June 27, 2019, an MTA NYCT Government and Community Relations representative participated in a public meeting with Queens Community Board 12 on March 12, 2019.

24.4.3 PUBLIC HEARING ON THE DEIS AND FEIS PROCESS

Upon completion of the DEIS, NYCT *prepared a Notice of Completion, published the notice in the NYSDEC Environmental Notice Bulletin and local newspapers, and distributed the DEIS on June 5, 2019*. A copy of the DEIS was posted on the MTA website consistent with NYSDEC procedures (6 NYCRR

617.12) and at four local repositories within the project area, including: Queens Central Library, South Jamaica Library, Allen Cathedral Senior Residence, and Queens Community Board 12.

A Public Hearing was held on June 27, 2019 at 6:30 PM at the Jamaica Center for Arts and Learning, 161-04 Jamaica Avenue in Jamaica, New York to give the public an opportunity to comment on the DEIS. The Public Hearing record remained open to received public comments until July 19, 2019, 46 days after the Notice of Completion. The Public Hearing included an informal poster session staffed by MTA NYCT personnel. Notification of the Public Hearing for the DEIS was published in the NYSDEC Environmental News Bulletin on June 5, 2019; on the MTA NYCT website and social media (Twitter); and placed in local newspapers including: *The New York Post, El Diario, Queens Chronical, and Pandora's Box* (see **Appendix H**). In addition, posters announcing the Public Hearing were placed in the buses and in the subway station in the project area. A transcript of the Public Hearing is in **Appendix I**.

MTA/NYCT Government and Community Relations also reached out to Queens Community Board 12 and all elected offices in the district (Councilmember Miller, Assembly Member Hyndman, and Senator Comrie) to inform about the Public Hearing and to ask them to reach out to their constituents. After the Public Hearing, these elected offices were called again to submit their comments and Councilmember Miller's office did. NYCT also reached out to the Allen Cathedral Senior Residence to inform them of the availability of the DEIS, the Public Hearing, and to request submittal of their comments.

Analysis of the public comments on the DEIS, provided in **Chapter 25: Response to DEIS Comments**, indicates that six individuals remarked on the DEIS, which included: one elected official; two representatives from Queens Community Board 12; the president of Amalgamated Transit Unit Local 1056; one resident; and one private citizen. In aggregate, MTA presented 24 detailed responses to the comments provided based on material previously given in the DEIS.

Revisions to the DEIS document have been incorporated into the FEIS as a result of the comments raised and responses provided. A summary of input received at the hearings and responses is provide in **Chapter 25: Response to DEIS Comments**. This includes comments received as testimony during the Public Hearing as well as those received in writing or online submission during the comment period. Responses have been prepared to address the comments received and are included in **Chapter 25: Response to DEIS Comments**. The Notice of Completion of this FEIS will be posted in the NYSDEC Environmental News Bulletin. The FEIS identifies the Preferred Alternative and mitigation measures to minimize or avoid significant adverse impacts. The mitigation measures will be further developed during final design and as the Construction Environmental Protection Program (CEPP) is finalized. MTA NYCT will prepare a written Findings Statement no less than 10 days after the publication of the Notice of Completion of the FEIS, stating MTA NYCT's basis for their decision on the Proposed Action.

Throughout the environmental review process, MTA NYCT has communicated with several agencies including NYSDOT, NYCDEP, New York City Department of Parks and Recreation (NYCDPR), NYSOPRHP, NYSDEC and others in the process for feedback, insight, and participation through its Office of Government and Community Relations. MTA NYCT will also maintain routine liaison with the public and its representatives concerning the project and EIS process.

24.4.4 CONTINUED PUBLIC OUTREACH

In addition to the public agency coordination and public outreach to the community described in the previous sections, ***MTA NYCT will continue outreach through its Office of Government and Community Relations to the general public, Community Board 12, agencies, and other stakeholders to provide information about the proposed JBD. Public outreach efforts will be announced on the MTA NYCT website.***

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25.0 RESPONSE TO DEIS COMMENTS

25.1 INTRODUCTION

During the EIS process, since mid-2016, and as discussed in various of its related environmental process documents, MTA has stated:

- *the purpose of the project* is to develop a reconstructed Jamaica Bus Depot (JBD) that "…demonstrates the maximum potential from among the Candidate Alternatives, to minimize adverse effects/impacts based on an integrated consideration of *engineering, environmental*, and *economic* factors…" (see DSD, page 5, Part C; FSD page 5 Part C; DEIS page 1-5; Section 1.4; FEIS page 1-5; Section 1.4).
- *MTA has proposed* in its Capital Program 2015-2019: "…$298 million to reconstruct the Jamaica Bus Depot" and that the "project will help NYCT to reduce its reliance on curbside street parking for buses; improving neighborhood conditions for the nearby residents."
- *MTA will perform a* ***State Environmental Quality Review Act (SEQRA) environmental impact analysis*** **to determine any potential significant impacts and identify mitigation measures to address any significant impacts. Noteworthy is that although Scoping was not required under SEQRA (see 6 NYCRR 617.8(a) when the EIS process was initiated (Note: Scoping became required by NYSDEC starting 2019), NYCT chose to implement Scoping (see DSD Section A, page 2), which is the precursor of the EIS.**
- *NYCT proposes* to "*Select a Preferred Alternative from among three (3) Candidate Alternative design concept (A, B, D) that have been developed as a result of extensive engineering and economic planning within NYCT (see Appendix B) through the SEQRA process; ... secure LEED Certification through the USGBC; ... upon the close of the SEQRA process and acceptance of its 'Findings' by the MTA Board, NYCT will reconstruct and operate the reconstructed JBD" (see FSD, page 5, Proposed Action).*
- *The lead agency (NYCT) must adopt* a formal set of written findings based on the FEIS. In accordance with 6 NYCRR Part 617.11 (d), the SEQRA Findings Statement issued in connection with a project approval must:
  - Consider the relevant environmental impacts, facts, and conclusions disclosed in the FEIS
  - Weigh and balance relevant environmental impacts with relevant social, economic, and other considerations;
  - Provide the rationale for the agency's decision (DEIS: p 2-3; Section 2.2.7 Statement of Findings)

Subsequent to the close of the DEIS process and Public Hearing, MTA has prepared this FEIS and has selected a "***Preferred Alternative***." The details of that decision analysis process are presented in **Section 3.2: Selection of the Preferred Alternative** of the FEIS. Importantly, the following presents NYCT's Response to Comments of the public on the DEIS, which formed a substantive input to NYCT's selection of the Preferred Alternative. All NYCT responses below are based on NYCT's *conformance* with engineering, economic, and environmental factors and considerations referenced above (see **Table 25-1: Response to Comments on the Draft Environmental Impact Statement for the Proposed Reconstruction and Expansion of the Jamaica Bus Depot**).

TABLE 25-1: RESPONSE TO COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED RECONSTRUCTION AND EXPANSION OF THE JAMAICA BUS DEPOT

Commenter #	Commenter	Summary of Comments and Questions	Response
1	Norm Miller	1-1 The Jamaica Bus Depot is the oldest bus depot in the MTA. It needs to be heavily renovated so that it cannot only maintain and store local standard buses but also articulated accordion buses.	1-1 The depot will be completely reconstructed after the Final EIS and Staff Summary are accepted by the MTA Board. Those documents will include the basis for, and identification of, the NYCT proposed Preferred Alternative. The composition of buses will also be documented, including electric buses. *The EIS process assures the documentation of the basis for the selection of the proposed Preferred Alternative.* Identification of the Preferred Alternative in the Final EIS will complete the EIS process, and then the MTA can initiate the preparation of the design and construction of the new bus depot to replace the existing Jamaica Bus Depot. The new bus depot would provide bus storage for 300 buses (SBEs), modernize the bus fleet to include articulated buses, electric buses, etc., and update the service and maintenance technology.
		1-2 The Q5 and Q85 should become +SBS routes.	1-2 As part of the Fast Forward plan, MTA is developing bus service patterns in each borough of New York City to better match service with current and future travel demands. This is a collaborative process among New York City Transit, MTA Bus, the New York City Department of Transportation, and the public, to ensure all affected customers have input into their redesigned networks. Currently, MTA is working on a reimagined Queens bus network which will be released to the public for feedback by the end of 2019, and a final plan in spring of 2020. Public outreach is being conducted throughout the process.

Commenter #	Commenter	Summary of Comments and Questions	Response
2	Michele Keller Transportation Committee Chairwoman (Queens Community Board 12)	2-1 Community Board 12's Transportation Committee supports the building of a new enclosed structure to house the buses. Our concerns for the residents contiguous to the depot's site is priority.	2-1 Appropriate technical, environmental, engineering, economic and other relevant analyses have been made by NYCT in a usual and customary manner for each of the three (3) Candidate Alternatives, consistent with NYSDEC SEQRA and related requirements. The EIS analyses demonstrated that there would be no unavoidable significant adverse environmental impacts (i.e., Air Quality, Noise and Vibration, Traffic, etc.) associated with any of the three Candidate Alternatives for both the construction and operational conditions. However, the evaluation did demonstrate that, from engineering and economic perspectives, Candidate Alternatives B and D would be: more complex to design; more difficult to construct; cost more to build and maintain; and, have higher ongoing energy usage (see Section 3.2). MTA NYCT has concluded that Candidate Alternative A is the Preferred Alternative because it demonstrates *the greatest potential to minimize, based on integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the reconstructed Jamaica Bus Depot.*
		2-2 The corridor where the depot is currently located is heavily travelled causing an increase of air pollutants from vehicles, buses, trucks and existing auto repair shops and car wash businesses. All of which have adverse health impact on our constituents subjected to these conditions. In particular, the Allen Cathedral Senior Residence which has 109 units (Sections 202 Supportive Housing for the Elderly Program) complex is adjacent to the depot.	2-2 Chapters 4 through 17 in the DEIS/FEIS present technical analyses related to the effects of construction and operation for *each* Candidate Alternative for various environmental domains including: Air Quality; Noise and Vibration; and Transportation. The analyses were performed to address sensitive receptors adjacent to/near by the project, including adjacent residential homes along 165th Street and the Allen Cathedral Senior Residence on 107th Avenue. The results of the environmental analyses for all three (3) Candidate Alternatives for both the construction and operation conditions of the reconstructed JBD are within the regulatory standards and requirements.

Commenter #	Commenter	Summary of Comments and Questions	Response
2	Michele Keller Transportation Committee Chairwoman (Queens Community Board 12)	2-3 It is my understanding your agency met with the residents at IS 8 Middle School in the last two years and heard their concerns as well. I do hope that MTA will take into consideration Community Board 12 and its constituents recommended input and concerns when making its decision to build the new bus depot.	2-3 All public comments that were received by NYCT related to the Draft Scoping Document period were documented, addressed and responded to by NYCT in the Final Scoping Document that was issued in March 2019. Those NYCT responses continue to be considered in the Preferred Alternative decision analysis process by NYCT.
		2-4 I look forward to working with MTA in the future.	2-4 NYCT staff, through the MTA NYCT Office of Government and Community Relation (Ms. Simone Price and Ms. Lucille Songhai) have worked with Queens Community Board 12 during the SEQRA EIS process, initiated in 2016. Ms. Songhai remains as the project Government and Community Relations direct contact to the public (646-252-2653; Lucille.Songhai@nyct.com).
		2-5 Good evening ladies and gentlemen. My name is Michele Keller. I am the Transportation Chairperson for Community Board 12 and I'm here to give our position on the Jamaica Bus Depot on Merrick Boulevard. Back in 2015 I believe it was under Simone Price, she came with a presentation about the proposals on the new depot. Simone Price who was a representative of MTA.	2-5 Ms. Price served in the Government and Community Relations role for the Queens Division during the SEQRA Scoping process but has moved to another NYCT position. Ms. Lucille Songhai has been the community liaison since then and remains available at 646-252-2653; Lucille.Songhai@nyct.com.

Commenter #	Commenter	Summary of Comments and Questions	Response
2	Michele Keller Transportation Committee Chairwoman (Queens Community Board 12)	2-6 She came and made a presentation and at that time, we discussed the three different options and we told her we really want the enclosed one and the reason being is that in that area you have two to three senior citizen buildings there and they're overwhelmed with the car wash, with the cars idling waiting to get their cars washed, the buses. It's a heavily traveled corridor. You have auto repair shops as well, so I think it would be deleterious to the people that live in that area to have an open depot there, so we are requesting that you have the new facility enclosed. Thank you.	2-6 With respect to *all* three (3) Candidate Alternatives, as explained in detail in the DEIS/FEIS, environmental surveys and analyses have been performed for a number of technical areas, including: • Transportation (Chapter 4) • Air Quality (Chapter 5) • Noise and Vibration (Chapter 6) • Contaminated and Hazardous Materials (Chapter 14) • Construction (Chapter 17) This *process* is reflective of the requirements of 6 NYCRR Part 617.11 (d): which consider the relevant environmental impacts, with relevant social, economic, and other considerations; and, were addressed by NYCT in selecting the Preferred Alternative. The EIS analyses demonstrated that there would be no unavoidable significant adverse environmental impacts (i.e., Air Quality, Noise and Vibration, Traffic, etc.) associated with any of the three Candidate Alternatives for both the construction and operational conditions. However, the evaluation did demonstrate that, from engineering and economic perspectives, Candidate Alternatives B and D would be: more complex to design; more difficult to construct; cost more to build and maintain; and, have higher ongoing energy usage (see Section 3.2). MTA NYCT has concluded that Candidate Alternative A is the Preferred Alternative because it demonstrates *the greatest potential to minimize, based on integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the reconstructed Jamaica Bus Depot.*

Commenter #	Commenter	Summary of Comments and Questions	Response
3	I. Daneek Miller Council Member (27th District, Queens)	3-1 I write today to express the position of our Southeast Queens community on the Metropolitan Transit Authority New York City Transit Draft Environmental Impact Statement for the proposed action for reconstruction and expansion of the Jamaica Bus Depot. After careful consideration of each "preferred alternative," we propose the implementation of Candidate Alternative D- Principally Enclosed Parking. We believe this alternative would demonstrate maximum potential in terms of minimizing adverse effects to the community as well as meeting all necessary MTA Unified Planning and Design Guidelines.	3-1 As stated above in the introduction to this Response to Comments section of the FEIS and as analyzed in detail in the DEIS and FEIS, all three (3) Candidate Alternatives are within the applicable and relevant regulatory standards and requirements and are in conformance with the applicable and relevant environmental laws and regulations (see Section 3.2). The EIS analyses demonstrated that there would be no unavoidable significant adverse environmental impacts (i.e., Air Quality, Noise and Vibration, Traffic, etc.) associated with any of the three Candidate Alternatives for both the construction and operational conditions. However, the evaluation did demonstrate that, from engineering and economic perspectives, Candidate Alternatives B and D would be: more complex to design; more difficult to construct; cost more to build and maintain; and, have higher ongoing energy usage. MTA NYCT has concluded that Candidate Alternative A is the Preferred Alternative because it demonstrates *the greatest potential to minimize, based on integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the reconstructed Jamaica Bus Depot*
		3-2 Candidate Alternative D will improve access for Southeast Queens commuters and maximize community standards.	3-2 As part of the Fast Forward plan, MTA is developing bus service patterns in each borough of New York City to better match service with current and future travel demands. This is a collaborative process among New York City Transit, MTA Bus, the New York City Department of Transportation, and the public to ensure all affected customers have input into their redesigned networks. Currently, MTA is working on a reimagined Queens bus network which will be released to the public for feedback by the end of the 2019, and a final plan in spring of 2020. Public outreach is being conducted throughout the process. The new depot will provide a modernized and efficient facility to fulfill the current and future travel demand needs for the southeast Queens customers.

Commenter #	Commenter	Summary of Comments and Questions	Response
3	I. Daneek Miller Council Member (27th District, Queens)	3-3 For context, the NYCT Jamaica Bus Depot currently houses several of the buses with the borough's busiest routes. Included among the bus lines that terminate in the Downtown Jamaica Area, are nearly all of Southeast Jamaica's local buses. The abysmal state of the current Jamaica Bus Depot has resulted in the lack of space to store the approximately 200 buses assigned there, as many of these vehicles are forced to be parked on adjacent public streets.	3-3 The purpose and goal of this project is to modernize and expand the bus facility to accommodate the current and future bus service needs (e.g., modernize the bus fleet to include articulated and electric buses, provide bus storage capacity for 300 standard bus equivalents (SBEs), update the service and maintenance technology, etc.). All three (3) Candidate Alternatives meet the purpose and need and applicable environmental laws and regulations (Note: in the interim, MTA has recently secured/acquired several properties along Merrick Boulevard to store the overflow buses, so they are no longer parked on the street.)

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3	I. Daneek Miller Council Member (27^{th} District, Queens)	3-4 By every measure, we believe a principally enclosed parking in the form of Candidate Alternative D will be the best option for the Southeast Queens community to enhance the quality and availability of public transit in these areas. This alternative would provide an administrative building and a main depot consisting of two buildings that would offer 338 SBE parking spaces. The three fueling lanes, three bus wash lanes, and 15 maintenance bays will maximize operations. The inclusion of a 20-foot security/sound barrier adjacent to the residential neighborhoods will minimize adverse impacts on the community. With several exits for buses, there will be a significant decrease of congestion in the area.	3-4 The EIS analyses demonstrated that there would be no unavoidable significant adverse environmental impacts (i.e., Air Quality, Noise and Vibration, Traffic, etc.) associated with any of the three Candidate Alternatives for both the construction and operational conditions. However, the evaluation did demonstrate that, from engineering and economic perspectives, Candidate Alternatives B and D would be: more complex to design; more difficult to construct; cost more to build and maintain; and, have higher ongoing energy usage (see Section 3.2). MTA NYCT has concluded that Candidate Alternative A is the Preferred Alternative because it demonstrates *the greatest potential to minimize, based on integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the reconstructed Jamaica Bus Depot* The Candidate Alternatives consist of different building types; however, the driveway locations and on-site bus circulation movements would be similar (see Chapter 4 – Transportation). Buses departing the depot would depart the proposed JBD via the Tuskegee Airmen Way driveway to the north or the Merrick Boulevard driveway located midblock between 107^{th} Avenue and Tuskegee Airmen Way. Returning buses would primarily enter via the Merrick Boulevard driveway located north of 107^{th} Street. In the evening, some buses may enter the depot through the fueling lanes at the Tuskegee Airmen Way driveway.

Commenter #	Commenter	Summary of Comments and Questions	Response
3	I. Daneek Miller Council Member (27th District, Queens)	3-5 If this alternative is implemented, in the 48-month construction period it proposes to construct the first building between the existing building and Merrick Boulevard. This will prevent interruption of bus operation and maintenance by transferring to the new building once completed, and then demolishing the existing building for construction of Building B.	3-5 The current Jamaica Bus Depot would continue its operation/maintenance of 200 buses during construction of a new bus depot structure for all three (3) Candidate Alternatives on the property located adjacent to Merrick Blvd. However, during construction of the Preferred Alternative, the buses would be stored and dispatched from a temporary off-site location (*to be determined*) throughout the construction period.
		3-6 With a record of decades of persistent neglect for transportation equity in Southeast Queens, the revitalization of the nearly eighty-year-old NYCT Jamaica Bus Depot will serve to alleviate some of the hardships of commuters and improve frequency of service in Southeast Queens.	3-6 Thank you for your comment. Yes, a reconstructed Jamaica Bus Depot would allow for additional bus storage capacity to increase bus service and meet the growing demand for bus service in the southeast section of Queens (see Section 1.3).

Commenter #	Commenter	Summary of Comments and Questions	Response
3	I. Daneek Miller Council Member (27th District, Queens)	3-7 We trust that you will give careful deliberation to our proposal in order to meet the transportation needs of our constituents and provide relief to the current state of disrepair. We also hope that the construction may be provided every resource required to expedite the effort and possibly reduce the 48-month construction timeline. Thank you for your consideration.	3-7 As stated in the Introduction to this Response to Comments section, all three (3) Candidate Alternatives meet all applicable environmental regulations related to their design and construction features and would be compatible with MTA's Unified Buses Planning and Design Guidelines. Both the EIS and the Executive Summary of the EIS present details related to the decision analysis process utilized by NYCT to select a Preferred Alternative from among Candidate Alternatives A, B and D. That Process is reflective of the requirements of 6 NYCRR Part 617.11 (d); which consider the relevant environmental impacts, with relevant social, economic, and other considerations; and, were addressed by NYCT in selecting the Preferred Alternative. To expedite construction and potentially reduce the construction timeline, NYCT would likely "fast track" construction, by phasing multiple construction activities across the project site to minimize construction duration (see Chapter 14: Construction).

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4	Delores Sharp Private Citizen	4-1 Good evening everyone. My name is Delores Sharp. I am a resident of 165th Street. My property directly abuts the bus depot and my concern, my major concern because this is really going to be, an impactful decision for the community is how will it really impact those of us that live on that block. What kind of, you know, inconveniences is it going to cause for us as parking to go in and out of our block. Just being in our, in our back yard. How is it going to impact us as far as safety, health concerns, the full gambit?	4-1 The DEIS and FEIS present details concerning the analyses performed by MTA NYCT since the SEQR EIS process was initiated in 2016. The *Executive Summary* of the Draft and Final EIS presents analytical and procedural information and the decision analysis process utilized by NYCT, along with public provided information, to select the Preferred Alternative. All three Candidate Alternatives for the new JBD would provide on-site bus storage for all buses, thereby eliminating the need to park buses on street. The new JBD would include the construction of security/sound barrier walls at the depot perimeter; as a result, bus operations noise would not exceed the Federal noise standards for the adjacent neighborhood. Buses will exit and enter the depot from the commercial streets of Tuskegee Airmen Way and Merrick Boulevard, thereby avoiding the residential areas. As discussed in the DEIS and FEIS, the results of the environmental analyses for both the operating and construction conditions for all three (3) Candidate Alternatives are within the regulatory standards and requirements. For detailed information, please see the following chapters: • Concerning potential traffic, parking, and pedestrian effect and impact; (see Chapter 4). • Concerning potential property safety and health; (see Chapter 16) for each of the Candidate Alternative. • Please note the discussion/analysis in Chapters 5 and 6 regarding Air Quality, Noise, and Vibration. • Please note the discussion in Chapter 18 regarding Displacement, Relocation, and Easements • Most importantly, note that through the implementation of its Construction Environmental Protection Plan (see Section 2.3.7), NYCT will implement routine oversight of the work of the Design-Build contractor and its subcontractors to assure conformance with health and safety requirements and conditions throughout the construction period.

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5	Yvonne Reddick District Manager (Queens Community Board 12)	5-1 Good evening. I'm Yvonne Reddick, District Manager for Community Board 12. I would like to say that my concerns are, and I will say in speaking on behalf of the residents, the impact, concern about the impact that it will have on the residents when this building is under construction.	5-1 Throughout the construction period, NYCT will implement its Construction Environmental Protection Plan (CEPP) program to assure the health and safety regulatory conformance (see Section 2.3.7 of the FEIS).
		5-2 We have to take into consideration the noise, the hours, and how many days that the contractor will be working and definitely take into consideration the seniors. You have as the transportation chairperson mentioned, you have the senior development right adjacent to the depot.	5-2 Projected noise levels for construction equipment related to all of the Candidate Alternatives would not exceed the FTA noise thresholds at any noise sensitive locations adjacent to proposed construction limits (see Section 17.5.3). Other potential impacts of construction (e.g. vibration, air quality, traffic, etc.) have been analyzed in the FEIS (see Chapters 4 through 17) and demonstrated conformance with applicable laws and regulations. Importantly, the MTA NYCT construction contract specifications would require the Design-Build contractor to meet all environmental regulations and requirements to include, but not limited to: noise, construction dust and debris emissions, maintenance and protection of traffic, etc. Please note that: construction noise is regulated and enforced by NYCDEP pursuant to the Construction Noise Regulation 15 RCNY §§ 281-100 et seq., (Part of the NYCDEP Noise Code; construction dust and debris emissions are regulated by NYCDEP Rules Pertaining to the Prevention of the Emission of Dust from Construction Related Activities, 15 RCNY §§ 13-0 et seq.,). NYCT will assure all environmental requirements will be met through the Construction Environmental Protection Process (CEPP) described in the FEIS (Section 2.3.7)

Commenter #	Commenter	Summary of Comments and Questions	Response
5	Yvonne Reddick District Manager (Queens Community Board 12)	5-3 You definitely have to consider the time, the hours, and the days, and right in the next block 108, you have a school. You have to take into consideration to the impact of the noise how it will affect the school, hours, the children.	5-3 The Richard Grossley Junior High School is located approximately three blocks south of the JBD. Noise measurements were conducted at representative existing sensitive receptor locations (such as residences and community facilities) where the greatest increases in traffic volumes that could be generated by the proposed JBD are likely to occur (see Chapter 6). For all three Candidate Alternatives, *the construction and operation of the proposed JBD would not result in any significant mobile (from moving buses) or stationary (from the depot itself) noise impacts* to sensitive noise receptors in the vicinity of the proposed JBD.
		5-4 And once again, most of all, the seniors. We're concerned about the seniors. And I think before this project begins, we're going to have to do more outreach to the surrounding community and the adjacent homeowners and hopefully we all, the Community Board, will work closely together with you regarding outreach to the community. Thank you.	5-4 NYCT recognizes the close proximity of the Jamaica Bus Depot to the adjacent residential areas (including the senior residence buildings) and community concerns. As for examples, the DEIS/FEIS presents: • Social and Economic Conditions (see Chapter 8) • Urban Design and Visual Resources (see Chapter 9) • Shadows (see Chapter 10) • Neighborhood Character (see Chapter 11) NYCT staff, through the MTA NYCT Office of Government and Community Relation (Ms. Lucille Songhai, 646/252-2653; Lucille.Songhai@nyct.com) have worked with Queens Community Board 12 during the SEQRA EIS process. Ms. Songhai remains as the project Government and Community Relations direct contact to the public.

Commenter #	Commenter	Summary of Comments and Questions	Response
6	Mark Henry President Amalgamated Transit Unit (ATU), Local 1056	6-1 Mark Henry of ATU Local 1056, President, Amalgamated Transit Union, Local 1056. I'm here just to comment on the three options that were there for Jamaica Depot sorely needed for the community at large. Either one of the properties would probably be beneficial to the community from my standpoint, as an operator and a president of the local.	6-1 NYCT agrees and believes that a reconstructed depot is needed and would be beneficial to the community.
		6-2 My only concern is just once you increase the capacity of the location, is the impact of where our operators would be able to park in regard to that facility. I know most of the spaces designated for buses, bus service, articulated service or express bus service which is sorely needed in the community but once you increase the size that means more employees will be generated to that location and the hours of operation require these individuals have some place to park their vehicles, if they don't take public transportation to report to work.	6-2 MTA NYCT policy does not require that MTA provide employee parking facilities. However, recognizing the on-street parking space utilization concern in the area surrounding the Jamaica Bus Depot, MTA (as stated in Final Scoping Document Chapter G, section regarding Traffic, Parking, Transit, and Pedestrians) will assess existing on-street parking utilization and will work to provide on-site parking to the extent that it does not interfere with usual and customary operations at the depot. MTA NYCT intends to put in place similar employee parking provisions at the reconstructed JBD as at the Mother Clara Hale bus depot; that is, staff will be able to park in the bus parking spaces when the buses are dispatched from the depot.
		6-3 From what was described in the presentation that was outside, I think it's pretty well thought out. Most of, the work that was involved with it did read some of the environmental work and I really don't oppose either one of the projects.	6-3 NYCT sincerely thanks the Commenter for their assessment of the NYCT presentation and document material for the project.

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6	Mark Henry President Amalgamated Transit Unit (ATU), Local 1056	6-4 I think I'm more partial to the I think it was the B design. B as in boy.	6-4 The introduction to this Response to Comments Section presents a brief discussion of the process used by NYCT to perform the EIS. Both the EIS and Executive Summary of the EIS present details related to the decision analysis process utilized by NYCT to select a Preferred Alternative from among Candidate Alternatives A, B and D (see Section 3.2). The EIS analyses demonstrated that there would be no unavoidable significant adverse environmental impacts (i.e., Air Quality, Noise and Vibration, Traffic, etc.) associated with any of the three Candidate Alternatives for both the construction and operational conditions. However, the evaluation did demonstrate that, from engineering and economic perspectives, Candidate Alternatives B and D would be: more complex to design; more difficult to construct; cost more to build and maintain; and, have higher ongoing energy usage. MTA NYCT has concluded that Candidate Alternative A is the Preferred Alternative because it demonstrates *the greatest potential to minimize, based on integrated consideration of engineering, economic, and environmental factors, the effects/impacts of construction and operation of the reconstructed Jamaica Bus Depot*.