Domino Sugar Project

Technical Memorandum (TM003)



CEQR No. **07DCP094K**

ULURP No. **N 140131 ZRK, 140132 ZSK, 140133 ZSK, 140134 ZSK, 140135 ZSK, N 140136 ZAK, N 140137 ZAK, and N 140138 ZAK**

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October 31, 2013

TABLE OF CONTENTS

I. INTRODUCTION……..1

II. PROJECT DESCRIPTION……..2

III. ASSESSMENT OF POTENTIAL FOR SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS UNDER PROPOSED MODIFICATIONS……15

A. Land Use, Zoning, and Public Policy……...……...…….16

B. Socioeconomic Conditions……..…26

C. Community Facilities and Services……..……....32

D. Open Space……..……42

E. Shadows……..45

F. Historic and Cultural Resources……..51

G. Urban Design and Visual Resources……..……..53

H. Natural Resources…….59

I. Hazardous Materials…….……62

J. Water and Sewer Infrastructure……...……..…63

K. Solid Waste and Sanitation Services……...……...…66

L. Energy…….……68

M. Transportation…….……70

N. Air Quality…….…….…101

O. Greenhouse Gas Emissions……...……...…113

P. Noise…….……117

Q. Public Health…….……..130

R. Neighborhood Character……...……..…131

S. Construction…….……133

T. Mitigation…….160

IV. CONCLUSION…….171

LIST OF APPENDICES

Appendix 1: **Proposed Zoning Text Amendments**

Appendix 2: **WRP Consistency Assessment**

Appendix 3: **No-Action Affordable Housing Developments within Child Care Study Area**

Appendix 4: **Novus Environmental Pedestrian Wind Safety Assessment**

Appendix 5: **2010 FEIS Traffic Mitigation Measures**

Appendix 6: **Transportation Planning Factors Memo**

Appendix 7: **Stationary Source Air Quality Report**

Appendix 8: **Detailed Construction Schedule**

Appendix 9: **Detailed Analysis of Potential Air Quality Impacts Associated with Construction of Building B**

Appendix 10: **Construction Noise Analysis – Sensitive Receptors**

TECHNICAL MEMORANDUM

CEQR Number 07DCP094K: Domino Sugar Project – TM003[1]

October 31, 2013

I. INTRODUCTION

The purpose of this Technical Memorandum is to determine whether the proposed changes to the previously approved Domino Sugar project would result in any significant adverse environmental impacts that were not previously identified in the May 2010 *Domino Sugar Rezoning Final Environmental Impact Statement* (FEIS) and subsequent Technical Memoranda dated June 4th, 2010 and July 10th, 2010 (CEQR No. 07DCP094K).

The Domino Sugar project is a mixed-use development project in the Williamsburg neighborhood of Brooklyn. As shown in Figure 1, the project site is comprised of two parcels along Kent Avenue, just north of the Williamsburg Bridge. The 9.8-acre waterfront parcel is the location of the former Domino Sugar factory, which ceased operations in 2004, and the 1.3-acre upland parcel is currently vacant. The LPC-designated Refinery Building is centrally located on the waterfront parcel. Surrounding land uses in the area include a mix of residential, commercial, and light manufacturing, with several recent large-scale residential developments located to the north and south, and smaller-scale structures located to the east. Directly north of the project site are the 1.70 acre Grand Ferry Park and the New York Power Authority (NYPA) North 1st Street gas turbine power generating facility, which began operating in 2001.

The program originally analyzed for the project site in the 2010 FEIS was for approximately 3.14 million gross square feet (gsf) of total development, including 2,442,305 gsf of residential floor area, 146,451 gsf of community facility space, 226,275 gsf of commercial/office and retail uses, 1,694 off-street parking spaces, and four acres of new publicly accessible open space (the "2010 Project"). While the applicant intended to build approximately 2,200 residential units on the project site, for analysis purposes the FEIS assumed that the project would include 2,400 residential units, based on an average unit size of approximately 1,000 gsf.[2] It should also be noted that whereas the FEIS analyzed a total of 1,694 parking spaces, the number of spaces in the project ultimately approved by CPC was 1,428 accessory parking spaces.

Since the issuance of the FEIS and subsequent Technical Memoranda, the project site was acquired by Two Trees Management Co. LLC, ("the Applicant") which has developed a new program (the "Proposed Modified Development") for the site. The program and building envelopes currently being proposed, as well as the development schedule, are different from the projected development analyzed for the site in the 2010 FEIS and subsequent Technical Memoranda. Primary differences include an increase in the amount of office space and community facility square footage, and reductions in the number of residential units and residential floor area, other commercial uses, and parking spaces planned on the site. In addition, the height and massing of the proposed buildings would be different from the approved massing, allowing for the development of an additional 1.98 acres of open space, including waterfront public access areas, additional public access areas, and public easement areas. The Proposed Modified

[1] This Technical Memorandum was prepared by Philip Habib & Associates, for Two Trees Management Co. LLC.
[2] All dwelling unit counts in this Technical Memorandum, unless otherwise explained, are based on this assumption.

Project Location



Development is expected to be completed by 2023, compared to the anticipated 2020 build year for the 2010 Project.

This memorandum provides a detailed description of the proposed modifications and requested approvals, as well as a detailed evaluation of the new incremental changes generated by the Proposed Modified Development, and assesses the resulting effects relative to those disclosed in the 2010 FEIS and subsequent Technical Memoranda. The potential impacts of the modifications on each of the technical areas identified in the *CEQR Technical Manual* are discussed below. This memorandum uses the most current 2012 City Environmental Quality Review (CEQR) guidelines and thresholds to determine whether the proposed modifications would result in any new or substantially different significant adverse environmental impacts not already identified in the 2010 FEIS and subsequent Technical Memoranda.

As described in the New York State Department of Environmental Conservation's SEQRA regulations, 6 NYCRR Sections 617.9(a)(7)(i)(a), (b), and (c), and the 2012 *CEQR Technical Manual*, the lead agency may require the preparation of a supplemental EIS if there are significant adverse environmental impacts not addressed or inadequately addressed in the EIS that arise from changes proposed for the project, or newly discovered information; or a change in circumstances related to the project. This technical memorandum concludes that there would be no additional significant adverse impacts in any of the analyzed CEQR technical areas as a result of the Proposed Modified Development, and that the majority of the mitigation measures originally proposed for the project would continue to be warranted.

II. PROJECT DESCRIPTION

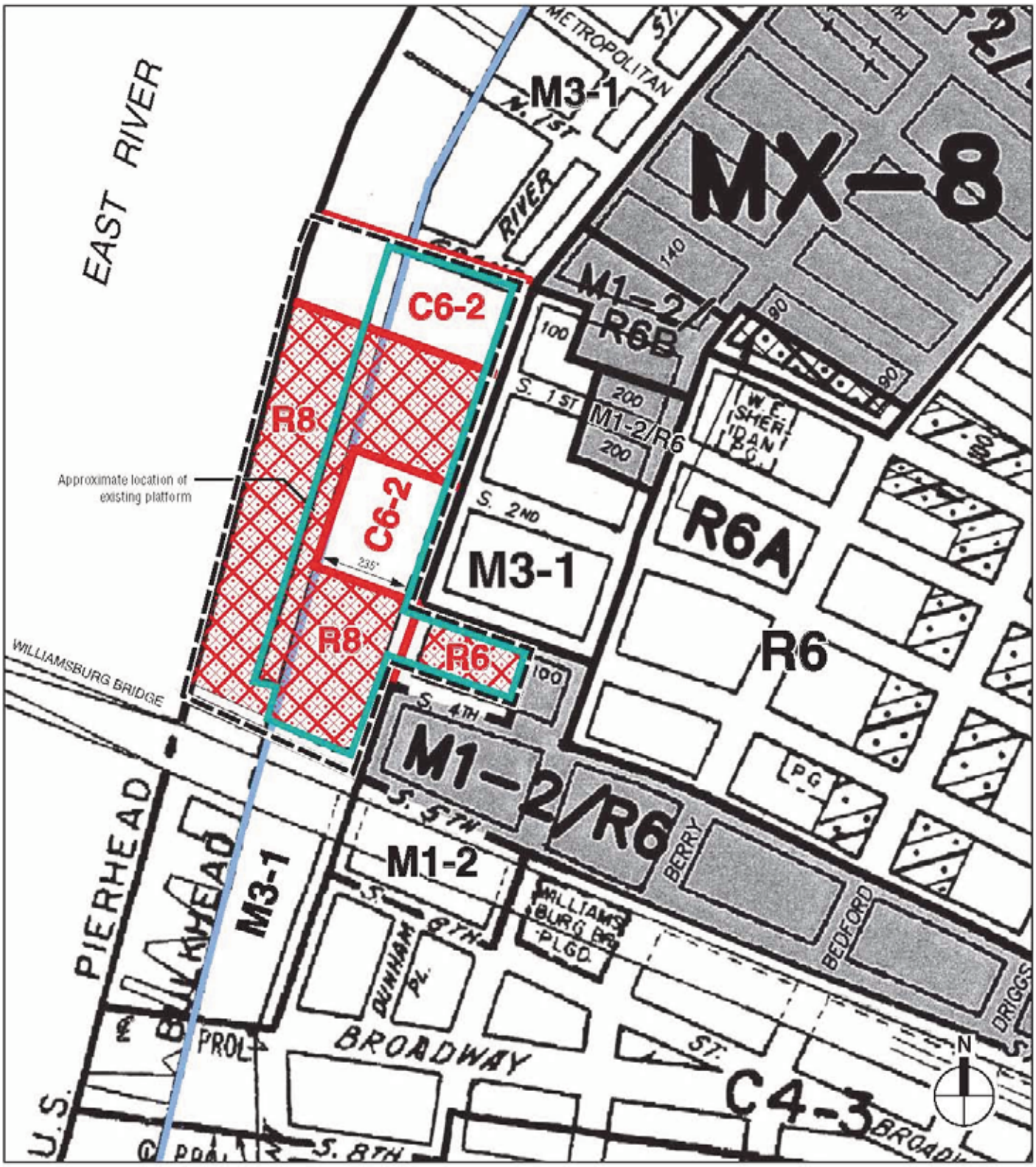
2010 Approved Project – Domino Sugar Rezoning FEIS & Technical Memoranda

The 2010 Domino Sugar project was intended to revitalize and reactivate a vacant waterfront industrial site with publicly accessible open space, a restored and adaptively reused historic building, and new residential buildings. The project analyzed in the 2010 FEIS and subsequent Technical Memoranda was to include 2,400 residential units, 127,537 gsf of retail/commercial space, 146,451 gsf of community facility space, and 98,738 gsf of commercial office space. As part of the 2010 Project, the landmarked building along the waterfront known as the Refinery Building was to be adaptively reused. The 2010 Project's approximately four acres of publicly accessible open space would have included an esplanade along the water's edge, linking the project site to Grand Ferry Park; a large open lawn between the esplanade and the Refinery Building that would highlight this restored historic structure; and new connections that were intended to provide visual and physical access to the waterfront from all streets leading to the project site.

The 2010 Project required a number of discretionary actions that were subject to environmental review pursuant to CEQR, which were analyzed in the 2010 FEIS. These actions included:

- Zoning map amendments (i) from M3-1 to R8 with a C2-4 commercial overlay for a section of the waterfront parcel; (ii) from M3-1 to C6-2 for portions of the waterfront parcel; and (iii) from M3-1 to R6 with a C2-4 commercial overlay on the upland parcel (refer to Figure 2);
- Zoning text amendments to the following sections: (a) Zoning Resolution ("ZR") § 23-953, ZR § 62-35, ZR § 62-352, and Appendix F of the ZR to apply the Inclusionary Housing program to the project site; and (b) ZR § 52-83 to modify the requirements of non-conforming signs to permit a sign on the Refinery Building as per the approval from the New York City Landmarks Preservation Commission (LPC);

2010 Zoning Map Change



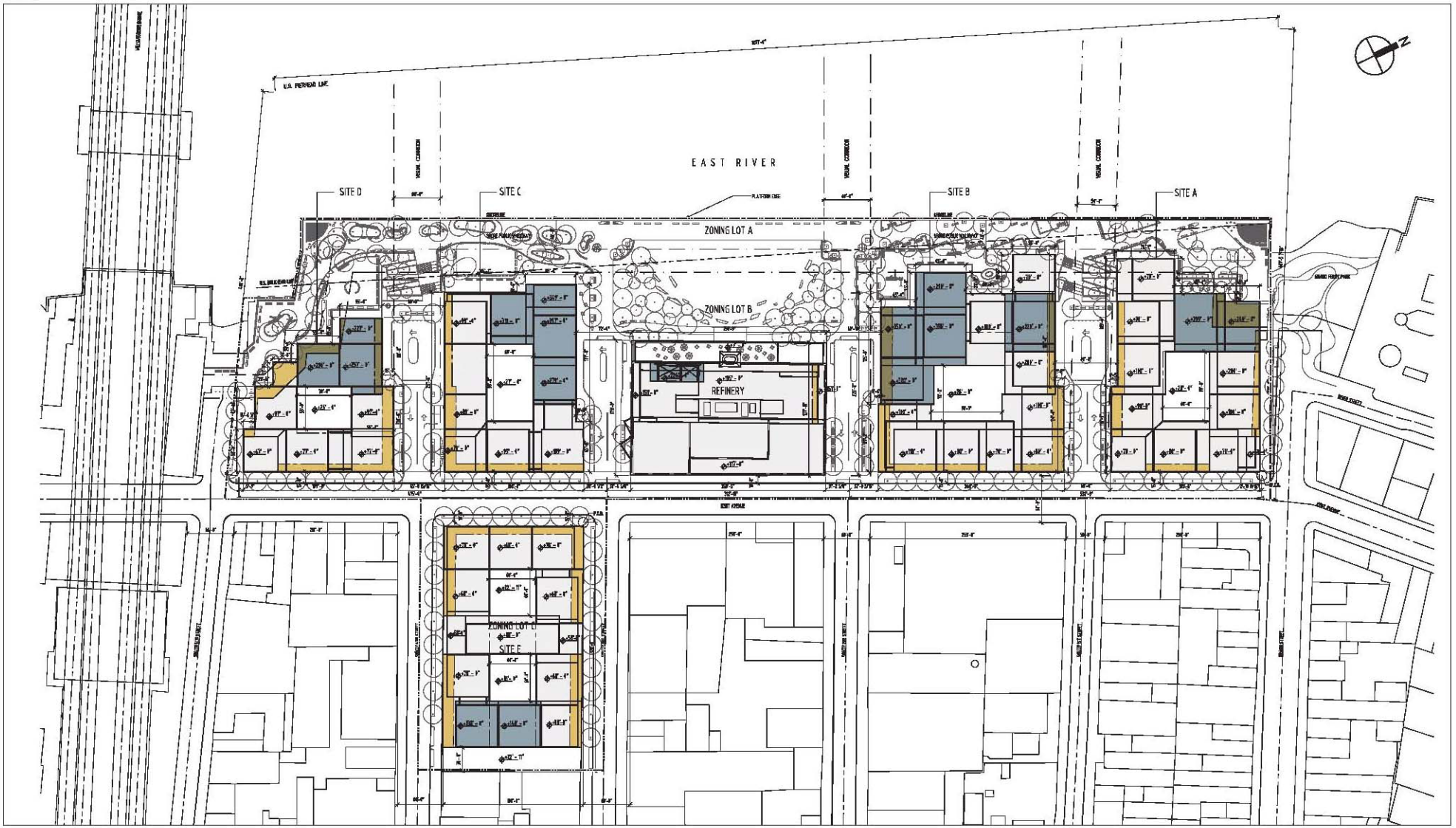
Source: 2010 Domino Sugar Rezoning FEIS.

- Special Permits pursuant to ZR § 74-74: (a) transfer of floor area development rights across Kent Avenue pursuant to ZR § 74-743(a)(1), and (b) modifications of the following pursuant to ZR § 74-743(a)(2): (i) height and setback per ZR § 62-341, (ii) required dimensions on an inner court recess of ZR § 23-852, (iii) required distance between windows in an inner court per ZR § 23-863, (iv) rear yard regulations of ZR § 23-533 and ZR § 62-332, and (v) distance between buildings regulations of ZR § 23-711;
- A Special Permit pursuant to ZR § 74-744(b) to modify the location of use provisions of ZR § 32-42;
- Authorizations pursuant to ZR § 62-822: (a) ZR § 62-822(a) to modify certain requirements of ZR § 62-50 (General Requirements for Waterfront Public Access Areas); (b) ZR § 62-822(b) to modify certain requirements of ZR § 62-513 (permitted obstructions in visual corridors) and ZR § 62-60 (Design Requirements for the Waterfront Public Access Areas), and (c) ZR § 62-822(c) to permit the phased implementation of waterfront public access improvements in coordination with phased development of the project site; and (c) an authorization for phased implementation of waterfront access requirements pursuant to ZR § 62-822(c) to permit the phased implementation of waterfront public access improvements in coordination with phased development of the site;
- City Planning Commission (CPC) Chair certification pursuant to ZR § 62-811 for compliance with waterfront public access and visual corridor requirements;
- CPC Chair certification pursuant to ZR § 62-812 to permit the subdivision of a waterfront zoning lot; and,
- Coastal Zone Consistency determination as the project site is within the Coastal Zone.

The above actions were approved by the City Planning Commission (CPC) in 2010. The 2010 Project also required approval of a Joint Permit Application from the U.S. Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC) for reconstruction of the existing waterfront platform and installation of a new sheet pile bulkhead. Approvals were also required for two proposed stormwater outfalls that were to be located at the end of South 2nd and South 3rd Streets. Additionally, a State Pollution Discharge Elimination System (SPDES) permit from NYSDEC was also required for stormwater discharges during the construction period because construction on the project site would have involved more than one acre.

The CPC served as the CEQR lead agency for the project's environmental review. A Positive Declaration and a Draft Scope of Work was issued on June 29th, 2007 and distributed, published and filed. A Public Scoping Meeting was held on the Draft Scope of Work on July 31st, 2007. A Final Scope of Work, reflecting the comments made during the scoping, was issued on December 30th, 2009. The applicant prepared a Draft Environmental Impact Statement (DEIS) and a Notice of Completion for the DEIS was issued December 30th, 2009. On April 28th, 2009, a joint public hearing was held on the DEIS pursuant to SEQRA regulations and CEQR procedures in conjunction with the Uniform Land Use Review Procedure (ULURP) applications. A Final Environmental Impact Statement (FEIS) was completed and a Notice of Completion for the FEIS was issued on May 28th, 2010.

The discretionary actions listed above would have facilitated the construction of five new buildings and the adaptive reuse of the existing Refinery Building, which was designated as a New York City Landmark in 2007 (refer to Figure 3, "2010 Project Site Plan"). As noted above, the development program for the 2010 FEIS analyzed a project that included 2,400 residential units (2,442,305 gsf), 127,537 gsf of retail/commercial space, 146,451 gsf of community facility space, and 98,738 gsf of commercial office space. This constituted a total FAR of 5.6 for the waterfront parcel and 6.0 for the upland parcel, producing an overall FAR for the project of 5.64. Four of the new buildings proposed in the 2010 Project



Source: 2010 Domino Sugar Rezoning FEIS.

would have risen to between 200 and 400 feet on the waterfront parcel and the one building on the upland parcel would have risen to 148 feet, with streetwalls on both parcels between 60 and 110 feet tall (refer to Figure 4, "2010 Project – Approved Building Envelopes"). The Refinery Building was to be adaptively reused. Development was expected to proceed in six phases starting with the upland block, and then proceeding north along the waterfront parcel from South 5th Street to Grand Street.

Subsequent to the Notice of Completion for the FEIS, two Technical Memorandums were carried out. The first memorandum (completed on June 4th, 2010) analyzed modifications to the height of Building A, and the second memorandum (completed on July 10th, 2010) analyzed bulk and setback modifications, a commitment to provide a shuttle service to the Broadway entrance of the Marcy Avenue J/M/Z subway station, and additional commitments related to the provision of community facility space. Both of these Technical Memoranda concluded that the proposed modifications would not result in any significant adverse environmental impacts not already identified in the 2010 FEIS.

Upon project approval, a Restrictive Declaration on the property was filed in the Office of the City Register (CRFN #2010000396103) on July 27, 2010. The Restrictive Declaration specifically outlined the building massing and program, the phasing, construction, design of the public access areas, property easements, and provided for the implementation of project components related to the environment and mitigation measures consistent with the 2010 FEIS. The Restrictive Declaration is tied to the project site (Brooklyn Block 2428, Lot 1 and Block 2414, Lot 1) and remains in effect today.

Proposed Modified Development

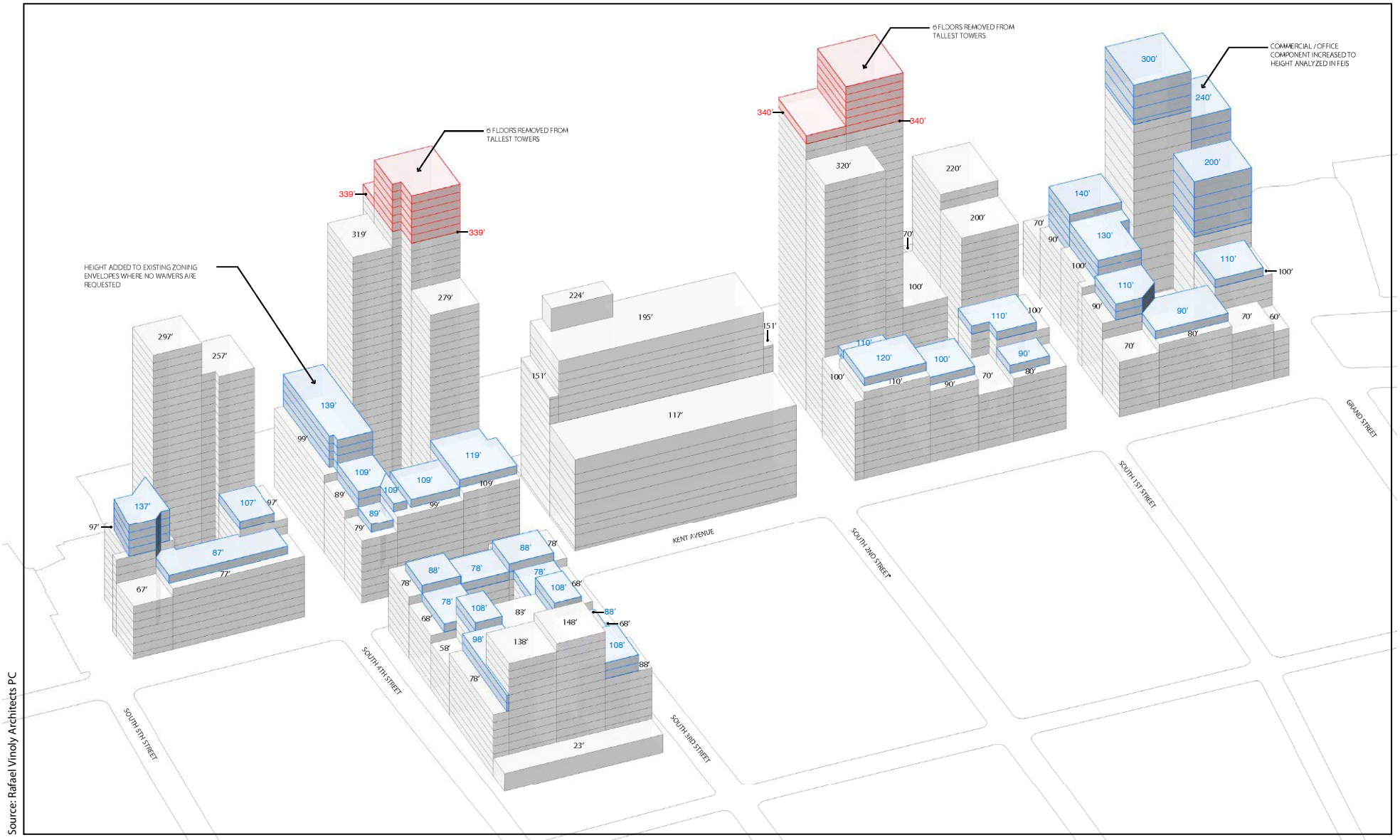
In 2012, subsequent to the ULURP approvals granted by CPC and the filing of the Restrictive Declaration, the project site was sold by The Refinery LLC, the applicant for the 2010 Project, to the Applicant. The Applicant is proposing to modify the previously approved development, as discussed below.

Project Site

The project site is bounded by Grand Street and its northwesterly prolongation, Kent Avenue, South 3rd Street, a line 100 feet westerly of Wythe Avenue, South 4th Street, Kent Avenue, South 5th Street and its northwesterly prolongation, and the U.S. Pierhead Line (Block 2414, Lot 1 and Block 2428, Lot 1). Refer to Figure 1 for the project site boundaries. The project site is located in R6/C2-4, R8/C2-4 and C6-2 Districts in Brooklyn Community District 1.

The project site consists of two parcels, a 9.8-acre waterfront parcel and a 1.3-acre upland parcel. The parcels are separated by Kent Avenue, a 60-foot wide one-way northbound street that runs through Williamsburg near the East River. The waterfront parcel measures approximately 1,300 feet long by 330 feet wide and is bounded by the East River to the west, Grand Ferry Park and Grand Street to the north, Kent Avenue to the east, and South Fifth Street to the south. The upland parcel measures approximately 320 feet long by 180 feet wide and is located on the east side of Kent Avenue between South 3rd and South 4th Streets. The waterfront parcel consists of land area and a 40- to 90-foot wide platform that runs along its entire western edge over the East River. Both parcels slope downward to the west, toward the East River, with a total grade change of approximately 16 feet on the upland parcel from its eastern to its western ends, and of 11 feet on the waterfront parcel from Kent Avenue to the platform at the water's edge.

The site has been used since the 1850s as a sugar refinery, at one time the largest in the world. The upland parcel was used as a parking lot for Refinery employees. The Refinery was closed in 2004 and the site is



Source: Domino Sugar Rezoning Technical Memorandum, July 10, 2010

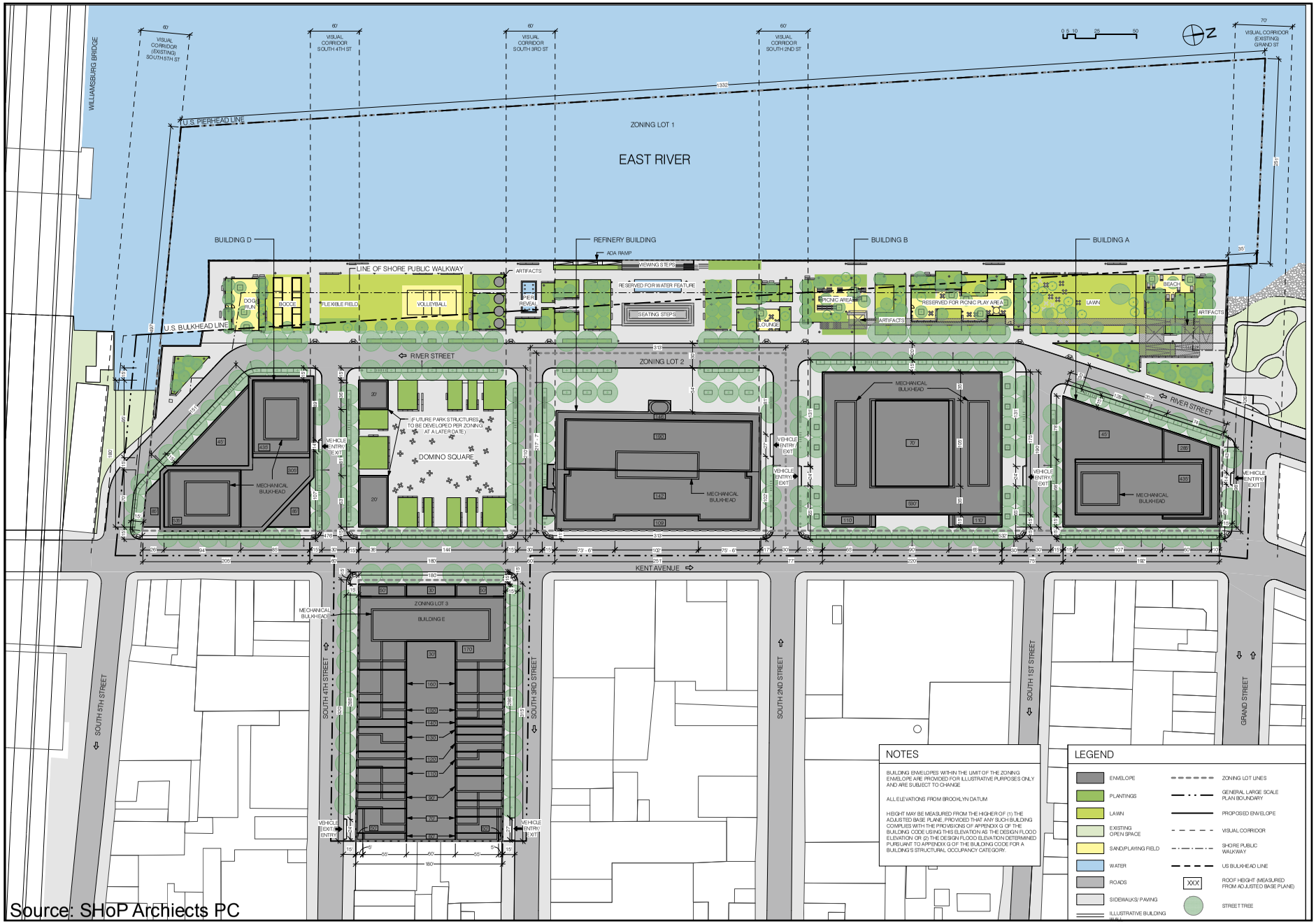
currently vacant. The buildings on the waterfront parcel were built between the 1880s and the 1960s. Notable structures include the landmarked Refinery Building and the Bin Building. The brick Refinery Building, completed in 1884 and landmarked by the New York City Landmarks Preservation Commission in 2007, is located in the center of the site along Kent Avenue and rises to a height of 155 feet overall, and 110 feet at Kent Avenue. The steel and glass Bin building, built in the 1960s to a height of 140 feet, supports the iconic Domino sign. The Bin Building is located directly south of the Refinery Building, and is connected to it by conveyor chutes that join the Refinery Building's southern face. Other buildings on the site were built at various times to house the rest of the Domino Sugar factory's operations including warehousing, packaging, and research and development.

Proposed Program

The proposed actions described below in the following section would allow the Applicant to develop the project site with four new mixed-use buildings, the adaptive reuse of the existing landmarked Refinery Building, and the development of a new publicly accessible waterfront park (refer to Figure 5, "Proposed Modified Development –Illustrative Site Plan"). The total Proposed Modified Development would encompass approximately 2.948 million zoning square feet (approximately 3.052 million gross square feet (gsf)) containing an estimated 2,282 dwelling units (DU) within 2,281,666 gsf of residential floor area, 504,308 gsf of office space, 114,638 gsf of other commercial uses (including approximately 72,407 gsf of retail and an approximately 42,231 gsf health club), and 150,935 gsf of community facility space (including a 375-seat elementary school, 35,753 gsf of not-for-profit/art studio space, and a 44,558 gsf not-for-profit sports and fitness center), as well as approximately 1,050 parking spaces. The Applicant would designate a minimum of 20 percent of the residential floor area as affordable, up to a maximum of 660 DU.[3] Publicly accessible open space along the waterfront and throughout the project site, including waterfront public access areas, public access areas, and public easement areas would total approximately 6.85 acres. The site plan and proposed buildings would be designed, according to the Applicant, to increase the total amount of publicly accessible open space, facilitate improved public access to the waterfront, and create a more mixed-use development that is better integrated into the existing neighborhood fabric, compared to the 2010 Project.

Table 1 shows the Proposed Modified Development program compared to the program analyzed in the 2010 FEIS and subsequent Technical Memoranda. As shown in the table, the proposed mixed-use development would include a total of approximately 3,314,741 gsf (2,948,429 zsf) of development, including parking, compared to approximately 3,142,521 gsf (2,749,303 zsf) analyzed in the 2010 FEIS. As shown in Table 1, compared to the 2010 Project analyzed in the FEIS, the Proposed Modified Development would represent a decrease of 160,639 gsf of residential floor area (118 units), an increase of 405,570 gsf of commercial/office floor area and 4,484 gsf of community facility space, a decrease of 12,899 gsf of retail and other commercial uses, and a decrease of approximately 664 parking spaces. The Proposed Modified Development would introduce an additional 1.98 acres of open space, compared to the 2010 Project, including a more than 100 percent increase in the public access area acreage due to the elimination of one of the 2010 Project's building sites.

[3] In order to reflect conservative assumptions with regard to potential impacts on child care, this Technical Memorandum assumes that the maximum number of DU (660) would be comprised of affordable to low- and moderate-income households.



Source: SHoP Archiects PC

Figure 5

Domino Sugar Technical Memorandum

Proposed Modified Development - Illustrative Site Plan

TABLE 1
Proposed Development Program – 2010 FEIS Program vs. Proposed Modified Development

	2010 Development Program Analyzed in FEIS (GSF)	Proposed Modified Development Program (GSF)	Net Difference – Current Program Vs. 2010 FEIS Program (GSF)
Residential	2,442,305 gsf (2,400 DUs)	2,281,666 gsf (2,282 DUs)	**-160,639 gsf (-118 DUs)**
Affordable Housing	*30% (720 DU)*	*Max. 660 DU*[1]	***-60 DU***
Commercial Office	98,738 gsf	504,308 gsf	**405,570 gsf**
Other Commercial Uses	127,537 gsf	114,638 gsf	**-12,899 gsf**
Retail	*127,537 gsf*	*72,407 gsf*	***-55,130 gsf***
Health Club	--	*42,231 gsf*	***42,231 gsf***
Community Facility	146,451 gsf	150,935 gsf	**4,484 gsf**
Parking	327,490 gsf (1,694 spaces)[2]	263,195 gsf (1,050 spaces)	**-64,295 gsf (-644 spaces)**
Total gsf (including parking)	***3,142,521 gsf***	***3,314,741 gsf***	***172,220 gsf***
Total gsf (excluding parking)	***2,815,031 gsf***	***3,051,546 gsf***	***236,515 gsf***
Open Space SF	212,097 sf (4.87 acres)[3]	298,429 sf (6.85 acres)	**86,332 sf (1.98 acres)**
Waterfront Public Access Area[4]	*159,902 sf (3.67 acres)*	*163,790 sf (3.76 acres)*	***3,888 sf (0.09 acres)***
Public Access Area[5]	*21,292 sf (0.49 acres)*	*46,623 sf (1.07 acres)*	***25,331 sf (0.58 acres)***
Public Easement Area[6]	*30,903 sf (0.71 acres)*	*88,016 sf (2.02 acres)*	***57,113 sf (1.31 acres)***

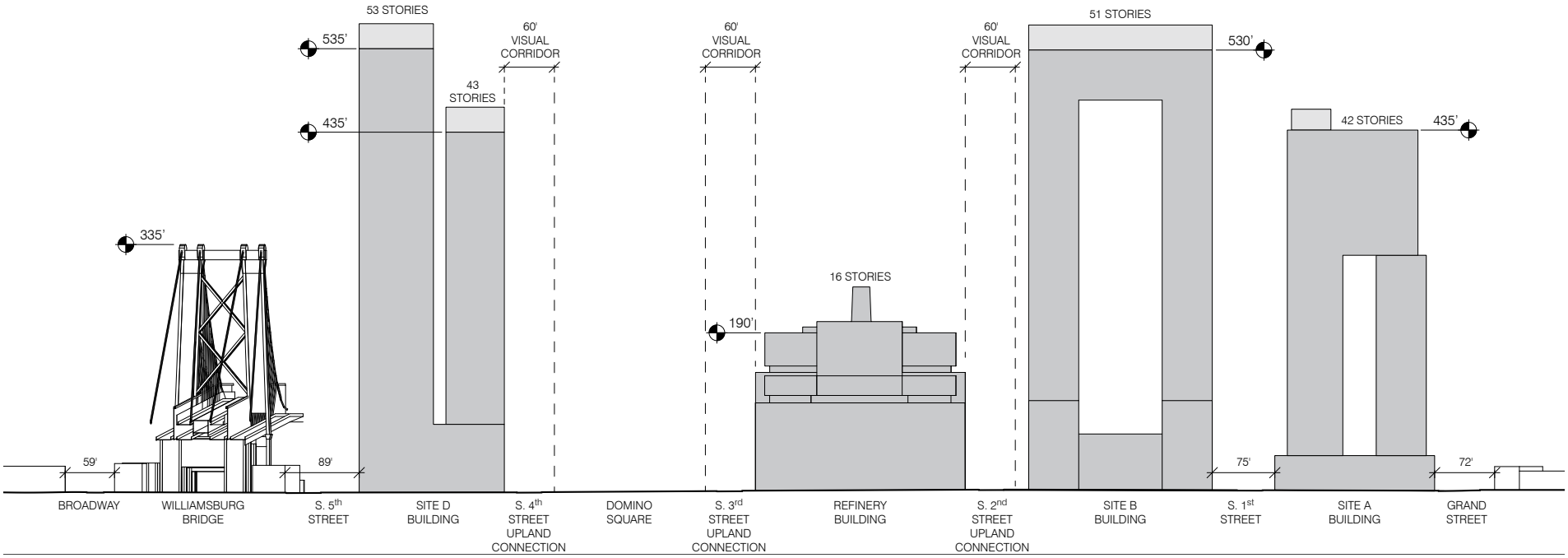
Notes:
[2] The Applicant is committed to designating 20 percent of the residential floor area as affordable, up to a maximum of 660 DU. For conservative analysis purposes, this Technical Memorandum assumes that the maximum number (660 DU) would be developed.
[2] As stated in the July 10th, 2010 Technical Memoranda, subsequent to completion of the FEIS, the applicant withdrew the application for a parking special permit. The approved ULURP application included 1,428 parking spaces.
[3] While the ULURP application for the 2010 Project stated that the project would include approximately 4.87 acres of open space, the 2010 FEIS assumed only 4.03 acres. For conservative analysis purposes it is assumed that the 2010 Project would include the 4.87 acres disclosed in the ULURP application.
[4] Includes the shore public walkway, supplemental public access areas, and upland connections.
[5] Not included in the waterfront public access area.
[6] Includes sidewalks and private drives.

Table 2 presents a building-by-building comparison of the 2010 Project and the Proposed Modified Development.

As currently proposed, the three new buildings on the waterfront parcel would rise to between approximately 435 and 535 feet, and the one building on the upland parcel would rise to approximately 170 feet, constituting a total FAR of 5.9 for the waterfront parcels and 7.0 for the upland parcel, for an overall FAR of 6.06.[4] As shown in Figures 6a, 6b, and 6c, the Refinery Building would also be adaptively reused, with a proposed glass and steel addition of four stories (maximum building height of approximately 190 feet) and two bay windows on its southern façade. The proposed new buildings would be designed to complement and enhance the landmark Refinery Building and Williamsburg's industrial past, referencing materials found on the project site, while redefining the Brooklyn skyline (see Figure 7).

The Proposed Modified Development, according to the Applicant, would integrate the project site into the existing community by extending River Street south through the project site from its current terminus at Grand Avenue as a new public access easement, and extending the streets that currently exist to the east of Kent Avenue to the waterfront open space as new public access easements. In addition, these new public access easements would create new, larger view corridors and public connections to the waterfront, compared to the 2010 Project, and would separate the proposed buildings from the proposed open space, creating, according to the Applicant, a true neighborhood park, rather than simply a residential backyard. The proposed public access easements would initially remain under the ownership of the Applicant, while being maintained and regulated by DOT/NYPD. In addition, as part of the proposed project, a traffic signal would be installed at the intersection of one-way northbound Kent Avenue and the proposed one-

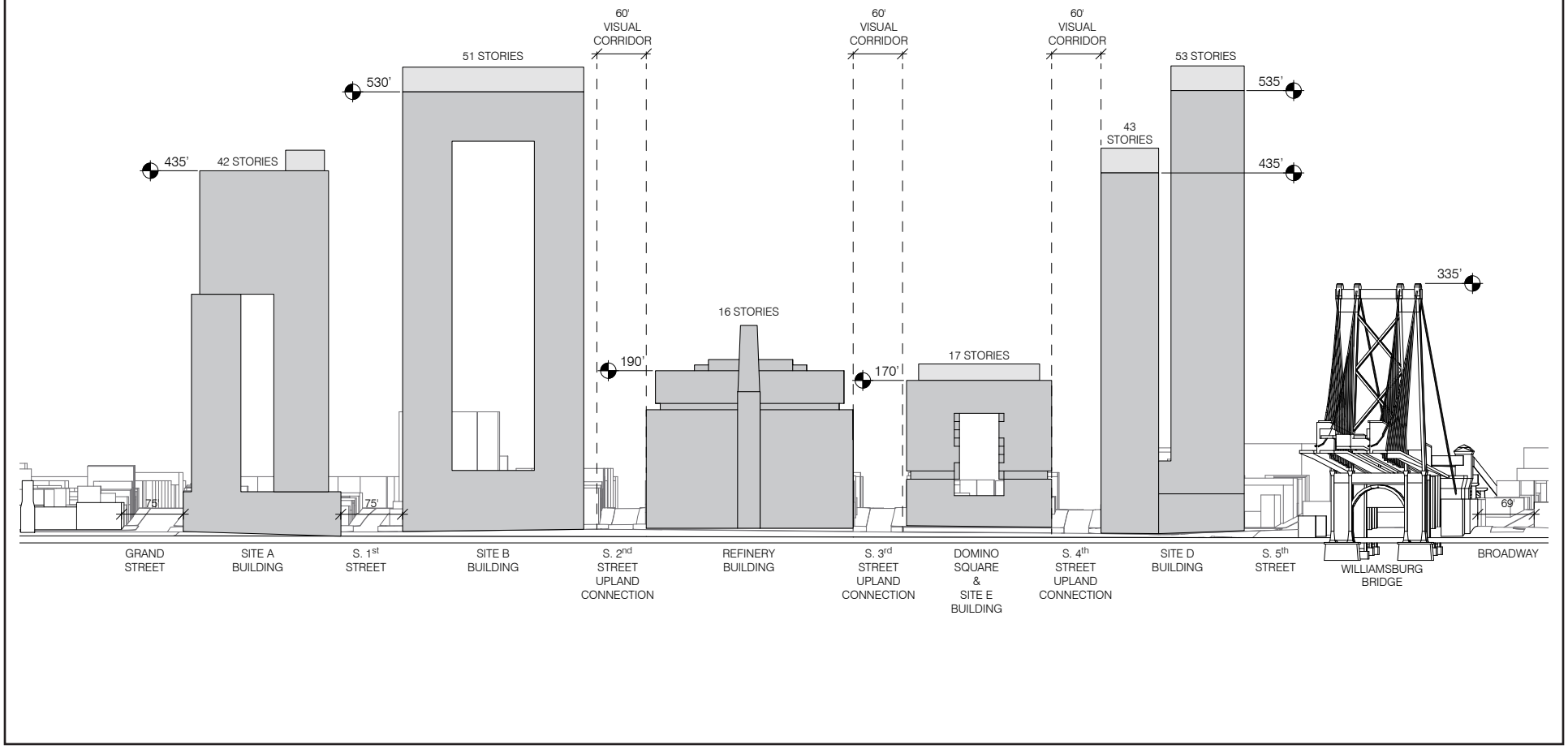
[4] Includes the transfer of floor area between the lots.



Source: SHoP Architects PC

Domino Sugar Technical Memorandum **Figure 6a**

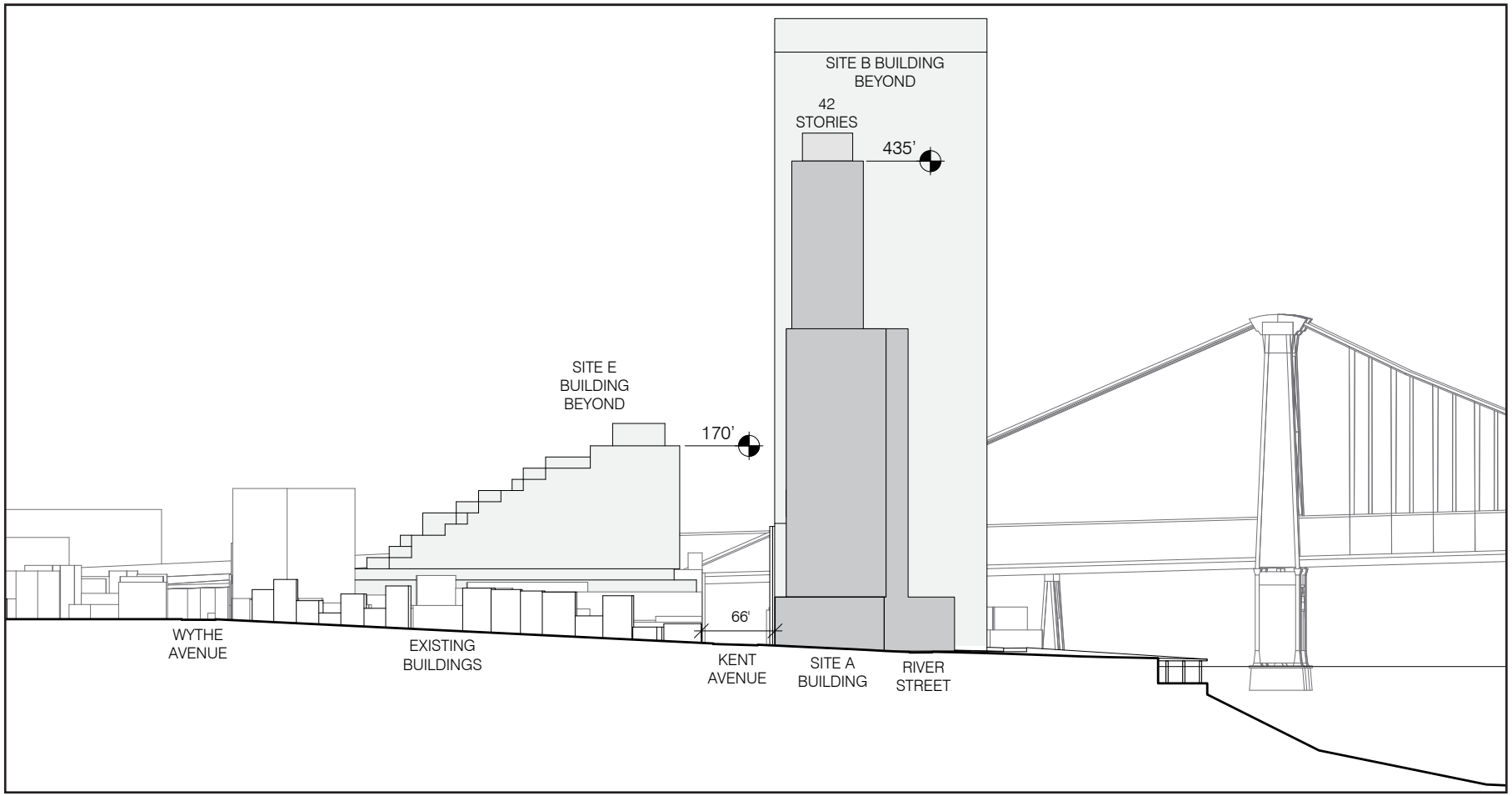
Proposed Modified Development - Illustrative West Elevation



Source: SHoP Architects PC

Domino Sugar Technical Memorandum **Figure 6b**

Proposed Modified Development - Illustrative East Elevation



Source: SHoP Architects PC



FOR ILLUSTRATIVE PURPOSES ONLY

way east bound South 5th Street extension, at the southern end of the project site. As described in the following sections, the Applicant intends to map the proposed public access easements as City streets at a later date as a separate action.

TABLE 2
Proposed Building Programs – 2010 FEIS Program vs. Proposed Modified Development

Building	Land Use	2010 Building Program Analyzed in the FEIS (GSF)	Proposed Modified Building Program (GSF)	Net Difference – Current Program vs. 2010 FEIS Program (GSF)
A	Residential[1]	203,984 (206 DU)	251,884 (252 DU)	47,900 (46 DU)
	Commercial Office	98,738	100,965	2,227
	Retail	30,000	7,004	-22,996
	Community Facility	42,316[2]	44,558[3]	2,242
	Parking	782 spaces	0	-782 spaces
B	Residential[1]	761,727 (740 DU)	1,026,170 (1,026 DU)	264,443 (286 DU)
	Commercial Office	0	0	0
	Retail	10,769	10,708	-61
	Community Facility	0	70,624[3]	70,624
	Parking	0	300 spaces	300 spaces
Refinery	Residential	260,522 (241 DU)	0	-260,522 (-241 DU)
	Commercial Office	0	403,343	403,343
	Retail	30,143	25,725	4,418
	Community Facility	104,135	35,753[3]	-68,382
	Parking	127 spaces	0	-127 spaces
C	Residential[1]	576,893 (569 DU)	0	-576,893 (-569 DU)
	Commercial Office	0	0	0
	Retail	10,775	0	-10,775
	Community Facility	0	0	0
	Parking	411 spaces	0	-411 spaces
D	Residential[1]	320,742 (317 DU)	610,928 (611 DU)	290,186 (283 DU)
	Commercial Office	0	0	0
	Retail	9,850	7,971	-1,879
	Health Club	0	42,231	42,231
	Community Facility	0	0	0
	Parking	0	0	0
E	Residential	318,427 (337 DU)	392,683 (393 DU)	74,256 (56 DU)
	Commercial Office	0	0	0
	Retail and other Commercial Uses	36,000	21,000	-15,000
	Community Facility	0	0	0
	Parking	374 spaces	750 spaces	376 spaces

Notes:
[1] The July 10th, 2010 Technical Memorandum analyzed a reallocation of the residential floor area to Buildings A, B, C, and D that would have affected approximately 42,000 gsf or 42 DU. Table 2 presents the floor area distribution analyzed in the 2010 FEIS.
[2] The June 4th, 2010 Technical Memorandum analyzed proposed modifications to the project analyzed in the 2010 FEIS that would have reduced the height of Building A. These reductions in height would have resulted in a reallocation of approximately 11,000 square feet of community facility space from Building A to Buildings B, C, and/or D. The June 4th, 2010 Technical Memorandum did not specify to which specific building(s) the community facility square footage would have been allocated to. Table 2 presents the floor area distribution analyzed in the 2010 FEIS.
[3] The proposed community facility space would consist of a 44,558 gsf not-for-profit sports and fitness center in Building A, a 70,624 gsf 375-seat elementary school in Building B, and 35,753 gsf of not-for-profit/artist studio space in the Refinery Building.

As shown in Figure 5, by reducing the building footprint of the proposed new buildings, the Proposed Modified Development would increase the total publicly accessible open space to 6.85 acres, 1.98 acres more than the 2010 Project. The elimination of the Building C originally proposed in the 2010 Project would allow the open space acreage to extend further into the surrounding community and increase the total public access area acreage to approximately 1.07 acres, 113 percent more than was proposed in the 2010 Project. This new proposed open space area ("Domino Square") would connect the waterfront to

Kent Avenue, create a new view corridor of the Manhattan skyline, and, according to the Applicant, enhance the adjacent landmark Refinery Building. The proposed open space would be programmed for passive uses, including seating areas and an Artifact Walk with historic elements from the Domino Sugar factory buildings on display, and active uses, such as playing fields, a dog run, and a playground.

The Proposed Modified Development, according to the Applicant, would be a true 24-hour mixed-use development. Residential units, commercial office space, and not-for-profit/artist studio spaces would be located on the upper stories of the proposed buildings, while local retail and a health club, as well as community facility uses, including a 375-seat school and a not-for-profit sports and fitness center, would occupy the ground floor and lower floors, activating the streetscape and drawing people to the project site's open space. The retail, office, and not-for-profit/artist studio spaces would be designed to accommodate neighborhood retailers, startup technology and creative firms, and artists, consistent with the types of businesses found in the surrounding neighborhood. The proposed not-for-profit sports and fitness center would be located in Building A, and would serve the greater Williamsburg community. On-site parking would be provided in two facilities in Buildings B and E, totaling 1,050 spaces and would serve the entire Proposed Modified Development.

Table 3 below shows the estimate of users (residents and workers) anticipated to be generated by the Proposed Modified Development, compared to the estimates assumed in the 2010 FEIS for the Domino Sugar development. As shown in the table, the Proposed Modified Development would introduce a total of 6,116 residents and 2,742 employees to the Domino Sugar site, compared to 6,696 residents and 1,347 employees for the program analyzed in the 2010 FEIS. Thus, compared to the 2010 Project analyzed in the FEIS, the Proposed Modified Development would result in a reduction in the residential population on the site by approximately 580 residents, and an increase in the worker population of approximately 1,395 employees.

TABLE 3
Domino Sugar Site Occupants – 2010 Project vs. Proposed Modified Development

Users On-Site[1]	**2010 Project as Analyzed in FEIS**	**Proposed Modified Development**	**Net Difference – Current Program Vs. 2010 FEIS Program**
Residential	6,696 residents 96 employees	6,116 residents 91 employees	- 580 residents - 5 employees
Retail	383 employees	217 employees	- 166 employees
Health Club	--	127 employees	127 employees
Office	395 employees	2,017 employees	1,622 employees
Community Facilities - School	--	29 employees	29 employees
Community Facilities - General	439 employees	241 employees	-198 employees
Parking	34 employees	20 employees	- 14 employees
Total	***6,696 Residents 1,347 Employees***	***6,116 Residents 2,742 Employees***	***- 580 Residents 1,395 Employees***

[1] For residents, the 2010 FEIS assumed 2.79 residents per unit (based on 2000 Census data); for the Proposed Modified Development, an updated ratio of 2.68 residents per unit is assumed, based on 2010 census data for average household size for census tracts within an approximate ¼-mile radius. Employee estimates are based on rates used in the 2010 FEIS: 3 employees per 1,000 sf of retail, health club, and general community facility space; 1 employee per 25 residential units; 1 employee per 250 sf of office space; and 1 employee per 50 parking spaces. In addition, for the Proposed Modified Development's public elementary school component, a ratio of 1 employee per 13 seats is assumed.

Proposed Actions

The development currently planned for the project site would require a number of discretionary actions that modify, or add to, those already considered in the 2010 FEIS. The proposed actions that would

modify those already considered in the 2010 FEIS include: waterfront zoning authorizations and certifications (including a certification for a waterfront zoning lot subdivision) and large-scale general development bulk Special Permits pursuant to ZR §74-743(a) and ZR §74-744(b). The discretionary actions being sought in conjunction with the Proposed Modified Development that are in addition to the modification to the actions already considered in the 2010 FEIS include: zoning text amendments to the Inclusionary Housing (IH) Program in waterfront areas and to the Large-Scale General Development Special Permit provisions, Special Permits pursuant to ZR §74-745(a) and ZR §74-745(b), and establishing public access easements. In addition, the Proposed Modified Development would require non-ULURP approvals by other City, State, and Federal agencies. Descriptions of the proposed modifications to the previous actions as well as the proposed additional discretionary actions for the project site are provided below, along with the purpose and need for each of the discretionary actions being sought.

Zoning Text Amendments

The proposed actions include two zoning text amendments to the Zoning Resolution (ZR) to facilitate the proposed mixed-use development on the project site. The zoning text amendments being sought would modify certain sections of the IH Program and the Large-Scale General Development Special Permit provisions. The proposed zoning text amendments are included in their entirety in Appendix 1.

Inclusionary Housing Text Amendment

The proposed zoning text amendment to ZR § 62-352 would amend the floor area compensation rules of the Inclusionary Housing Program and would allow for the floor area of the waterfront lot (which will contain Buildings A, B, and D) to be increased from the base FAR of 4.88 to a maximum FAR of 6.5, provided that the amount of affordable housing floor area is equal to at least 20 percent of the total residential floor area. Without the proposed text amendment, the 20 percent threshold would apply to both residential floor area and commercial/community facility floor area above the ground floor in Buildings A, B, and D. The proposed zoning text amendment would only be applicable to the waterfront lot, and would not impact the inclusionary housing requirements for the upland lot which would contain Building E.

The proposed text amendment would facilitate the construction of approximately 145,000 gsf of commercial space and approximately 115,000 gsf for community facility uses that may not be economically feasible according to the Applicant under the existing IH compensation rules because the majority of this space would be above the level of the ground floor and therefore would not be excluded from said compensation rules. If these commercial and community facility uses were located in separate zoning lots and not in mixed-use buildings, the space would not be subject to any IH requirements to achieve the maximum floor area ratio of 6.5. Additionally, at the time that the IH rules for Community District 1 in Brooklyn were created, the development and provision of large amounts of commercial and community facility floor area above the ground floor in mixed-use buildings was likely not contemplated which could explain why only ground floor non-residential floor area is currently excluded from ZR § 62-352.

With the proposed text amendment, a minimum of approximately 367,000 square feet of floor area on the waterfront zoning lot would be required to be designated as affordable housing in order to achieve the maximum FAR of 6.5. Without the text amendment, the office and community facility space above the ground floor would not be excluded from the IH compensation rules and a minimum of approximately 410,000 square feet would be required to be designated as affordable housing to achieve the maximum FAR of 6.5 on the waterfront zoning lot.

The proposed text amendment includes compensation requirements regarding maximum income levels that are consistent with the existing Inclusionary Housing provisions and permits the waterfront lot to reach its maximum floor area provided that the amount of low income floor area (defined as 80 percent of Area Median Income or less) is equal to at least 10 percent of the residential floor area, and that the amount of low income floor area plus two-thirds of the amount of moderate income floor area (defined as 125 percent of Area Median Income or less) is equal to at least 20 percent of the residential floor area.

While the proposed text change would aid the economic feasibility, according to the Applicant, of constructing the commercial and community facility space proposed, the Applicant intends to work with the City, local stakeholders and elected officials during ULURP to meet the goal of providing up to 660 units of affordable housing project-wide, more than is required under the current zoning, predicated upon the availability of various tax exemptions and incentives.

Large-Scale General Development Text Amendment

The Applicant proposes to create new subsection ZR §74-745(b), Waiver or reduction of loading berth requirements. The zoning text amendment would allow the modification of loading berth requirements by Special Permit. Specifically, this zoning text amendment would (through the proposed new Special Permit) facilitate a waiver or reduction in the amount of required off-street loading berths for certain commercial uses in select waterfront areas. The proposed Special Permit would have limited applicability as it would only apply to select commercial uses in Brooklyn CD 1 within a large-scale general development in a waterfront area. On the project site, the proposed Special Permit would facilitate a better relationship between the proposed streetwalls and sidewalks, reduce curb cuts, and add visual interest for pedestrians.

Large-Scale General Development Special Permits

The Proposed Modified Development would require four Special Permits, pursuant to ZR §74-74: transfer of floor area development rights and distribution of lot coverage as well as waiving certain height, yard, and setback requirements pursuant to ZR §74-743(a); modification of location of use requirements pursuant to ZR §74-744(b); modification of parking location requirements pursuant to ZR §74-745(a); and modification of loading berth requirements pursuant to the proposed ZR §74-745(b).

The Special Permit pursuant to ZR §74-743(a) is being requested to transfer approximately 242,857 square feet of residential zoning floor area from proposed zoning lot 1 (a portion of the existing waterfront zoning lot) to the existing upland zoning lot (zoning lot 3) to allow the Proposed Modified Development to, among others, provide better site design and reduce development along the waterfront by locating more floor area on the upland parcel; a similar request was made for the 2010 Project. Additionally, this Special Permit would modify the lot coverage requirements for the Proposed Modified Development. Pursuant to ZR §62-322, developments are limited to a maximum lot coverage of 65 percent for residential uses in R6/C2-4 districts. Although the development proposed on zoning lot 3 would not be able to comply with this requirement since it would exceed the requirement by 7 percent, collectively, the proposed distribution of lot coverage would allow the Proposed Modified Development to comply with the residential lot coverage requirement (approximately 22 percent for residential uses). As such, the requested Special Permit is necessary according to the Applicant to facilitate the project site's mixed-use development.

Moreover, the requested ZR §74-743(a) Special Permit would allow the modification of certain bulk requirements under ZR §62-34 (Height and Setback Regulations on Waterfront Blocks), ZR §62-332 (Rear Yards and Waterfront Yards) and ZR §33-23 (Permitted Obstructions in Required Yards or Rear

Yard Equivalents). As shown in Figures 8a through 8c, the Proposed Modified Development's four new buildings would not comply with the relevant base height, setback, maximum height, wall width, and maximum tower size requirements. Specifically, with regards to the maximum height requirement, on Buildings B and D, the proposed bulkhead screens would exceed the maximum surface area requirements for bulkheads under ZR §33-42(f), and therefore would require a waiver of the maximum height requirements up to the top of the bulkheads. This waiver would allow the building façade to continue without interruption to the top of the bulkheads, thereby, according to the Applicant, creating uniformity and better building and urban design. Additionally, the proposed addition to the Refinery Building would also not comply with the setback requirements under ZR §62-34, thereby increasing the degree of the Refinery Building's existing setback non-compliance. In addition, the bay windows that are proposed on the south façade of the Refinery Building, along South 3rd Street, would also not comply with the height and setback requirements.

Finally, (1) the proposed zoning lot 1 would require a floor area distribution waiver since the total floor area coverage for all buildings on proposed zoning lot 1 (Buildings A, B, and D) would be approximately 26 percent (less than the minimum floor area coverage of 30 percent required at a height of 20 feet pursuant to ZR §62-34(c)(3); (2) the proposed Building E would have certain non-residential portions within the required rear yard equivalent that would be two stories and in excess of 23 feet and therefore require modification of ZR §33-23; and (3) a waterfront yard modification is necessary on proposed zoning lot 1 as the level of the waterfront yard is proposed to be raised along the entire waterfront due to flood elevations and to create ADA accessible areas.

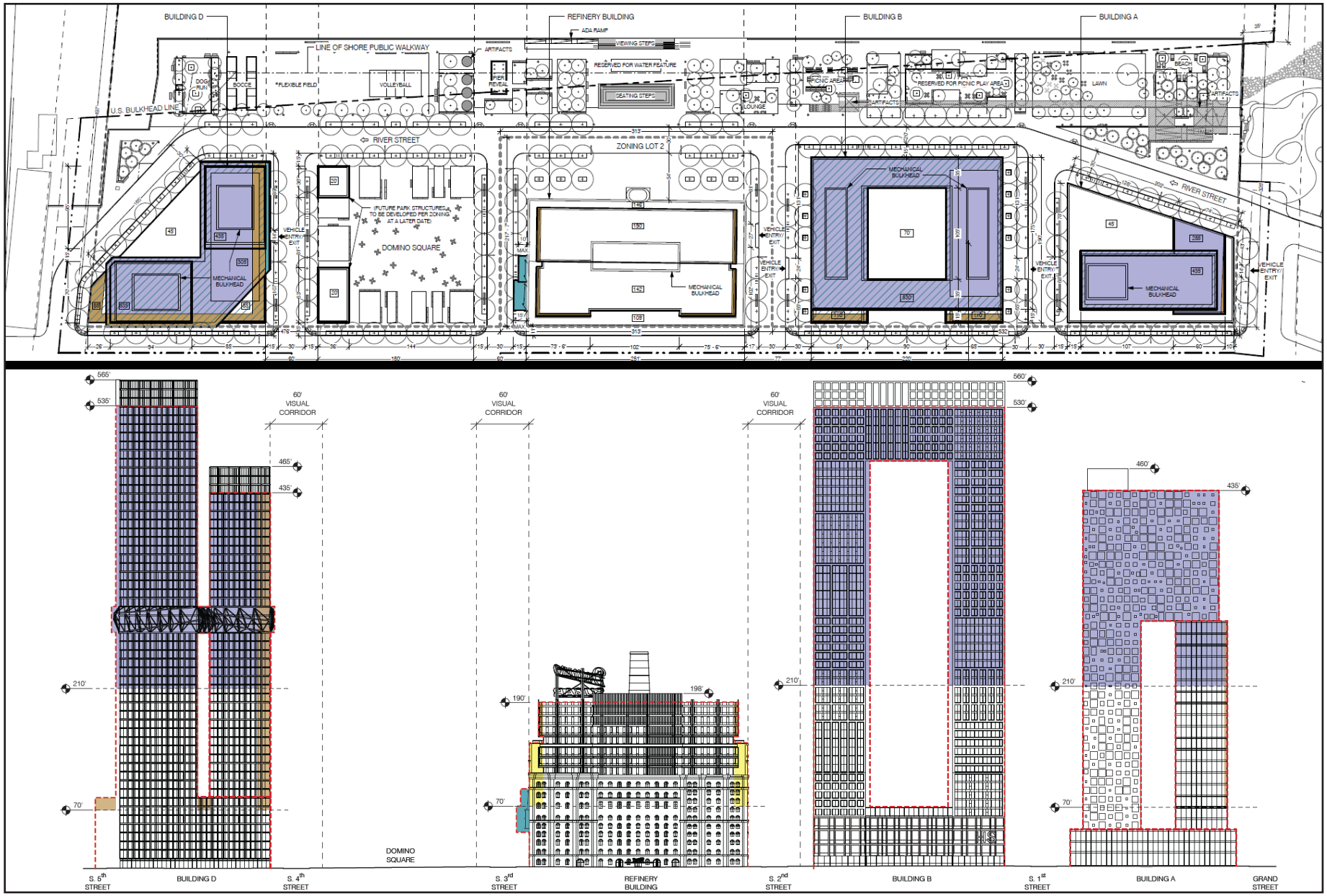
The Applicant is also seeking a Special Permit pursuant to ZR §74-744(b) to allow certain commercial uses to be located on the same floor and/or on floor(s) above the lowest floor occupied by a dwelling unit for the Proposed Modified Development's Building A and D (see Figure 9). This Special Permit was similarly requested for the 2010 Project and is necessary to facilitate the proposed mix of uses on the project site.

As previously noted, the Proposed Modified Development would include two accessory parking facilities—a 750-space garage in Building E and a 300-space garage in Building B—which would serve all of the proposed project site uses. The Zoning Resolution requires that accessory parking spaces be located on the same zoning lot as the primary use(s). Since the Proposed Modified Development comprises multiple zoning lots within a Large-Scale General Development, in order to ensure better site design and access, the Applicant is seeking a Special Permit pursuant to ZR §74-745(a) to allow all of the required accessory off-street parking spaces to be provided within two separate parking facilities in Buildings B and E.

In addition, the Applicant is seeking a Special Permit pursuant to the proposed ZR §74-745(b), Waiver or reduction of loading berth requirements, to allow a reduction in the amount of required off-street loading berths on the upland parcel (proposed zoning lot 3). Given the nature, location and limited quantity of ground floor retail being proposed in Building E (intended primarily to be neighborhood-oriented retail uses that typically create very little loading demand, if any) an off-street loading berth is not practically required to serve this commercial space as this small-scale, ground floor retail could load through their frontage with limited deliveries. The Proposed Modified Development would be sufficiently served through the four proposed loading berths in Buildings A, B, and D and the Refinery Building.

Waterfront Zoning Authorizations and Certifications

As the project site is comprised of zoning lots within waterfront blocks, it is subject to waterfront zoning requirements. Development of the project site requires waterfront zoning certifications (ministerial actions) to demonstrate compliance with applicable requirements in waterfront zoning and for the

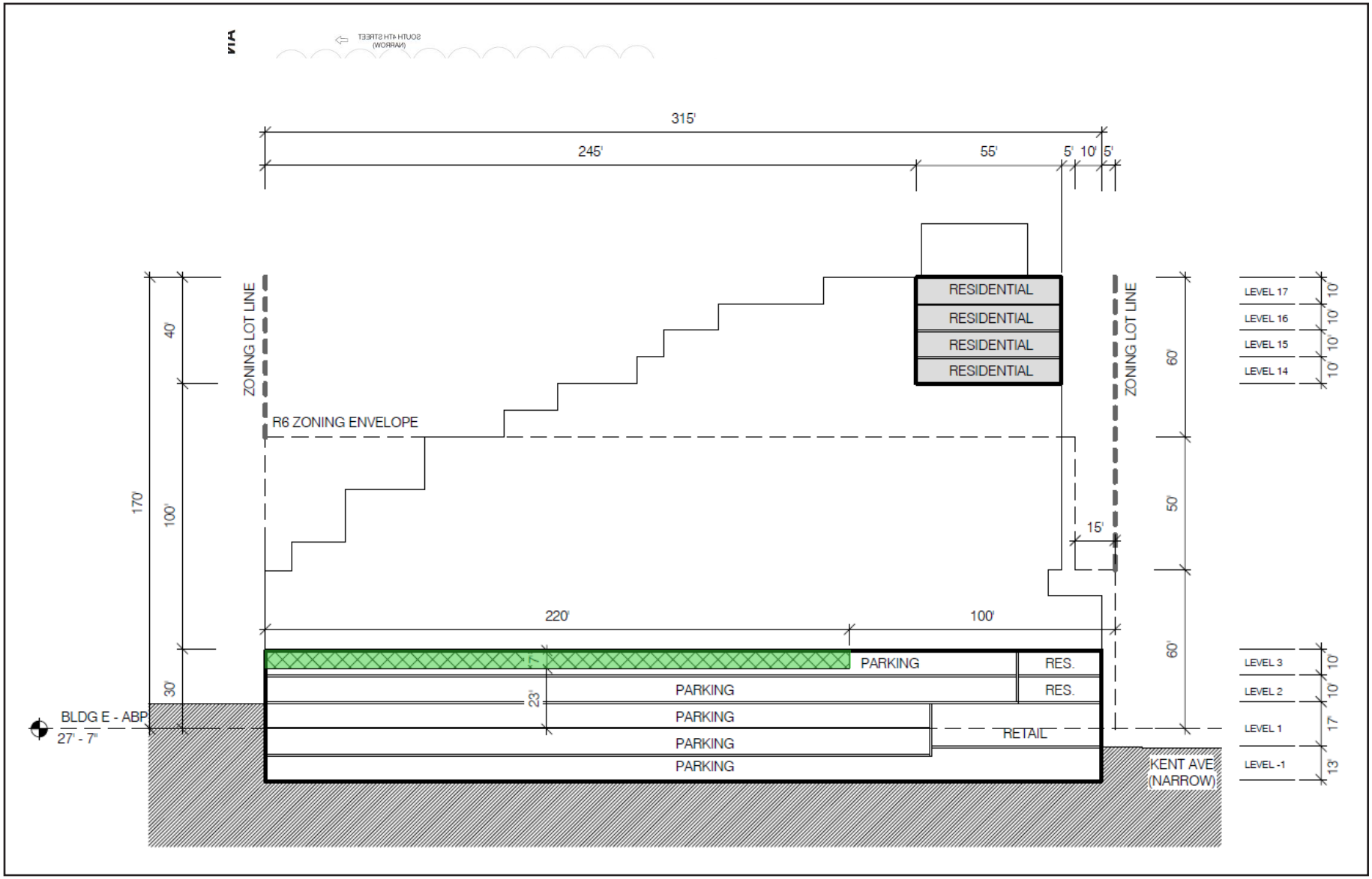


FOR ILLUSTRATIVE PURPOSES ONLY

Domino Sugar Technical Memorandum

Figure 8a

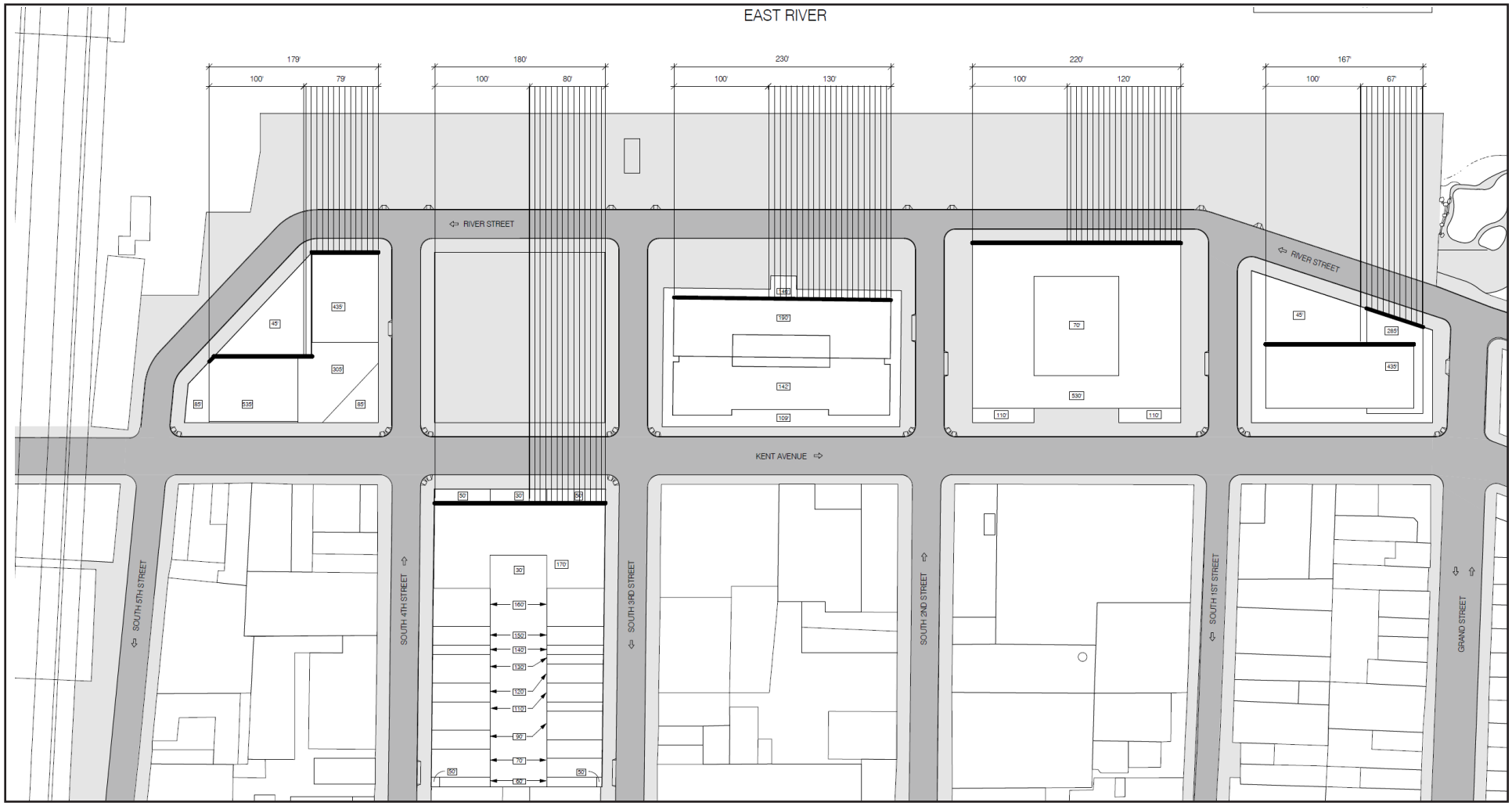
Requested Height and Setback Waivers for the Waterfront Parcel



Rear Yard Equivalent Waiver

Domino Sugar Technical Memorandum **Figure 8b**

Building E Rear Yard Equivalent Waiver

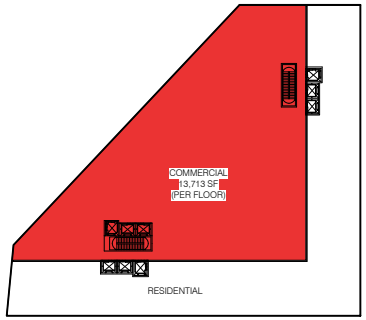


Domino Sugar Technical Memorandum

Figure 8c

Requested Building Wall Width Waivers

Building D

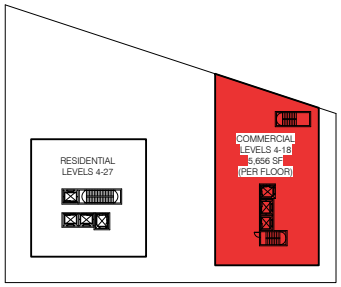


Location of Uses : Floors 2-3

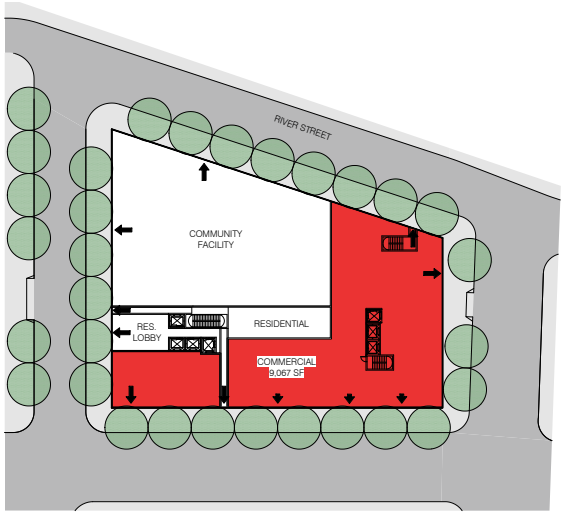


Location of Uses : Ground Floor

Building A



Location of Uses : Residential Floors 4-27/
Commercial Floors 4-18



Location of Uses : Ground Floor

subdivision of the waterfront zoning lot. In addition, waterfront zoning authorizations (discretionary actions) are required to permit any modifications to waterfront zoning requirements.

Waterfront zoning authorizations pursuant to ZR §62-822 are required to facilitate the Proposed Modified Development. These authorizations would request modifications to otherwise applicable requirements of the ZR in order to address flooding concerns and newly mandated flood elevation regulations, respond to the unique geography of the project site, and create a superior design for the waterfront. Specifically, the Applicant is seeking Authorizations to modify certain waterfront public access area, visual corridor, and related design requirements, and for phased development of the waterfront public access area (see Figure 10); the 2010 Project also requested waterfront zoning authorizations.

Similar to the 2010 Project, the Applicant is seeking CPC Chair certifications for waterfront public access and visual corridor requirements pursuant to ZR §62-811 for proposed zoning lots 1 and 2 as well as CPC Chair certification pursuant to ZR §62-812 for a waterfront zoning lot subdivision. The Proposed Modified Development would comply with the applicable waterfront public access and visual corridor requirements, as modified by the requested approvals. The requested waterfront zoning lot subdivision would subdivide the waterfront zoning lot into two separate zoning lots, one which would contain the landmark Refinery Building (proposed zoning lot 2) and one which would contain Buildings A, B, D, and the public open space block (proposed zoning lot 1).

Establishing Public Access Easements

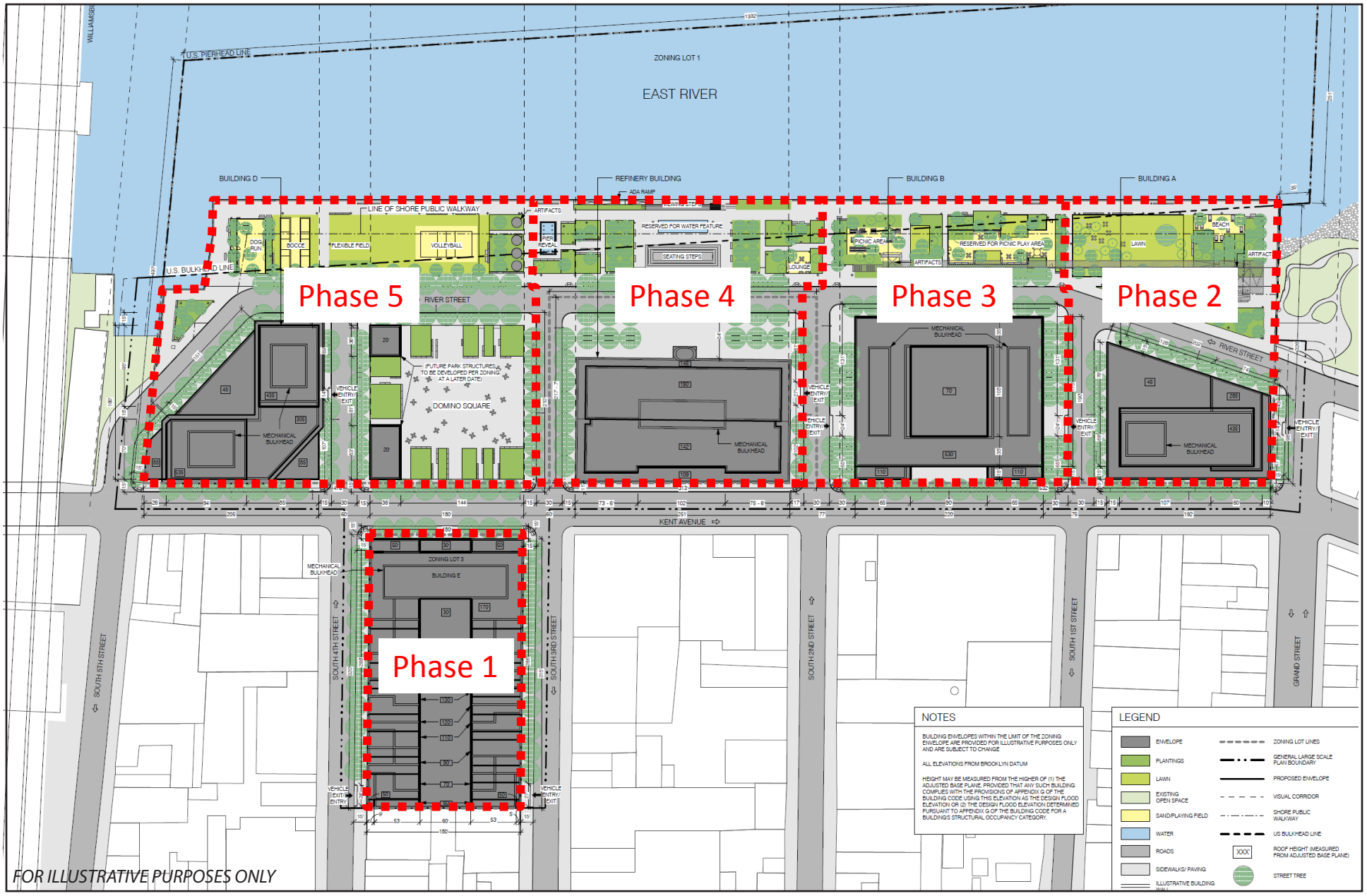
The Applicant is proposing the establishment of the proposed River, South 1st, South 2nd, South 3rd, and South 4th Street extensions as public access easements. In establishing the public access easements, the general public would have the right to use the proposed streets and airspace, and no structures could be built on the public access easements nor fencing that would hinder the general public's access to the proposed streets. Through establishing the proposed streets as public access easements, the extended streets would formally function as street extensions of the adjacent River Street and South 1st through South 4th Street, while the Applicant would maintain ownership. Specifically, standard parking regulations would be enforced by the City and these streets would be designed and constructed to DOT standards.

Actions not Subject to ULURP

In addition to the proposed actions subject to CPC approval, the Proposed Modified Development would require approval from other City, state, and federal agencies.

NYSDEC and USACE Permits and Approvals

As with the 2010 Project, the Proposed Modified Development would require approval of a Joint Permit Application from the U.S. Army Corps of Engineers (USACE) and the NYSDEC for reconstruction of the existing waterfront platform and installation of a new sheet pile bulkhead. The NYSDEC permit has already been issued and the USACE approval is pending; the existing NYSDEC permit will need to be modified to reflect changes in design of the platform associated with the Proposed Modified Development. Approvals would also be required for the two proposed stormwater outfalls to be located at the end of South 2nd and South 3rd Streets and a State Pollution Discharge Elimination System (SPDES) permit from NYSDEC for stormwater discharges during the construction period because the project site involves more than one acre.



Domino Sugar Technical Memorandum **Figure 10**

Waterfront Public Access Areas Phased Development

BSA Special Permits

Special Permits from the Board of Standards and Appeals (BSA) would be requested for physical culture establishments (i.e., health clubs) to be located within portions of the proposed community facility space and the proposed commercial space. As previously stated, the Proposed Modified Development would include a 44,558 sf not-for-profit sports and fitness center (a community facility use) as well as a 42,231 sf health club (a commercial use), in Buildings A and D, respectively. The BSA Special Permits would be required pursuant to ZR §73-36, which authorizes the BSA to grant special permits for specified uses.

Agreements with Other City Agencies

In conjunction with the Proposed Modified Development, the Applicant anticipates executing a Maintenance and Operations Agreement with the New York City Department of Parks and Recreation (DPR) that would identify the terms under which the Public Access Areas would be constructed, maintained and operated. In addition, the Applicant anticipates entering into a School Option Agreement with the New York City School Construction Authority (SCA) which would detail the terms under which the SCA can elect to take title to the school proposed as part of the Proposed Modified Development.

Modified Restrictive Declaration

To reflect the proposed development changes, a modified Restrictive Declaration would be recorded on the property after all land use-related actions required for the Proposed Modified Development are approved, as described herein. The Restrictive Declaration would, among other things: (1) require development in substantial accordance with the approved plans, which establish an envelope within which the building must be constructed, including limitations on floor area; (2) require that the project site's development program be within the scope of the development scenario analyzed in this Technical Memorandum; (3) provide for the implementation of Project Components Related to the Environment and mitigation measures, substantially consistent with the 2010 FEIS as augmented by this Technical Memorandum; and (4) require Construction Monitoring Measures to be implemented.

Possible Financing

In order to construct the proposed affordable housing units, the Applicant may seek Federal, State, and/or City funding (or some combination of all three) to make the affordable housing component financially feasible under commercially reasonable terms.

Anticipated Future Actions

As previously stated, as part of the Proposed Modified Development the proposed street extensions on the project site would be designated public access easements within the waterfront public access area, and would therefore not require an amendment to the City map. However, the public access easement would function as one-way public rights-of-way for vehicular traffic, and it is the intent of the Applicant to pursue a City map amendment to map the proposed River Street extension and the western extensions of South 1st, South 2nd, South 3rd, and South 4th Streets at a later date. This anticipated future action would be subject to ULURP.

In anticipation of the future City map amendment, the public access easements have been conceptually designed in consultation with the relevant City agencies to avoid potential future obstacles. Throughout the street network design process, the Applicant has consulted with the DOT to ensure that the proposed streets are consistent with DOT street design material and the Fire Department of the City of New York

(FDNY) to ensure that all proposed building frontages have the necessary fire access. As previously stated, the proposed public access easements would function as streets with standard vehicle regulations and enforcement. In addition, with the exception of a small portion of River Street immediately adjacent to Building B which would have a street width of 50 feet, the proposed public access street widths would be a minimum of 60 feet wide, as required to ensure the necessary fire access.

At the time of the anticipated future City map amendment, the streets and associated infrastructure would become City-owned. However, as the streets would not fundamentally change with this future action (i.e., the street network capacity would remain as developed with the Proposed Modified Development), it is not anticipated that this future action would result in different adverse impacts as traffic would not be expected to function any differently from what is projected with these streets designated as public access easements versus designated as mapped streets. Therefore, it is not anticipated that this future action would result in any different significant adverse environmental impacts not already identified in the 2010 FEIS and subsequent Technical Memoranda.

III. ASSESSMENT OF POTENTIAL FOR SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS UNDER PROPOSED MODIFICATIONS

This Technical Memorandum uses the 2010 FEIS as the baseline condition for analysis purposes, although where applicable, updates presented in the subsequent Technical Memoranda are used instead (e.g., for transit assessment). Where more updated information regarding existing (2013) conditions is available, it is used in this Technical Memorandum, as appropriate. In addition, this Technical Memorandum also utilizes the guidelines and methodologies set forth in the most current 2012 *CEQR Technical Manual*.

The 2010 FEIS concluded that the original project would result in significant adverse impacts on public elementary and intermediate schools, childcare facilities, historic resources, traffic and parking, transit and pedestrians, and construction-related traffic and noise, as well as shadow impacts on Grand Ferry Park. Mitigation measures were developed for each of the identified areas of impact and were recorded in the Restrictive Declaration. In comparing the Proposed Modified Development and the 2010 Project, it is assumed that the agreed-upon mitigation measures would have been implemented as part of the 2010 Project. The 2010 FEIS concluded that the original project would result in unavoidable significant adverse impacts on: (1) historic resources as a result of the demolition of several S/NR-eligible historic resources located on the project site; and (2) Grand Ferry Park due to the new incremental shadow cast by the 2010 Project's buildings, which would only be partially mitigated.

As described below, the proposed revisions to the program and design of the Domino Sugar development would not alter the conclusions for the environmental areas examined in the 2010 FEIS and two subsequent Technical Memoranda. However, several technical areas – such as community facilities, open space, shadows, and transportation – were further examined to determine if the Proposed Modified Development could alter the conclusions of the 2010 FEIS. Whereas the 2010 Project had a build year of 2020, the Proposed Modified Development is expected to be completed by 2023.

A. Land Use, Zoning, and Public Policy

As stated in the 2012 *CEQR Technical Manual*, the appropriate study area for land use and zoning is related to the type and size of the project being proposed as well as the location and neighborhood context of the area that could be affected by the project. For large-scale, high density developments which may result in indirect or secondary impacts, a 0.25 to 0.5 mile radius should be used. As per CEQR methodology, the appropriate study area can be coordinated with the required technical analysis study areas for the purposes of data collection. Additionally, as larger study areas can dilute or obscure a project's effects, particularly when those effects are localized in nature, for conservative analysis purposes the following land use, zoning, and public policy assessment uses a ¼-mile study area, the same study area used for the technical analyses of both socioeconomic conditions and open space included in this Technical Memorandum.

Land Use

The 2010 FEIS concluded that the original project would have a strong positive effect on land use by creating a mixed-use development on a currently underutilized lot that would serve both the new residents and the surrounding community. The Proposed Modified Development would similarly introduce a mix of uses on a currently-underutilized lot. As land use conditions in the surrounding area have continued the trend noted in the 2010 FEIS towards increased higher density residential and mixed-used development, the Proposed Modified Development would be compatible with the existing and anticipated future development in the surrounding area and would not result in any significant adverse land use impacts.

As shown in Figure 11, since the 2010 FEIS analysis, nine new residential developments (both new construction and conversions) have been completed in the ¼-mile study area. As shown in Table 4, below, these new developments have a combined total of 1,340 DU; six of the developments include ground-floor retail. In addition to these completed projects, ten residential and commercial projects are underway in the surrounding area that are expected to be complete by 2023. Table 5 lists No-Action projects in the ¼-mile study area that were not included in the 2010 FEIS, but are expected to be completed by the analysis year of 2023 for the Proposed Modified Development.

As noted in the 2010 FEIS, the predominant land uses in the surrounding area are a mix of residential, mixed use, and industrial uses. The largest industrial use in the surrounding area is the New York Power Authority (NYPA) North 1st Street gas turbine power generating facility, located one block to the north of the project site. The NYPA facility, along with the other industrial uses in the surrounding area, already coexist with residential and mixed uses on nearby blocks, and would not adversely affect the residential uses on the project site.

Similar to the 2010 Project, the Proposed Modified Development would include a mix of office, retail, community facility, and residential uses, as well as publicly accessible open space. In total, the Proposed Modified Development would result in an increase of approximately 405,570 gsf of commercial office space, approximately 4,484 gsf of community facility uses (including a 375-seat school, as well as not-for-profit/artist studio space and a not-for-profit sports and fitness center), and approximately 1.98 acres of open space (including waterfront public access areas, additional public access areas, and public easement areas), and a decrease of 12,899 gsf of retail and other commercial uses and 118 DU compared to the 2010 Project (refer to Table 1). The mix of uses in the Proposed Modified Development would be compatible with existing and anticipated future uses in the study area, as the area in the immediate vicinity of the project site is expected to continue to exhibit a mix of commercial and residential uses.

Recent and Anticipated Future Development

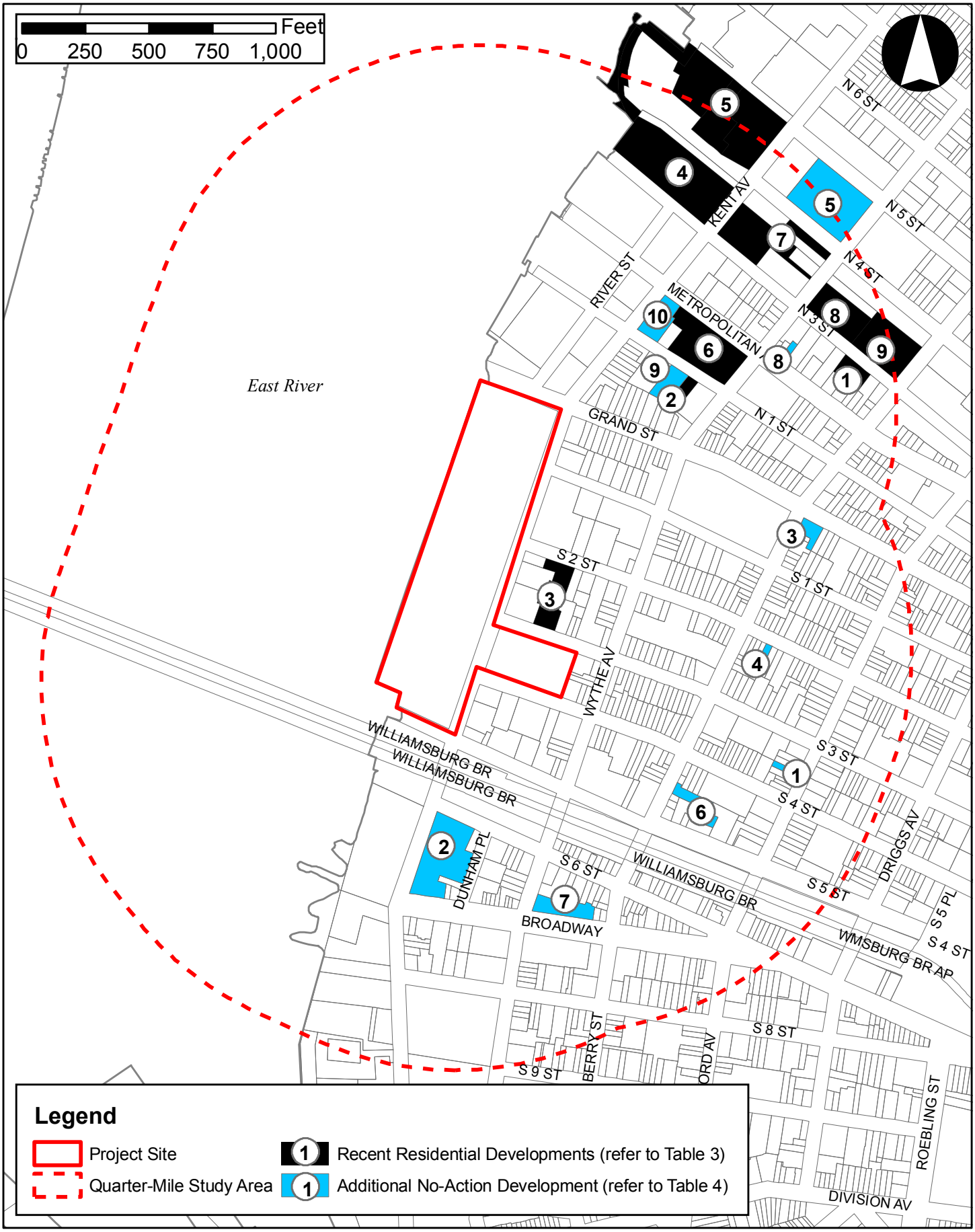


TABLE 4
Recent Residential Development

Map No.[1]	Project Name/Address	Dwelling Units (DU)	Ground Floor Retail	2010 FEIS No-Action Development
1	100 North 3rd Street	36	Yes	No
2	66 North 1st Street	21	No	Yes[3]
3	29 South 3rd Street	24	No	No
4	184 Kent Avenue	339	Yes	Yes[4]
5	Northside Piers[2]	561	Yes	Yes[5]
6	80 Metropolitan Avenue	123	No	Yes
7	157-173 Kent Avenue	133	Yes	Yes[6]
8	85 North 3rd Street	63	Yes	Yes[7]
9	103 North 3rd Street	40	Yes	Yes[8]
	Total	***1,340***		

Sources: 2010 FEIS, NYC Department of Buildings (DOB), Department of City Planning (DCP)
Notes:
[1] Refer to Figure 11.
[2] Two of the three Northside Towers are complete. Tower 3 is under construction and expected to include an additional 570 DU.
[3] The 2010 FEIS assumed 20 DU.
[4] The 2010 FEIS assumed 256 DU.
[5] The 2010 FEIS assumed 900 DU.
[6] The 2005 Greenpoint-Williamsburg Rezoning FEIS assumed 253 DU.
[7] The 2005 Greenpoint-Williamsburg Rezoning FEIS assumed 59 DU.
[8] The 2005 Greenpoint-Williamsburg Rezoning FEIS assumed 37 DU.

TABLE 5
Anticipated No-Action Development

Map No.[1]	Project Name/Address	Dwelling Units (DU)	Commercial (sf)
1	UDAAP Project (354-358 Bedford)	59	5,755 (and 422 sf of community facility space)
2	15 Dunham Place (389 Kent Avenue)	160	--
3	255 Berry Street	18	--
4	112 South 2nd Street	6	--
5	204 Wythe Avenue	190	7,599
6	337 Berry Street	50	15,000
7	53 Broadway	67	--
8	105 Metropolitan Avenue	--	1,936 (and 2,076 sf of light manufacturing)
9	60 North 1st Street	--	12,987
10	58 Metropolitan	64	--
	Totals	***614***	***43,277 sf commercial 422 sf community facility 2,076 sf light manufacturing***

Sources: NYC Department of Buildings (DOB), DCP
Notes:
[1] Refer to Figure 11.

The Proposed Modified Development would increase the commercial office square footage (compared to the 2010 Project), allowing for a mix of start-up and incubator type facilities in an area that currently lacks such space and use. These proposed new, high quality office spaces would be consistent with a trend in the surrounding area toward the conversion of former manufacturing buildings to commercial office uses. Several new office buildings have been completed in the surrounding area since 2010, in addition to the nine mixed-use commercial/residential developments already completed or currently under construction (refer to Tables 4 and 5 above), however the amount of existing office space in the surrounding area has not expanded sufficiently to meet the needs of the growing residential population. The introduction of an additional 405,570 gsf of commercial office space with the Proposed Modified

Development would continue the trend toward office conversion and provide much-needed office space for the residents of the surrounding area.

As described above, the Proposed Modified Development would be compatible with surrounding land uses, and would provide much needed high quality office space to an area that currently lacks opportunities for local residents to work close to home. Therefore, the Proposed Modified Development would not result in any significant adverse impacts on land use in the study area and the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Zoning

As previously noted, the 2010 approvals rezoned the project site from M3-1 to R8 with a C2-4 commercial overlay for a section of the waterfront parcel; from M3-1 to C6-2 for portions of the waterfront parcel; and from M3-1 to R6 with a C2-4 commercial overlay on the upland parcel (refer to Figure 2). In addition, since the 2010 FEIS analysis, the block immediately adjacent to the upland parcel (bounded by South 2nd and South 3rd Streets, Wythe Avenue, and a line 210 feet northwesterly of Wythe Avenue) was rezoned from M3-1 to MX8:M1-4/R6A. This rezoning was proposed prior to the 2010 Project's certification and approved in 2011. No other significant zoning changes have occurred in the surrounding ¼-mile study area since the 2010 FEIS.

To facilitate the Proposed Modified Development, several modifications to the original zoning actions would be necessary, including: zoning text amendments for the Inclusionary Housing (IH) Program and Large-Scale General Development regulations; a Special Permit for the transfer of floor area development rights and the distribution of lot coverage between parcels as well as to waive certain height and setback requirements; a Special Permit to modify the location of use provisions; a Special Permit to modify parking location requirements; and a Special Permit to modify loading berth requirement. As previously noted, many of the discretionary actions being sought in conjunction with the Proposed Modified Development are modifications of the previous approvals of the 2010 Project; the proposed zoning text amendments to the Large-Scale General Development regulations, as well as the Special Permits to modify parking location and loading berth requirements are additional actions.

As previously stated, the proposed Inclusionary Housing (IH) zoning text amendment would amend the floor area compensation rules of the Inclusionary Housing Program and would allow for the floor area of the waterfront lot (which will contain Buildings A, B and D) to be increased from the base FAR of 4.88 to a maximum FAR of 6.5, provided that the amount of affordable housing floor area is equal to at least 20 percent of the total residential floor area. Without the proposed text amendment, the 20 percent threshold would apply to both residential floor area and commercial/community facility floor area above the ground floor in Buildings A, B, D. The proposed zoning text amendment would only be applicable to the waterfront lot, and would not impact the inclusionary housing requirements for the upland lot which would contain Building E.

The proposed text amendment would facilitate the construction of approximately 145,000 gsf of commercial space and approximately 115,000 gsf for community facility uses that may not be economically feasible under the existing IH compensation rules because the majority of this space would be above the level of the ground floor and therefore would not be excluded from said compensation rules. If these commercial and community facility uses were located in separate zoning lots and not in mixed-use buildings, the space would not be subject to any IH requirements to achieve the maximum floor area ratio of 6.5.

Additionally, at the time that the IH rules for Community District 1 in Brooklyn were created, the development and provision of large amounts of commercial and community facility floor area above the ground floor in mixed-use buildings was likely not contemplated. This may explain why only ground floor non-residential floor area is currently excluded from ZR § 62-352.

With the proposed text amendment, a minimum of approximately 367,000 square feet of floor area on the waterfront zoning lot would be required to be designated as affordable housing in order to achieve the maximum FAR of 6.5. Without the text amendment, the office and community facility space above the ground floor would not be excluded from the IH compensation rules and a minimum of approximately 410,000 square feet would be required to be designated as affordable housing to achieve the maximum FAR of 6.5 on the waterfront zoning lot.

The proposed text amendment includes compensation requirements regarding maximum income levels that are consistent with the existing Inclusionary Housing provisions and permits the waterfront lot to reach its maximum floor area provided that the amount of low income floor area (defined as 80 percent of Area Median Income or less) is equal to at least 10 percent of the residential floor area, and that the amount of low income floor area plus two-thirds of the amount of moderate income floor area (defined as 125 percent of Area Median Income or less) is equal to at least 20 percent of the residential floor area.

While the proposed text change would ensure the economic feasibility of constructing the commercial and community facility space proposed, the Applicant intends to work with the City, local stakeholders and elected officials during ULURP to meet the goal of providing up to 660 units of affordable housing project-wide, more than is required under the current zoning, predicated upon the availability of various tax exemptions and incentives.

Furthermore, the proposed IH text amendment is consistent with the planning goals of the Greenpoint-Williamsburg Rezoning, which has in the last several years facilitated the redevelopment of the rezoning area with a mix of residential and commercial uses. The proposed text amendment would similarly facilitate the development of a desirable mix of commercial, community facility and residential uses on the project site. These uses are consistent with and are complementary to the Brooklyn neighborhoods of Williamsburg and Greenpoint. In particular, the addition of new, high quality office space in an area that is currently underserved by such space will allow for a mix of creative office uses including start-ups and incubator type facilities.

As previously mentioned, as a result of the Greenpoint-Williamsburg rezoning, the residential population of the Greenpoint and Williamsburg neighborhoods has grown and continues to grow at a remarkable rate; however, the area still lacks opportunities for existing and new residents to work close to their homes. Many of these residents currently commute to other parts of New York City for their jobs, including Downtown Brooklyn, parts of Queens and Manhattan. The proposed text amendment would allow the creation of much needed office space in the Greenpoint and Williamsburg neighborhoods, providing opportunities for these area residents and future residents to work close to where they live. Without this much needed commercial office space, reliance on public and private transportation will continue to increase, straining the City's resources and adversely impacting the natural and human environment.

The proposed zoning text amendment would apply exclusively to project site. Moreover, this text amendment would facilitate the redevelopment of a large, vacant and unused waterfront site.

In addition to the proposed amendment relating to the IH program, the Applicant is seeking to create new subsection ZR §74-745(b), Waiver or reduction of loading berth requirements, to allow the modification of loading berth requirements by Special Permit. The zoning text amendment would create a new Special

Permit that would facilitate a waiver or reduction in the amount or required off-street loading berths for select commercial uses within a large-scale general development in a Brooklyn CD1 waterfront area.

In addition, the proposed zoning text amendments would have limited applicability as they would apply only to certain large-scale general developments in select waterfront areas; applicability of the text amendments is neither borough-wide nor City-wide. Moreover, the proposed text amendments would facilitate the redevelopment of a larger, vacant and unused waterfront site.

In addition to the above-described zoning text amendments, the Applicant is requesting four Special Permits pursuant to ZR §74-74 to facilitate the Proposed Modified Development.

The proposed Special Permit pursuant to ZR §74-743(a) would allow the transfer of approximately 242,857 square feet of zoning floor area from proposed zoning lot 1 (a portion of the existing waterfront zoning lot) to the existing upland zoning lot (proposed zoning lot 3) to, among others, provide better site design and reduce development along the waterfront by locating more floor area on the upland parcel; a similar request was made for the 2010 Project. This Special Permit would also modify the lot coverage requirements for the Proposed Modified Development (ZR §62-322) which limit developments to a maximum lot coverage of 65 percent for residential uses in R6/C2-4 districts. As collectively the Proposed Modified Development would comply with these residential lot coverage requirements, a transfer of floor area was similarly requested for the 2010 Project, and the requested Special Permit would have limited applicability and is necessary to develop the additional approximately 1.98 acres of open space on the project site, the proposed Special Permit would not result in new significant adverse impacts to zoning in the surrounding area.

With the proposed transfer of zoning floor area, the Proposed Modified Development would have a maximum FAR of 5.9 on the waterfront parcels (inclusive of the Refinery Building) and 7.0 on the upland parcel, for an overall FAR of 6.06. In comparison, the 2010 Project would have had a maximum FAR of 5.6 on the waterfront parcels and 6.0 on the upland parcel, for an overall FAR of 5.64. As such, the Proposed Modified Development would result in an increase of 0.3 FAR on the 9.8-acre waterfront site and an increase of 1.0 on the 1.3-acre upland parcel, representing an overall increase of 0.42 FAR (201,000 zsf) compared to the 2010 Project. The additional 0.3 FAR on the waterfront parcels would be distributed between four buildings. The proposed additional floor area on the upland parcel would be located along Kent Avenue, thereby serving as a transition from the lower FAR buildings to the east of the project site to the waterfront buildings. The overall increase in floor area in the Proposed Modified Development would be comprised of commercial office space, which would primarily be located in the Refinery Building. The residential FAR under the Proposed Modified Development would not represent an increase in residential FAR for waterfront sites under the Greenpoint-Williamsburg Rezoning.

The requested ZR §74-743(a) Special Permit would also modify certain bulk requirements under ZR §62-34 (Height and Setback Regulations on Waterfront Blocks), ZR §33-23 (Permitted Obstructions in Required Yards or Rear Yard Equivalents) and ZR §62-332 (Rear Yards and Waterfront Yards). Developments on zoning lots landward of the shoreline are required to comply with various bulk requirements, including the following height and setback regulations of ZR §62-34:

- ZR §62-341(c)(1) and ZR §62-341(c)(2) limit base height of a building to a maximum base height of 60 feet and a maximum height of 110 feet in R6 districts to a maximum base height of 70 feet and a maximum height of 210 feet in R8 and C6-2 districts;
- ZR §62-341(a)(2) requires setbacks of 15 feet from a narrow street, 10 feet from a wide street, and 30 feet from a shore public walkway for all such developments;

- ZR §62-341(c)(3) stipulates that building that exceed the maximum base height are required to have a minimum floor area coverage comprising at least 30 percent of the lot area at a height of 20 feet;
- ZR §62-341(c)(4) limits residential tower sizes to a maximum of 7,000 sf for the R6/C2-4 portion of the project site and 8,100 sf for the R8/C2-4 portion of the project site;
- ZR §62-341(c)(5) limits the width of building walls that face the shoreline to 100 feet; and
- ZR §62-332 limits the level of a waterfront yard to no higher than the elevation of the top of the adjoining existing bulkhead, existing stabilized natural shore, or mean high water line.

As shown in Figures 8a through 8c, the proposed buildings would not comply with one or more of the above requirements. Specifically, Buildings B and D's proposed bulkhead screens would exceed the maximum surface area requirements for bulkheads and therefore require waivers of the maximum height requirements up to the top of the proposed bulkheads on these two buildings, and the proposed Refinery Building addition and bay windows would increase the degree of the building's existing non-compliance. In addition, (1) Building E would have certain non-residential portions within the required rear yard equivalent that would be two stories and in excess of 23 feet and therefore require modifications of ZR §33-23; (2) the proposed zoning lot 1 would require a floor area distribution waiver since the total floor are coverage of all buildings on the zoning lot (Buildings A, B, and D) would be approximately 26 percent, and therefore not meet the minimum floor area coverage requirement of 30 percent at a height of 20 feet; and (3) the level of the waterfront yard on proposed zoning lot 1 is raised due to flood elevations and to create ADA accessible areas and therefore requires a modification of the waterfront yard requirement under ZR § 62-332 pursuant to the requested ZR §74-743(a) Special Permit.

As the Proposed Modified Development would not comply with the above base height, setback, maximum height, wall width, and maximum tower size and yard requirements, the Special Permit is being requested. As the requested ZR §74-743(a) Special Permit was similarly requested for the 2010 Project, the Refinery Building (an existing non-complying building) would be adaptively reused as part of the Proposed Modified Development, and the waivers would apply solely to the project site and are necessary to increase the amount of public open space and improved access to the waterfront, the proposed Special Permit would not result in new significant adverse impacts to zoning in the surrounding area.

In addition, the Applicant is seeking a Special Permit pursuant to ZR §74-744(b) to modify the location of use provisions of ZR §34-422 (refer to Figure 9). The Applicant is seeking this Special Permit to allow certain commercial uses to be located on the same floor and/or on the floor(s) above the lowest floor occupied by a dwelling unit in the Proposed Modified Development's Buildings A and D. As the proposed Special Permit would have limited applicability and was similarly requested for the 2010 Project, it would not result in any new significant adverse impacts on zoning in the surrounding area.

The Applicant is also seeking a Special Permit pursuant to ZR §74-745(a) to allow all of the required off-street parking spaces to be provided within two separate parking facilities in Buildings B and E. Currently the Zoning Resolution requires that accessory parking spaces be located on the same zoning lot as the primary use(s). Since the Proposed Modified Development comprises multiple zoning lots within a Large-Scale General Development, this two accessory parking facilities proposed under Special Permit would (1) be conveniently located in relation to the uses to which the spaces are accessory; (2) allow for better site design and access, and (3) would not adversely affect traffic conditions, the proposed Special Permit would not result in a significant adverse impact on zoning in the surrounding area.

In addition, the Applicant is seeking a Special Permit pursuant to the proposed ZR §74-745(b), Waiver or reduction of loading berth requirements, to allow a reduction in the amount of required off-street loading

berths. Given the nature, location, and limited quantity of ground floor retail being proposed in Building E (intended primarily to be neighborhood oriented uses that typically created very little loading demand, if any), an off-street loading berth is not practically required to serve this commercial space. This small-scale ground floor retail would load through their frontage with limited deliveries and would not be efficiently served by off-street loading. The Proposed Modified Development would be sufficiently served through the four proposed loading berths and would meet the stipulations of the proposed ZR §74-745(b), the proposed Special Permit would not result in significant adverse impacts on zoning in the surrounding area.

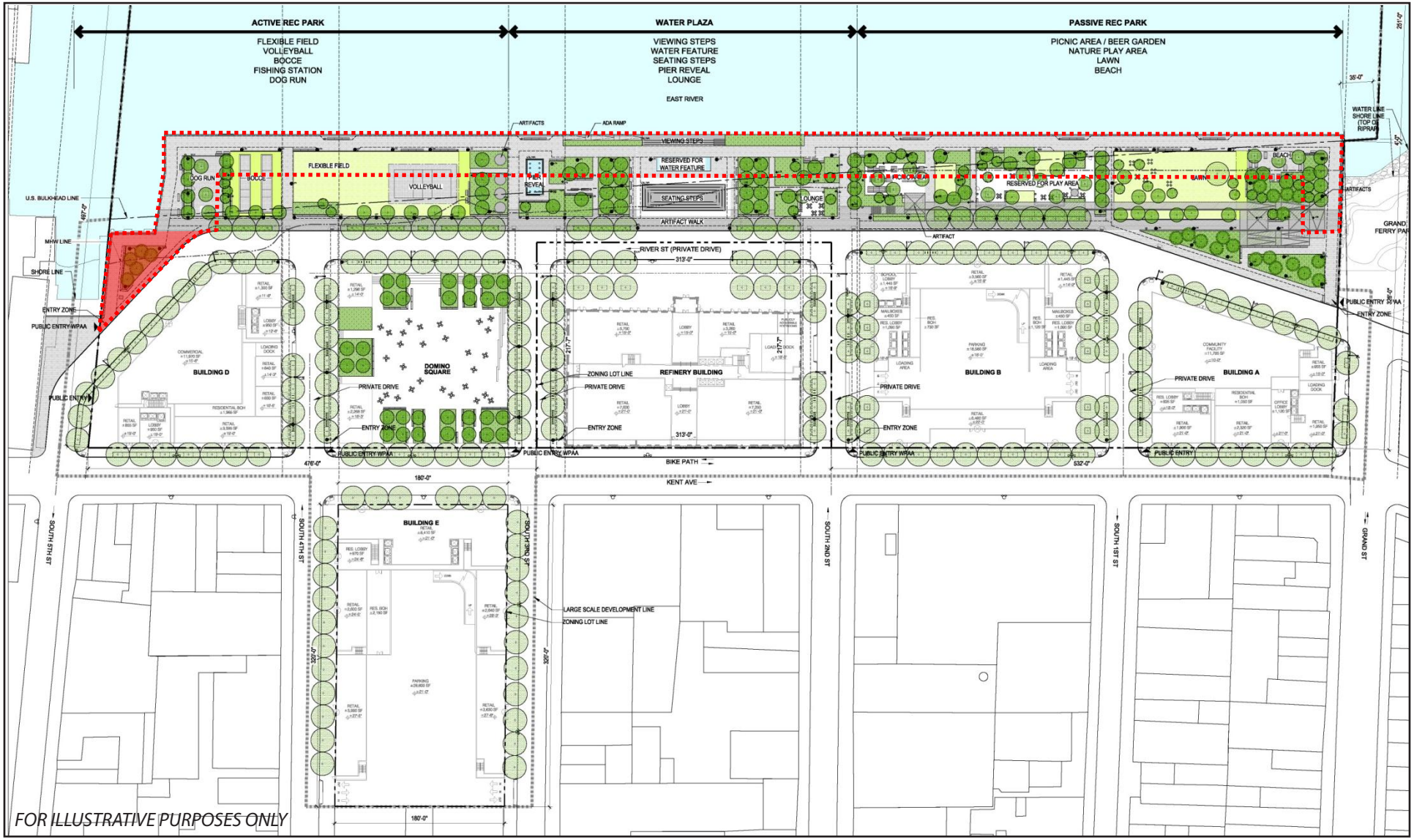
Lastly, similar to the 2010 Project, the Proposed Modified Development would require several waterfront zoning authorizations and CPC Chair certifications. Two CPC Chair certifications are being requested for waterfront public access and visual corridor requirements pursuant to ZR § 62-811 for proposed zoning lots 1 and 2, as well as a CPC Chair certification pursuant to ZR § 62-812 for a waterfront zoning lot subdivision. The waterfront zoning authorizations are being requested pursuant to: (1) ZR § 62-822(a) to modify certain waterfront public access area and visual corridor requirements; (2) ZR § 62-822(b) to modify requirements within waterfront public access areas; and (3) ZR § 62-822(c) for phased development of waterfront public access areas.

The requested waterfront zoning authorizations pursuant to ZR § 62-822(a) would allow modifications of the required shore public walkway width and the configuration of supplemental public access areas. Figure 12 presents graphically the portion of the shore public walkway that would not meet the minimum required width of 40 feet pursuant to ZR § 62-53(a)(2). As shown in Figure 12, due to the shallowness of the project site at the southern end near South 5th Street, the proposed shore public walkway would be reduced to approximately 11 feet in this area; all other portions of the shore public walkway would meet the required 40 foot minimum width requirement.

The requested waterfront zoning authorizations pursuant to ZR § 62-822(b) would allow the following: (1) limited obstructions in the South 3rd Street and South 4th Street visual corridors as a result of the proposed Refinery Building bay windows and the proposed architectural feature that would connect the Building B towers; (2) non-ADA compliant seating steps due to space constraints; (3) relief from the minimum slope requirement for circulation paths due to existing grades on the site; (4) semi-translucent awnings along building frontages on South 2nd and South 4th Streets to shelter building entrances; (5) relief from certain planting and minimum planting requirements; and (6) relief from maximum fence height limits for the proposed play area and dog run to provide better separations between the uses in these areas and the adjacent waterfront public access area.

The requested waterfront zoning authorizations and CPC Chair certifications would provide for better design of the buildings and open space compared to the standard requirements of waterfront zoning.

The Proposed Modified Development would include several new zoning actions that were not included in the 2010 Project and would facilitate the construction of buildings that would not be permitted in nearby zoning districts. However, as demonstrated in the preceding discussion, the requested Special Permits, authorizations, certifications, and zoning text amendments would facilitate the creation of additional much-needed open space and office and community facility space, allow for better site design and access, and have limited applicability. As such, no new significant adverse impacts to zoning are anticipated, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.



Waterfront Public Access Areas

Area that does not meet minimum width requirement pursuant to Section 62-53(a)(2) of the Zoning Resolution

Public Policy

The 2010 FEIS concluded that the original project would not result in any significant adverse impacts on public policy. Similar to the 2010 Project, the Proposed Modified Development would support the PlaNYC goals for creating affordable housing, developing new open space, increasing waterfront access, and implementing environmental remediation and redevelopment of a former industrial site. The proposed actions associated with the Proposed Modified Development would facilitate the development of an additional 1.98 acres of publicly accessible open space along the waterfront, including waterfront public access areas, additional public access areas, and public easement areas, as well as an associated increase in permeable surfaces. As such, the Proposed Modified Development would further these public policy goals and those set forth in the City's Waterfront Revitalization Program and the Plan for the Brooklyn Waterfront. In addition, while the Proposed Modified Development would result in a reduction in the total number of residential floor area, and thereby reduce the amount of affordable housing units to be developed on the project site, the reduction in residential floor area would facilitate the development of an additional 405,570 gsf of commercial office space, and thereby reduce the need for future project site employees to travel to their places of work. As such, the Proposed Modified Development would not result in any significant adverse impacts on public policy and the findings of the 2010 FEIS and subsequent Technical Memoranda would not change.

The project site is located within the boundaries of the coastal zone and, therefore, the policies of New York City's Waterfront Revitalization Program (WRP) are applicable. The WRP contains ten major policies focused on improving public access to the waterfront; reducing damage after flooding; protecting water quality, sensitive habitat, and aquatic ecosystems; reusing abandoned waterfront structures; and promoting development with appropriate land uses. Appendix 2 includes the WRP Consistency Assessment Form (CAF) as well as a description of each of the policies that were identified in the CAF as requiring further assessment and a discussion of the Proposed Modified Development's consistency with each policy. Similar to the 2010 Project, the Proposed Modified Development would reuse the abandoned Refinery Building and include new mixed-used development that would be consistent with the surrounding land uses. In addition, the height and set back waivers and zoning text amendments being sought to facilitate the Proposed Modified Development would allow for the creation of an additional 1.98 acres of publicly accessible open space, thereby decreasing stormwater runoff. Additional measures, including locating the buildings further upland compared to the 2010 Project and decreasing the amount of subsurface development (through the proposed Special Permit to modify parking location requirements) would help to reduce damage from flooding. As such, the Proposed Modified Development was determined to be consistent with the WRP by DCP's Waterfront and Open Space Division (WRP #13-004).

In 1994, the Department of City Planning (DCP) issued the *Plan for the Brooklyn Waterfront*. The goals of the plan are to protect and enhance the natural waterfront; reestablish the public's connection to the waterfront; facilitate water-dependent uses and accommodate the working waterfront; and promote new waterfront uses on vacant or underutilized lots. The *Plan* calls for public access to the waterfront between Grand Street and North 8th Street and identified Kent Avenue as a potential greenway/bikeway. Similar to the 2010 Project, the Proposed Modified Development would further the goals set out in the *Plan for the Brooklyn Waterfront* through the redevelopment of a currently underutilized waterfront property and the creation of 6.85 acres of open space, including 3.76 acres of waterfront public access areas, 1.07 acres of additional public access areas. In addition, the discretionary actions being sought in conjunction with the Proposed Modified Development would allow for the creation of through streets to the waterfront, improving the public's connection to the proposed open space compared to the 2010 Project's cul-de-sacs. As such, the Proposed Modified Development would be consistent with the policies set forth in the *Plan*, and the findings of the 2010 FEIS and subsequent Technical Memoranda would not change.

In April 2007, the Mayor's Office of Long-Term Planning and Sustainability released *PlaNYC: A Greater, Greener New York*. Some of the goals of the *PlaNYC* include creating new housing; increasing access to open space; redeveloping brownfield sites; improving water quality; and reducing the City's greenhouse gas emissions by 30 percent. The housing component of *PlaNYC* specifically identifies the project site as an opportunity to increase the City's housing supply. As previously stated, with the proposed text amendment, a minimum of approximately 367,000 square feet of floor area on the waterfront zoning lot would be required to be designated as affordable housing in order to achieve the maximum FAR of 6.5. Without the text amendment, the office and community facility space above the ground floor would not be excluded from the IH compensation rules and a minimum of approximately 410,000 square feet would be required to be designated as affordable housing to achieve the maximum FAR of 6.5 on the waterfront zoning lot. While the proposed text change would ensure the economic feasibility of constructing the commercial and community facility space proposed, the Applicant intends to work with the City, local stakeholders and elected officials during ULURP to meet the goal of providing up to 660 units of affordable housing project-wide, more than is required under the current zoning, predicated upon the availability of various tax exemptions and incentives.

In addition, as a result of the Greenpoint-Williamsburg rezoning, the residential population of the Greenpoint and Williamsburg neighborhoods has grown and continues to grow at a remarkable rate; however, the area still lacks opportunities for existing and new residents to work close to their homes. Many of these residents currently commute to other parts of New York City for their jobs, including Downtown Brooklyn, parts of Queens and Manhattan. The proposed text amendment would allow the creation of much needed office space in the Greenpoint and Williamsburg neighborhoods, providing opportunities for these area residents and future residents to work close to where they live. Without this much needed commercial office space, reliance on public and private transportation will continue to increase, straining the City's resources and adversely impacting the natural and human environment. Furthermore, the proposed height and setback waivers would facilitate the development of a greater amount of publicly accessible open space than the 2010 Project; all of the project site buildings would be LEED certified. As such, the Proposed Modified Development would be consistent with the goals of *PlaNYC*, and the findings of the 2010 FEIS and subsequent Technical Memoranda would not change.

In April 2006, the City established 16 Industrial Business Zones (IBZs) to protect and incentivize industrial and manufacturing businesses within these zones. The Greenpoint-Williamsburg IBZ is located approximately nine blocks north of the project site. As the project site is not located in and IBZ or an ombudsmen area, the Proposed Modified Development would be not affect or conflict with this policy, and the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

The City Council adopted the Williamsburg 197-a Plan in 2002. While the Plan did not put forth any specific recommendations for the project site, it did include recommendations for the reuse of vacant industrial parcels along the waterfront, additional residential development, and the creation of a waterfront promenade. Similar to the 2010 Project, the Proposed Modified Development would result in the reuse of a former industrial parcel, including a mix of residential and commercial development and a publicly accessible open space along the waterfront. While the Proposed Modified Development would result in a slight reduction in the number of residential units, the discretionary actions being sought would facilitate the development of additional open space. The proposed River Street extension would highlight the waterfront open space, separating it from the proposed buildings, and integrating the open space amenity into the surrounding community. As such, the Proposed Modified Development would be consistent with the goals of the Williamsburg 197-a Plan, and the findings of the 2010 FEIS and subsequent Technical Memoranda would not change.

Since the 2010 FEIS, DCP issued *Vision 2020: New York City Comprehensive Waterfront Plan*, a ten-year vision for the future of the City's 520 miles of shoreline. This plan provides a sustainable framework for more water transport, increased public access to the waterfront, and economic opportunities to help make the water part of New Yorkers' everyday lives. Along with outlining eight Citywide strategies (expanding public access; enlivening the waterfront; supporting the working waterfront; improving water quality; restoring the natural waterfront; enhancing the Blue Network; improving government oversight; and increasing climate resilience), *Vision 2020* developed site-specific strategies for 22 segments of the City's shoreline; the project site is located within the Brooklyn Upper Bay North Neighborhood Reach ("Reach 14N"). Reachwide strategies include facilitating open space improvements at street ends, and strategies specific to the project site and the area immediately adjacent to it include commencing development of the Domino Sugar factory, including affordable housing, commercial, community facility, and waterfront open space and exploring the potential for open space under the Williamsburg bridge. The Proposed Modified Development would be consistent with the overarching goals of *Vision 2020* and the strategies specific to the project site and the surrounding area. The Proposed Modified Development would include the mix of uses specified in the document. The proposed height and setback waivers would also facilitate the development of buildings with smaller footprints, thereby allowing for the creation of an additional 1.98 acres of open space along the waterfront, including waterfront public access areas, additional public access areas, and public easement areas, and an increase in the amount of pervious surfaces on the project site, compared to the 2010 Project. Furthermore, the Proposed Modified Development would not deter the potential future development of open space immediately to the south, under the Williamsburg Bridge. As such, the Proposed Modified Development would be consistent with the goals and policies of this public policy.

B. Socioeconomic Conditions

The 2010 FEIS analyzed the potential effects of the original project on population and housing characteristics, economic activity, and business and employment in the surrounding area. As the project site was, and continues to be unoccupied, the focus of the assessment was on indirect (or secondary) business and residential displacement and effects on specific industries. The analysis concluded that the 2010 Project would not result in significant adverse impacts due to changes in socioeconomic conditions. As the Proposed Modified Development would not introduce significant land use changes from the 2010 Project, and the prevailing market conditions and trends identified in the 2010 FEIS have continued, no new significant adverse impacts to socioeconomic conditions are anticipated.

According to the 2012 *CEQR Technical Manual*, a residential development of 200 units or less or a commercial development of 200,000 sf or less would typically not result in socioeconomic impacts, unless it generates socioeconomic conditions that are very different from the prevailing conditions. The Proposed Modified Development would introduce approximately 2,282 residential units as well as approximately 769,881 gsf of commercial and community facility uses (retail, offices, a health club, a 375-seat elementary school, not-for-profit/artist studio spaces, and a not-for-profit sports and fitness center). Whereas the 2010 FEIS analyzed 2,400 residential units, of which 720 were expected to be affordable, a minimum of 20 percent of the Proposed Modified Development's residential floor area are expected to be affordable, up to a maximum of 660 DU. As stated in Section A, for the purposes of this Technical Memorandum, it is conservatively assumed that the maximum number of residential units (660 DU) would be affordable to low- and moderate-income households. In total, this represents a net reduction of 118 residential units and a net increase of 397,155 gsf of commercial and community facility uses, compared to the 2010 Project. As the Proposed Modified Development would result in a net decrease in the residential population compared to the No-Action condition, this section focuses on the socioeconomic impacts of the increased commercial uses introduced by the Proposed Modified Development within a ¼-mile radius of the project site.[5] In total, the Proposed Modified Development's additional commercial and community facility floor area would generate approximately 2,631 permanent jobs, with a slight reduction in estimated retail positions and a net increase in higher paying permanent office jobs. Updated socioeconomic conditions since completion of the 2010 FEIS (e.g., 2010 Census and 2011 ACS Five-Year Estimates) are included below.

Indirect Residential Displacement

As stated in the 2010 FEIS, the residential population within the ¼-mile study area increased by approximately 6.5 percent between 1990 and 2000, and by an estimated additional 25.2 percent between 2000 and 2009. In 2009 the estimated population was approximately 9,083. 2010 Census data show an existing population of approximately 10,689, continuing the trend of population growth shown in the 2010 FEIS (see Table 6, below). Since the 2010 Census, the population within the ¼-mile study area has increased by approximately 30.1 percent, to an estimated 13,907 residents, due to the construction of several large-scale developments, including 184 Kent Avenue, the Edge, and Northside Piers to the north of the project site (refer to Figure 11 and Table 4, above).[6]

[5] As the Census boundaries have been updated since the 2010 FEIS analysis, the relevant Census tracts and Census block groups for the ¼-mile study area for the updated 2010 Census data and 2011 ACS data include Census tracts 549, 551, and 555, as well as block group 2 of Census tract 553.

[6] The new residential population is calculated by applying the 2.68 average household size for the ¼-mile study area (2010 Census) to the total number of new residential units (1,340). A vacancy rate of 10.4 percent is assumed based on the 2011 vacancy rate within the ¼-mile study area (2011 ACS 5-Year Estimate).

TABLE 6
Residential Population within ¼-Mile of the Project Site from 1990 to Existing Conditions

1990	2000	At time of 2010 FEIS (2009 Data)	2010	Estimated 2013 Population	Percent Change 1990 to 2000 (%)	Percent Change 2000 to 2010 (%)	Percent Change 2010 to 2013 (%)
6,810	7,254	9,083	10,689	13,907	6.5	47.4	30.1

Sources: 2010 FEIS, 2010 Census Summary File 1

The 2010 FEIS noted the increase in the number of total households and average household income before 2000; the number of households increased by 27.0 percent and the median household income increased by 48.4 percent between 1989 and 1999. The increase in median household income was coupled by a 15.3 percent decrease in the percent of the population below the established poverty level, to 27.1 percent in 1999. As shown in Table 7 since 2000, the number of households and the median household income in the study area has continued to increase, by 59.8 percent and 32.2 percent, respectively. The percent of the population below the established poverty level decreased during this period, to 21.5 percent.

TABLE 7
Household and Income Characteristics within ¼-Mile of the Project Site

Total Number of Households			Median Household Income[1]			Poverty Status		
1990	2000	2010	1989	1999	2006-2011	1989	1999	2006-2011[2]
2,247	2,853	4,558	$29,630	$43,967	$58,122	42.4%	27.1%	21.5%

Sources: 2010 FEIS, 2010 Census Summary File 1, 2011 ACS 5-Year Estimates
Notes:
[1] Adjusted to 2013 dollars based on the U.S. Department of Labor Bureau of Labor Statistics' CPI Inflation Calculator.
[2] Includes all of Census Tract 553.

The 2010 FEIS noted that since 1990, the number of housing units in the study area increased significantly, increasing approximately 22.0 percent by 2000, and increasing an additional 23.1 percent between 2000 and 2009. This increase in the number of housing units was coupled by a 33.4 percent increase in median contract rent. As shown in Table 8, since completion of the 2010 FEIS, there has continued to be significant residential construction in the study area. In spite of the 2007/2008 economic downturn, the total number of housing units in 2010 within the ¼-mile study area (6,126) was 66.7 percent greater than the amount estimated in the 2010 FEIS (3,674), and the median contract rent increased to $1,377.[7] These housing trends reflect the Greenpoint-Williamsburg rezoning and the increasing popularity of Williamsburg as a conveniently located residential community.

The prevailing residential trends presented in the 2010 FEIS continue in existing conditions, and the Proposed Modified Development would result in a net decrease in the study area residential population compared to the No-Action condition. As such, no additional significant adverse socioeconomic impacts to the area's residential population are anticipated, and the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

[7] Adjusted to 2013 dollars based on the U.S. Department of Labor Bureau of Labor Statistics' CPI Inflation Calculator.

TABLE 8
Housing Characteristics within ¼-Mile of the Project Site

Total Number of Housing Units				Median Contract Rent[1]		
1990	2000	At time of 2010 FEIS (2009 data)	2010	1990	2000	2006-2011
2,446	2,984	3,674	6,126	$635	$847	$1,377

Sources: 2010 FEIS, 2010 Census Summary File 1, 2011 ACS Five-Year Estimates
Notes:
[1] Adjusted to 2013 dollars based on the U.S. Department of Labor Bureau of Labor Statistics' CPI Inflation Calculator.

Indirect Business and Institutional Displacement

The 2010 FEIS analysis of indirect business and institutional displacement focuses on whether the 2010 Project could increase commercial property values and rents in the surrounding area, making it difficult for some categories of businesses to remain in the area. The Proposed Modified Development would introduce a net increase of 397,155 gsf of commercial and community facility uses (mostly office) compared to the 2010 Project, increasing the total number of permanent office jobs compared to the 2010 Project. As described in further detail below, this increase is not expected to result in any additional significant adverse impacts to area businesses and institutions that were not disclosed in the 2010 FEIS and subsequent Technical Memoranda.

The 2010 FEIS concluded that the new retail and commercial uses of the original project would not introduce a new economic activity that would alter existing economic patterns. As stated in the 2010 FEIS, the retail trade sector accounted for 10.2 percent of all jobs in the surrounding area, the third highest concentration of jobs in the area (along with construction). As shown in Table 9, below, according to the most recent employment data, the retail trade sector currently represents 18.3 percent of all businesses in the ¼-mile area around the project site, making it the highest in the area. In comparison, over this same ten-year period, the percentages of jobs in the construction, manufacturing, and transportation/warehousing/utilities sectors have seen the most significant decline.

The Proposed Action would result in an overall increase in economic activity in the primary study area and create new opportunities for existing businesses to expand and attract new companies to locate in the City. As stated above, since the 2005 Greenpoint-Williamsburg rezoning, the surrounding area has seen significant residential growth, with an existing residential population of approximately 13,907 in the ¼-mile area surrounding the project site; however, the area still lacks opportunities for residents to work close to their homes, with many commuting to other parts of New York City for work.

As shown in Table 10, below, of the approximately 7,387 employed working age population in the surrounding ¼-mile study area, the majority have occupations that typically require office space; approximately 22.8 percent work in management, business, science, and arts occupations; an additional 24.8 percent work in sales and office occupations. The Proposed Modified Development would facilitate the creation of approximately 504,308 gsf of much-needed high quality office space as well as approximately 35,753 gsf of not-for-profit/artist studio spaces (for an estimated 2,258 additional jobs in these employment sectors), providing opportunities for area residents and future residents to work close to where they live.

TABLE 9
Comparison of Employment and Business Establishments by Industry in 2000 and 2011

North American Industry Classification System (NAICS) Category	Percent of Total Study Area (%)[1]	
	2000	2011
Agriculture, forestry, fishing and hunting and mining	0	0
Construction	10.2	5.3
Manufacturing	16.6	5.4
Wholesale trade	9.2	7.4
Retail trade	10.2	18.3
Transportation and warehousing and utilities	8.7	2.2
Information	3.2	1.6
Finance, insurance, real estate, and rental and leasing	6.6	11.8
Professional, scientific, management, administrative, and waste management services	7.2	12.1
Educational, health and social services	12.6	7.6
Arts, entertainment, recreation, accommodation, and food services	7.7	12.4
Other services (except public administration)	5.1	8.4
Public administration	2.7	0.4
Unclassified	NA[2]	7.1
Total	***100***	***100***

Sources: 2010 FEIS, 2011 Infogroup business data obtained through ESRI Business Analyst.
Notes:
[1] The preliminary assessment of potential indirect business and institutional displacement in the 2010 FEIS looked at the ½-mile area surrounding the project site (as the 2010 Project would have resulted in a population increase of more than 5 percent over No-Action conditions within the ¼-mile area). As the Proposed Modified Development would result in a net decrease in the residential population, the study area is the ¼-mile area surrounding the project site, per CEQR methodology.
[2] The "Unclassified" category was not included in the 2010 FEIS.

TABLE 10
Existing Study Area Residential Population Employment by Occupation

Occupation	Study Area Employed Population	
	Number of Persons	Percentage
Management, business, science, and arts occupations	4,023	54.5
Service occupations	1,096	14.8
Sales and office occupations	1,835	24.8
Natural resources, construction, and maintenance occupations	201	2.7
Production, transportation, and material moving occupations	232	3.1
Total	***7,387***	***100***

Sources: 2011 ACS 5-Year Estimates

Furthermore, introducing additional commercial office space in Williamsburg would not result in significant adverse effects on DUMBO or the surrounding office space in Brooklyn. According to Cushman and Wakefield market reports, since 2002 the supply of office space in the greater Downtown Brooklyn area has increased by over 4 million square feet to approximately 17 million square feet, while the vacancy rate has continued to decrease from 10 percent in 2002 to less than 8 percent in 2013. The vacancy rate for office space in DUMBO is even lower, currently estimated below 3 percent. Compared to other cities, a 10 percent vacancy rate is considered low. For example, Boston has a 16 percent vacancy rate and Atlanta has an 18 percent vacancy rate.[8] Based on recent demand projections, it is anticipated that the office vacancy rate will continue to decrease in Brooklyn. In June 2013, the Brooklyn Tech

[8] Cassidy Turley Office Market Snapshot, 2012.

Triangle Coalition, a coalition of economic development organizations representing DUMBO, Downtown Brooklyn and the Navy Yard, projected that roughly 2.6 million to 3.9 million square feet of space is needed in the area by 2015 to accommodate the needs of existing technology firms located in Brooklyn as well as the needs of firms that would like to locate there. Even if half of that projection is realized, the area would be left with no vacancy, unable to accommodate this demand. In addition, the technology sector, which only represents around 7 percent of the area's share of leased space, is just one of many growing sectors in the Brooklyn office market. As such, given the low vacancy rates and the projected future demand, it is anticipated that the additional 405,570 gsf of commercial office space would be quickly absorbed and would not result in indirect office displacement in the surrounding area.

The 2010 FEIS also concluded that the new office uses introduced to the study area would, similarly, not be considered new economic activities in the area, as industries that typically require office space represented a combined total of 13.8 percent of all employment in the area in 2000. In 2011, the percent of industries that typically require office space (including finance, insurance, and real estate, and professional, scientific, management, administrative, and waste management services) represents 23.9 percent of the area businesses (refer to Table 9). In total, eleven buildings within ¼ mile of the project site had 10,000 sf or more of office space in 2010.[9] Recently, the 29,212 sf former industrial building at 242 Kent Avenue (located just north of the project site) was converted to office uses.

In addition, while not sufficient to meet the employment needs of the area's growing residential population, several larger former industrial buildings just outside of the study area have recently been converted to office buildings. The VICE Magazine office at 99 North 10th Street (just north of the study area) is just one example of recent office conversions that are not included in Table 9, above. These new office buildings are typically geared toward either small startup companies or creative and technology firms, similar to the tenants expected in the Proposed Modified Development's office and not-for-profit/artist studio spaces.

The scale and types of commercial office and residential spaces anticipated with the Proposed Modified Development would be in keeping with the trend in office construction and conversion in the surrounding area. Offices in the Proposed Modified Development are anticipated to range from an average of approximately 1,500 to 2,500 gsf, and would be marketed primarily to small startup companies, serving as an incubator for new creative and technology companies; the proposed 35,753 gsf of not-for-profit/artist studio spaces would similarly be comprised of spaces averaging approximately 2,000 gsf. In addition, the neighborhood retail spaces, which are anticipated to range from an average of approximately 3,000 to 6,000 gsf, would be in keeping with the independent retailers found throughout the surrounding area, providing additional rental space for independent local businesses. These new retail spaces would serve the new population introduced by the Proposed Modified Development, as well as the residential population of the surrounding area.

Businesses most vulnerable to indirect displacement due to increases in rent are typically those businesses that tend not to directly benefit from the market forces generating increases in rent (in terms of increased business activity). As the 2010 FEIS noted, due to the increased area residential population, there is an existing related trend toward increased demand for convenience goods and neighborhood services. Uses (such as heavy and some light manufacturing uses) that are less dependent on a residential population customer base may not be able to afford increases in rent due to increased property value. As discussed above, this ongoing trend toward more residential and commercial development has shifted the predominant employment sectors in the surrounding area accordingly. Similar to the 2010 Project, while the Proposed Modified Development could result in limited indirect business displacement, it would be part of a larger trend toward residential and retail growth in the study area. The Proposed Modified

[9] 2010 PLUTO data.

Development would not alter or accelerate trends that would change existing economic patterns in a manner that would result in significant indirect business displacement.

Adverse Effects on Specific Industries

According to the 2012 *CEQR Technical Manual*, a significant adverse impact may occur if an action would measurably diminish the viability of a specific industry that has substantial economic value to the City's economy. The businesses that could have been indirectly displaced by the 2010 Project were limited in number and were not concentrated in any particular industry. Therefore, the 2010 FEIS concluded that the original Domino Sugar project would not result in any significant adverse impacts on specific industries. As existing business conditions remain relatively the same as the conditions analyzed in the 2010 FEIS, the Proposed Modified Development would not result in any new significant adverse impacts on specific industries.

As the Proposed Modified Development would be consistent with trends and existing similar uses in the surrounding area, the Proposed Modified Development would not result in any significant adverse impacts on socioeconomic conditions in the study area. Therefore, the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

C. Community Facilities and Services

As stated in the 2012 *CEQR Technical Manual*, the demand for community services generally stems from the introduction of new residents to an area. The Proposed Modified Development for the Domino Sugar site would introduce approximately 2,282 dwelling units to the area, with an estimated 6,116 residents.[10] Therefore, an evaluation of the Proposed Modified Development's effects on community facilities is provided below. The Proposed Modified Development would include 118 less dwelling units than the 2010 Project and, as such, would not result in any additional impacts. However, as updated schools and child care data as well as CEQR methodologies have been issued subsequent to the completion of the 2010 FEIS, updated schools and child care analyses are provided to determine whether the impacts identified in the 2010 FEIS would still occur.

As detailed below, the Proposed Modified Development would not result in any new significant adverse impacts to community facilities and services, and would not alter the findings of the 2010 FEIS and subsequent Technical Memoranda.

Public Schools

The 2010 Project was expected to generate approximately 696 elementary, 288 intermediate, and 336 high school students. Based on these assumptions, the 2010 FEIS concluded that the project would result in a significant adverse impact on elementary and intermediate schools within a ½-mile of the project site and within Sub-district 3 of Community School District (CSD) 14,[11] but would not result in significant adverse impacts on area high schools. To mitigate the 2010 Project's impact on area elementary and intermediate schools, a 600-seat 100,000 sf PS/IS school was to be constructed on premises, upon consultation with the School Construction Authority (SCA), as specified in the Restrictive Declaration for the site. The 2010 FEIS did not analyze the impacts of this mitigation on future 2020 school utilization, and the Restrictive Declaration did not specify how the school seats would be split between elementary and intermediate levels.

While the Proposed Modified Development would introduce less residential units than were considered in the 2010 FEIS, to reflect updates to CEQR community facility impact assessment methodology, as well as the new build year of 2023, the proposed project was evaluated for its potential effects on elementary, intermediate, and high schools in the study area. For conservative analysis purposes, and to not take credit from the previously approved project's student population, new 2013 baseline (existing) conditions were determined for the schools analysis, and it is assumed that the 2010 Project (including the 600-seat school mitigation) would not be constructed in the No-Action condition.

The *CEQR Technical Manual* provides standard student generation rates for residential developments in each borough. According to Table 6-1a of the 2012 *CEQR Technical Manual*, a residential development in Brooklyn would introduce new students at the following rates: 0.29 new elementary school students per unit; 0.12 new middle school students per unit; and 0.14 new high school students per unit. Based on these guidelines, with approximately 2,282 dwelling units, approximately 662 elementary students and 274 intermediate students would be generated by the Proposed Modified Development, for a total of 936 elementary/intermediate students, as well as 319 high school students. As the number of elementary/intermediate school and high school students generated by the Proposed Modified Development would exceed the CEQR threshold of 50 elementary/intermediate students or 150 high

[10] Assuming an average household size of 2.68 (2010 Census Data for the Brooklyn census block groups located within ½-mile of the project site).
[11] Current CEQR methodology assesses Sub-district impacts only.

school students, it was evaluated for its potential effects on elementary, intermediate and high schools in the study area.

As shown in Figure 13, the Domino Sugar development site is located within the boundaries of Sub-district 3 of Brooklyn Community School District 14 (CSD14). Per 2012 *CEQR Technical Manual* methodology, for an analysis of potential impacts on elementary and intermediate schools, the study area is defined as the Sub-district in which the project site is located. As high school students travel throughout the City and high schools have a borough- or City-wide base, the high school analysis study area is the borough of Brooklyn. 2012-2013 capacity and enrollment data for CSD14, Sub-district 3 were obtained from the Department of Education's Utilization Profiles.

Projected 2023 CSD 14, Sub-district 3 school enrollment was calculated by adding the School Construction Authority's (SCA) Projected New Housing Starts to the projected enrollment from the New York City Department of Education (DOE). Sub-district enrollment percentages obtained from DCP were applied to CSD 14 DOE enrollment projections for 2021.[12] Approximately 26.37 percent and 28.96 percent of CSD 14's projected 2023 elementary and intermediate enrollment, respectively, is estimated to be within Sub-district 3. Future public school utilization rates are calculated by comparing the No-Action enrollment to projected future capacity. Any new school projects identified in the DOE Five-Year Capital Plan is included in future conditions if construction has already begun.

In addition, for comparative analysis purposes, the 2010 FEIS elementary school analysis was updated to include the approved mitigation in the form of a 600-seat PS/IS school. Based on the elementary and intermediate school impacts of the 2010 Project, it is assumed that the 600-seat school would include 400 elementary seats and 200 intermediate seats. Tables 11 and 12 present projected enrollment, utilization, and capacity projections for CSD 14, Sub-district 3 for 2020 under the 2010 Project (both with and without the mitigation school) and for 2023 under the Proposed Modified Development.

Elementary Schools

As described above, the Proposed Modified Development would generate approximately 662 elementary school students. Combined with the estimated 3,830 additional elementary school students expected in the future No-Action, projected 2023 With-Action enrollment for Sub-district 3 of CSD14 would be 4,492. The Proposed Modified Development would also increase elementary school capacity with the construction of a 375-seat elementary school to be located in Building B of the project site. With no additional expected changes to elementary school capacity in the 2023 future, projected 2023 With-Action capacity would increase to 3,630 seats.

[12] As 2023 enrollment projections are not available, pursuant to CEQR methodology, the latest available projection series was used.

Elementary and Intermediate Schools within CSD 14, Sub-district 3

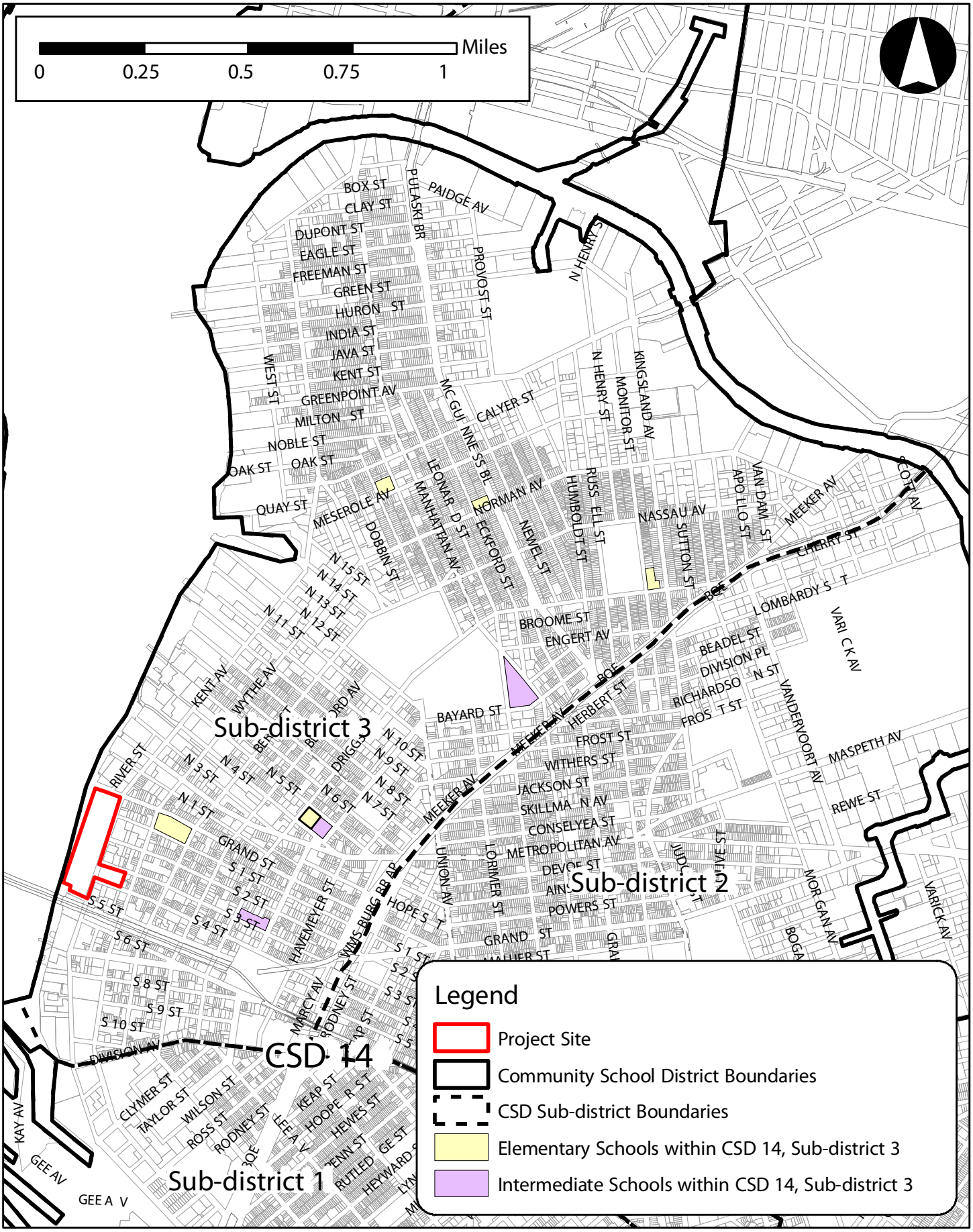


TABLE 11
Estimated With-Action CSD 14, Sub-district 3 Elementary School Enrollment, Capacity, and Utilization—2010 FEIS v. Proposed Modified Development

2010 FEIS Analyzed Program (2020 Build Year)								
2020 No-Action Condition				**2020 With-Action Condition**				**Increment**
Projected Capacity[1]	Projected Enrollment	Available Seats	Utilization (%)	Projected Capacity[1]	Projected Enrolment	Available Seats	Utilization (%)	Incremental Change in Utilization
3,214	5,343	-2,129	166.24	3,214	6,039	-2,825	187.90	21.66
2010 Project Including School Mitigation[2]								
				2020 With-Action Condition				**Increment**
				Projected Capacity	Projected Enrolment	Available Seats	Utilization (%)	Incremental Change in Utilization
				3,614	6,039	-2,425	167.10	0.86
Proposed Modified Development (2023 Build Year)								
2023 No-Action Condition				**2023 With-Action Condition**				**Increment**
Projected Capacity[3]	Projected Enrollment	Available Seats	Utilization (%)	Projected Capacity[4]	Projected Enrolment	Available Seats	Utilization (%)	Incremental Change in Utilization
3,255	3,830	-575	117.67	3,630	4,492	-862	123.75	6.08

Sources: DOE enrollment projection data (Actual 2011, Projected 2012-2021); NYCDOE 2010-2014 Five-Year Capital Plan, Proposed February 2013 Amendment; NYC DOE, *Enrollment – Capacity – Utilization Report, 2012-2013 School Year*.

Notes:

[1] Future elementary school capacity analyzed in the 2010 FEIS was based on DOE's enrollment projections for 2017 and did not include any capacity changes.

[2] Assumes that the elementary school component of the 600-seat PS/IS mitigation school would be 400 seats.

[3] While the February 2013 amendment to the NYCDOE 2010-2014 Five-Year Capital Plan has design money for a new 612-seat IS/PS school in the Sub-district, as construction has not begun, it is not included in the 2023 future condition. As such, no additional elementary school capacity changes are anticipated in the No-Action condition.

[4] The projected capacity was calculated by adding the proposed 375-seat elementary school to existing capacity in CSD 14, Sub-district 3. No other capacity changes are anticipated in the study area.

As shown in Table 11, above, with the 662 elementary students generated by the Proposed Modified Development and the increase in elementary school capacity, elementary schools in Sub-district 3 of CSD14 would have a deficit of 862 seats and a utilization rate of 123.75 percent, an increase of 6.08 percent over the No-Action condition projected utilization. By comparison, the 2010 Project under 2020 With-Action conditions was expected to result in a utilization rate of approximately 187.9 percent with a shortfall of 2,825 seats, an approximately 21.7 percent increase over the previously analyzed No-Action condition. With the 2010 Project's school mitigation, assumed to include 400 elementary seats, the 2010 Project would have resulted in an elementary school utilization rate of approximately 167.1 percent and a shortage of 2,425 elementary seats within CSD 14, Sub-district 3.

The 2012 *CEQR Technical Manual* defines a significant adverse schools impact as a project that would result in: (1) a collective utilization rate that is equal to or greater than 100 percent in the With-Action condition; and (2) an increase of five percent or more in the collective utilization rate between the No-Action and With-Action condition. As shown in Table 11, similar to the conclusions of the 2010 FEIS, CSD14, Sub-district 3 elementary schools would operate over capacity in future No-Action and With-Action conditions. While the increase in utilization would be below what was projected in the 2010 FEIS, as the increase in utilization would be above the *CEQR* significant impact threshold of 5 percent, the Proposed Modified Development would have a significant adverse impact to public elementary schools and additional school capacity would be required to avoid this significant adverse impact.

As previously stated, the 2010 Project would have resulted in a significant adverse elementary school impact. To mitigate the disclosed significant adverse impact, the previous project would have included a 600 seat PS/IS school. The Applicant is committed to including a 375-seat elementary school, and would need to include an additional 32 seats to fully mitigate significant adverse elementary school impacts. The

Applicant received the standard Programs of Requirements from the SCA and determined that the proposed 70,624 sf elementary school in Building B could accommodate the additional 32 seats, if necessary. However, additional elementary school capacity is anticipated in the Sub-district by 2023 in conjunction with the Greenpoint Landing development, and it is possible that the additional seats would not be needed.[13] As discussed in Section T, "Mitigation," the Applicant has entered into a Letter of Intent and would consult with SCA six months in advance of design start for Building B to determine whether the proposed 375-seat elementary school could adequately meet actual elementary school demand in CSD 14, Sub-district 3.

As the Proposed Modified Development would not result in any new significant adverse impacts on elementary schools, than those anticipated with the 2010 Project, the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Intermediate Schools

As shown in Table 12, the 2010 Project would have resulted in a utilization rate of 143.0 percent and a shortfall of 829 intermediate school seats, surpassing the CEQR threshold of impact significance. Assuming that the 600-seat mitigation school would have included 200 intermediate seats, the utilization rate would have been approximately 130 percent, with a shortfall of 629 intermediate seats.

Based on updated schools data, CSD 14, Sub-district 3 intermediate school capacity is expected to decrease to approximately 989 seats due to the co-location of charter schools in two existing intermediate schools (resulting in a net decrease of 641 intermediate school seats). In addition, the SCA projects that No-Action enrollment will be 1,399 in the 2023 Build Year, compared to the 2,467 students forecasted in the 2010 FEIS. As a result of these anticipated changes in the No-Action condition, the incremental increase in intermediate school utilization with the Proposed Modified Development would exceed the CEQR impact threshold of 5 percent. With the additional 274 intermediate students generated by the Proposed Modified Development, intermediate schools within CSD 14, Sub-district 3 would have a total enrollment of 1,673 students (169.16 percent utilization), and a shortfall of 684 intermediate seats. As such, similar to the 2010 Project, the Proposed Modified Development would result in a significant adverse intermediate school impact.

To mitigate the significant adverse intermediate school impact, the Proposed Modified Development would need to provide 153 intermediate school seats, compared to approximately 200 intermediate seats needed to mitigate the 2010 Project, as disclosed in the 2010 FEIS. However, as previously stated, additional intermediate school capacity is anticipated in the Sub-district by 2023. Specifically, the February 2013 proposed amendment allocated design money for a new 612-seat PS/IS school in Sub-district 3 in conjunction with the Greenpoint Landing development. As such, it is possible that the additional capacity will not be necessary at the time of the Proposed Modified Development's construction.

[13] As funding for the construction of the 612-seat PS/IS school has not been allocated, and construction has not begun, the anticipated future school is not included in the quantitative analysis.

TABLE 12
Estimated With-Action CSD 14, Sub-district 3 Intermediate School Enrollment, Capacity, and Utilization—2010 FEIS v. Proposed Modified Development

2010 FEIS Analyzed Program (2020 Build Year)								
2020 No-Action Condition				**2020 With-Action Condition**				**Increment**
Projected Capacity[1]	Projected Enrollment	Available Seats	Utilization (%)	Projected Capacity[1]	Projected Enrolment	Available Seats	Utilization (%)	Incremental Change in Utilization
1,926	2,467	-541	128.09	1,926	2,755	-829	143.04	14.95
2010 Project Including School Mitigation[2]								
				2020 With-Action Condition				**Increment**
				Projected Capacity	Projected Enrolment	Available Seats	Utilization (%)	Incremental Change in Utilization
				2,126	2,755	-629	129.59	1.50
Proposed Modified Development (2023 Build Year)								
2023 No-Action Condition				**2023 With-Action Condition**				**Increment**
Projected Capacity[3]	Projected Enrollment	Available Seats	Utilization (%)	Projected Capacity[3]	Projected Enrolment	Available Seats	Utilization (%)	Incremental Change in Utilization
989	1,399	-410	141.46	989	1,673	-684	169.16	27.70

Sources: DOE enrollment projection data (Actual 2011, Projected 2012-2021); NYCDOE 2010-2014 Five-Year Capital Plan, Proposed February 2013 Amendment; NYC DOE, *Enrollment – Capacity – Utilization Report, 2012-2013 School Year*.

Notes:

[1] Future intermediate school capacity analyzed in the 2010 FEIS was based on DOE's enrollment projections for 2017 and did not include any capacity changes.

[2] Assumes that the intermediate school component of the 600-seat PS/IS mitigation school would be 200 seats.

[3] Based on approved "Proposals for Significant Changes in Utilization," there are expected to be changes in capacity at two CSD 14, Sub-district 3 intermediate schools. With new charter schools to be co-located in JHS 50 John D. Wells and JHS 126 John Ericsson, according to their "Building Utilization Plans," the capacity of the schools would be reduced by 192 and 347 seats, respectively, from their existing 2012-2013 target capacities. While the February 2013 amendment to the NYCDOE 2010-2014 Five-Year Capital Plan has design money for a new 612-seat IS/PS school in the Sub-district, as construction has not begun, it is not included in the 2023 future condition.

To mitigate the significant adverse intermediate school impact, the Applicant could expand the proposed 70,624 sf elementary school in Building B to accommodate the additional 153 intermediate seats. As discussed in Section T, "Mitigation," the Applicant has entered into a Letter of Intent with SCA and would consult with SCA six months in advance of design start for Building B to determine whether the additional intermediate school capacity is needed to meet actual intermediate school demand in CSD 14, Sub-district 3. As the Proposed Modified Development would not result in any new significant adverse impacts on intermediate schools, other than those anticipated with the 2010 Project, the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

High Schools

The 2010 Project was expected to generate 336 high school students, 17 students more than would be generated by the Proposed Modified Development. As the 2010 FEIS found that the original project would not result in significant adverse impacts to high schools, and that Brooklyn high schools would continue to operate below capacity, the Proposed Modified Development, which would generate fewer high school students, would similarly not result in a significant adverse impact on area high schools. Therefore, the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Potential PS 84 Conversion Impacts on Elementary and Intermediate School Analyses

Recently the DOE has proposed to expand the existing PS 84 Jose de Diego (located at 250 Berry Street) which currently serves Pre-Kindergarten through fifth grade students to serve students in Pre-Kindergarten throughout eighth grade. If this proposal is approved, PS 84 would begin enrolling sixth-grade students in the 2014-2015 school year and would add one grade each year until it serves students in Pre-Kindergarten through eighth grade in the 2016-2017 school year. Based on the Draft EIS prepared for the proposed change of use released on August 29, 2013, if approved, PS 84 would decrease from its existing 1,049 K-5 school seats to 1,007 seats that would include 662 elementary school seats and 345 intermediate school seats.[14] While the proposal has not been approved by the CSD 14 Community Education Council and is therefore not considered in the quantitative analysis pursuant to CEQR, an assessment of the impacts of this proposed change of use on the Proposed Modified Development's elementary and intermediate school impact analysis was undertaken.

Elementary Schools

If the proposal is approved, the No-Action CSD 14, Sub-district 3 elementary school capacity would decrease, thereby increasing the projected No-Action utilization rate to 133.54 percent. As a result, the incremental impact associated with the Proposed Modified Development would decrease. If the proposed PS 84 conversion is approved by the CSD 14 Community Education Council, the Proposed Modified Development's 375-seat elementary school would adequately accommodate the incremental elementary school demand generated on the project site. With the proposed PS 84 conversion and the Proposed Modified Development's 375-seat elementary school, the utilization rate would increase to 138.52 percent, a 4.98 percentage point increase over the No-Action condition with the PS 82 conversion, which would not constitute a significant adverse impact pursuant to CEQR guidelines, and therefore would not require additional elementary seats beyond those currently proposed.

Intermediate Schools

If the proposal to change the use of PS 84 to include intermediate school seats was approved by the CSD 14 Community Education Council, the No-Action CSD 14, Sub-district 3 intermediate school capacity would increase, decreasing the utilization rate to 104.87 percent. As a result, the incremental impact of intermediate school students generated by the Proposed Modified Development would increase, and the Proposed Modified Development would need to provide 189 intermediate school seats to avoid exceeding the threshold of a 5 percentage point increase in the utilization rate.

Libraries

According to the guidelines established in the *CEQR Technical Manual*, if a proposed action increases the number of residential units served by the local library branch by more than 5 percent, then an analysis of library services is necessary. In Brooklyn, the introduction of 734 residential units would represent a 5 percent increase in dwelling units per branch.

The 2010 FEIS concluded that the 2010 Project would not have any significant impacts on library service, as the resultant increase in residential population represented only 4.6 percent of the total catchment area population. As the Proposed Modified Development would result in a net reduction of 118 dwelling units to the study area, compared to the 2010 Project, no additional significant adverse library service impacts

[14] Upon consultation with DCP, the maximum projected enrollment is assumed as a proxy for capacity.

would be generated. Therefore, the proposed modifications would not alter the findings of the 2010 FEIS and subsequent Technical Memoranda.

Child Care Facilities

The *CEQR Technical Manual* requires a detailed analysis of childcare facilities when a proposed action would produce substantial numbers of subsidized, low- to moderate-income family housing units that may therefore generate a sufficient number of eligible children to affect the availability of slots at public day care centers. Typically, proposed actions that generate 20 or more eligible children under age 6 require further analysis. According to Table 6-1 of the 2012 *CEQR Technical Manual*, the number of dwelling units to yield 20 or more eligible children under age 6 in Brooklyn would be 110 affordable housing units.

The 2010 FEIS concluded that the 2010 Project, which included 720 affordable units, would introduce 128 children eligible for publicly-funded childcare, and would result in significant adverse impacts on childcare facilities within 1-½ miles of the project site. To mitigate the potential impact on publicly-funded childcare facilities, the applicant agreed to coordinate with the NYC Administration for Children's Services (ACS) to consider the need for and the implementation of measures to provide any needed additional capacity within the 1-½-mile study area or within CB1. The 2010 Project would have needed to provide 27 childcare slots to mitigate the impact.

The Proposed Modified Development would consist of approximately 2,282 residential units, of which up to 660 DU would be affordable. While the Proposed Modified Development would introduce less affordable dwelling units than were considered in the 2010 FEIS, to reflect updated child care data, as well as the new build year of 2023, the Proposed Modified Development was evaluated for its potential effects on publicly-funded child care facilities in the study area. For conservative analysis purposes, and to not take credit from the previously approved project's publicly-funded child care eligible population, new 2013 baseline (existing) conditions were determined for the child care analysis, and it is assumed that the 2010 Project would not be constructed in the No-Action condition.

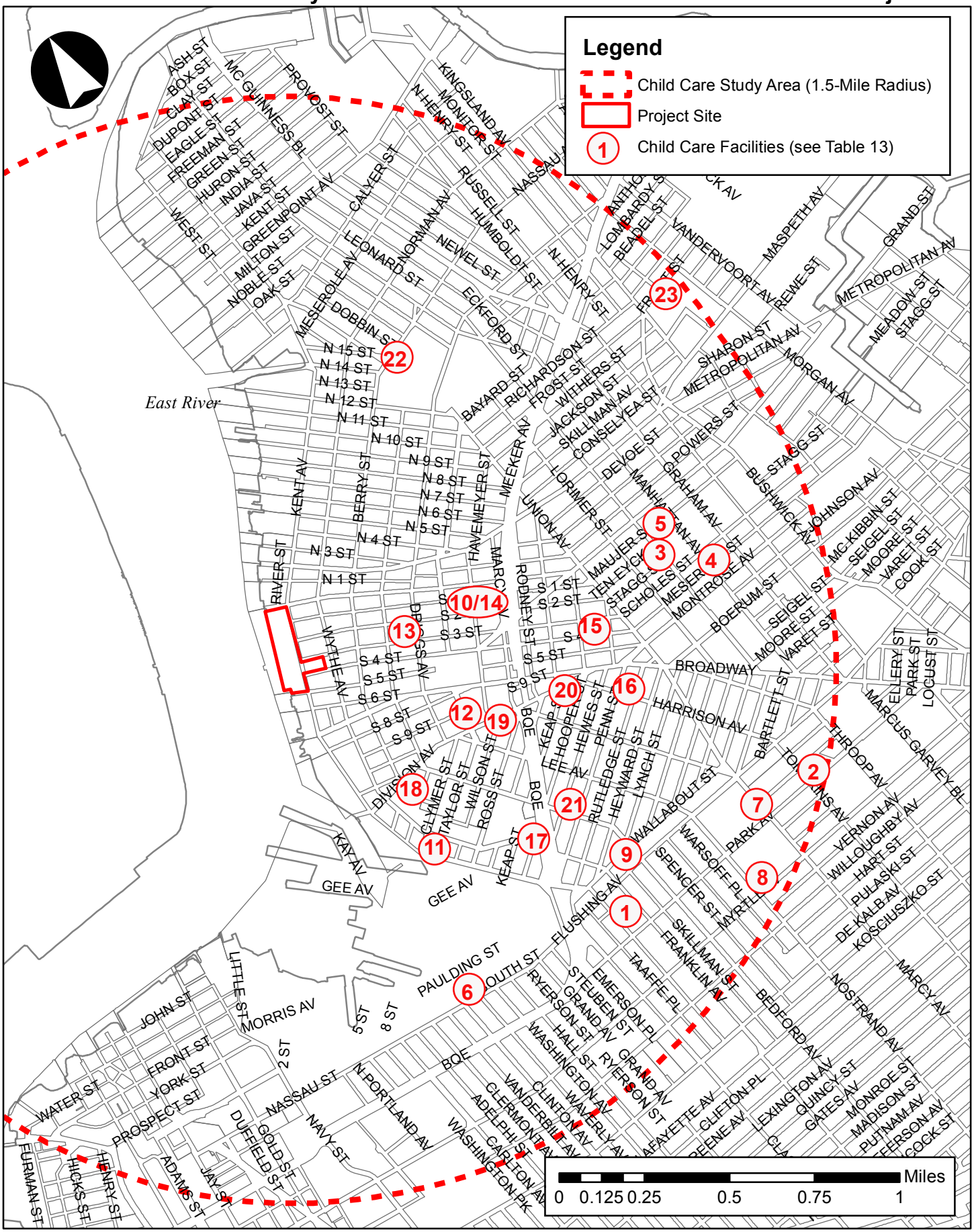
The *CEQR Technical Manual* provides multipliers for estimating the number of children eligible for publicly-funded child care in each borough. According to Table 6-1b of the 2012 *CEQR Technical Manual*, low- to moderate-income housing units in Brooklyn would introduce 0.178 new children under six years old eligible for publicly-funded child care per unit. Based on these guidelines, and assuming the maximum number of affordable dwelling units (660 DU) the Proposed Modified Development would introduce approximately 117 children eligible for publicly-funded child care. As the number of eligible children generated by the Proposed Modified Development would exceed the CEQR threshold of 20, it was evaluated for its potential effects on publicly-funded child care in the study area.

As shown in Figure 14 and Table 13, 23 publicly-funded child care facilities are located within approximately 1.5 miles of the project site (the typical child care study area as defined by CEQR). Based on consultation with ACS, the 1,979 group child care slots provided at these facilities are currently operating at 100 percent utilization with no available slots.[15]

Since enrollment projections for child care facilities are not available, CEQR analysis assumes that the capacity would stay the same for the build year. Future No-Action conditions are predicted by adding the number of children under age 6 eligible for publicly-funded child care services generated by known and anticipated development in the study area to the current enrollment, based on the 2012 CEQR multipliers.

[15] ACS's Division of Child Care and Head Start, June 2013.

Publicly-Funded Child Care Facilities within 1.5 Miles of the Project Site



Following this methodology, the anticipated 2023 No-Action child care enrollment is presented in Table 14, along with the 2023 With-Action condition including the estimated 117 children eligible for publicly-funded child care introduced to the study area with the Proposed Modified Development. A complete list of the No-Action developments included in the child care analysis is provided in Appendix 3.[16]

TABLE 13
Existing Publicly-Funded Group Child Care

Map #[1]	Name	Address	Enrollment/Capacity
1	B'Above 32	799 Kent Avenue	90
2	Tompkins Children Center	730 Park Avenue	82
3	Stagg Street Center for Children	77-83 Stagg Street	95
4	Bushwick United HDFC 5	152 Manhattan Avenue	106
5	Bushwich United HDFC 4	178 Leonard Street	39
6	Bushwick United HDFC 9	741 Flushing Avenue	64
7	Marcy Children's Center	494 Marcy Avenue	49
8	Our Children the Leaders of Tomorrow 1	756 Myrtle Avenue	85
9	Yeled v Yalda 712	712 Bedford Avenue	37
10	Padre Kennedy ECDC	243 South 2nd Street	55
11	Williamsburg CCC	110 Taylor Street	45
12	Two by Two	321 Roebling Street	68
13	Nuestros Ninos DCC III	161 South 3rd Street	35
14	Nuestros Ninos DCC II	243 South 2nd Street	70
15	Nuestros Ninos DCC I	384 South 4th Street	140
16	United Academy Inc. 2	60 Harrison Avenue	95
17	United Academy Inc. 1	722 Wythe Avenue	144
18	Williamsburg Y Head Start	64-70 Division Avenue	195
19	Yeshivath Kehilath Yakov 2	212 Wilson Street	118
20	Yeshivath Kehilath Yakov 3	274 Keap Street	170
21	Yeshivath Kehilath Yakov 6	638-644 Bedford Avenue	60
22	John Oravecz ECDC	25 Nassau Avenue	92
23	Cooper Park Child Care Center	292 Frost Street	45
		Total	***1,979***

Source: ACS's Division of Child Care and Head Start, June 2013.
Notes:
[1] See Figure 14.
[2] Includes Head Start programs (all of which are center-based per ACS).
[3] All existing publicly-funded group child care facilities are operating at 100% utilization with no available slots.

As shown in Table 14, based on these assumptions, if no new child care facilities open in the 2023 future, publicly-funded group child care facilities in the study area are expected to operate over capacity in both the No-Action and With-Action conditions, with an incremental change in utilization of approximately 5.9 percent (from 107.5 percent to 113.4 percent). While it is likely that additional capacity could be provided by family and private child care centers, pursuant to CEQR, these facilities are not included in the child care analysis. As such, similar to the 2010 Project, the Proposed Modified Development would exceed the CEQR impact threshold of a 5 percentage point increase in utilization compared to the No-Action condition, and therefore would be considered a significant adverse impact on study area child care facilities. However, as indicated in Table 14, the incremental change in utilization as a result of the

[16] Pursuant to CEQR methodology, only residential units affordable to households at or below 80 percent AMI are included in the analysis.

Proposed Modified Development (5.9 percent) would be less than the incremental change from the 2010 Project as analyzed in the 2010 FEIS (6.5 percent).

TABLE 14
Estimated With-Action Publicly-Funded Group Child Care Enrollment—2010 FEIS v. Proposed Modified Development

2010 FEIS Analyzed Program (2020 Build Year)								
2020 No-Action Condition				**2020 With-Action Condition**				**Increment**
Projected Capacity	Projected Enrollment	Available Slots	Utilization (%)	Projected Capacity	Projected Enrolment	Available Slots	Utilization (%)	Incremental Change in Utilization
1,982	2,088	-106	105.3	1,982	2,216	-234	111.8	6.5%
Proposed Modified Development (2023 Build Year)								
2023 No-Action Condition				**2023 With-Action Condition**				**Increment**
Projected Capacity	Projected Enrollment[1]	Available Slots	Utilization (%)	Projected Capacity	Projected Enrolment	Available Slots	Utilization (%)	Incremental Change in Utilization
1,979	2,128	-149	107.5	1,979	2,245	-266	113.4	5.9%

Sources: 2010 FEIS, ACS (June, 2013)
Notes:
[1] See Appendix 3 for a list of known and anticipated No-Action residential developments in the study area.

Additionally, this analysis conservatively assumes that the maximum number of residential units (660 DU) would be developed as affordable units. As stated previously, the Applicant would designate a minimum of 20 percent of the Proposed Modified Development's residential floor area as affordable, up to a maximum of 660 DU. Therefore, the project-generated demand for publicly-funded group child care could be less than projected in this analysis.

Nevertheless, the increase in the utilization rate of publicly-funded child care facilities would exceed the 5 percent CEQR threshold for a significant adverse impact, as with the 2010 Project. To avoid exceeding the significant impact threshold, the number of affordable units included in the Proposed Modified Development would need to be reduced to 547, which would generate only 97 children eligible for publicly-funded group child care. Possible mitigation measures for this significant adverse impact will be developed in consultation with ACS and may include provision of suitable space on-site for a child care center, provision of a suitable location off-site and within a reasonable distance (at a rate affordable to ACS provides) or funding or making program or physical improvements to support additional capacity. As the Proposed Modified Development would not result in any new significant adverse childcare impacts, it would not alter the findings of the 2010 FEIS and subsequent Technical Memoranda.

Police/Fire Services and Health Care Facilities

The 2010 FEIS concluded that the 2010 Project would not have any significant impacts on health care facilities, including hospitals and other outpatient clinic facilities within one mile of the project site. The proposed changes to the Domino Sugar development would not alter these findings.

According to the 2012 *CEQR Technical Manual*, a detailed assessment of service delivery is conducted only if a proposed project would affect the physical operations of, or access to and from, a police or fire station or hospital or public health clinic, or where a proposed project would create a sizeable new neighborhood where none existed before. As the Proposed Modified Development would occupy the same site as the previously approved project and would result in a net reduction of 118 dwelling units to

the study area, compared to the 2010 Project, no additional significant adverse police/fire services or health care facilities impacts would be generated. Therefore, the proposed modifications would not alter the findings of the 2010 FEIS and subsequent Technical Memoranda.

D. Open Space[17]

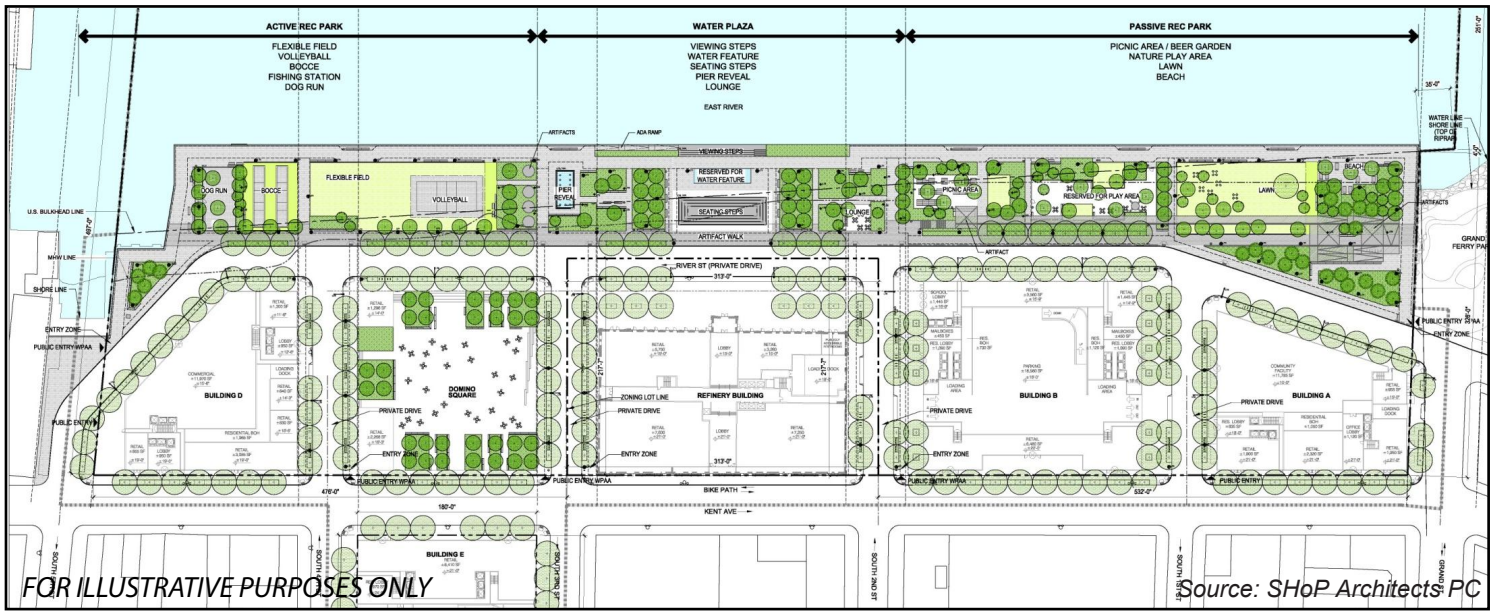
The 2010 Project would have included 2,400 DU, approximately 372,726 sf of commercial and community facility space, and 4.16 acres of publicly accessible open space, excluding public easement areas.[18] No significant adverse open space impacts were identified in the 2010 FEIS. As shown in Figure 15, the Proposed Modified Development would include approximately 4.83 acres of waterfront public access areas and additional public access areas (excluding public easement areas), 0.67 acres more than the 2010 Project. As with the 2010 Project, the Proposed Modified Development's waterfront public access areas would be developed in phases (refer to Figure 10). In addition, as shown in Table 3, the Proposed Modified Development would introduce a total of 2,742[19] employees and 6,116 residents to the site, compared to 1,347 employees and 6,696 residents for the 2010 Project. As the Proposed Modified Development would generate fewer residents and include more open space than the 2010 Project, no further analysis of significant adverse open space impacts on the residential population is warranted. However, as the Proposed Modified Development would introduce an additional 1,395 employees over the 2010 Project, the new project was evaluated for its potential effects on open space resources in the ¼-mile nonresidential daytime population study area, in accordance with *CEQR Technical Manual* guidelines.

As noted above, the 2010 Project would have included 4.16 acres of publicly accessible open space, including an approximately ¼-mile-long waterfront esplanade, a large lawn on the waterfront side of the Refinery Building, and upland connections to Kent Avenue along South 1st, South 2nd, South 3rd, and South 4th Streets. The open space would have been programmed with both passive and active spaces, including play areas, seating areas, public gathering areas, and an active play lawn that would have functioned as an ice rink in the winter. The 2010 FEIS assumed that 60 percent of the proposed open space would be programmed for passive uses, and the remaining 40 percent would be actively programmed. The Proposed Modified Development would include approximately 210,413 sf (4.83 acres) of publicly accessible open space (excluding public easement areas), 0.67 acres more than the 2010 Project.[20] Based on preliminary plans, the majority (approximately 3.86 acres, or 80 percent) of the Proposed Modified Development's open space is expected to be programmed for passive uses, including seating and lawn areas and an Artifact Walk with historic elements from the Domino Sugar factory buildings on display. The remaining 0.97 acres (20 percent) are expected to include a dog run and bocce court, as well as a playground adjacent to the proposed 375-seat elementary school in Building B.[21] The proposed playground would be used by the students during the school day, and would be accessible to the public. As discussed below, the changes proposed to the Domino Sugar program would not be expected to alter the conclusions of the 2010 FEIS and subsequent Technical Memoranda.

According to the 2012 *CEQR Technical Manual*, nonresidents, specifically workers, tend to use passive open space, and the City has defined an optimal ratio for worker populations of 0.15 acres of passive open

[17] For the purpose of the open space analysis, the public easement areas (included in the open space totals presented in Table 1) are conservatively not included in the open space analysis calculations.
[18] The 2010 FEIS analyzed a total open space acreage of 4.03, 0.13 acres less than was included in the ULURP application.
[19] Assumes 3 employees per 1,000 sf of retail, health club, and community facility space, 1 employee per 25 residential units, 1 employee per 250 sf of office space, 1 employee per 13 elementary school seats, and 1 employee per 50 parking spaces.
[20] For consistency purposes in comparing the Proposed Modified Development to the 2010 Project, the total publicly accessible open space acreage includes a waterfront park, the upland park (Domino Square), and the landscaped public walkways connecting the waterfront park to the surrounding community.
[21] The Applicant may construct two market sheds or concession features accessory to the open space uses at a later date. As approval of these potential future market sheds is not one of the discretionary actions currently being sought, they are not included in the open space analysis.

Illustrative Comparison of Open Space Provided By Proposed Modified Development and 2010 Project



Proposed Modified Development



2010 Project

Source: 2010 Domino Sugar Rezoning FEIS

space per 1,000 nonresidents. As shown in Table 15 below, in the 2010 FEIS, the nonresidential passive open space ratio was expected to decrease by 3.1 percent from No-Action to With-Action conditions, from 2.46 to 2.38 acres per 1,000 nonresidents, well above the City recommended ratio of 0.15 acres.

With the Proposed Modified Development, the nonresidential passive open space ratio is expected to decrease by 12.6 percent from No-Action to With-Action conditions, from 2.376 to 2.076 acres per 1,000 nonresidents. While this decrease would be larger than what was projected in the FEIS, the passive open space ratio for nonresidents would remain well above the DCP-recommended guideline of 0.15 acres of passive open space per 1,000 nonresidents. As such, the conclusions of the open space analysis in the 2010 FEIS and subsequent Technical Memoranda remain valid, and the Proposed Modified Development would not result in new significant adverse passive open space impacts.

TABLE 15
Adequacy of Open Spaces in the ¼-Mile Commercial Study Area—2010 FEIS v. Proposed Modified Development

	2010 FEIS		Proposed Modified Development	
	2020 No-Action Condition	**2020 With-Action Condition**	**2023 No-Action Condition[1]**	**2023 With-Action Condition[2]**
Study Area Population				
Nonresidents	4,670	5,835	4,835	7,395
Combined Nonresidents and Residents	25,949	33,810	27,760	36,436
Open Space Acreage				
Total	20.78	24.81	20.78	25.61
Active	9.29	10.90	9.29	10.26
Passive	11.49	13.91	11.49	15.35
Passive Open Space Ratios				
Acres per 1,000 nonresidents	2.461	2.384	2.376	2.076
Recommended acres per 1,000 residents and nonresident	0.441	0.440	0.211	0.429
Acres per 1,000 residents and nonresidents	0.443	0.411	0.414	0.421
Percent Change in Ratios (No-Action to With—Action)				
Passive (Nonresidents)		-3.1%		-12.6%
Combined Passive (Residents & Nonresidents)		-7.1%		1.7%

[1] No-Action Condition resident and worker populations were updated from the 2010 FEIS No-Action condition to reflect additional known residential and commercial development anticipated in the 2023 future. New residents were calculated assuming 2.68 residents per unit; 3 workers per 1,000 sf of retail or community facility and cultural space; 1 worker per 25 dwelling units; 1 worker per 250 sf of office space; and 1 worker per 3 hotel rooms.
[2] With-Action Condition includes the addition of 6,116 residents and 2,742 employees to the study area population as a result of the proposed modifications, as well as the addition of a 4.83-acre publicly accessible open space, including waterfront public access areas and additional public access areas.

In terms of the combined passive open space for the total population (workers and residents) within the ¼-mile commercial study area the 2010 FEIS projected a decrease of 7.1 percent from No-Action to With-Action conditions, from 0.44 to 0.41 acres per 1,000 residents and workers. This ratio was less than the recommended combined guideline ratio of 0.44 acres per 1,000 residents and workers (see Table

15).[22] With the Proposed Modified Development, the combined passive open space ratio would increase by approximately 1.7 percent from No-Action to With-Action conditions, from 0.414 to 0.421 acres per 1,000 residents and workers. While combined passive open space ratio would be slightly less than the recommended combined guideline ratio of 0.429 acres per 1,000 residents and workers, it would be greater than the projected With-Action combined passive open space ratio disclosed in the 2010 FEIS (0.411 acres per 1,000 residents and workers). This increase is due to the 4.83 acres of publicly accessible open space (excluding public easement areas) included as part of the Proposed Modified Development (a net increase of 0.67 acres over the previously approved project) and the decrease in the number of dwelling units with the Proposed Modified Development (a net decrease of 118 DU).

In addition, according to the *CEQR Technical Manual*, a direct adverse impact on open space would occur when a proposed action would cause the physical loss of public open space; change the use of an open space; or cause increased noise or air pollutant emissions, odors, or shadows that would affect its usefulness, whether on a permanent or temporary basis. As described in greater detail in the following sections, the Proposed Modified Development would not result in any new or additional significant adverse shadows, wind, hazardous materials, air quality, noise, or construction impacts on any of the open spaces in the study area.

As the Proposed Modified Development would not result in any significant adverse open space impacts, the conclusions of the open space analysis in the 2010 FEIS and subsequent Technical Memoranda remain valid.

[22] Weighted average based on City-recommended passive open space ratio of 0.15 acres per 1,000 nonresidents and 0.50 acres per 1,000 residents.

E. Shadows

The 2010 FEIS concluded that the development of Building A in the original project would result in significant adverse shadow impacts on Grand Ferry Park, located directly north of the project site (refer to Figure 1). The 2010 Project was expected to cast more than three-and-a-half hours of new midday shadows on portions of Grand Ferry Park throughout the year. Due to this new incremental shadow, the analysis concluded that the utility of the park and the park's vegetation would be significantly impacted during the fall, winter, and early spring. As the Proposed Modified Development would result in the construction of taller buildings with smaller footprints, the potential shadow impacts on open space resources within the surrounding area was assessed herein. As described in detail below, the Proposed Modified Development would result in an approximately 40 percent reduction in total shadow durations on Grand Ferry Park and slightly longer late afternoon shadows on PS 84 William Sheridan Playground, when compared to the 2010 Project.

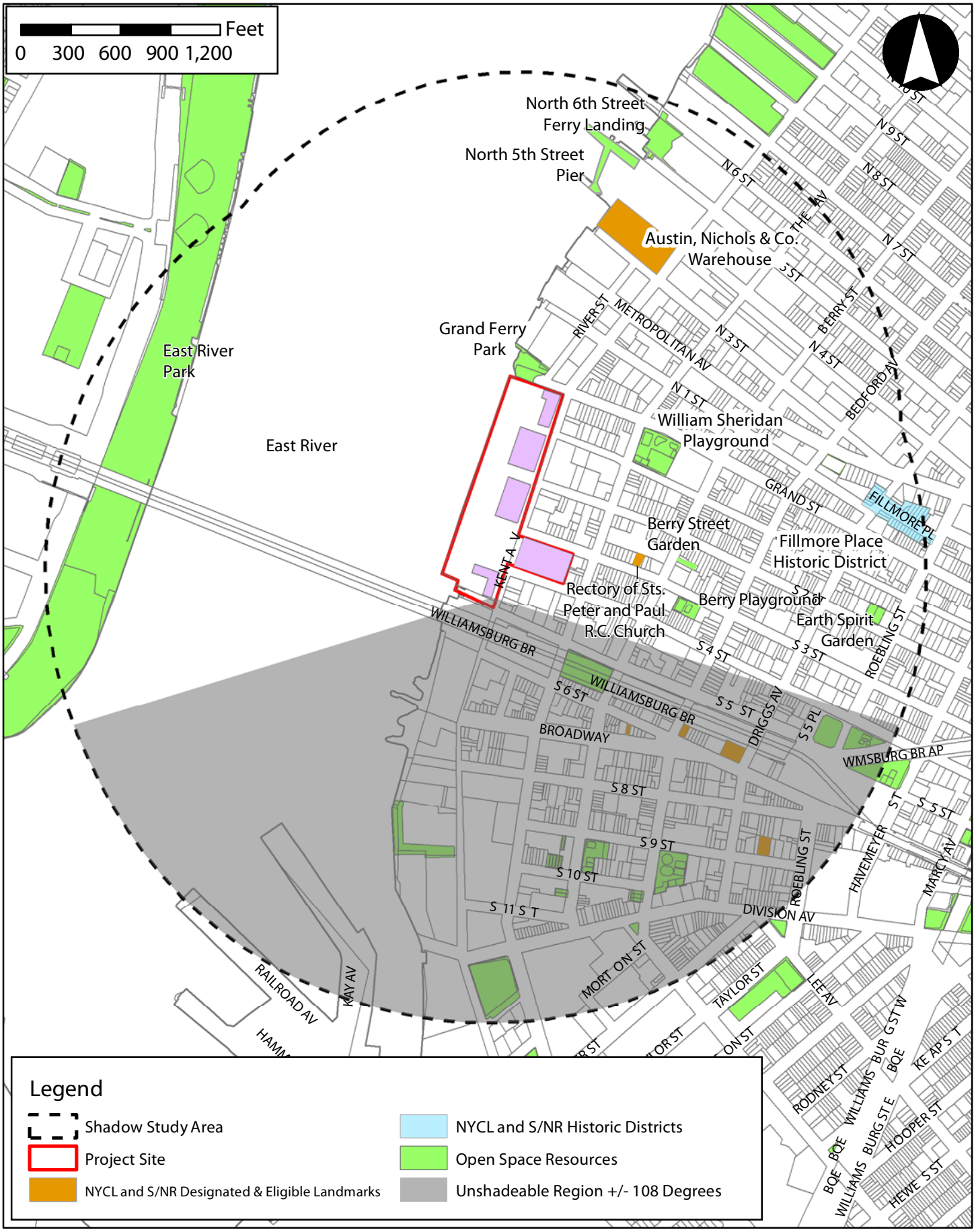
The 2010 Project would have resulted in the construction of five buildings ranging in height from 148 feet to 400 feet; Building B was the tallest building. The 2010 Project also included an addition to the existing Refinery Building, which would have raised its height to 208 feet. According to the 2012 *CEQR Technical Manual*, the longest shadow a structure will cast, except for periods close to dawn or dusk, is 4.3 times its height. The Proposed Modified Development would result in the construction of four new buildings ranging in height from 170 feet (Building E) to 535 feet (Building D), and an addition above the existing Refinery Building, giving it a total height of 190 feet. As per CEQR guidelines, the longest shadow that would be cast by the Proposed Modified Development's Building D building would be approximately 2,301 feet long (Tier 1 Assessment as per the *CEQR Technical Manual*). The maximum shadow radius for the proposed buildings in shown in Figure 16.

In accordance with CEQR guidelines, the assessment of potential shadow impacts is limited to new shadows long enough to reach publicly accessible open spaces or historic resources that have sunlight-sensitive features (e.g., highly carved ornamentation, stained glass windows, and exterior materials and color that depend on direct sunlight for visual character). As the sun rises in the east, the earliest shadow would be cast almost directly westward, and shadows would shift clockwise throughout the day until sunset, when they would fall almost directly east. As shown in Figure 16, the shadow radius for the proposed buildings was adjusted to exclude the triangular area south of the project site between -108 degrees from true north and 108 degrees from true north, as in New York City no shadow can be cast by a building on this triangular area (Tier 2 Assessment). Any resources that fell outside the resultant shadow radius were screened out from further consideration, as no shadows cast by the Proposed Modified Development would likely reach them.

If the Tier 1 and Tier 2 screening assessments indicate that project shadows might be long enough to reach any sunlight-sensitive resources, then according to the *CEQR Technical Manual*, a Tier 3 screening assessment should be performed to determine if, in the absence of intervening buildings, shadows resulting from the proposed project can reach a sunlight-sensitive resource, thereby warranting a detailed shadow analysis. However, given the presence and proximity of several sunlight-sensitive resources within the defined shadow radius for the proposed buildings (refer to Figure 16), and the fact that the Proposed Modified Development is being compared to a No-Action development on the project site, this intermediate step in the assessment (Tier 3) was skipped, and a detailed shadow assessment was conducted, as detailed below.

The detailed analysis compares the extent and duration of project-generated incremental shadows on any sun-sensitive uses and vegetation of open spaces, or sunlight-sensitive features of architectural resources, and assesses the effects of new shadows on such resources. The detailed analysis compares shadows cast by the Proposed Modified Development to a baseline condition representing the future analysis year

Shadow Study Area - Tier 1 and Tier 2 Assessments



without the proposed project. For analysis purposes, the baseline model used for comparison includes the 2010 Project structures on the project site, which could be built as-of-right under the approvals granted in 2010. The project-generated incremental shadow refers to the additional shadow that would be cast by the Proposed Modified Development compared to the buildings that could be constructed on the site in the No-Action condition. Shadows cast by the structures in the No-Action condition are considered to be part of the baseline shadow, and any additional shadow that would be cast by the Proposed Modified Development would be considered new or incremental shadow.

Resources Within Maximum Shadow Radius

As previously stated, the Proposed Modified Development would result in the construction of buildings with greater maximum heights than those analyzed in the 2010 FEIS. As shown in Figure 16, seven sunlight-sensitive open space resources are located within the Proposed Modified Development's maximum shadow radius: Grand Ferry Park, PS 84 William Sheridan Playground, Berry Playground, Berry Street Garden, Earth Spirit Garden, North 5th Street Pier, and the North 6th Street Ferry Landing.[23] In addition, one natural resource, the East River falls within the Tier 2 screening area.

While three historic resources are located within the study area (the S/NR eligible Rectory for Saint Peters and Paul Catholic Church, the S/NR-listed Austin, Nichols & Co. Warehouse, and the LPC-designated Fillmore Place Historic District), these historic resources do not feature sunlight-sensitive windows ore architectural features on the western or southern facades, the only facades that would receive project-generated shadows. The *CEQR Technical Manual* states that if a sunlight-sensitive feature on an architectural resource is located on a facade that faces directly away from the proposed project site (i.e. when an architectural resource is west of the proposed project site and the sun-sensitive feature is on the west facade of that structure), no further shadows assessment is needed for that particular resource because no shadows from the proposed project could fall on that sunlight-sensitive face. Therefore, pursuant to CEQR methodology, there would be no potential for adverse shadow impacts on the Rectory for Saint Peters and Paul Catholic Church, Austin, Nichols & Co. Warehouse, and the Fillmore Place Historic District, and no further assessment of these historic architectural resources is required.

Assessment of Potential Shadow Impacts

As directed by the 2012 *CEQR Technical Manual*, shadows analyses were performed for the eight identified sunlight-sensitive resources for four representative days of the year: March 21/September 21, the equinoxes; May 6, the midpoint between the summer solstice and the equinox (and equivalent to August 6); June 21, the summer solstice and the longest day of the year; and December 21, the winter solstice and the shortest day of the year. The *CEQR Technical Manual* defines the temporal limits of a shadow analysis period to fall from an hour and a half after sunrise to an hour and a half before sunset.

Similar to the 2010 Project, new incremental shadows from the Proposed Modified Development would be cast on three of the eight identified sunlight-sensitive resources: the East River, Grand Ferry Park, and PS 84 William Sheridan Playground. Table 16 summarizes the results of the shadow analysis on the identified resources in comparison to the incremental shadows cast by the 2010 Project.

[23] A small portion of the East River Park, located along the Manhattan waterfront, falls within the Proposed Modified Development's maximum shadow radius. However, shadows from the Proposed Modified Development would only reach this open space resource in the morning of the December 21 analysis day for a total of nine minutes, below the CEQR threshold of impact significance. As such, the Proposed Modified Development would not result in any new significant adverse shadow impacts to this resource and the discussion below focuses on the resources discussed in the 2010 FEIS.

For open space and natural resource, the uses and features of the space indicate its sensitivity to shadows. Shadows occurring during the cold-weather months of interest generally do not affect the growing season of outdoor vegetation; however, their effects on other uses and activities should be assessed. Therefore, this sensitivity is assessed for both (1) warm-weather-dependent features like wading pools and sand boxes, or vegetation that could be affected by a loss of sunlight during the growing season; and (2) features, such as benches, that could be affected by a loss of winter sunlight. Uses that rely on sunlight include: passive use, such as sitting or sunning; active use, such as playfields or paved courts; and such activities as gardening, or children's wading pools and sprinklers. Where lawns are actively used, the turf requires extensive sunlight. Vegetation requiring direct sunlight includes the tree canopy, flowering plants and plots in community gardens. Generally, four to six hours a day of sunlight, particularly in the growing season (March through October), is often a minimum requirement.

TABLE 16
Incremental Shadow Durations—2010 Project v. Proposed Modified Development

Resource	March 21/September 21 7:36 AM-4:29 PM			May 6/August 6 6:27 AM-5:18 PM			June 21 5:57 AM-6:01 PM			December 21 8:51 AM-2:53 PM		
	2010 Project[1]	Proposed Modified Development	Difference	2010 Project[1]	Proposed Modified Development	Difference	2010 Project[1]	Proposed Modified Development	Difference	2010 Project[1]	Proposed Modified Development	Difference
East River	7:36 AM-12:00 PM (4h 24 m)	7:36 AM-12:15 PM (4h 39m)	15m	6:27 AM-11:30 PM (5h 3m)	6:27 AM-11:21 AM (4h 54m)	- 9m	5:57 AM-11:15 PM (5h 18m)	5:57 AM-11:12 AM (5h 15m)	- 3m	8:51 AM-12:45 PM (3h 54m)	8:51 AM-1:03 PM (4h 12m)	18m
Grand Ferry Park	8:45 AM-3:00 PM (6h 40m)	8:30 AM-12:52 PM (4h 22m)	- 2h 18m	9:45 AM-2:00 PM (4h 15m)	9:27 AM-12:00 PM (2 h33m)	- 1h 42m	10:30 AM-2:15 PM (3h 45m)	10:09 AM-11:52 AM (1h 43m)	- 2h 2m	8:51 AM-1:30 PM (4h 39m)	8:51 AM-11:47 PM (2h 56m)	- 1h 43m
PS 84 William Sheridan Playground	4:25 PM-4:29 PM (4m)	3:59 PM-4:29 PM (30m)	26m	4:30 PM-5:15 PM (45m)	3:27 PM-5:18 PM (1h 51m)	1h 6m	5:30 PM-6:01 PM (31m)	3:43 PM-6:01 PM (2h 18m)	1h 47m	--	--	--

Notes:
[1] The 2010 Project incremental shadow durations for the March 21/September 21, May 6/August 6, and June 21 analysis days have been updated to Eastern Standard Time, consistent with 2012 *CEQR Technical Manual* methodology.

As indicated in Table 16, similar to the 2010 Project, the Proposed Modified Development would cast incremental shadows on three open space or natural resources in one or more of the analysis periods. No incremental shadows would be cast on Berry Playground, Berry Street Garden, Earth Spirit Garden, North 5th Street Pier, or the North 6th Street Ferry Landing on any of the analysis days.

East River

As shown in Table 16, the 2010 Project was expected to cast new incremental shadows on the adjacent East River on all four analysis days, with durations between 3 hours and 54 minutes (on December 21) and 5 hours and 18 minutes (on June 21). The 2010 FEIS concluded that this new incremental shadow would not result in a significant adverse impact to this natural resource. As stated in the 2010 FEIS the swift current of the East River would quickly move phytoplankton and other natural elements through the shaded area. In addition, the areas that would receive the longest shadow duration would continue to receive more than five hours of direct sunlight in the afternoon, as there are no intervening structures to the west.

Similar to the 2010 Project, the Proposed Modified Development would cast new incremental shadows on the East River on all four analysis days, with slightly longer durations on two of the four analysis days (March 21 and December 21), and a slightly shorter duration on May 6 and June 21. The shadow durations resulting from the Proposed Modified Development are not significantly different than those disclosed in the 2010 FEIS, therefore no new significant adverse shadow impacts on the East River are

anticipated, and the FEIS and subsequent Technical Memoranda conclusions with respect to this resource remain unchanged.

Grand Ferry Park

As stated above, the 2010 FEIS concluded that the original project would result in significant adverse shadow impacts on Grand Ferry Park in the fall, winter, and early spring months. The 2010 Project would have cast new incremental shadows on this open space resource on all four analysis days, for durations ranging from 3 hours and 45 minutes (on June 21) to 6 hours and 40 minutes (on March 21). To address this significant shadow impact, the applicant for the 2010 Project consulted with the Department of Parks and Recreation (DPR) and the Department of City Planning (DCP) to develop a mitigation program. As part of the 2010 Project's Restrictive Declaration, the previous applicant agreed to provide funding for the monitoring and maintenance of the affected plantings within Grand Ferry Park and their replacement with shade-tolerant species, if necessary. With these measures, the 2010 FEIS concluded that the significant adverse shadows impact on Grand Ferry Park would only be partially mitigated.

As shown in Table 16, the Proposed Modified Development would result in shorter incremental shadow durations on Grand Ferry Park on all four analysis days due to the proposed modified massing. New incremental shadows cast by the Proposed Modified Development would be cast in the morning hours for total durations between 1 hour and 43 minutes (on June 21) and 4 hours and 22 minutes (on March 21). Due to this shortened shadow duration compared to the 2010 Project, Grand Ferry Park would receive direct sunlight throughout the afternoon hours (refer to Figures 17a through 17d). Only on the March 21/September 21 analysis day would the hours of direct sunlight between the new incremental shadow exiting and the end of the shadow analysis period be less than the recommended 4 to 6 hours of sunlight per day necessary to maintain healthy plant growth. As shown in Figure 17a, on this analysis day, Grand Ferry Park would receive approximately 3.5 hours of direct sunlight between the shadow exiting at 12:15 PM and the end of the analysis period at 4:26 PM; the northwest portion would receive incremental sunlight compared to the 2010 Project. Grand Ferry Park would be almost entirely in sunlight during the remaining analysis periods of the growing season (refer to Figures 17b and 17c).

As the Proposed Modified Development would lessen the shadow duration on Grand Ferry Park, no new shadow impacts on this open space resource are anticipated.

PS 84 William Sheridan Playground

The 2010 Project was expected to also cast new incremental shadows on PS 84 William Sheridan Playground on three of the four analysis days for durations ranging from 4 minutes (on March 21) to 45 minutes (on May 6). The shadows would be cast on paved featureless portions of the open space resource, as well as on a portion of its basketball court and play structures. Given the limited extent and short duration of the new incremental shadow cast on the playground, the 2010 FEIS concluded that the original project would not result in significant adverse impacts on PS 84 William Sheridan Playground.

As shown in Table 16, similar to the 2010 Project, the Proposed Modified Development would cast new incremental shadows on PS 84 William Sheridan Playground at the close of the shadow analysis periods on three of the four analysis days. The new incremental shadow durations would range from 26 minutes (on March 21) to 2 hours and 14 minutes (on June 21).

As shown in Figure 17a, on the March 21/August 21 analysis day the new incremental shadows would be cast on a very small portion of the northwestern corner of PS 84 William Sheridan Playground for the final 26 minutes of the analysis period, with the majority of this open space resource receiving direct



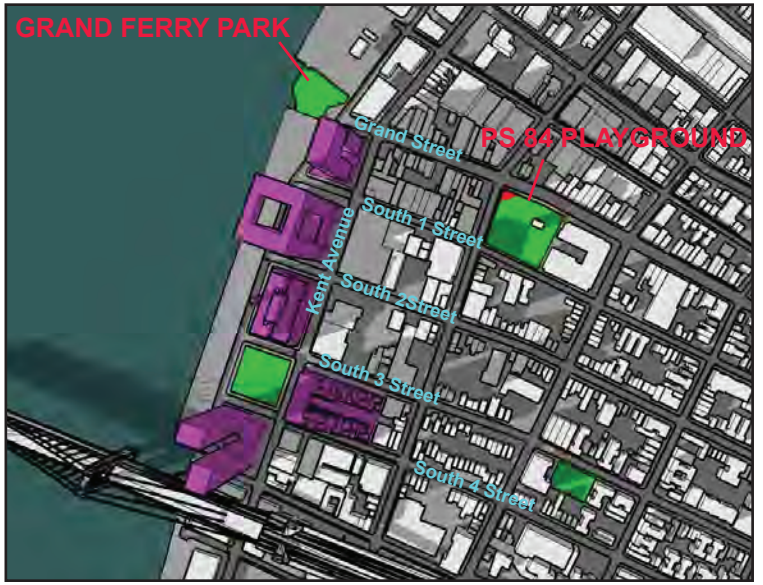
9:00 AM



10:00 AM



12:00 PM



4:15 PM

Proposed Modified Development

Open Space Resources

Incremental Shadow

Incremental Sunlight

Domino Sugar Technical Memorandum **FIgure 17a**

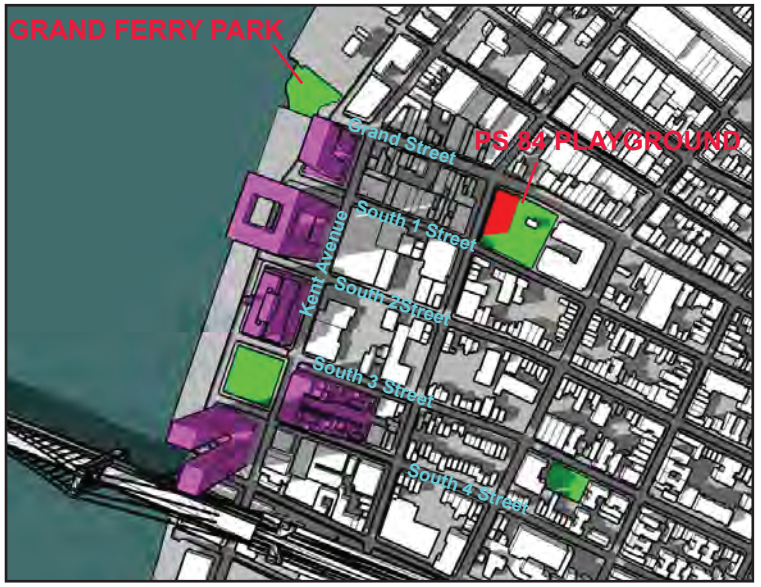
Incremental Shadows from the Proposed Modified Development - March 21/September 21



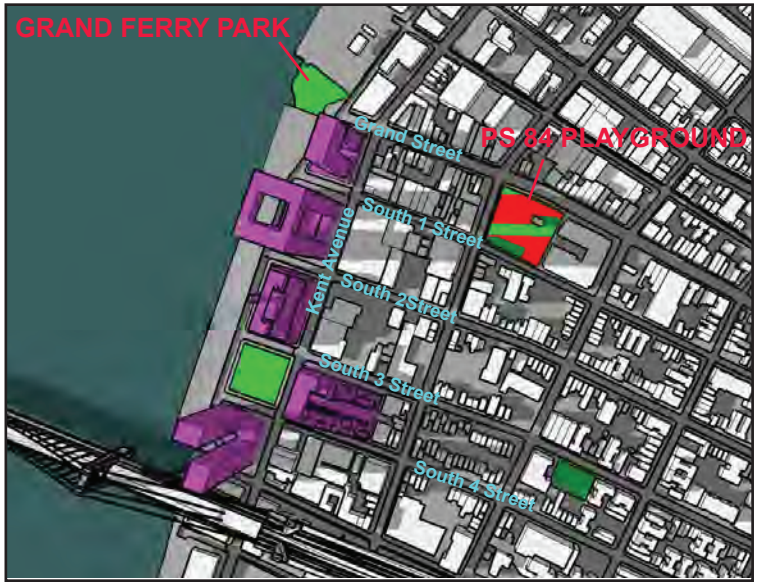
10:00 AM



11:30 AM



3:45 PM



4:45 PM

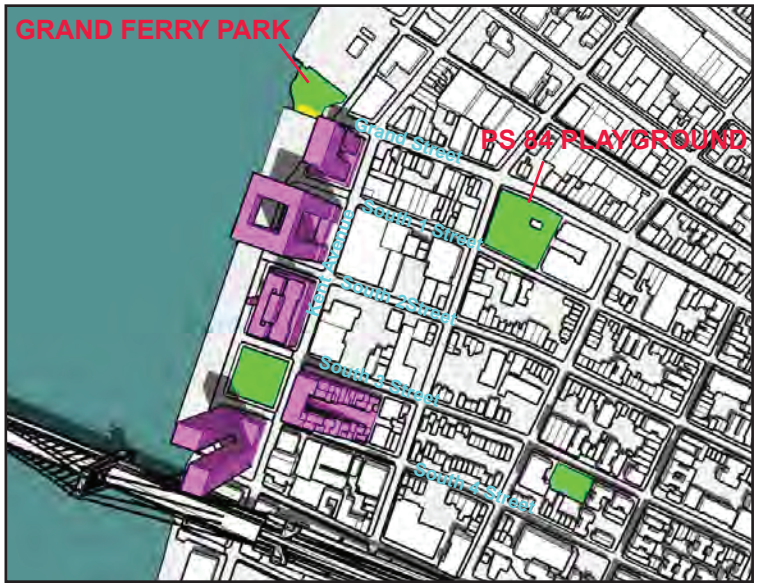
Proposed Modified Development | Open Space Resources | Incremental Shadow | Incremental Sunlight

Domino Sugar Technical Memorandum **FIgure 17b**

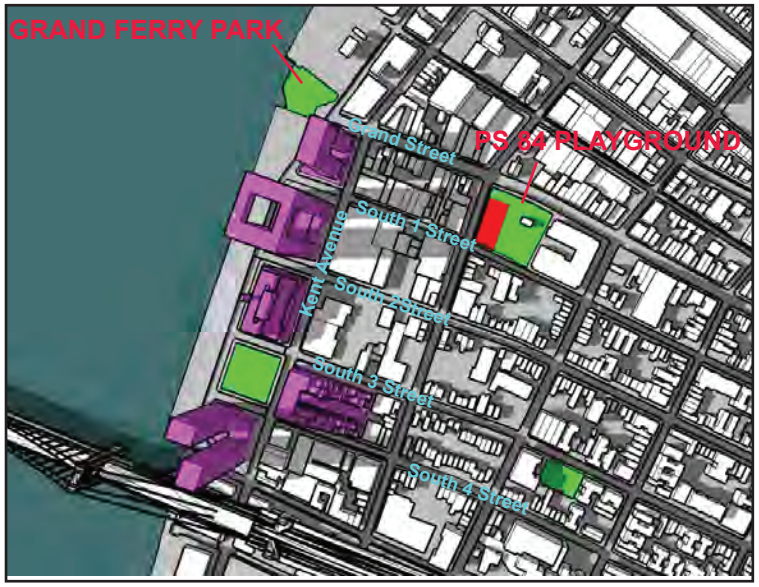
Incremental Shadows from the Proposed Modified Development - May 6/August 6



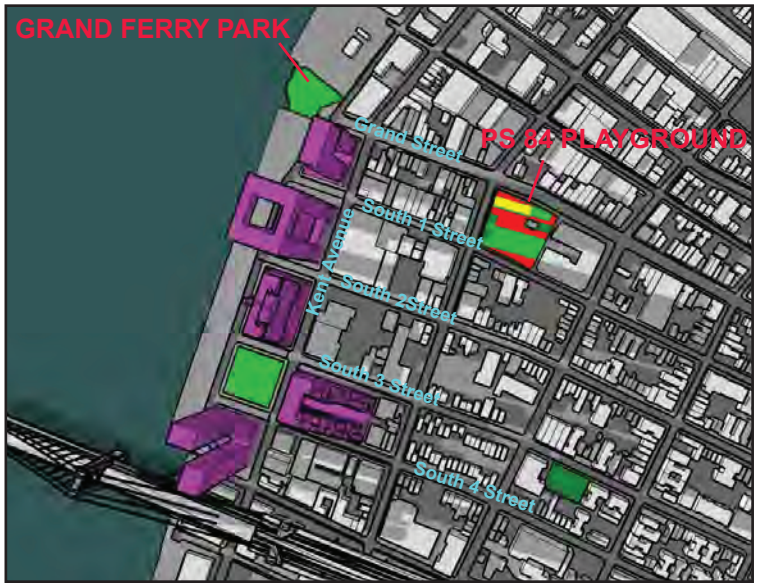
10:30 AM



11:30 AM



4:00 PM



5:45 PM

Proposed Modified Development

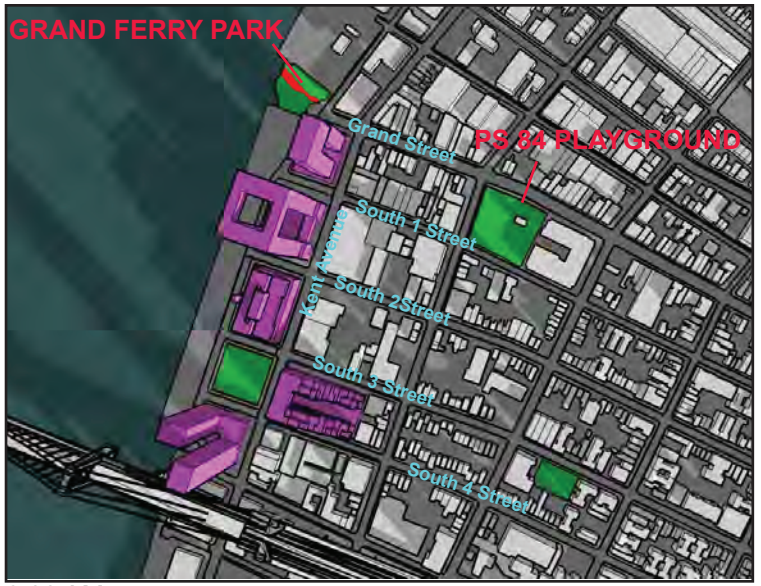
Open Space Resources

Incremental Shadow

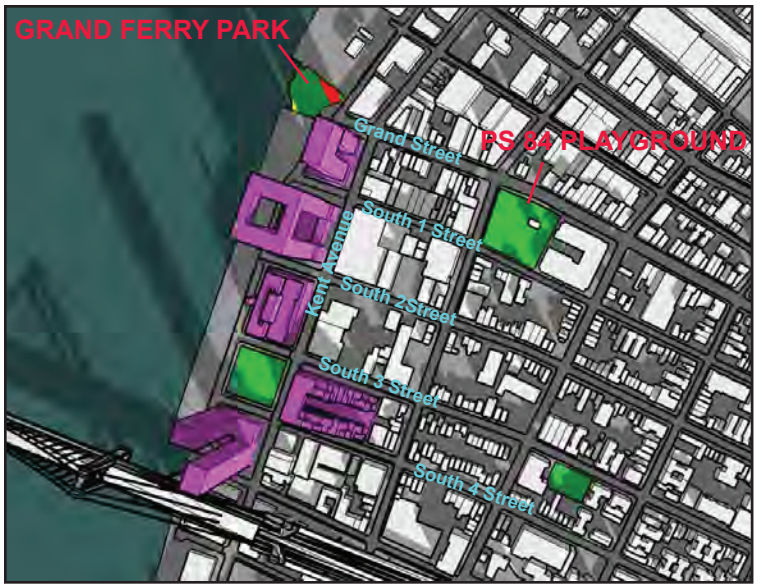
Incremental Sunlight

Domino Sugar Technical Memorandum **FIgure 17c**

Incremental Shadows from the Proposed Modified Development - June 21



9:00 AM



10:45 AM

Proposed Modified Development

Open Space Resources

Incremental Shadow

Incremental Sunlight

Incremental Shadows from the Proposed Modified Development - December 21

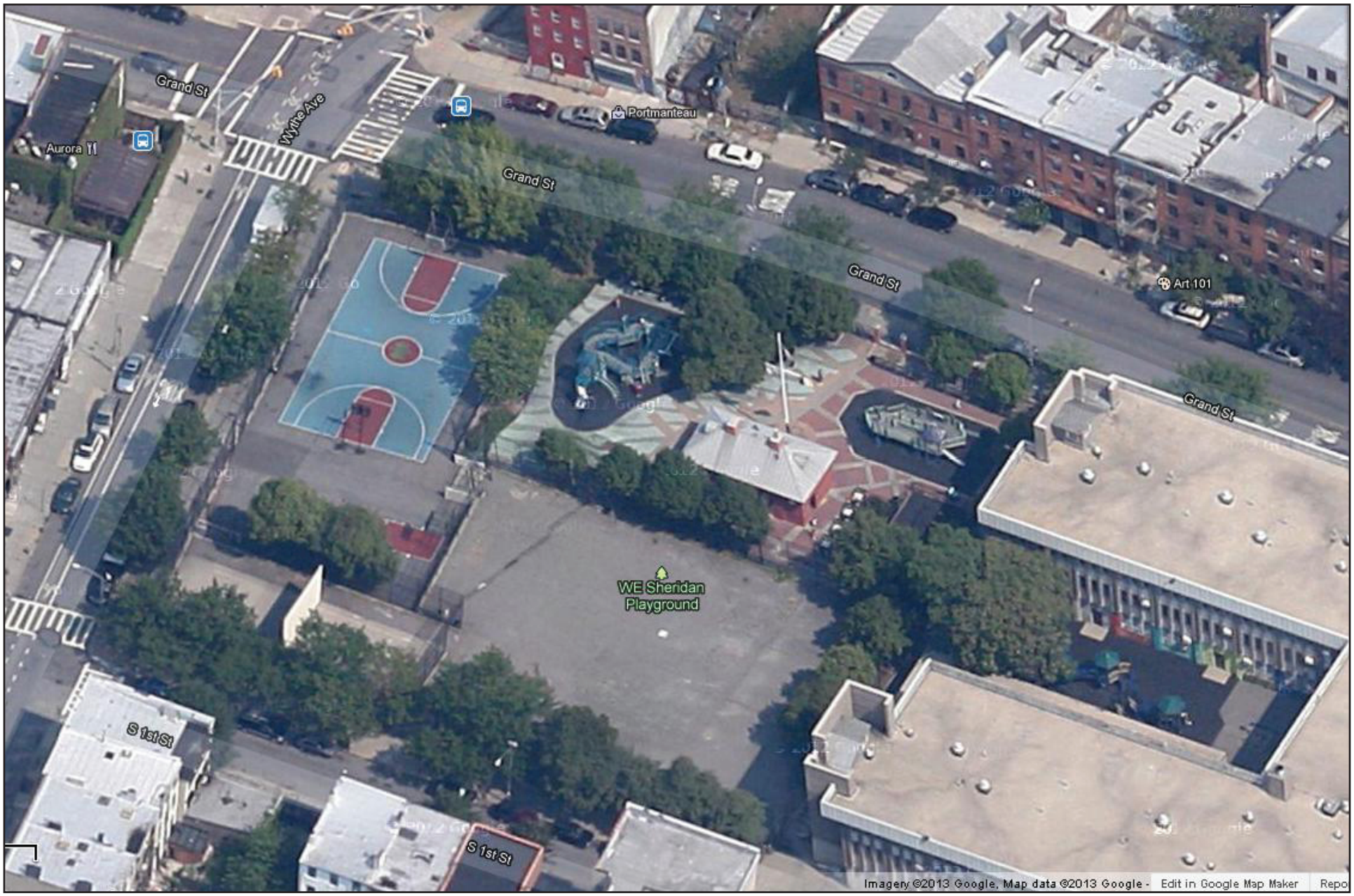
sunlight throughout the morning and early afternoon hours. Approximately 75 percent of this resource would receive direct sunlight during this period of incremental shadow. The affected area of the open space resource includes a small portion of the Playground's basketball court (refer to Figure 18). Given the limited extent and duration of the incremental new shadow on this analysis day, the Proposed Modified Development would not result in any significant adverse impacts to the playground's utilization.

On the May 6/August 6 analysis day, the entirety of PS 84 William Sheridan Playground would receive direct sunlight throughout the morning and early afternoon hours, providing ample sunlight for the healthy growth of the trees located within and around the periphery of the playground (refer to Figure 17b). The Proposed Modified Development would cast new incremental shadows on a portion of PS 84 William Sheridan Playground for the final 1 hour and 51 minutes of the analysis period (beginning at 3:27 PM). As shown in Figure 17b, on this analysis day the incremental shadows would enter the Playground from the northwest, falling on approximately 30 percent of the open space resource by 3:45 PM, while the remainder of the Playground would receive direct sunlight. By approximately 4:45 PM (33 minutes before the analysis period), incremental shadows from the Proposed Modified Development would fall on approximately 2/3 of the Playground. As shown in Figure 18, the incremental shadow would cover the entirety of the basketball court throughout the incremental shadow period, while the playground equipment, and handball court would be cast in incremental shadow during only a portion of the incremental shadow period. In addition, portions of the paved open play area located in the southeastern corner of the Playground, as well as the playground equipment located in the northeastern corner of the Playground would remain in sunlight throughout the analysis day, ensuring that the open space utilization would not be affected during the brief period of incremental shadow. As the new incremental shadows would be cast on PS 84 William Sheridan Playground during the spring and summer months during which the playground is utilized throughout the daylight hours and portions of this open space resource would remain in sunlight throughout the analysis day, the new incremental shadow duration in the late afternoon hours is not expected to affect enjoyment of this open space resource.

On the June 21 analysis day, the entirety of PS 84 William Sheridan Playground would receive direct sunlight throughout the morning and early afternoon hours, with incremental shadows from the Proposed Modified Development entering the Playground at 3:43 PM. As shown in Figure 17c, throughout the period of incremental shadow, a minimum of approximately 50 percent of the Playground would remain in sunlight; incremental sunlight would fall on the northwestern portion of the open space resource during the period of incremental shadow. At 4:00 PM, the incremental shadow would fall solely on portions of the handball and basketball courts, while the two playgrounds and paved open play area would be in direct sunlight (refer to Figure 18). By 5:45 PM, the new incremental shadow would be cast on portions of the basketball court and playgrounds, as well as a small portion of paved open play area, with parts of all of these open space features as well as the entirety of the handball court receiving direct sunlight. As the new incremental shadows would be cast on PS 84 William Sheridan Playground in the late afternoon hours and a majority of the Playground would receive direct sunlight throughout the period of incremental shadow, the Proposed Modified Development would not result in a significant adverse impact on William Sheridan Playground, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Project Open Space

In addition to the above-identified resources, it should be noted that the Proposed Modified Development would include 6.85 acres of publicly accessible open space, including waterfront public access areas, additional public access areas, and public easement areas, 1.98 acres greater than the 2010 Project (refer to Figure 18). Similar to the 2010 Project, as this open space would mostly be located immediately to the


Grand St
Wythe Ave
Portmanteau
Aurora
Grand St
Grand St
Art 101
Grand St
WE Sheridan
Playground
S 1st St
S 1st St
Imagery ©2013 Google, Map data ©2013 Google -
Edit in Google Map Maker
Repo

west of the proposed buildings, it is expected to be cast in shadow only during some periods (mostly in the morning), on all four analysis days.

The 2010 FEIS stated that during all seasons, the project-generated open space would provide new sunlit areas during times when Grand Ferry Park would have experienced areas of incremental shadow. Specifically, on the March 21/September 21 analysis day, there would be several areas of sun along the 2010 Project's open space beginning just after noon, and by 2:30 PM, most of the 2010 Project's open space would be in sun, while portions of Grand Ferry Park would have been in shade. In addition, on the May 6/August 6 and June 21 analysis days, large areas of sun would be found along the 2010 Project's open space at the times when Grand Ferry Park would have experienced the most incremental shadows for the seasons.

As shown in Figures 17a through 17d, due to the elimination of Building C and the more slender massing of the Proposed Modified Development, only small portions of proposed waterfront open space would be cast in shadow throughout the analysis days, compared to the 2010 Project. This could compensate somewhat for the incremental shadow occurring at this time on Grand Ferry Park, as the 2010 FEIS similarly concluded. In addition, the proposed additional open space (Domino Square) would receive direct sunlight throughout most of the analysis days, providing an additional sunlit area during times when Grand Ferry Park would experience incremental shadow. As such, the Proposed Modified Development would minimize the shadows cast on project open space, and would be an improvement over the 2010 Project. Moreover, this open space would be designed in the context of its partially shadowed conditions (utilizing shade-tolerant elements, for example). As such, the Proposed Modified Development would not result in a new significant adverse shadow impact, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

F. Historic and Cultural Resources

For the 2010 FEIS, the New York City Landmarks Preservation Commission (LPC) and the New York State Historic Preservation Office (SHPO) determined that the project site was not sensitive for archaeological resources, but that an analysis of architectural resources was necessary. The waterfront parcel of the project site includes the former Domino Sugar processing plant which is eligible for listing on the State/National Register of Historic Places (S/NR). In addition, three buildings within the plant – the Pan, Filter, and Finishing Houses (collectively known as "the Refinery Building") – are a designated New York City Landmark (NYCL). The upland parcel of the project site is vacant.

Both the 2010 Project and the Proposed Modified Development would adaptively reuse the Refinery Building and demolish the other 14 small industrial buildings on the S/NR-eligible site (see Figure 19). The 2010 FEIS stated that the reuse of the Refinery Building, including a new internal structural system, new historically appropriate windows, a glass and steel rooftop addition and restoration of the façade, was approved by the LPC. However, the LPC Certificate of Appropriateness had not been issued at the time of the 2010 FEIS. The Proposed Modified Development would include a similar glass and steel rooftop addition which would add four additional stories, resulting in a total building height of approximately 190 feet, as well as two bay windows on the Refinery Buildings southern façade. As in the 2010 FEIS, the Applicant is currently in the process of obtaining a Certificate of Appropriateness for the proposed addition to the landmarked Refinery Building from LPC.[24]

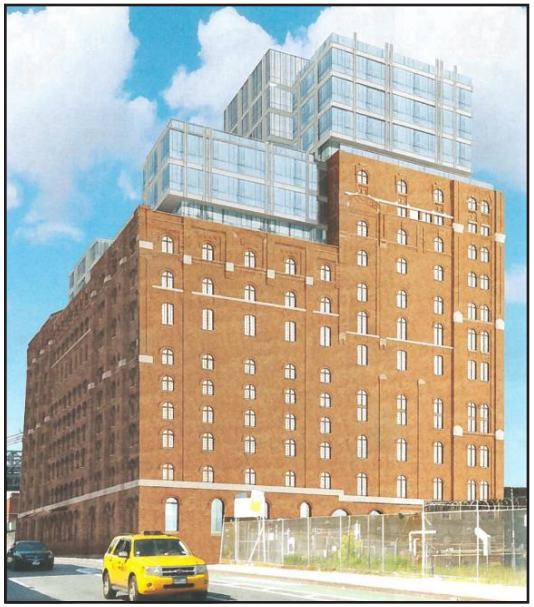
As stated in the 2010 FEIS, in a letter dated November 6, 2008, SHPO concurred that there was no feasible alternative to the demolition of all structures on the project site except for the buildings that comprise the Refinery Building. However, the 2010 FEIS evaluated methods to alleviate the significant adverse impacts that would occur as a result of the demolition of the 14 S/NR-eligible small industrial buildings on the waterfront parcel, but concluded that it was not feasible to adaptively reuse these buildings for residences because of the limitations of their industrial designs. Any plans to adaptively reuse these industrial buildings would result in significant alterations which would ultimately compromise their historic character. The 2010 FEIS presented measures to partially mitigate significant adverse impacts, including consultations with SHPO through Memorandums of Agreement (MOA) or Letters of Resolution (LOR) during the pre-final and final design stages, salvaging and use of industrial artifacts in open space, Historic American Engineering Record (HAER) documentation where feasible, and a Construction Protection Plan (CPP) in consultation with LPC and SHPO. The Proposed Modified Development would continue to adhere to the mitigation measures identified in the 2010 FEIS for consultations with SHPO through MOA or LOR and preparation of a CPP in consultation with LPC and SHPO. Moreover, the Proposed Modified Development would include a publically-accessible artifact walk along the waterfront esplanade exhibiting salvaged industrial artifacts as recommended in the 2010 FEIS.

The Proposed Modified Development would result in the construction of four new buildings on the project site instead of the five proposed in the 2010 Project. Like the 2010 Project, it is the Applicant's intent that these new buildings would use materials to complement and enhance the industrial aesthetic of the adjacent historic resources, such as masonry, metal, glass, and wood. In contrast to the bulky structures proposed in the 2010 Project, the new buildings would be designed with large openings, expanding visual access throughout the site so that additional views of the historic resources would be available. The proposed buildings would not alter the visual prominence of any architectural resources, but instead would be designed to enhance these structures. While the new buildings would be taller than

[24] In the absence of receipt of the approval, the applicant would proceed with the previously approved addition described in the 2010 FEIS. As the previously approved addition included less floor area, for analysis purposes, it is conservatively assumed that the applicant would construct the proposed larger rooftop addition.



1. Proposed Modified Development (view northeast)



2. Proposed Modified Development (view southwest)



3. 2010 Project (view northeast)



4. 2010 Project (view south)

FOR ILLUSTRATIVE PURPOSES ONLY

Domino Sugar Technical Memorandum **Figure 19**

Adaptive Reuse of the Refinery Building - 2010 Project v. Proposed Modified Development

those proposed in the 2010 Project, no new shadows would be cast on sun-sensitive features of historic resources, as discussed above in "Shadows."

There are 26 architectural resources and two historic districts in the surrounding area. However, the 2010 FEIS determined that there would be no significant adverse impacts to any of these architectural resources as a result of the 2010 Project because none of these resources had significant visual or architectural relationships to the project site. The Proposed Modified Development would not alter this finding. At both the ground level and the proposed re-envisioned skyline, the scale and proportion of the Proposed Modified Development would celebrate and enhance the waterfront's industrial heritage, of which both the Refinery Building and the S/NR-eligible Williamsburg Bridge are important components. On the ground, the Refinery Building would be made more physically and visually accessible through Domino Square, the open space proposed directly to the south. Additionally, the remainder of the project site would be divided into corresponding blocks of similar width, reinforcing compatible proportions between the Refinery Building and the Proposed Modified Development's new building footprints.

In addition, the proposed building heights, setbacks, and massing would further enhance the Refinery Building, compared to the 2010 Project. The large building footprints and disparate building heights of the 2010 Project were not consistent with the scale of the Refinery Building. Each massing of the 2010 Project extended north-east of the Refinery Building's wall, which would have resulted in setting the building back, thereby limiting north-south views of the landmark Refinery Building. The Proposed Modified Development's heights and setbacks would better articulate a relationship with the Refinery Building. Along Kent Avenue the Refinery Building rises to a height of approximately 109 feet; directly north of the Refinery Building, Building B would rise to a height of 110 feet before a setback, forming a continuous streetwall that would frame South 2nd Street. Southeast of the Refinery Building, with a maximum height of 170 feet, Site E would relate to the proposed addition to the Refinery Building.

The Proposed Modified Development would also further enhance the S/NR-eligible Williamsburg Bridge, compared to the 2010 Project. Borrowing from the iconic pair of slender industrial towers of the Williamsburg Bridge, the Proposed Modified Development would continue this rhythm. In comparison, the broad walls of the 2010 Project buildings would have created canyons between buildings and occluded views of this resource. As shown in Figure 20, by pulling the proposed buildings further back from the water, decreasing their building footprints, and increasing the amount of total waterfront open space, the Proposed Modified Development would (1) open up new views of the S/NR-eligible Williamsburg Bridge not currently available, and (2) improve upon the 2010 Project by enhancing the public view corridors to this historic resource. As shown in Figure 21, the Proposed Domino Square would provide additional expansive viewing opportunities along Kent Avenue of the span of the Williamsburg Bridge that are not available under existing conditions and would not exist with the 2010 Project.

Overall, the Proposed Modified Development would not result in any new significant adverse impacts to historic resources on the project site or in the surrounding study area. Therefore, the Proposed Modified Development would not alter the findings of the Historic Resources chapter of the 2010 FEIS and subsequent Technical Memoranda.

View of the Williamsburg Bridge along waterfront open adjacent to Building B - 2010 Project v. Proposed Modified Development

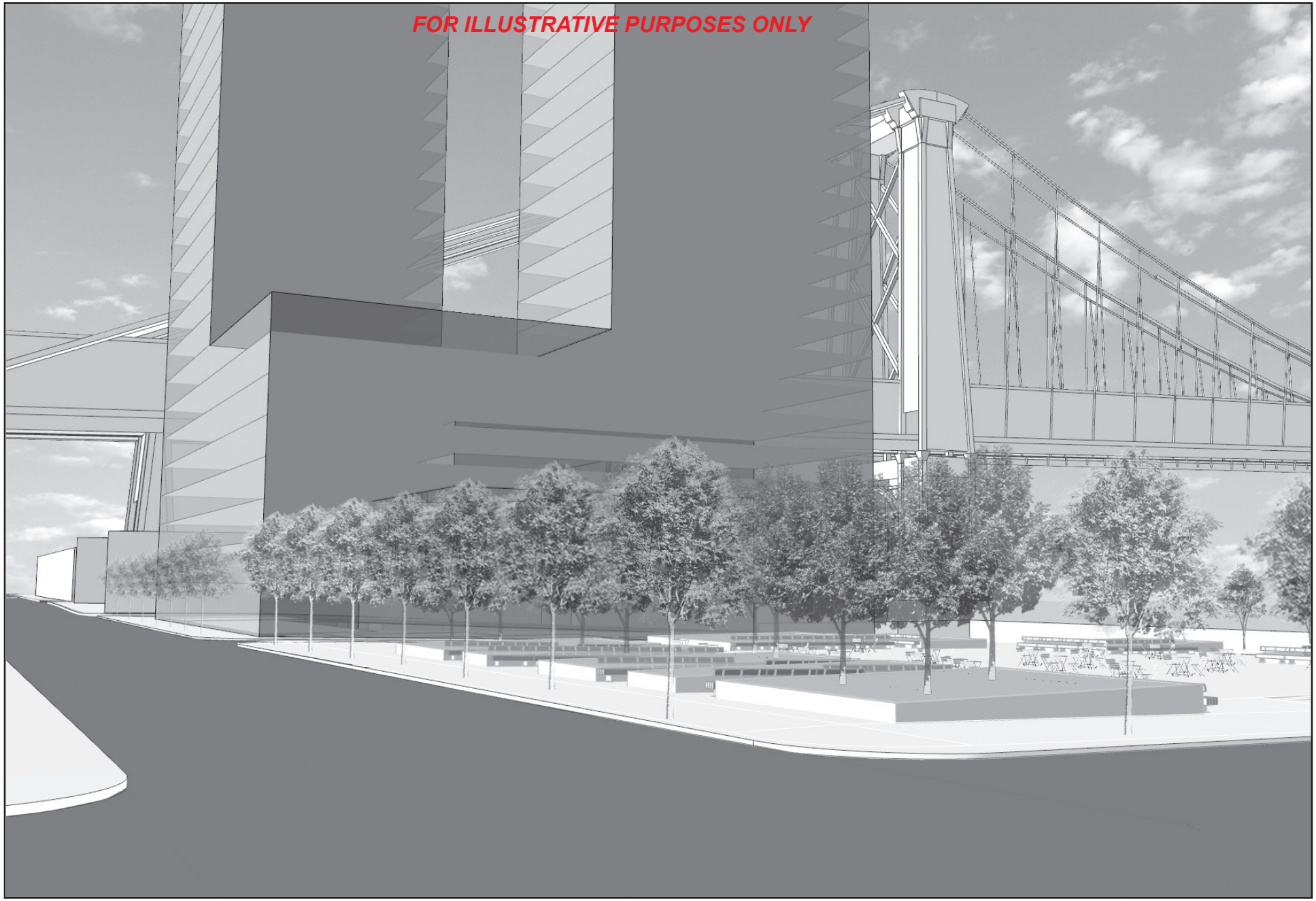


2010 Project



Source: SHoP Architects PC

Proposed Modified Development



Source: SHoP Architects PC

Domino Sugar Technical Memorandum

Figure 21

View of the Williamsburg Bridge from Kent Avenue & South 3rd Street (With-Action Condition)

G. Urban Design and Visual Resources

The 2010 FEIS did not identify any significant adverse urban design or visual resources impacts for the Domino Sugar rezoning, although the changes to the study area's urban design and visual resources were identified as considerable. The 2010 FEIS included an assessment to determine whether the project site would experience pedestrian level wind speeds that would potentially result in a significant adverse urban design impact. The FEIS concluded that the project would create some elevated pedestrian wind conditions during the winter months, exceeding the safe pedestrian wind conditions criteria at four locations on the project site. However, the 2010 FEIS concluded that the unsafe pedestrian wind conditions associated with the 2010 Project would have essentially been minimized by landscaping features, and these conditions would have been similar to those at comparable locations in the city. The 2010 Project's Restrictive Declaration contains provisions defining circumstances under which the final tree planting layout detailed in the construction drawings may be required to undergo wind tunnel analysis to confirm its effectiveness in addressing the potential for elevated pedestrian wind conditions.

The Proposed Modified Development would decrease the built footprint on the project site to allow for an additional 1.98 acres of publicly accessible open space (including waterfront public access areas, additional public access areas, and public easement areas), while increasing the height of the structures from the 2010 Project. The proposed new buildings would range in height from 170 feet to 535 feet, and would include, and be in close proximity to, two iconic structures, the Refinery Building and the Williamsburg Bridge, respectively (refer to Figure 22).

The Proposed Modified Development would be comprised of four new mixed-use buildings along Kent Avenue and the renovation and expansion of the existing Refinery Building. The Proposed Modified Development would enhance several of the positive urban design effects identified in the 2010 FEIS, including reactivating the waterfront, complementing the landmarked Refinery Building, extending the existing street network, connecting the surrounding community to the new public open space, and providing new expansive views of visual resources in the study area.

Block Form, Street Pattern, and Street Hierarchy

As defined under CEQR, block form and street pattern are urban design features that refer to the shape and arrangement of blocks and surrounding streets, set street views, define the flow of activity of an area, and create the basic format on which building arrangements can be organized. Street hierarchy helps convey a sense of the overall form and activity level of a neighborhood. As stated in the 2012 *CEQR Technical Manual,* streets may be classified as expressways, arterials, boulevards, collector/distributor streets, or local streets, and they may be defined by their width, type of access, and the presence or absence of at-grade pedestrian crossings.

The Proposed Modified Development would extend River Street south along the water to link with existing City streets (South 1st through South 5th Streets) with a total of 2.02 acres of streets and sidewalks throughout the project site. In comparison the 2010 Project would have created cul-de-sacs that dead-ended at the East River waterfront, limiting access to the waterfront and adding to the sense that the waterfront open space was more a residential backyard that a public open space. This modification would create the potential for an integrated Brooklyn neighborhood that could grow from the fabric of South Williamsburg northward and would open access to a series of new public spaces along the proposed quarter-mile waterfront park.

The Proposed Modified Development's re-knit street grid would result in developable city blocks with a similar scale to those of Manhattan's lower Westside (approximately 200 feet by 200 feet), with the major

Figure 22

Comparison of 2010 Project and the Proposed Modified Development - Birds Eye View



2010 Project



Proposed Modified Development

distinction being that River Street would not be a highway. The proposed streets, which have been developed in close consultation with DOT and FDNY, would function similar to the public streets immediately adjacent to the project site, with minimum widths of 60 feet, with one exception of a 50-foot wide street segment on River Street, immediately adjacent to Building B. River Street would continue as a one-way southbound street from its existing terminus north of the project site, connecting this currently dead-end street into the Williamsburg street grid. The scale and character of the street grid would create opportunities for vibrant street life that would activate the waterfront sidewalks and makes the new public spaces "of the neighborhood" more than "of Brooklyn's edge."

As the Proposed Modified Development would extend the adjacent street grid into the project site, facilitating uninterrupted vehicular and pedestrian flow along the waterfront and creating an accessible and vibrant streetscape, the Proposed Modified Development would not result in any significant adverse impacts to block form and street pattern, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Building Arrangement

Building arrangement refers to the way that buildings are placed on zoning lots and blocks and can help to convey a sense of the overall form and design of a block or a larger area.

The Proposed Modified Development's building arrangement is intended to maximize open space on the project site, increase project site access, and emphasize the Refinery Building (refer to Figure 22). Whereas the 2010 Project would have developed the waterfront parcel with five buildings, as well as constructing a building on the upland parcel (Building E), the Proposed Modified Development would distribute the total buildable area on only four out of the five possible sites. The proposed transfer of floor area and resultant distribution of total buildable area would not unduly increase the bulk of buildings in any one block, but rather would provide for a balanced distribution of floor area, freeing up land for more public open space. The block directly south of the Refinery Building (the location of the 2010 Project's Building C) would be developed into publicly accessible open space (Domino Square). This location, more protected from wind than on the waterfront, could serve as a year-round asset to the neighborhood with a diverse mix of open space uses and community events. Through this substantial reduction in building footprint, the Proposed Modified Development would increase the overall amount of public open space by 1.98 acres (including waterfront public access areas, additional public access areas, as well as public easement areas), compared to the 2010 Project. The quality of the open space would also add programmatic flexibility to the park.

As stipulated in the *CEQR Technical Manual*, given the location of the project site along the East River and the size of the 2010 Project's building, the 2010 FEIS included a wind tunnel assessment to better understand wind conditions at the project site and whether the 2010 Project would have resulted in ground-level wind speeds that could create pedestrian wind safety issues. The results of the wind tunnel analysis (including in Appendix H of the 2010 FEIS) indicated that during the summer months (May through October), there was no potential for elevated pedestrian wind conditions. However, during the winter months the wind safety criterion of gust speeds greater than 55 mph that occur more than twice per season or more than three times per year would be exceeded at four locations with the 2010 Project: one location at the eastern limit of Grand Ferry Park; one location along the walkway between Buildings A and B; one location on the north side of the Refinery Building; and, one location on the west site of Building C.

To assess the impact of the modified site plan on pedestrian wind conditions, a wind tunnel assessment was undertaken by Novus Environmental to determine how the pedestrian wind conditions for the

Proposed Modified Development's current open space concept plan would compare to those of the 2010 Project analyzed in the FEIS (refer to Novus letter in Appendix 4). Similar to the analysis included in the 2010 FEIS, the testing was conducted using a scale model of the Proposed Modified Development and project landscape elements. Those landscaping features are designed to minimize the potential for elevated pedestrian wind conditions. In addition to the project landscape elements, specific elements of the Proposed Modified Development that result in lessened pedestrian wind conditions include: replacing the 2010 Project's Building C with additional open space, thereby reducing building massing and increasing the distance between adjacent buildings; increasing the distances between Buildings A and B as well as the distance between Building B and the Refinery Building; shifting the taller portion of Building E from the east to the west; reducing the Building A, B, and D footprints; and increasing the total number of openings, gaps, and podium spaced on the proposed buildings.

As in the 2010 FEIS, wind conditions at the project site were evaluated based on a composite of historical wind records for LaGuardia, John F. Kennedy (JFK) and Newark Airports. Wind conditions were analyzed in the May through October "summer" period and November through April "winter" period, and the results of the wind tunnel were compared against the same criterion used in the 2010 FEIS (gust speeds greater than 55 mph that occur more than twice per season or more than three times per year). Similar to the 2010 Project, all locations met the wind safety criterion in the summer. In the winter, results of the wind tunnel tests showed that there were two locations at which the gust speed of 55 mph would occur, below the safety criterion of no more than two events per season. As such, the Proposed Modified Development would not result in unsafe pedestrian wind conditions, as previously anticipated with the 2010 Project.

Building Bulk, Use, and Type

Bulk, use, and type, are characteristics used to describe buildings. As stated in the 2012 *CEQR Technical Manual*, a building's bulk is created from an amalgam of characteristics that include its height, length, and width; lot coverage and density; and shape and use of setbacks and other massing elements. The general appearance of a building (e.g., residential, manufacturing, commercial office) gives an impression of its use and helps to understand its visual and urban design character. Building type refers to a distinctive class of buildings and suggests distinguishing features of a particular building. Examples of building type include industrial loft, church, gas station, and walk-up tenement.

At the City and waterfront scale, the Proposed Modified Development re-envisions the Brooklyn skyline, and proposes the construction of buildings with smaller footprints and greater heights than the 2010 Project (refer to Figure 23). The current zoning along the majority of Brooklyn's East River waterfront tops off at approximately 400 feet, and the 2010 Project would have similarly included buildings ranging in height from 297 feet to 400 feet. As stated in the 2010 FEIS, while this would have represented a significant change from the No-Action condition, no impact would result. The Proposed Modified Development would include buildings with heights ranging from 435 feet to 535 feet, and therefore would represent a notable change to pedestrian views of the Brooklyn skyline from Manhattan, compared to the 2010 Project. However, this change would not meet the 2012 *CEQR Technical Manual* threshold for a significant adverse urban design impact in that it would not alter the arrangement, appearance, or functionality of the project site such that the alteration would negatively affect a pedestrian's experience. The Proposed Modified Development would complement and enhance the existing and expected development in Williamsburg, Greenpoint, and Long Island City to the north, and in South Williamsburg and downtown Brooklyn to the south, and would become the central point of the Brooklyn skyline.

On the upland site, Building E (at a maximum height of 170 feet) would step down from the scale of the waterfront buildings to the lower buildings of the neighboring upland area, negotiating a transition in

View from Manhattan - 2010 Project v. Proposed Modified Development



2010 Project



Proposed Modified Development

scale between the heights along Kent Avenue and the low-rise buildings to its east. In addition, the proposed Building E would include many setbacks on the east façade in order to reduce the visual bulk of the building and to better complement the buildings nearby.

In addition, while the architectural material and design features depicted in the accompanying figures will not be required under the requested approvals, it is the Applicant's intent that the proposed buildings would ultimately feature metal, glass, and wood with various patinas that would create a variegated pallet as opposed to a monolithic or singular reading. The facades would minimize the scale of the buildings by breaking them down into various elements; on Building B, for example, the overall height of the building would break down into 60 foot by 60 foot increments. The overlapping scales of geometry would create super grids and local grids, thereby generating shadows and reflections of light to articulate depth and texture throughout the surface area (refer to Figure 22). It should be noted, however, that while the above-described architectural material and design features would serve to counter the proposed building heights, other elements that would be required under the requested approvals, such as the proposed setbacks and reduced building footprints would also serve this purpose.

The proposed building bulks would complement the immediate surroundings by creating a consistent street wall in keeping with the height of the landmark Refinery Building, decreasing building footprints thereby minimizing the broad walls of the 2010 Project and opening up the project site's waterfront open space to the adjacent community. As shown in Figure 24, the building setbacks along Kent Avenue would vary between 10 and 30 feet and would register with the various setbacks and massing conditions present on adjacent blocks. On the waterfront side, the decreased building footprints would also enable a broadened corridor of open space (refer to Figure 20).

In addition, the Proposed Modified Development would be generally consistent in terms of bulk and use with recent waterfront developments in the surrounding area, including Northside Piers and the Edge, located to the north of the project site and Schaefer Landing to the south of the project site. These recent developments are characterized by tall, modern, mixed-use buildings (reaching heights of up to 400 feet) and mark a change in the urban design of the study area from a low-scale, mixed industrial and residential area to an area including modern, tower-style mixed-use developments. Additional known and anticipated developments along the East River waterfront will continue this urban design trend. As such, the Proposed Modified Development would be consistent with existing and anticipated future tower-style mixed-use waterfront developments.

Both the Proposed Modified Development and the 2010 Project would result in the construction of mixed-use residential, commercial, and community facility buildings that would be consistent with existing and future land uses in the neighborhood. With the Proposed Modified Development, the landmark Refinery Building would be adaptively reused with commercial offices, not-for-profit/artist studio spaces, and ground floor retail, compared to the residential condominiums proposed for the building in the 2010 Project. This mix of commercial uses would be in keeping with the historic commercial/manufacturing uses of this structure and therefore would require less substantial changes to the building's interior.

Streetscape Elements

Streetscape elements are the distinctive physical features that make up a streetscape, such as street walls, building entrances, parking lots, fences, street trees, street furniture, curb cuts, and parking ribbons. These features help define the immediate visual experience of pedestrians.

View south along Kent Avenue - 2010 Project v. Proposed Modified Development



2010 Project (view from north of South 3rd Street)



Proposed Modified Development (view from north of South 1st Street)

As shown in Figure 24, the Proposed Modified Development would enliven the streetscape with ground floor uses that would serve business and residential tenants. The buildings would feature continuous, retail storefronts that would be both transparent and inviting. Where possible, ground floor businesses may open to accommodate outdoor seating and extend activities from within the buildings onto the public realm, in accordance with City regulations. The activated streetscape would extend the Williamsburg neighborhood to the waterfront, with ground floor retail located along all street frontages, including the proposed River Street extension, further connecting the waterfront open space amenities to the surrounding area, compared to the cul-de-sacs proposed with the 2010 Project.

In addition, the Proposed Modified Development would reduce the total number of accessory parking spaces: the Proposed Modified Development would include off-street accessory parking garages in Buildings B and E, compared to Buildings A, C, and E as well as the Refinery Building with the 2010 Project. The associated reduction in vehicle access points to the project site's accessory parking garages would minimize dead space on the building's frontages and allow for a more fluid movement of pedestrians throughout the project site.

Topography and Natural Features

Topographic and natural features help define the overall visual character of an area and may include varied ground elevation, rock outcroppings and steep slopes, vegetation, and aquatic features.

The Proposed Modified Development would enhance and protect the project site's topography and natural features by providing increased access to the waterfront and increasing the amount of permeable surfaces. Similar to the 2010 Project, the Proposed Modified Development would involve the construction of a new overwater platform. The Proposed Modified Development would modify the height of the overwater platform so that it would be in accordance with the new Preliminary Work Maps. The Applicant is also seeking several authorizations to modify requirements for location, area, and minimum dimensions of waterfront public access areas and visual corridors to address the recently released flood elevations and ensure that the project site's topography would be developed in a manner that would ensure its long-term sustainability. Specifically, the level of the waterfront yard as well as the visual corridors at the waterfront edge would be raised due to flood elevations and to create accessible area, with the level raise ranging from 2.2 to 6.57 feet.

Visual Resources

The 2012 *CEQR Technical Manual* defines an area's visual resources as the unique or important public view corridors, vistas, or natural or built features. Visual resources can include waterfront views, public parks, landmark structures or districts, or natural features such as a river or geological formations.

Similar to the 2010 Project, the Proposed Modified Development would block some views of visual resources in the study area, including the Williamsburg Bridge and the Manhattan skyline, but it would also allow for new expansive views of these resources, which are currently not available, through newly created public view corridors, new public waterfront open space, and the porosity of the proposed building massing, as shown in Figures 20 and 21. The new vantage points from the proposed public waterfront open space would allow the Williamsburg Bridge to be viewed in the larger context of the Brooklyn and Manhattan waterfronts, and would provide new views to the Manhattan and Brooklyn Bridges, to the south. The proposed openings in the four new buildings would frame views of the Manhattan skyline from upland areas of Brooklyn, as well as the adjacent industrial buildings along Kent Avenue (see Figure 22).

The Proposed Modified Development would include three visual corridors along South 2nd, South 3rd, and South 4th Streets with minimum widths of 60 feet. In addition, 30-foot wide sidewalks would be located adjacent to Building B (along South 1st and South 2nd Street), widening the view corridors to approximately 75 feet between Building B and the Refinery Building. In comparison, the 2010 Project included three visual corridors at South 1st, South 2nd, and South 4th Streets; the South 1st Street visual corridor would have had a minimum width of 50 feet. Furthermore, the 2010 Project proposed deeper buildings with continuous mass spanning between the side streets, which would have occluded views of the waterfront from upland areas. As shown in Figure 25, by decreasing the buildings footprints, the Proposed Modified Development would allow for views through and beyond the project site to lower Manhattan and Midtown. The porous character of the proposed massing would further permit additional views of the East River and the Manhattan skyline from upland areas. The 2010 Project's buildings had broader walls, which would have created canyons between the buildings and occluded views of the waterfront.

Compared to the 2010 Project, the Proposed Modified Development would also remove an entire building (Building C), and would replace it with additional open space (Domino Square). By increasing the proposed open space by 1.98 acres and decreasing the buildings' footprints, the positive visual resources elements identified in the 2010 FEIS would only be enhanced. As shown in Figure 22 the proposed Domino Square would open a new visual corridor towards the adjacent landmarked Refinery Building. In addition, this iconic structure would be enhanced by the relocation of the formerly illuminated "Domino Sugar" sign to the top of the renovated Refinery Building (see Figures 19 and 26).

Decreasing the building footprints would also provide north-south views of the Refinery Building from the waterfront. The 2010 Project's buildings would have extended northwest of the Refinery Building's wall, which would have resulted in setting the landmark building back from the waterfront lot's western street wall. This would have limited north-south views of the Refinery Building and its iconic smokestack. In comparison, the Proposed Modified Development would articulate a relationship with the Refinery Building, forming a continuous wall with the structure.

While the Proposed Modified Development's buildings would be taller than the 2010 Project's buildings, the proposed reduced building footprints and massing would enhance views of the Williamsburg Bridge, compared to the 2010 Project. For pedestrians, the most prominent increase in visual access to the Williamsburg Bridge occurs when walking down the length of the project site along the northwest facades, which are further from the water than in the 2010 Project; the Proposed Modified Development's smaller building footprints would enable a broadened corridor of open space, made accessible through the proposed River Street extension and the redesigned waterfront open space. The larger building footprints of the 2010 Project would have reduced the available public space near the water, in addition to the multiple cul-de-sacs and the fluctuating building edge which would have limited the extent and quality of views of the Williamsburg Bridge from the water's edge. The Proposed Modified Development's Domino Square would create additional extensive viewing opportunities along Kent Avenue of the span of the Williamsburg Bridge that would not exist with the 2010 Project.

As the Proposed Modified Development would open up new view corridors currently inaccessible, and would enhance the visual corridors originally proposed in the 2010 Project by decreasing the proposed building footprints and constructing more porous structures, the Proposed Modified Development would not result in significant adverse impacts to visual resources. Therefore, the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

View west from Wythe Ave & South 2nd Street - 2010 Project v. Proposed Modified Development



2010 Project

Source: 2010 FEIS



Proposed Modified Development

Source: SHoP Architects PC

Proposed Modified Development - Refinery surrounding context



Proposed Modified Development - view north along the waterfont open space, with the Refinery Building and Buildings B and E in the background.



Proposed Modified Development - view west along South 3rd Street from Wythe Avenue, with the Refinery Building visible in the background and Building E in the foreground.

H. Natural Resources

According to the 2012 *CEQR Technical Manual,* a natural resources assessment is warranted if: (1) a project site is located on or near a natural resource; and (2) the project would disturb that identified natural resource. Given the location of the project site adjacent to the East River and the 2010 Project's in-water project elements, the 2010 FEIS conducted an analysis of the potential for the original Domino Sugar project to affect terrestrial natural resources and the floodplain within the project site, and aquatic natural resources and water quality within the adjacent East River. The analysis concluded that the 2010 Project would not cause any significant adverse environmental impacts on groundwater, floodplains, terrestrial plant communities or wildlife, or East River water quality or aquatic biota. As discussed below, the Proposed Modified Development is not expected to alter the conclusions of the 2010 FEIS and subsequent Technical Memoranda.

The 2010 Project included the construction of stone riprap aprons associated with two stormwater outfalls, which would have resulted in the removal of 142 cubic yards of bottom material and the installation of new sheet piling and backfill. The 2010 FEIS stated that this in-water construction would have adversely affected approximately 414 sf of New York State Department of Environmental Conservation (NYSDEC)-designated shaded littoral zone tidal wetlands. However, the 2010 FEIS concluded that any negative impacts associated with these in-water project elements would be offset by the restoration of at least an equal area of shaded aquatic habitat through the removal of upland material between the Mean High Water (MHW) elevation and the new sheet pile bulkhead. In addition, the replacement of the existing overwater platform with a new overwater platform of the same size was expected to minimize any potential effects on the amount of aquatic biota affected by shading. As such, the 2010 FEIS concluded that the original project would only result in temporary localized effects on water quality and aquatic biota as a result of increased amounts of suspended sediment associated with construction activity.

In conjunction with the 2010 Project, NYSCDEC approved the previous bulkhead plan (Permits 2-6101-0052/00010, 2-6101-0052/00011, and 2-6101-0052/00012). The approved permits include drawings of the proposed bulkhead, noting the construction of the stone riprap aprons associated with the proposed stormwater outfalls described above. The existing permits will require modifications due to changes in design of the platform, and the Applicant will continue to work with NYSDEC to modify these existing permits as necessary. In addition, approval from the USACE in conjunction with the Joint Permit bulkhead construction previously approved by NYSDEC is pending. As the Proposed Modified Development would not increase the amount of in-water project elements from what was planned as part of the 2010 Project, no new significant adverse impacts to water quality or aquatic biota that were not disclosed in the 2010 FEIS and subsequent Technical Memoranda are anticipated.

In addition, the Applicant's commitment to the same measures to protect the environment which were associated with the 2010 Project, as analyzed in the 2010 FEIS, would ensure that construction of the Proposed Modified Development would not result in significant adverse impacts to natural resources. Specifically, the Applicant would commit to the following:

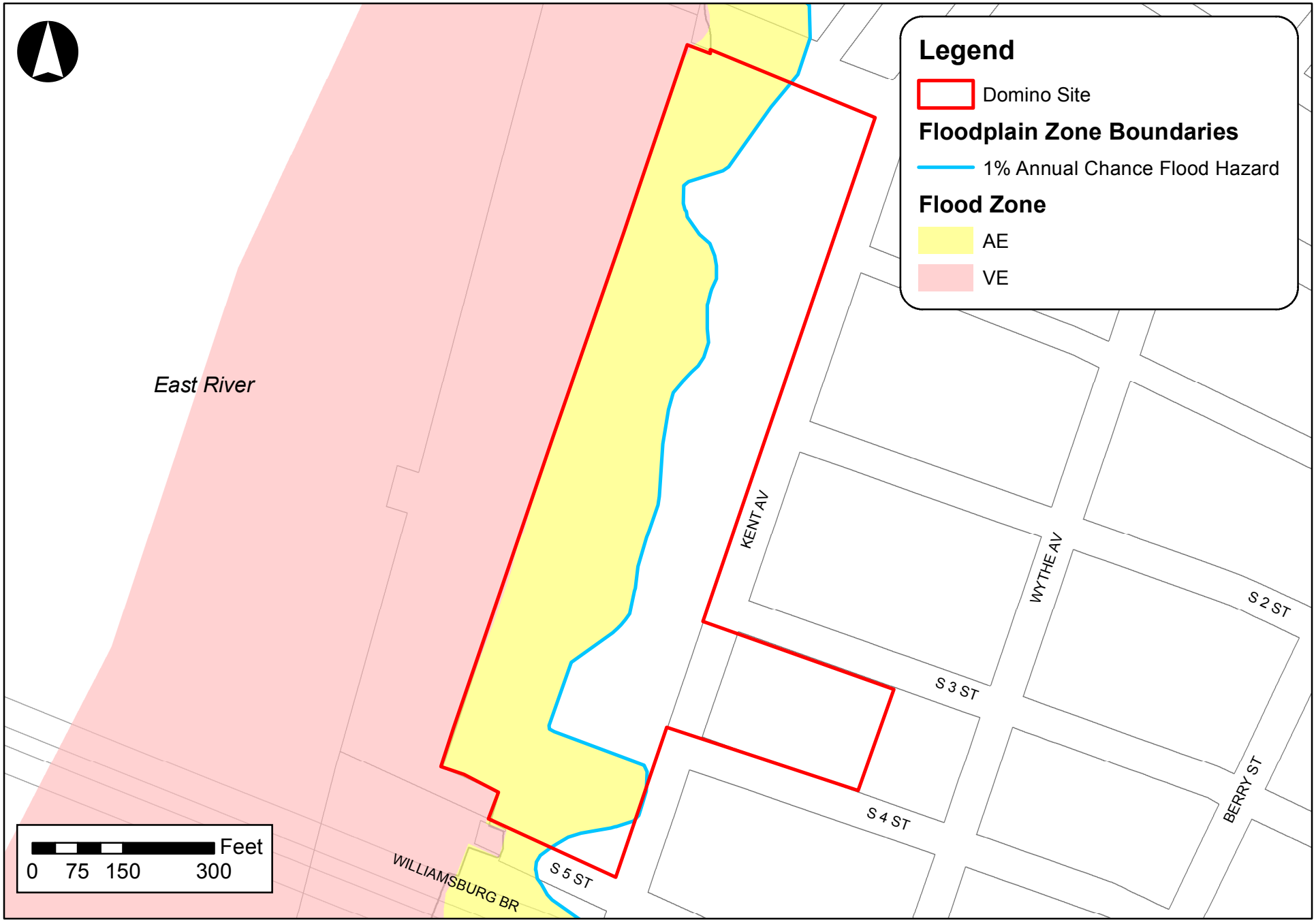
- Hazardous materials (e.g., asbestos-containing materials) would be addressed prior to and during the demolition of existing structures in accordance with DEP, NYSDEC, Occupational Safety and Health Administration, and US Environmental Protection Agency (EPA) requirements, and the updated Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP);
- Sampling would be performed before any dewatering activities to ensure that any discharged groundwater meets the DEP limitation for effluent to municipal sewers;

- Restoration of at least an equal area of shaded aquatic habitat within the project site, including littoral zone wetlands, to compensate for the loss of shaded littoral zone tidal wetlands due to the installation of new sheet piling;
- Replacement of existing bottom material from within the footprint of the two riprap apron pads with a similar volume of stone riprap to generally match the existing bottom profile, in conjunction with construction of the new stormwater outfalls;
- Authorization from NYSDEC and USACE for in-water activities related to bulkhead and outfall construction;
- Preparation of a Stormwater Pollution Prevention Plan (SWPPP), including structural and non-structural Best Management Practices (BMPs), as well as a Notice of Intent (NOI) submitted to NYSDEC;
- Placing floating debris screens throughout demolition and construction activities to capture floating debris;
- Appropriate measures such as the use of a floating boom and silt curtain to capture floating debris and contain sediment resuspended during bottom disturbing construction activities to minimize increases in suspended sediment;
- The use of precast/prestressed concrete type piles (which produce lower sound pressure levels) for the new overwater platform;
- Limiting pile driving or other in-water construction activities to the window typically imposed by regulatory agencies to protect certain fish species; and
- Replacing the existing overwater platform with a new overwater platform of the same size so that there would be no increase in the area affected by shading.

In the aftermath of Hurricane Sandy, the Federal Emergency Management Agency (FEMA) created Preliminary Work Maps to show a more current picture of flood risk for certain New York and New Jersey communities affected by the hurricane. In most cases, the Preliminary Work Maps reflect a higher flood elevation than the regulatory Flood Insurance Rate Maps (FIRMs), which were developed more than 25 years ago. Since the Preliminary Work Maps for New York were released on June 10, 2013, the City has made immediate accommodations to zoning regulations and upgrades to the New York City Building Code so that new construction can be built to these higher standards. As outlined by the New York City Department of Buildings (DOB), any building classified as substantially damaged or as a substantial improvement must be elevated to fully comply with the flood zone regulations for new buildings in Appendix G of the 2008 New York City Building Code. For residential buildings, this includes elevating the habitable spaces and filling in the basement or cellar.

Two small portions of the project site along its northwest and southwest boundary fall within a Preliminary Work Map Advisory Zone A. As defined by FEMA, Advisory Zone A is comprised of the area subject to storm surge flooding from the 1% annual chance coastal flood. These areas are not subject to high velocity wave action but are still considered high risk flooding areas. As shown in Figure 27, the advisory base (1% annual change/100-year) flood elevation is 12 feet NAVD88 (13.1 NGVD or 10.55 Brooklyn Borough Highway Datum). The advisory 0.2% annual chance (500-year) flood elevation is 16 feet NAVD88 (17.1 NGVD or 14.55 Brooklyn Borough Highway Datum).

The entirety of the area within Advisory Zone A would be comprised of permeable open space and roads (see Figure 28). Similar to the conclusions of the 2010 FEIS, the possible placement of clean fill within some of the open space areas would not exacerbate flooding conditions near the project site. In addition,



Domino Sugar Technical Memorandum **Figure 27**

FEMA Preliminary Work Map

FLOOD PROTECTION MEASURES

- Buildings pulled away from the water
- Permeable surfaces (road + park)
- Critical systems above flood plain
- Sloping streets follow the natural grade of site to the water



FEMA 100 Year flood plain - 2013 Proposal



FEMA 100 Year flood plain - 2010 Approved Plan

100 year flood elevation (10.55')

Source: SHoP Architects

Domino Sugar Technical Memorandum

Figure 28

Comparison of the Proposed Modified Development and the 2010 Project - 100-year Flood Elevation

as shown in Figure 28, compared to the 2010 Project the Proposed Modified Development would pull the proposed buildings further back from the waterfront and increase the total amount of permeable surface area, through the proposed additional open space and the incorporation of permeable materials and pavers throughout the project site. In addition the proposed project site roads would be sloped to follow the natural grade of the site to the water, and would therefore not adversely affect the floodplain.

The proposed buildings would also have a smaller building footprint and include less subsurface development compared to the buildings of the 2010 Project; the only below-grade parking with the Proposed Modified Development would be located in Building B. All critical systems would be located above the 100-year floodplain, and the proposed buildings would meet the standards of the New York City Building Code and the Best Available Flood Hazard Data available from FEMA at the time of construction. Therefore the design of the structures would minimize the potential for flood damage, and there would be no significant adverse impacts associated with the project site's location in the 100-year floodplain.

I. Hazardous Materials

Based on environmental studies conducted at the project site, the 2010 FEIS concluded that there would be no significant adverse hazardous materials impacts associated with the original project. While site investigations did show the presence of semi-volatile organic compounds and metals subsurface, it was determined that the presence of these compounds did not pose a significant adverse impact to human health or the environment. Additionally, as part of the 2010 Project, a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) were developed and approved by DEP to avoid any significant adverse impacts to construction workers, the surrounding community, and future site occupants. As stipulated in the 2010 Project's Restrictive Declaration, prior to developing the site, development activities, including any remediation, would be conducted in accordance with the DEP-approved RAP and CHASP under the oversight of DEP and/or the New York City Mayor's Office of Environmental Remediation (NYCOER).

According to the 2012 *CEQR Technical Manual*, the potential for significant impacts related to hazardous materials can occur when: (1) elevated levels of hazardous material exist on a site and the project would increase pathways to human or environmental exposure; (2) a project would introduce new activities or processes using hazardous materials and the risk of human or environmental exposure is increased; or (3) the project would introduce a population to potential human or environmental exposure from off-site sources. The Proposed Modified Development would introduce a new population to a former manufacturing zone in close proximity to existing manufacturing facilities.

As mentioned above, as part of the 2010 Project, a RAP and CHASP were developed and approved by DEP. Given the proposed changes in building footprints, layout of uses and open space, proposed street network, and the elapsed time since the 2010 Project's RAP and CHASP were prepared, these documents have been updated and revised to reflect the Proposed Modified Development. The updated RAP and CHASP are currently undergoing review and approval by DEP. All development activities associated with the Proposed Modified Development would be in accordance with the anticipated DEP-approved RAP and CHASP. In addition, all development activities associated with the Proposed Modified Development, including the removal of any storage tanks, the management of excavated soil, and vapor control, would be conducted in accordance with these documents, to avoid any potential impacts to the construction workers, the surrounding community, and future site occupants. Therefore, with implementation of these measures, the Proposed Modified Development is not expected to result in any new significant adverse hazardous materials impacts that were not previously disclosed in the 2010 FEIS and subsequent Technical Memoranda.

J. Water and Sewer Infrastructure

The 2010 FEIS found that, while the analyzed project would create new demand for water and treatment of sewage, the existing municipal services could handle these increases in demand, and no significant adverse infrastructure impacts were expected. The project analyzed in the 2010 FEIS included the construction of two new stormwater outfalls on South 2nd and South 3rd Streets.

Modeling studies were performed as part of the FEIS to estimate the potential impact of the 2010 Project on the number and annual volume of combined sewer overflow (CSO) discharges from the Newtown Creek WPCP collection system. The modeling indicated that the 2010 Project's new sanitary wastewater generation was anticipated to slightly increase CSO discharges to the East River and tributaries of Newtown Creek but would result in reduced stormwater discharges. The EIS indicated that with the new storm sewers planned as part of the 2010 Project in place, a portion of the site's stormwater currently reaching the combined sewers would discharge directly to the river after receiving treatment. The results of the modeling analyses indicated that the 2010 Project would result in one additional CSO discharge event at two individual outfalls.

Water quality modeling was also conducted to assess the 2010 Project's potential impacts on water quality of the East River and Newtown Creek from additional sewage flow to the Newtown Creek WPCP and from CSOs within the Brooklyn sewershed for the Newtown Creek WPCP. The water quality modeling results indicated that the increase in CSO volumes projected for the 2010 Project would not result in a significant adverse impact on the water quality of the East River or Newtown Creek. Therefore, the FEIS concluded that CSO discharges associated with the 2010 Project would not result in a significant adverse impact on the city's sanitary sewage systems or on water quality for the receiving waters.

As discussed below, the Proposed Modified Development would not alter the conclusions of the 2010 FEIS and subsequent Technical Memoranda with respect to water and sewer infrastructure. As shown in Table 17, below, using the updated rates specified in Table 13-2 of the 2012 *CEQR Technical Manual*, the anticipated demands for water and sewage treatment associated with the Domino Sugar site would be reduced compared to what was disclosed in the 2010 FEIS. Compared to the program analyzed in the 2010 FEIS, the Proposed Modified Development would result in a net decrease in total water demand of approximately 439,631 gallons per day, and a net decrease in wastewater generation of approximately 98,866 gpd.

Water Supply

Given the size of New York City's water supply system and the City's commitment to maintaining adequate water supply and pressures, few actions have the potential to cause significant impacts on this system. Therefore only very large developments or actions having exceptionally large water demands (e.g., more than 1 million gallons per day) would warrant a detailed water supply assessment. The estimated total water consumption resulting from the Proposed Modified Development on the project site is well below the general threshold of 1 million gallons per day typically used to determine the need for a detailed analysis, and therefore no further analysis is warranted.

Wastewater and Stormwater Conveyance and Treatment

For wastewater and stormwater conveyance and treatment, the 2012 *CEQR Technical Manual* indicates that a preliminary assessment would be needed if a project is located in a combined sewer area and would exceed the following incremental development of residential units or commercial space above the predicted No-Action scenario: (a) 1,000 residential units or 250,000 sf of commercial space or more in

Manhattan; or, (b) 400 residential units or 150,000 sf of commercial space or more in the Bronx, Brooklyn, Staten Island or Queens. Although the Proposed Modified Development would result in a net reduction of approximately 118 residential units compared to the project analyzed in the 2010 FEIS, it would exceed the CEQR threshold of 150,000 sf of nonresidential square footage, and therefore warrants a preliminary assessment.

TABLE 17
Expected Water Demand and Wastewater Generation on Domino Sugar Site – 2010 FEIS vs. Proposed Modified Development

Proposed Development Site	Use	Size (gsf)	Domestic Only (Water Usage/ Wastewater Generation) (gpd)	Air Conditioning Only (gpd)	Total Water Demand (gpd)
2010 FEIS (as presented in Table 14-2 of FEIS document)	Residential	2,400 DU (2,442,305 gsf)	749,952	415,192	1,165,144
	Office	98,738	9,875	9,874	19,749
	Retail	127,537	21,681	21,681	43,362
	Community Facility	146,451	24,897	24,897	49,794
		Total	***806,405***	***471,644***	***1,278,049***
Proposed Modified Development	Residential	2,282 DU (2,281,6664 gsf)	611,576	N.A.	611,576
	Office	504,308	50,431	85,732	136,163
	Retail	72,407	17,378	12,309	29,687
	Health Club/Not-for-profit Sports & Fitness Center	86,789	20,829	14,754	35,583
	Community Facility - School	375 Seats (70,624 gsf)	3,750	12,006	15,756
	Community Facility – Not-for-profit/Artist Studio Space	35,753	3,575	6,078	9,653
		Total	***707,539***	***130,879***	***838,418***
Net Difference: 2010 FEIS vs. Proposed Modified Development			**-98,866**	**-340,765**	**-439,631**

Notes: Based on average daily water use rates provided in Table 13-2 of the 2012 *CEQR Technical Manual*.

Residential use – 100 gallons per day (gpd) per resident. The 2010 FEIS residential water consumption assumed 112 gpd/person for domestic and 0.17 gpd/sf for air conditioning. For the Proposed Modified Development, the updated 2012 *CEQR Technical Manual* rates are assumed (100 gpd/person for domestic, with no water usage assumed for air conditioning). Assume 2.68 residents per unit for Proposed Modified Development, based on 2010 Census data.

Office use – Domestic: 0.10 gpd per square foot; 0.17 gpd per sf for air conditioning. The 2010 FEIS water consumption for office use assumed 25 gpd/person for domestic and 0.10 gpd/sf for air conditioning; updated 2012 *CEQR Technical Manual* rates are used for the Proposed Modified Development.

Retail use – Domestic: 0.24 gpd per square foot; 0.17 gpd per sf for air conditioning. The 2010 FEIS residential water consumption assumed 0.10/sf; for the Proposed Modified Development, the updated 2012 *CEQR Technical Manual* rate of 0.24/sf is used.

Health Club/Not-for-profit Sports & Fitness Center – Assumes the retail water demand and water generation rates.

Community facility use (school) – Domestic: 10 gpd per seat; 0.17 gpd per sf for air conditioning.

Community facility use (Not-for-profit/Artist Studio Space) – Domestic: 0.10 gpd per square foot; 0.17 gpd per sf for air conditioning (assumes office rates).

According to the *CEQR Technical Manual*, wastewater is considered to include sanitary sewage, wastewater generated by industries, and stormwater. Water used for air conditioning generates a negligible amount of wastewater for it is recirculated or evaporates in the cooling and heating process.

The majority of New York City's wastewater treatment system is comprised of the sewer network beneath the streets and the 14 wastewater treatment plants (WWTPs) located throughout the city. All 14 WWTPs in New York City have a State Pollution Discharge Elimination System (SPDES) permitted total capacity of 1.8 billion gallons per day. Sewers beneath the City's streets collect sewage from buildings as well as stormwater from buildings and catch basins in streets. Collection sewers can be ten inches to two feet in diameter on side streets, and larger in diameter under other roadways. They connect to trunk sewers, generally five to seven feet in diameter, which bring the sewage to interceptor sewers. These large interceptor sewers (often 11 or 12 feet in diameter) bring the wastewater collected from the various smaller mains to the WWTPs for treatment.

The project site is served by the Newtown Creek WWTP, which is regulated by SPDES permit to treat and discharge up to 310 mgd of wastewater, making it the largest wastewater treatment facility in the City. As shown in Table 17, above, the expected sanitary sewage resulting from the Proposed Modified Development would result in a net decrease of approximately 98,866 gpd compared to the 2010 Project. As such, it would not result in any new or additional impacts that were not identified in the 2010 FEIS and subsequent Technical Memoranda, and the findings and conclusions of that document remain unchanged.

In addition, the Proposed Modified Development would include a net additional 1.98 acres of open space, decreasing the percentage of rooftop surface area compared to both existing conditions and the 2010 Project. This additional 1.98 acres of open space areas is expected to decrease the amount of stormwater runoff generated on the project site, and the roadways would be designed to retain stormwater through the use of permeable materials and pavers. As such, the stormwater impacts are expected to be less than the amount disclosed in the 2010 FEIS, and the Proposed Modified Development would not result in any new or additional significant adverse impacts to stormwater conveyance and treatment that were not disclosed in the 2010 FEIS and subsequent Technical Memoranda.

K. Solid Waste and Sanitation Services

The 2010 FEIS found that the analyzed project would generate 59 tons of solid waste per week (compared to the No-Action condition), 49 tons of which would be handled by the New York City Department of Sanitation (DSNY). The analysis concluded that the solid waste systems serving the project site had adequate capacity to meet this increase in demand.

With 118 fewer residential units, the Proposed Modified Development would generate a slightly lower amount of residential waste to be handled by DSNY. While the Proposed Modified Development would include a 375-seat public elementary school, which would also be served by DSNY, as shown in Table 18 below, compared to the 2010 FEIS, the total amount of solid waste to be handled by DSNY would be less, a reduction of 3,713 pounds (or 1.9 tons) per week. As the amount of solid waste handled by DSNY would be reduced as a result of the Proposed Modified Development, there would be no additional impacts on the City's solid waste and sanitation services.

TABLE 18
Expected Solid Waste Generation on Domino Sugar Site –
2010 FEIS vs. Proposed Modified Development

Proposed Development Site	Use	Size	Solid Waste Handled by DSNY (lbs/wk)	Solid Waste Handled by Private Carters (lbs/wk)	Total Solid Waste (lbs/wk)
2010 FEIS (as presented in Table 15-2 of FEIS document)	Residential	2,400 units	98,400	0	98,400
	Retail/Parking	417 employees	0	32,943	32,943
	Office	395 employees	0	5,135	5,135
	Community Facility	439 employees	0	5,707	5,707
		Total	***98,400***	***43,785***	***142,185***
Proposed Modified Development	Residential	2,282 units	93,562	0	93,562
	Retail/Health Club/Not-for-profit Sports & Fitness Center/Parking	498 employees	0	39,342	39,342
	Office	2,017 employees	0	26,221	26,221
	Community Facility - School	375 seats (public elementary)	1,125	0	1,125
	Community Facility – Not-for-profit/Artist Studio Space	107 employees	0	1,391	1,391
		Total	***94,687***	***66,954***	***161,641***
Net Difference: 2010 FEIS vs. Proposed Modified Development			**-3,713**	**23,169**	**19,456**

Notes: Based on citywide average waste generation rates presented in Table 14-1 of the 2012 *CEQR Technical Manual.*
Residential use: 41 lbs/wk per unit.
Retail use: 79 lbs/wk per employee, and 3 employees per 1,000 sf.
Health club/Not-for-profit Sports & Fitness Center: 79 lbs/wk per employee, and 3 employees per 1,000 sf.
Parking: 79 lbs/wk per employee, and 1 employee per 50 spaces.
Office use: 13 lbs/wk per employee and 1 employee per 250 sf.
Community facility use: For public elementary school, use 3 lbs/wk per pupil; for not-for-profit/artist studio space, use office rate of 13 lbs/wk per employee, and 3 employees per 1,000 sf.

However, the additional office space included in the Proposed Modified Development would generate more solid waste to be handled by private carters than what was assumed in the 2010 FEIS, which would

be somewhat offset by the reduction in the retail square footage. As shown in Table 18, based on the solid waste generation rates provided in the 2012 *CEQR Technical Manual*, the Proposed Modified Development would result in the generation of approximately 23,169 additional pounds of solid waste per week handled by private carters, or the equivalent of approximately 11.6 tons per week, compared to the project analyzed in the 2010 FEIS. As the additional amount of solid waste that would be handled by private carters would be substantially less than the CEQR threshold of 50,000 lbs/wk, the Proposed Modified Development would not result in any new significant adverse solid waste impacts, and would not alter the findings of the 2010 FEIS and subsequent Technical Memoranda.

L. Energy

The 2010 FEIS anticipated that the 2010 Project would result in a net increase in energy demand of approximately 376,000 million British Thermal Units (BTUs) (110 million kilowatt hours [kWh]) per year, compared to No-Action conditions. However, this additional demand was not expected to overburden the energy generation, transmission, and distribution system and the FEIS concluded that it would not result in a significant adverse energy impact.

According to the *CEQR Technical Manual*, all new structures requiring heating and cooling are subject to the New York State Energy Conservation Code, which reflects State and City energy policy. Therefore, actions resulting in new construction would not create adverse energy impacts, and would not require a detailed energy assessment. A detailed assessment would be limited to actions that might somehow affect the transmission or generation of energy. As the Proposed Modified Development does not fall into that category, significant adverse impacts to energy resources are not anticipated to occur and an energy assessment is not warranted.

As shown in Table 19 below, compared to the project analyzed in the 2010 FEIS, the Proposed Modified Development would result in a net increase in energy demand of approximately 126,832 million BTUs (37.2 million kWh) per year.

TABLE 19
Expected Energy Usage on Domino Sugar Site – 2010 FEIS vs. Proposed Modified Development

Proposed Development Site	Use	Size (gsf)	Usage Rate (BTUs/sf/year)[1]	Usage Rate (kWh/sf/year)[1]	Energy Usage (million BTU per year)	Equivalent kWh
2010 FEIS (as presented in Table 16-2 of FEIS document)	Residential	2,442,305	145,500	42.6	355,355	104,042,193
	Retail	127,537	55,800	16.4	7,117	2,091,607
	Office	98,738	77,900	22.8	7,692	2,251,226
	Community Facility	146,451	65,300	19.1	9,563	2,797,214
	Parking	307,000	27,400	8.0	8,412	2,456,000
				Total	***388,139***	***113,638,240***
Proposed Modified Development	Residential	2,281,666	126,700	37.1	289,087	84,649,809
	Office	504,308	216,300	63.4	109,082	31,973,127
	Retail	72,407	216,300	63.4	15,662	4,590,604
	Health Club	42,231	216,300	63.4	9,135	2,677,445
	Community Facility - School	70,624	250,700	73.5	17,705	5,190,864
	Community Facility - General	80,311	216,300	63.4	17,371	5,091,717
	Parking	263,195	216,300	63.4	56,929	16,686,563
				Total	***514,971***	***150,860,129***
Net Difference: 2010 FEIS vs. Proposed Modified Development					**126,832**	**37,221,889**

Notes:

[1] The 2010 FEIS used the energy usage rates of the 2001 *CEQR Technical Manual*, which have since been updated. For the Proposed Modified Development, the updated rates provided in Table 15-1 of the 2012 *CEQR Technical Manual* are used.

Similar to the project analyzed in the FEIS, this additional consumption would be very small compared with the existing energy demands of New York City; the increase in annual demand would represent

approximately 0.3 percent of the City's forecasted annual energy requirement of 58,086 GWh for 2020.[25] Therefore, the Proposed Modified Development is not expected to overburden the energy generation, transmission, and distribution system, and would not result in a significant adverse energy impact. Additionally, the Proposed Modified Development would be required to comply with the New York State Conservation Construction Code, which governs performance requirements of heating, ventilation, and air conditioning systems, as well as the exterior building envelope of new buildings. In compliance with this code, the buildings to be constructed on the Domino Sugar site must incorporate the required energy conservation measures, including meeting code requirements relating to energy efficiency and combined thermal transmittance. In addition, similar to the 2010 Project, the Applicant would commit to all project site buildings being LEED certified. As the Proposed Modified Development would not result in any new significant adverse energy impacts, the findings of the 2010 FEIS and subsequent Technical Memoranda would not change.

[25] NYISO 2012 Load & Capacity Data report projected Zone J energy consumption.

M. Transportation

The Proposed Modified Development would increase the square footage of office and community facility uses by approximately 405,570 gsf and 4,484 gsf, respectively, while reducing the size of residential and retail uses analyzed for the site in the 2010 FEIS. A preliminary trip generation forecast was used to determine potential changes in impacts on traffic, transit, pedestrian, and parking conditions in the area surrounding the project site as a result of the Proposed Modified Development and is presented below.

Traffic

The 2010 FEIS assessed the potential traffic impacts associated with the 2010 Project compared to traffic conditions under the No-Action scenario. As stated in the 2010 FEIS, the No-Action scenario assumed that the project site would be developed with approximately 106,300 gsf of industrial distribution space, approximately 60,000 gsf of storage space, 40,000 gsf of catering hall/restaurant space, and 61,000 gsf of land used for building materials storage (as well as 5,000 gsf of office space for this use). The 2010 FEIS determined that the net traffic generated by the 2010 Project would have had the potential for significant adverse impacts at a total of 18 signalized and 14 unsignalized intersections during one or more of the peak hour periods analyzed, including 24 intersections during the weekday AM peak hour, 11 intersections during the weekday midday peak hour, 31 intersections during the weekday PM peak hour, and six intersections during the Saturday midday peak hour at one or more lane-group or approach. Mitigation measures were proposed in the 2010 FEIS that would fully mitigate these impacts, which included signal timing modifications, lane restripings, changes to parking regulations, changes to bicycle lane classifications, new stop controls, and installation of new traffic signals (refer to Appendix 5 for traffic mitigation measures identified in 2010 FEIS).

As noted above, subsequent to completion of the FEIS, modifications to the 2010 Project were proposed, which included commitments by the applicant related to shuttle bus service. The shuttle bus would have provided service from the project site to the Broadway entrance of the Marcy Avenue J/M/Z subway station during the peak morning and evening commuting periods, providing a more direct connection for the project-generated transit users between the project site and the Marcy Avenue station. The July 10, 2010 Technical Memorandum assessment anticipated that up to seven shuttle buses (consisting of a mix of 25-passenger and 44-passenger capacity buses) would be used,[27] yielding a total of 28 vehicle trips (14 inbound and 14 outbound) during the weekday AM and PM peak hours, respectively.

The July 10, 2010 Technical Memorandum concluded that the shuttle bus trips in the future 2020 conditions would not alter the conclusions regarding the traffic operating conditions presented in the FEIS, and the same significant adverse traffic impacts would occur with the shuttle bus operations. However, with the shuttle bus operation during the PM peak hour, a few changes to the 2010 FEIS mitigation measures were identified for the intersections of Broadway and Havemeyer Street, Bedford Avenue and South 6th Street, and Kent Avenue and South 6th Street.

Level 1 (Project Trip Generation) Screening Assessment

It should be noted that some of the trip generation factors used in 2010 FEIS analysis were based on 2000 Census data and the 2001 *CEQR Technical Manual*, both of which have since been updated. For example, the more up to date 2010 ACS Five Year Estimates modal split data for the same census tracts referenced in the 2010 FEIS shows that a smaller percentage of the area's residential population travel to work by car

[27] The July 10, 2010 Technical Memorandum noted that the capacity of the shuttle bus fleet could vary depending on demand upon full build-out.

and by taxi than assumed in the 2010 FEIS (12.8 percent and 0.9 percent, respectively, compared to 16.2 percent and 1.8 percent in the FEIS). These updated modal splits were applied to the Proposed Modified Development's residential population. In addition, given the Proposed Modified Development's mix of uses, a significant proportion of trips would be "linked trips" between the buildings' residential, retail, school, and other community facility uses. It is further assumed that approximately 85 percent of all anticipated subway trips would include a shuttle component. The proposed shuttle is discussed in greater detail in the Transit subsection of this analysis.

For the worker population, the FEIS analysis assumed a 49.2 percent auto mode share based on 2000 Census reverse Journey to Work data. However, the 2000 reverse Journey to Work Census data, the most recent data available, do not account for the residential development that has occurred in the surrounding area since 2000. Additionally, there were few, if any, office uses in this area, especially between 1999 and 2000, when the Census was conducted. Therefore, as 2010 reverse Journey to Work data (which would provide updated modal split assumptions for the project site's worker population) has yet to be made available by the Department of City Planning, mode choice field surveys of office workers in similar areas were conducted in order to provide a more accurate analysis of any potential traffic impacts generated by the Proposed Modified Development. As previously stated, offices in the Proposed Modified Development are anticipated to range from an average of approximately 1,500 to 2,500 gsf, and would be marketed primarily to small startup companies, serving as an incubator for new creative and technology companies; the proposed 35,753 gsf of not-for-profit/artist studio spaces would similarly be comprised of spaces averaging approximately 2,000 gsf.

Based on the survey results, the exponential relationship between the survey results for auto share and the respective survey sites' weighted average distances to the subway was determined. An updated modal choice was established and applied to the combined office and not-for-profit/artist studio component of the Proposed Modified Development (refer to Transportation Planning Factors Memorandum in Appendix 6 for details). As indicated in Table 20, this resulted in a forecasted modal split of 17.7 percent auto, 1.2 percent taxi, 49.1 percent subway, 5.0 percent bus, 20.0 percent walk, 5.0 percent bike, and 2.0 percent ferry for the office and not-for-profit/artist studio space components of the Proposed Modified Development. The 20.0 percent walk share addresses the anticipated number of office and not-for-profit/artist studio workers who would live on the project site and in the surrounding area, as no specific linked trips are applied to the office and not-for-profit/artist studio space trip generation. These updated modal splits are therefore applied to the Proposed Modified Development's office and not-for-profit/artist studio employee component.

As shown in Table 20, the office and not-for-profit/artist studio visitor component, assumed to represent approximately 5 percent of all office and not-for-profit/artist studio space trips based on the survey responses, was similarly based on visitors surveyed in DUMBO in fall 2012. Based on the responses from visitors to the survey sites, higher private auto and taxi mode shares (25.2 and 16.4 percent, respectively) were applied to office and not-for-profit/artist studio visitor trips, as well as a higher bus share (8.4 percent). Compared to the employee mode shares, lower subway and walk/other mode shares (27.2 percent and 22.8 percent, respectively) were applied to office and not-for-profit/artist studio visitor trips, consistent with the survey results (refer to Appendix 6).

TABLE 20
Proposed Modified Development—Transportation Planning Assumptions

Land Use:	**Local Retail**	**Residential**	**Office**			**Non-profit Art Studio**			**Not-for-Profit Sports & Fitness Center**	**Health club**	**Open Space**	**PS school**	**Staff**
Size/Units:	72,408 sf	2,282 DU	504,308 sf			35,753 sf			44,558 sf	42,231 sf	4.8 acres	375 seats	29 staff
Trip Generation:	(1)	(1)	(1)(4)			(1)(4)			(1)	(1)	(1)	(6)	(6)
Weekday	205	8.075	17.1	0.9		17.1	0.9		44.7	44.7	139	2	2
Saturday MD	240	9.6	3.7	0.2		3.7	0.2		26.1	26.1	196	0	0
	per 1,000 sf	per DU	per 1,000 sf			per 1,000 sf			per 1,000 sf	per 1,000 sf	per acre	per student	per staff
Temporal Distribution:	(1)	(1)	(1)			(1)			(1)	(1)	(1)	(6)	(6)
AM	3.0%	10.0%	12.0%	12.0%		12.0%	12.0%		4.0%	4.0%	3.0%	50%	50%
MD	19.0%	5.0%	15.0%	15.0%		15.0%	15.0%		9.0%	9.0%	5.0%	0%	0%
PM	10.0%	11.0%	14.0%	14.0%		14.0%	14.0%		5.0%	5.0%	6.0%	5%	50%
Sat MD	10.0%	8.0%	17.0%	17.0%		17.0%	17.0%		9.0%	9.0%	6.0%	0%	0%
	(2)	(2,3)	(2, 4)			(2, 4)			(5)	(5)	(2)	(6)	(6)
			Employee		Visitors	Employee		Visitors					
Modal Splits:	All Periods	AM/MD/PM	SAT MD	AM/PM	Midday/ SATMD	All periods	AM/PM	Midday/ SATMD	All periods	All Periods	All Periods	All Periods	AM//PM	AM/MD/PM
Auto	5.0%	12.8%	19.0%	17.7%	2%	25.2%	17.7%	2%	25.2%	10.0%	10.0%	5.0%	0.0%	35.0%
Taxi /dropoff	5.0%	0.9%	1.0%	1.2%	1%	16.4%	1.2%	1%	16.4%	1.0%	1.0%	5.0%	10.0%	0.0%
Subway	0.8%	8.9%	5.7%	7.4%	1%	4.1%	7.4%	1%	4.1%	6.0%	6.0%	5.0%	0.0%	7.5%
Shuttle-Subway	4.2%	50.2%	32.3%	41.7%	6%	23.1%	41.7%	6%	23.1%	34.0%	34.0%	0.0%	0.0%	42.5%
Bus	5.0%	6.4%	7.0%	5.0%	7%	8.4%	5.0%	7%	8.4%	5.0%	5.0%	5.0%	1.0%	1.0%
School bus	0.0%	0.0%	0.0%	0.0%	0%	0.0%	0.0%	0%	0.0%	0.0%	0.0%	0.0%	13.0%	0.0%
Walk/Other	80.0%	20.8%	35.0%	27.0%	83%	22.8%	27.0%	83%	22.8%	44.0%	44.0%	80.0%	76.0%	14.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	(2)	(2)		(2)			(2)			(5)	(5)	(2)	(6)	(6)
In/Out Splits:	In Out	In Out		In	Out		In	Out		In Out	In Out	In Out	In Out	In Out	In Out
AM	50% 50%	15.0%	85.0%	94%	6%		94%	6%		41% 59%	41% 59%	50% 50%	100% 0%	100% 0%
MD	47% 53%	50.0%	50.0%	39%	61%		39%	61%		54% 46%	54% 46%	50% 50%	0% 0%	0% 100%
PM	44% 56%	70.0%	30.0%	5%	95%		5%	95%		75% 25%	75% 25%	50% 50%	0% 100%	50% 50%
SAT MD	55% 45%	50.0%	50.0%	60%	40%		60%	40%		54% 46%	54% 46%	50% 50%	0% 0%	0% 0%
Vehicle Occupancy:	(2)	(2)		(4)			(4)			(5)	(5)	(2)	(6)	(6)
	weekday Saturday													
Auto	2.20 2.10	1.28		1.26	1.6		1.26	1.6		2.00	2.00	2.0	1.1	1.1
Taxi	2.20 2.10	1.5		1.26	1.6		1.26	1.6		2.00	2.00	2.0	1.1	1.1
Truck Trip Generation	(1)	(1)		(1)			(1)			(1,5)	(1,5)	(2)	(6)	
	0.35	0.06		0.32			0.32			0.19	0.19	0.00	14.00	
	0.04	0.02		0.01			0.01			0.04	0.04			
	per 1,000 sf	per DU		per 1,000 sf			per 1,000 sf			per 1,000 sf	per 1,000 sf		students/bus	
	(1)	(1)		(1)			(1)			(1)	(1)	(1)	(1)	(1)
AM	8.0%	12.0%		10.0%			10.0%			8.0%	8.0%	0.0%	0.0%	0.0%
MD	11.0%	9.0%		11.0%			11.0%			11.0%	11.0%	0.0%	0.0%	0.0%
PM	2.0%	2.0%		2.0%			2.0%			2.0%	2.0%	0.0%	0.0%	0.0%
SAT MD	11.0%	9.0%		11.0%			11.0%			11.0%	11.0%	0.0%	0.0%	0.0%
	In Out	In Out		In	Out		In	Out		In Out	In Out	In Out	In Out	In Out	In Out
AM/MD/PM	50.0% 50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0% 50.0%	50.0% 50.0%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%

Notes :

(1) *2012 CEQR technical Manual* .

(2) *Domino Sugar Rezoning FEIS* (2010)

(3) American Community Survey (ACS) 2010 Journey-to-work data. Saturday midday modal split data based on the 2010 FEIS's weekday to Saturday modal ratio.

(4) PHA Dumbo & Williamburg employee surveys, Nov. & Dec. 2012. Based on PHA survey the 27% walk mode consists of 20% walk, 5% bicycle and 2% ferry.

(5) *Atlantic Avenue and Court Street EAS,* May 2002.

(6) *PS 229 Addition, Brooklyn EAS* (2007)

TABLE 21
Proposed Modified Development—Trip Forecast Summary

Land Use:		Local Retail		Residential		Office				Non-profit Art Studio				Not-for-profit Sports & Fitness Center		Health club		Open Space		PS school		Staff		TOTAL ALL USES	
Size/Units:		72,408	sf	2,282	DU	504,308	sf			35,753	sf			44,558	sf	42,231	sf	4.8	acres	375	seats	29	staff		
Peak Hour Trips:						Employee		Visitors		Employee		Visitors													
	AM	334		1,843		1,037		56		73		4		80		76		20		281		29		3,833	
	MD	2,115		921		1,294		69		92		5		179		170		34		0		0		4,879	
	PM	1,113		2,027		1,208		65		86		5		100		94		40		28		29		4,795	
	SAT MD	1,303		1,753		317		19		23		1		105		99		57		0		0		3,677	
Person Trips:																									
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto	8	8	35	201	172	11	13	1	12	1	1	0	3	5	3	4	1	1	0	0	10	0	258	232
	Taxi	8	8	2	14	12	1	9	1	1	0	1	0	0	0	0	0	1	1	28	0	0	0	62	25
	Subway	1	1	25	139	72	5	2	0	5	0	0	0	2	3	2	3	1	1	0	0	2	0	112	152
	Shuttle-Subway	8	7	139	787	404	26	12	1	29	2	1	0	12	16	11	15	0	0	0	0	12	0	628	854
	Bus	8	8	18	100	49	3	4	0	3	0	0	0	2	2	2	2	1	1	3	0	1	0	91	116
	School bus															0	0	0	0	37	0	0	0	37	0
	Walk/Other	134	135	58	325	263	15	12	1	19	1	1	0	14	21	14	20	6	6	213	0	4	0	738	524
	Total	167	167	277	1,566	972	61	52	4	69	4	4	0	33	47	32	44	10	10	281	0	29	0	1,926	1,903
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto	50	56	59	59	10	16	8	11	1	1	0	1	10	8	9	8	1	1	0	0	0	0	148	161
	Taxi	50	56	4	4	5	8	4	7	0	1	0	1	1	1	1	1	1	1	0	0	0	0	66	80
	Subway	7	10	41	41	5	8	1	2	1	1	0	0	5	5	6	5	1	1	0	0	0	0	67	73
	Shuttle-Subway	42	46	231	232	31	47	5	10	2	2	0	1	32	28	31	27					0	0	374	393
	Bus	50	56	29	29	36	56	3	4	2	4	0	0	5	4	5	4	1	1	0	0	0	0	131	158
	School bus																			0	0	0	0	0	0
	Walk/Other	795	897	96	96	421	653	6	8	31	46	0	2	43	37	38	34	13	13	0	0	0	0	1,443	1,786
	Total	994	1121	460	461	508	788	27	42	37	55	0	5	96	83	90	79	17	17	0	0	0	0	2,229	2,651
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto	24	31	182	78	11	203	1	15	1	14	0	1	8	3	7	2	1	1	0	0	5	5	240	353
	Taxi	24	31	13	5	1	14	1	10	0	1	0	1	1	0	1	0	1	1	0	3	0	0	42	66
	Subway	4	5	126	54	4	85	0	3	0	6	0	0	5	2	4	1	1	1	0	0	1	1	145	158
	Shuttle-Subway	21	26	713	305	25	478	1	14	2	33	0	1	25	9	24	8	0	0	0	0	6	6	817	880
	Bus	24	31	91	39	3	57	0	5	0	4	0	1	4	1	4	1	1	1	0	0	0	0	127	140
	Schoolbus																			0	4	0	0	0	4
	Walk/Other	392	499	295	126	16	307	1	14	0	23	0	2	32	10	31	10	16	16	0	21	2	3	785	1,031
	Total	489	623	1420	607	60	1144	4	61	3	81	0	6	75	25	71	22	20	20	0	28	14	15	2,156	2,632
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
SAT MD	Auto	36	29	167	167	34	23	3	1	2	3	0	0	6	5	5	5	1	1	0	0	0	0	254	234
	Taxi	36	29	9	9	2	2	2	1	0	0	0	0	1	0	1	0	1	1	0	0	0	0	52	42
	Subway	5	4	50	50	14	9	0	0	1	1	0	0	3	3	3	3	1	1	0	0	0	0	77	71
	Shuttle-Subway	30	25	283	283	79	53	3	2	6	4	0	0	19	16	18	15	0	0	0	0	0	0	438	398
	Bus	35	30	61	61	10	6	1	1	1	0	0	0	3	2	3	2	1	1	0	0	0	0	115	103
	Schoolbus																			0	0	0	0	0	0
	Walk/Other	574	470	306	307	50	35	3	2	3	2	1	1	26	21	25	20	24	25	0	0	0	0	1,012	883
	Total	716	587	876	877	189	128	12	7	13	10	1	1	58	47	55	45	28	29	0	0	0	0	1,948	1,731
Vehicle Trips :																									
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto (Total)	4	4	27	157	137	9	8	1	10	1	1	0	2	3	2	2	1	1	0	0	9	0	201	178
	Taxi	4	4	1	9	10	1	6	1	0	0	0	0	0	0	0	0	1	1	25	0	0	0	47	16
	Taxi/dropoff (Balanced)																							63	63
	Schoolbus/Shuttle																			3	3	0	0	27	27
	Truck	1	1	8	8	8	8	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	18	18
	Total	9	9	36	174	155	18	14	2	11	2	1	0	2	3	2	2	2	2	25	0	9	0	309	286
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto (Total)	23	25	46	46	8	12	4	7	1	1	0	0	5	4	5	4	1	1	0	0	0	0	93	100
	Taxi	23	25	3	3	4	6	3	4	0	0	0	0	1	1	1	1	1	1	0	0	0	0	36	41
	Taxi/dropoff (Balanced)																							77	77
	Schoolbus																			0	0	0	0	11	11
	Truck	1	1	6	6	9	9	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	17	17
	Total	47	51	55	55	21	27	7	11	2	2	0	0	6	5	6	5	2	2	0	0	0	0	198	205
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto (Total)	11	14	142	61	8	162	1	9	1	11	0	1	4	2	4	1	1	1	0	0	5	5	177	267
	Taxi	11	14	9	3	1	11	1	6	0	1	0	1	1	0	1	0	1	1	0	3	0	0	25	40
	Taxi/dropoff (Balanced)																							65	65
	Schoolbus/Shuttle																			0	0	0	0	24	24
	Truck	0	0	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	Total	22	28	152	65	11	175	2	15	1	12	0	2	5	2	5	1	2	2	0	3	5	5	269	359
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
SAT MD	Auto (Total)	17	14	130	130	27	17	2	1	2	2	0	0	3	3	3	3	1	1	0	0	0	0	185	171
	Taxi	17	14	6	6	2	2	1	1	0	0	0	0	1	0	1	0	1	1	0	0	0	0	29	24
	Taxi/dropoff (Balanced)																							53	53
	Schoolbus/Shuttle																			0	0	0	0	14	14
	Truck	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	Total	34	28	138	138	29	19	3	2	2	2	0	0	4	3	4	3	2	2	0	0	0	0	254	240

Notes: 25% linked trips is applied to school trips as residential linkage; 25% linked trips is applied to local retail.

TABLE 22
Change in Peak Hour Volumes Due to the Proposed Modifications – 2010 FEIS vs. Proposed Modified Development

	Proposed Modified Development			2010 FEIS			Proposed Modified Development v. 2010 FEIS
VEHICLE TRIPS							
Total Vehicles	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	309	286	595	384	328	712	- 117
MD	198	205	403	263	267	530	- 127
PM	269	359	628	421	513	934	- 306
SAT MD	254	240	494	362	344	706	- 212
SUBWAY TRIPS[1]							
Subway	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	740	1,006	1,746	308	815	1,123	623
MD	441	466	907	321	332	653	254
PM	962	1,038	2,000	821	531	1,352	648
SAT MD	515	469	984	281	265	546	438
BUS TRIPS							
Bus	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	91	116	207	99	171	270	- 63
MD	131	158	289	126	135	261	28
PM	127	140	267	194	158	352	- 85
SAT MD	115	103	218	137	128	265	- 47
WALK ONLY/OTHER TRIPS							
Walk	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	738	524	1,262	374	516	890	372
MD	1,443	1,786	3,229	922	1,072	1,994	1,235
PM	785	1,031	1,816	849	877	1,726	90
SAT MD	1,012	883	1,895	969	840	1,809	86

Notes:
[1] Includes both Subway and Shuttle-Subway Trips (refer to Table 21).

Table 20 shows the transportation planning assumptions used to forecast how many vehicle trips per hour the Proposed Modified Development is expected to generate in the surrounding area. Table 21 shows the total net travel demand for the Proposed Modified Development, and Table 22 compares the Proposed Modified Development's peak hour volumes to those of the 2010 Project, as disclosed in the 2010 FEIS. The projected No-Build project site travel demand assessed in the 2010 FEIS is not accounted for in Table 22.

As shown in Table 22, the Proposed Modified Development would generate a total of approximately 595, 403, 628, and 494 vehicles per hour (vph) during the weekday AM, midday and PM and Saturday midday peak hours, respectively, compared to 712, 530, 934, and 706 vph for the project analyzed in the 2010 FEIS. Therefore, as shown in Table 22, the incremental change resulting from the Proposed Modified Development compared to the 2010 Project would be -117, -127, -306, and -212 vph during the weekday AM, midday and PM and Saturday midday peak hours, respectively, compared to the 2010 FEIS. It should also be noted that the proposed reduction in off-street accessory parking spaces on the project site (1,050 spaces for the Proposed Modified Development compared to 1,648 spaces assumed in the 2010 FEIS) is expected to result in a further decrease in project-related traffic at intersections in the immediate vicinity of the site.

The Proposed Modified Development would generate less vehicle trips than projected in the 2010 FEIS and subsequent Technical Memoranda in all peak hours, and is therefore not expected to result in any new or substantially different significant adverse traffic impacts not already disclosed in the 2010 FEIS, pursuant to CEQR. However, the Proposed Modified Development would result in a different site plan than the 2010 Project and would relocate the parking spaces compared to where they were originally analyzed in the 2010 FEIS. As such, a Level 2 (Project Trip Assignment) Screening Assessment was conducted for all peak hours to determine if additional and/or different locations of significant adverse impact would occur with the Proposed Modified Development.

Level 2 (Project Trip Assignment) Screening Assessment

The Proposed Modified Development would result in a modified site plan with a different street network than that associated with the 2010 Project. Therefore, a trip assignment for the project site and immediately surrounding area was conducted to assess the associated new traffic patterns. While the 2010 FEIS analyzed 55 intersections, given the net reduction in vehicle trips, the vehicle trip assignment for the Proposed Modified Development focuses on the project site and the area immediately surrounding the project site.

The project site is located between the East River and Kent and Wythe Avenues, north of the Williamsburg Bridge. The area is characterized by higher-than-average commercial traffic since Kent Avenue, a one-way northbound DOT-designated truck route, serves as a major north-south connection for the manufacturing and industrial uses along the Brooklyn waterfront. Kent Avenue is also characterized by a major two-way north-south bicycle route (located along the western side of the thoroughfare), separated from the vehicle moving lane by a four-foot-wide buffer and an eight-foot "Floating" parking lane. Traffic lights are spaced considerably apart along this corridor, making Kent Avenue a quick connection between downtown Brooklyn and the Williamsburg/Greenpoint area. Other key roadways within the study area include Wythe Avenue, a one-way southbound street with an exclusive southbound bicycle lane, which runs parallel to Kent Avenue. New traffic signals have been installed along this corridor since issuance of the 2010 FEIS (at Grand, South 2nd, South 4th, South 6th, and South 8th Streets) to address the heavy existing traffic flows (noted in the 2010 FEIS). Metropolitan Avenue and Grand Street (to the north of the project site) are two-way east-west streets. Metropolitan Avenue provides direct access to the BQE and carries heavy vehicular and truck traffic, and Grand Street provides an east-west connection between Maspeth, Queens and Williamsburg.

To accurately compare the effects of traffic generated by the projects the same trip assignment patterns assumed in the 2010 FEIS were applied to the Proposed Modified Development, with adjustments made to project-generated vehicular circulation within and immediately adjacent to the project site to reflect the modified site plan. As stated in the 2010 FEIS, project-generated vehicle trips were assigned to the study area intersections based on the most likely routes to and from the project site, the configuration of the street network, prevailing travel patterns, and the location of the project site's proposed access and egress points; whereas the 2010 Project's vehicle trips were routed to the driveways along South 1st, South 3rd, and South 4th Streets, where access to the 2010 Project's parking garages would have been provided, the Proposed Modified Development's vehicle trips were routed to the two proposed parking garages in Buildings E and B, which would have access/egress points on South 4th and South 3rd Streets between Kent and Wythe Avenues, and on the proposed South 1st and South 2nd Street extensions between Kent Avenue and the proposed River Street extension. As with the 2010 Project, all delivery vehicles were assigned to the traffic network via DOT's designated truck routes.

In addition, the same No-Action project site development assumed in the 2010 FEIS was applied for the Proposed Modified Development, thereby allowing for an accurate comparison of the net increment of

vehicle trips generated by the two projects. Specifically, as stated in the 2010 FEIS, No-Action development on the project site would have generated approximately 98, 212, 335, and 395 vehicle trips during the weekday AM, midday, and PM, and Saturday midday peak hours. The No-Action background growth for the Proposed Modified Development was adjusted to reflect the later build year (2023) by conservatively applying the same 1 percent annual background growth as was assumed in the 2010 FEIS.

Figures 29, 30, 31, and 32 compare the Build volumes for the 2010 Project (Build Year 2020) and Proposed Modified Development (Build Year 2023) during the weekday AM, midday, and PM, and Saturday midday peak hours. As evident in the figures, while total vehicle volumes at certain approaches would be greater than the vph of these same approaches with the 2010 Project, the total vph at all intersections would be below the total vph associated with the 2010 Project, with the exception of two study area intersections (described below).

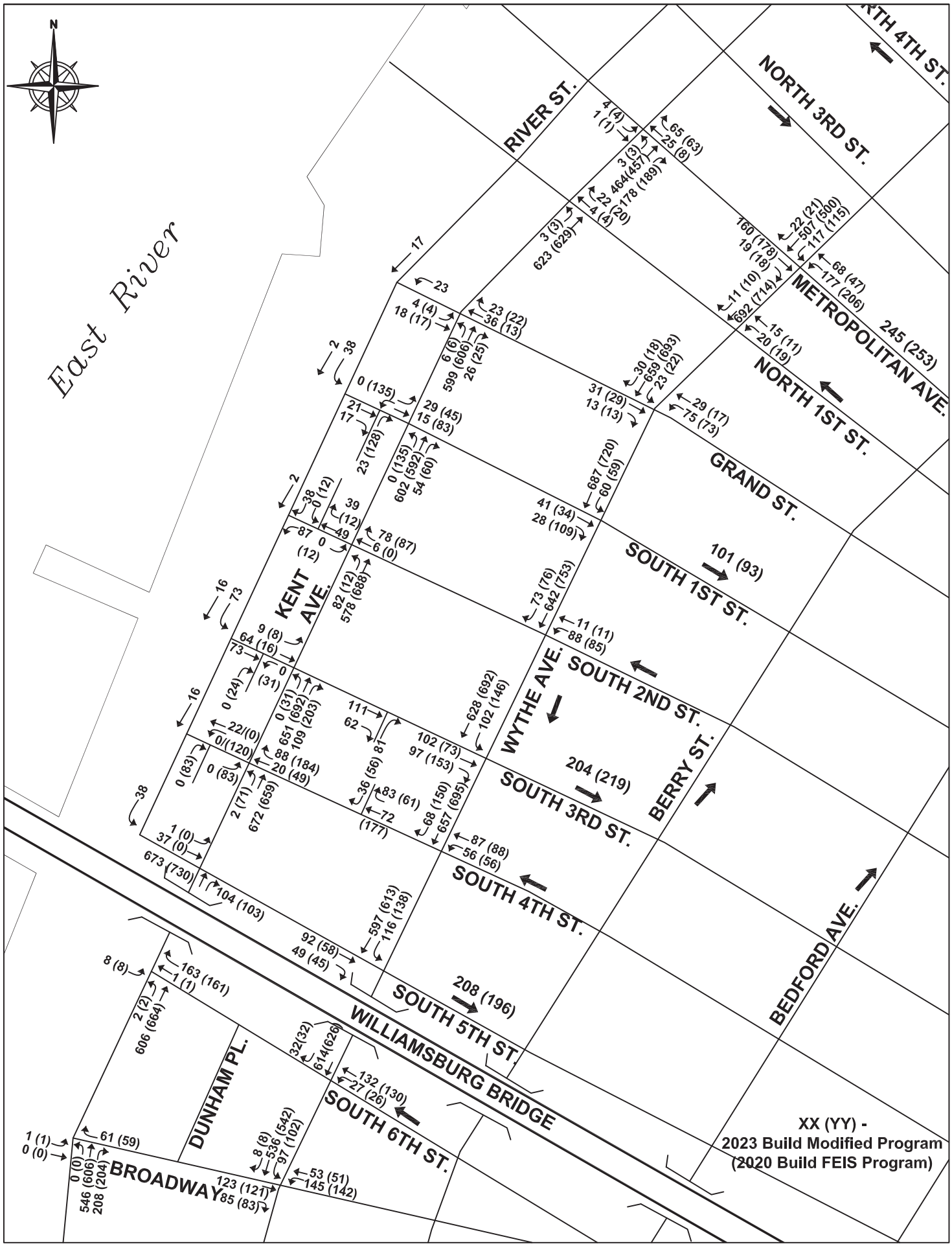
The generally improved traffic conditions throughout the study area are due in part to the modified street network and proposed site plan. Specifically, the Proposed Modified Development would extend the existing one-way South 1st, South 2nd, South 3rd, and South 4th Streets to the west, as well as extending the one-way southbound River Street from its existing southern terminus at Grand Street, resulting in a more balanced vehicle circulation system than that created by the 2010 Project's two-way cul-de-sacs intersecting Kent Avenue along the waterfront parcel. In addition, the Proposed Modified Development would decrease the total number of parking spaces located on the waterfront parcel: only 300 accessory parking spaces would be located on the waterfront parcel with the Proposed Modified Development, compared to 1,370 with the 2010 Project. Due to these two proposed modifications, traffic levels along Kent Avenue (where the main concentration of traffic would be located) would be significantly improved. In addition, the Proposed Modified Development would include the installation of a traffic signal at the intersection of Kent Avenue and South 5th Street.

However, as noted above, while the total Build volumes with the Proposed Modified Development would generally be equal to or less at all intersections compared to the 2010 Project, due to the modified site plan and program, the net vph at certain approaches would be greater during one or more peak analysis hour (see Figures 29 through 32). In addition, two intersections (Kent Avenue at South 5th Street and Kent Avenue at Grand Street) would experience slightly higher total traffic volumes during one or more peak analysis hour; neither of these intersections would have experienced significant adverse impacts with the 2010 Project. As the Proposed Modified Development would result in slightly higher 2023 Build volumes at these two study area intersections than projected for the 2010 Project for its 2020 Build Year, a more detailed analysis of these two intersections is warranted.

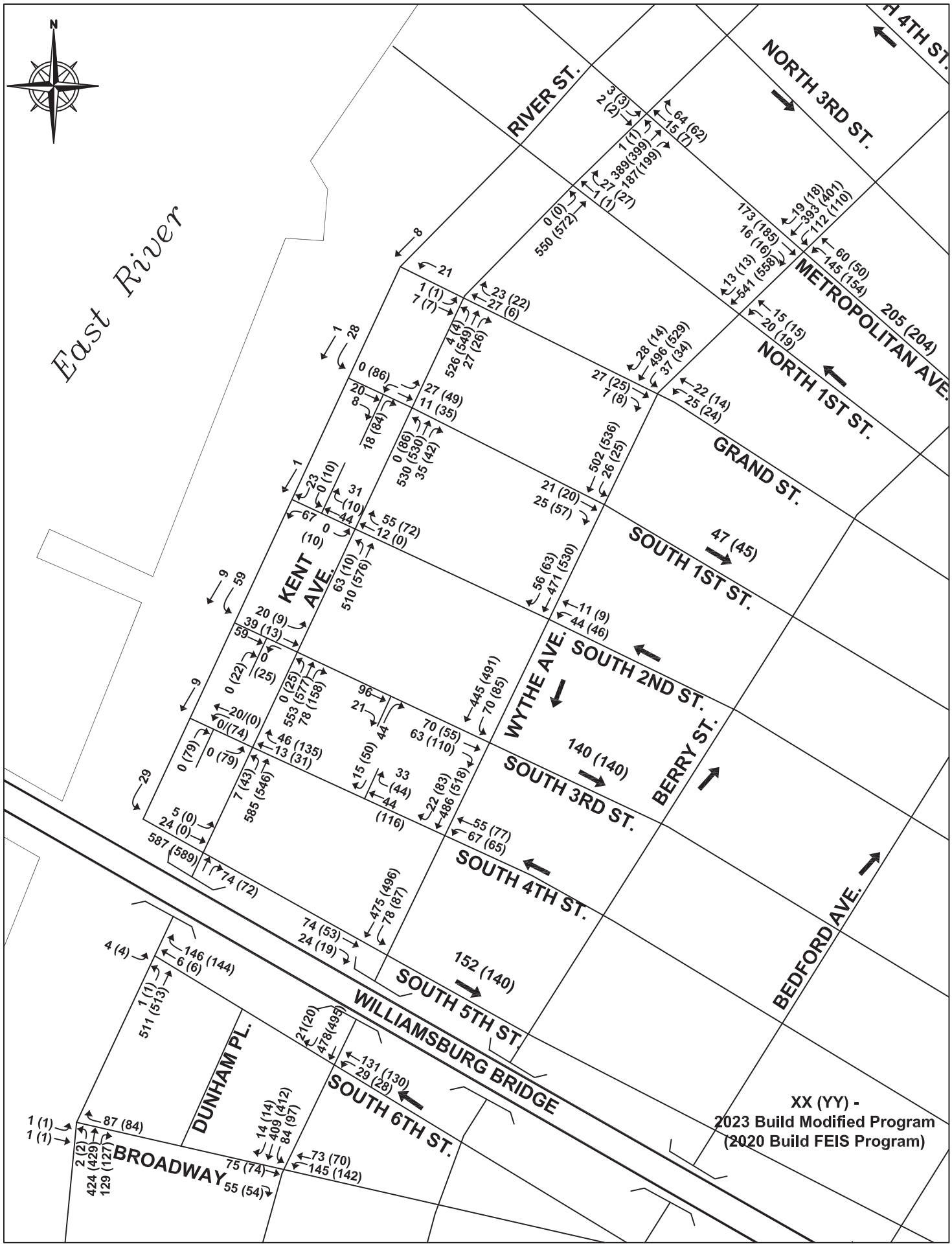
All other primary movements at study area intersections would experience equal or lesser traffic volumes during all peak analysis hours. As such, the significant adverse traffic impacts resulting from the Proposed Modified Development are anticipated to be similar or less than those disclosed in the 2010 FEIS and subsequent Technical Memoranda, and no further analysis of the previously impacted intersections is warranted at this time with the exception of the now signalized Wythe Avenue intersections noted above.

While the Proposed Modified Development would result in lower incremental traffic volumes, a detailed analysis is warranted to determine whether: (1) significantly adversely impacted intersections along Wythe Avenue that were unsignalized at the time of the 2010 FEIS are still anticipated to experience significant adverse impacts under their now signalized condition; and (2) intersections that would not have experienced significant adverse traffic impacts with the 2010 Project and would have higher Build traffic volumes with the Proposed Modified Development would be significantly adversely impacted.

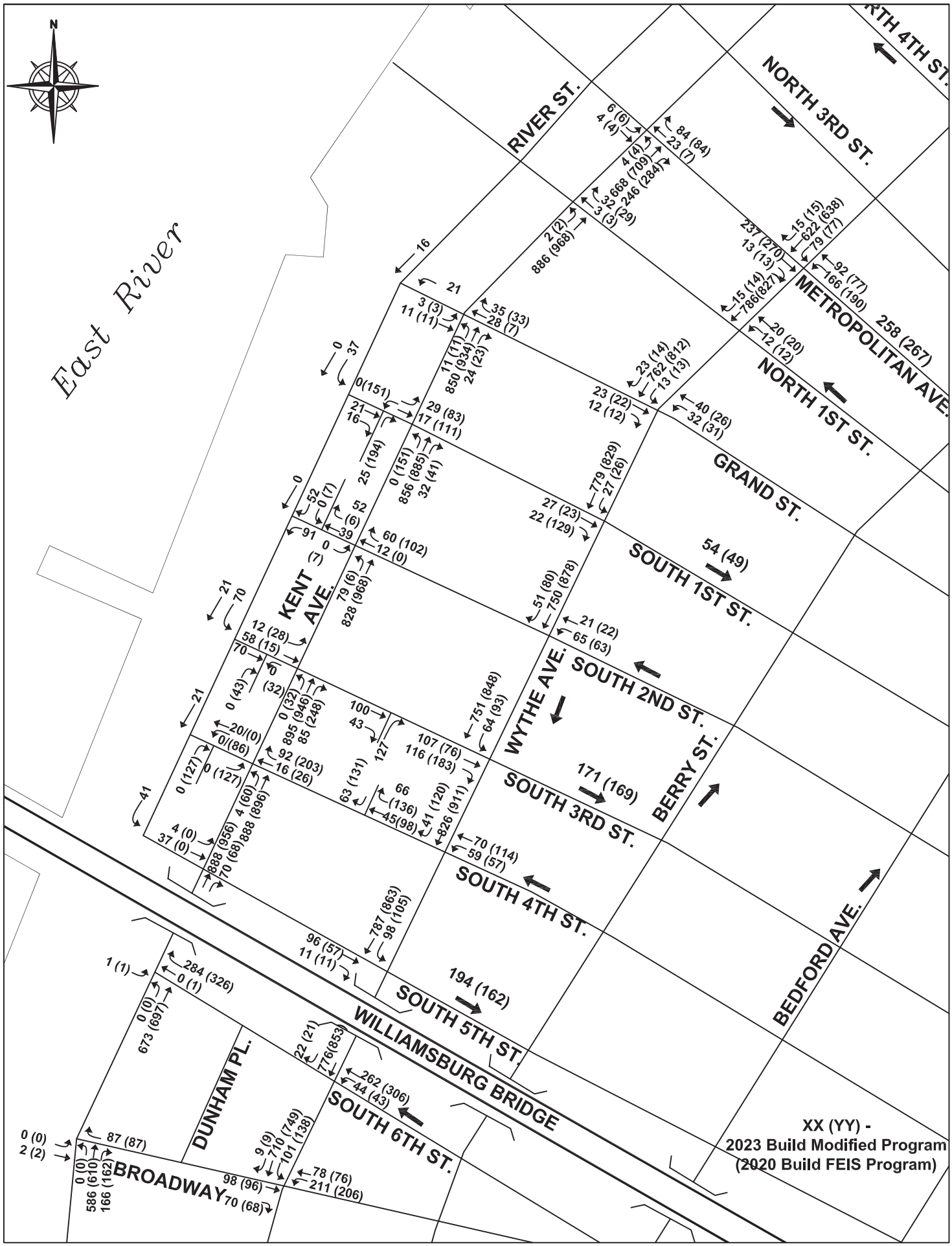
2023/2020 With-Action Traffic Volume - Weekday AM Peak Hour



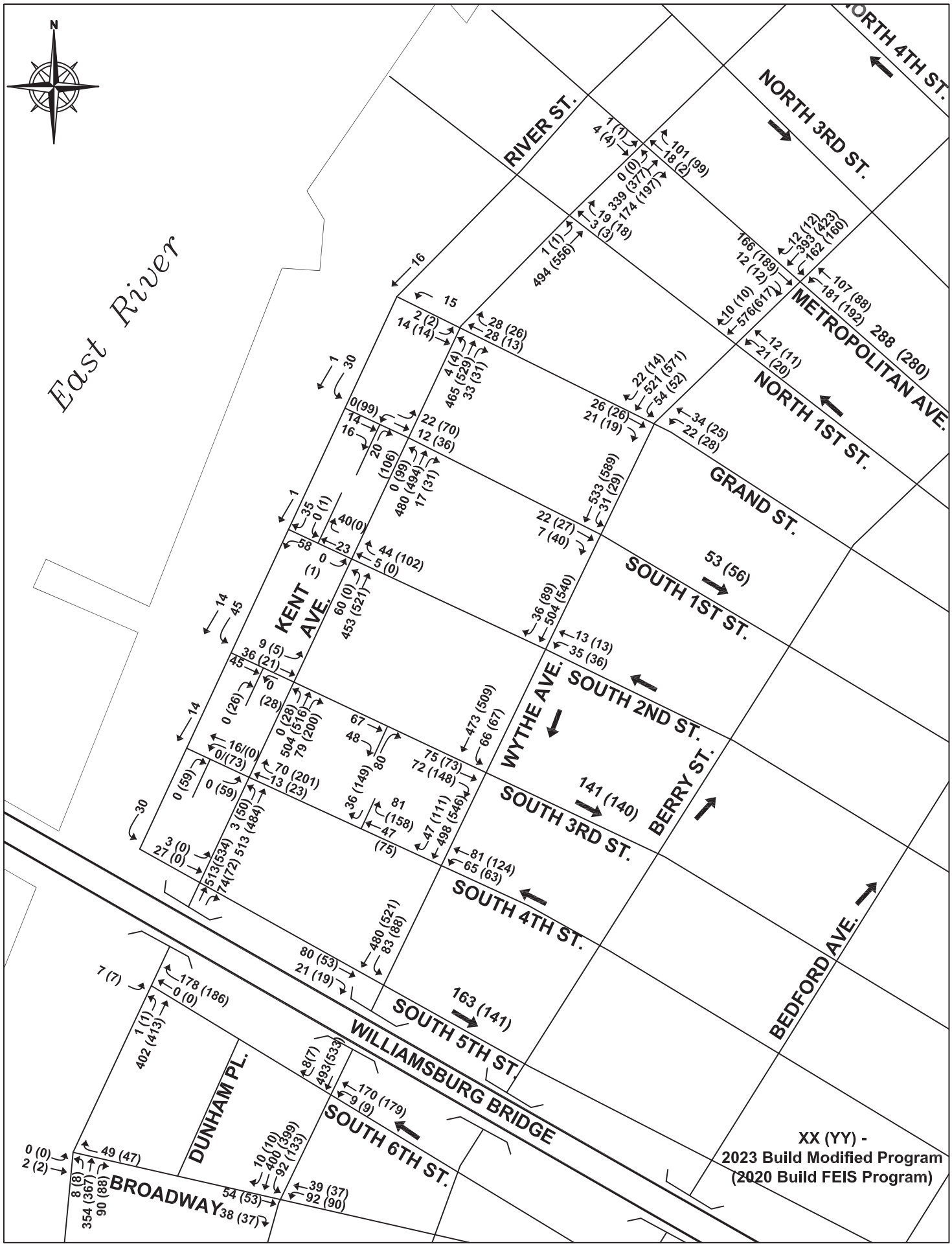
2023/2020 With-Action Traffic Volume - Weekday MD Peak Hour



2023/2020 With-Action Traffic Volume - Weekday PM Peak Hour



2023/2020 With-Action Traffic Volume - Saturday MD Peak Hour



Detailed Analysis

Primary Study Area

As stated in the 2012 *CEQR Technical Manual*, significant impacts for analyzed intersections are summarized as follows: (1) for a lane group within LOS A, B, or C under the No-Action condition, a deterioration to mid-LOS D (delay greater than 45.0 seconds/vehicle at signalized intersections or 30 seconds/vehicle at unsignalized intersections) or to LOS E or F; (2) for a lane group with LOS D under the No-Action condition, an increase in delay of 5.0 or more seconds if the With-Action delay exceeds mid-LOS D; (3) for a lane group with LOS E under the No-Action condition, an increase in projected delay of 4.0 or more seconds; or (4) for a lane group with LOS F under the No-Action condition, an increase in projected delay of 3.0 or more seconds. The same criteria apply to both signalized and unsignalized intersections; however, for minor streets at unsignalized intersection to trigger significant impacts, 90 passenger car equivalents (PCEs) must be identified in the future With-Action condition in any peak hour.

Table 23 presents the LOS analysis for the four primary study area now signalized intersections along Wythe Avenue that were previously anticipated to experience significant adverse impacts with the 2010 Project during one or more peak analysis hour. To accurately compare the Proposed Modified Development to the 2010 Project, LOS analyses were prepared for both projects, and the No-Action LOS analyses were conducted for their respective build year volumes (2020 for the 2010 Project and 2023 for the Proposed Modified Development).

As shown in the tables, significant adverse impacts would occur at all four of these now signalized primary study area intersections during one or more peak analysis hour for both the 2010 Project and the Proposed Modified Development. Therefore, the conclusions of the 2010 FEIS would not change.

The 2010 FEIS concluded that the previously unsignalized intersection of Wythe Avenue and Grand Street would experience a significant adverse impact at its southbound approach during the weekday AM and PM peak hours. As shown in Table 23, accounting for the intersection's now signalized condition, significant adverse impacts would occur along this approach during the same two peak hours, in addition to the Saturday midday peak hour (with a deterioration of more than 4 seconds from the No-Action LOS E condition) with the 2010 Project. With the Proposed Modified Development, this same now signalized intersection would experience a significant adverse impact along its southbound approach only during the weekday AM peak hour (with an increase of more than 4 seconds of average control delay from the No-Action LOS E condition). No significant adverse impact would occur during the weekday AM, weekday midday, or Saturday midday peak hours with the Proposed Modified Development.

The previously unsignalized intersection of Wythe Avenue and South 2nd Street was expected to experience significant adverse impacts along its southbound approach during the weekday AM and PM peak hours. Under its now signalized condition, it is anticipated that significant adverse impacts would occur along this same approach during all four peak analysis hours with the 2010 Project (see Table 23). In comparison, due to the reduced traffic volumes with the Proposed Modified Development, significant adverse impacts would only occur during the weekday AM and PM peak hours at the now signalized intersection of Wythe Avenue and South 2nd Street. During both of the impacted peak hours, the average control delay at the southbound approach would increase by more than 3 seconds from the No-Action LOS F condition,

The 2010 FEIS concluded that the 2010 Project would have resulted in significant adverse impacts along the southbound approach of the previously unsignalized intersection of Wythe Avenue and South 4th

Street during all four peak analysis hours. As shown in Table 23, under the intersection's now signalized condition, significant adverse impacts are anticipated during the same peak hours at this approach. Due to the reduced traffic volumes associated with the Proposed Modified Development, significant adverse impacts are anticipated only during the weekday AM and midday peak hours. No significant impacts are anticipated during the weekday PM and Saturday midday peak hours with the Proposed Modified Development. During the weekday AM peak hour, the average control delay at this southbound approach would increase by more than 4 seconds from its No-Action LOS E condition, and during the weekday midday peak hour, the average control delay would deteriorate to more than 45 seconds per vehicle from the No-Action LOS C condition.

At the southbound approach of the previously unsignalized intersection of Wythe Avenue and South 6th Street, the 2010 FEIS concluded that the 2010 Project would have resulted in significant adverse impacts during the weekday AM and PM peak hours; no significant adverse impacts were anticipated at this intersection during the weekday or Saturday midday peak hours. As shown in the revised LOS analysis based on the intersection's now signalized condition (Table 23), significant adverse impacts would also occur during these two peak analysis hours with the 2010 Project. The Proposed Modified Development would similarly result in significant adverse impacts at this now signalized intersection during the weekday AM and PM peak hours: during the weekday AM peak hour, the Proposed Modified Development would increase the average control delay by more than 5 seconds from the No-Action LOS D condition, and during the weekday PM peak hour the Proposed Modified Development would increase the average control delay by more than 3 seconds of average control delay from the No-Action LOS F condition.

Tables 24a and 24b present the LOS analysis for the two primary study area intersections that were not significantly adversely impacted with the 2010 Project and would experience slightly greater incremental traffic volumes at one or more approach with the Proposed Modified Development (Kent Avenue at Grand and South 5th Streets). As indicated in Table 24a, at the unsignalized intersection of Kent Avenue and Grand Street, the northbound approach would continue to operate at LOS A during all peak analysis hours, as under both No-Action conditions and the 2010 Project. With both the 2010 Project and the Proposed Modified Development, the eastbound and westbound approaches would be more congested compared to No-Action conditions. During the weekday AM and midday and Saturday midday analysis periods, the eastbound and westbound approaches would operate at LOS D (compared to LOS C or better under No-Action condition). However, as the projected vehicle delay would remain below 45.0 seconds, these approaches would not experience significant adverse impacts, pursuant to CEQR. During the weekday PM peak hour, the average control delay at the eastbound and westbound approaches would be lower than with the 2010 Project; the eastbound and westbound approaches would operate at LOS E with the Proposed Modified Development compared to LOS F for both approaches with the 2010 Project. As traffic conditions at the intersection of Kent Avenue and Grand Street would be better than disclosed in the 2010 FEIS, the Proposed Modified Development would not result in any new significant adverse impacts at this primary study area intersection and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

TABLE 23
LOS Analysis of Wythe Avenue Now Signalized Primary Study Area Intersections

Weekday AM Peak Hour

			2010 FEIS Scenario						Proposed Modified Development Scenario					
			2020 NoBuild AM Peak Hour			2020 Build AM Peak Hour			2023 NoBuild AM Peak Hour			2023 Build AM Peak Hour		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	EB	TR	0.12	20.7	C	0.11	20.5	C	0.12	20.7	C	0.11	20.6	C
Grand Street	WB	LT	0.30	23.7	C	0.32	24.0	C	0.31	23.9	C	0.35	24.6	C
	SB	LTR	1.06	64.9	E	1.24	133.6	F *	1.08	72.0	E	1.21	120.2	F *
Wythe Ave @	WB	LT	0.24	20.9	C	0.28	21.8	C	0.25	21.0	C	0.28	21.7	C
South 2nd Street	SB	TR	1.14	97.2	F	1.48	240.3	F *	1.17	106.6	F	1.27	149.9	F *
Wythe Ave @	WB	LT	0.24	22.4	C	0.42	25.7	C	0.24	22.5	C	0.42	25.6	C
South 4th Street	SB	TR	1.01	50.7	D	1.48	243.2	F *	1.03	56.1	E	1.24	134.3	F *
Wythe Ave @	WB	LT	0.27	22.6	C	0.38	24.5	C	0.28	22.7	C	0.39	24.6	C
South 6th Street	SB	TR	0.96	39.1	D	1.11	83.9	F *	0.98	43.4	D	1.09	76.7	E *

Weekday midday Peak Hour

			2010 FEIS Scenario						Proposed Modified Development Scenario					
			2020 NoBuild MD Peak Hour			2020 Build MD Peak Hour			2023 NoBuild MD Peak Hour			2023 Build MD Peak Hour		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	EB	TR	0.12	20.6	C	0.08	20.3	C	0.12	20.6	C	0.09	20.3	C
Grand Street	WB	LT	0.11	20.6	C	0.12	20.7	C	0.12	20.7	C	0.14	21.0	C
	SB	LTR	0.92	32.2	C	0.98	42.4	D	0.94	35.9	D	0.96	39.2	D
Wythe Ave @	WB	LT	0.13	19.5	B	0.17	20.1	C	0.13	19.5	B	0.18	20.3	C
South 2nd Street	SB	TR	0.95	39.2	D	1.06	66.4	E *	0.97	43.1	D	0.94	37.7	D
Wythe Ave @	WB	LT	0.35	24.3	C	0.42	25.8	C	0.36	24.5	C	0.43	25.9	C
South 4th Street	SB	TR	0.89	28.6	C	1.04	59.5	E *	0.91	30.8	C	1.04	61.0	E *
Wythe Ave @	WB	LT	0.27	22.7	C	0.39	24.6	C	0.28	22.7	C	0.40	24.8	C
South 6th Street	SB	TR	0.77	18.9	B	0.87	25.9	C	0.78	19.9	B	0.84	23.7	C

Weekday PM Peak Hour

			2010 FEIS Scenario						Proposed Modified Development Scenario					
			2020 NoBuild PM Peak Hour			2020 Build PM Peak Hour			2023 NoBuild PM Peak Hour			2023 Build PM Peak Hour		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	EB	TR	0.16	21.2	C	0.09	20.3	C	0.16	21.2	C	0.09	20.4	C
Grand Street	WB	LT	0.17	21.4	C	0.17	21.5	C	0.18	21.5	C	0.21	21.9	C
	SB	LTR	1.34	177.5	F	1.40	207.3	F *	1.37	190.6	F	1.34	177.6	F
Wythe Ave @	WB	LT	0.20	20.4	C	0.26	21.5	C	0.21	20.5	C	0.24	21.1	C
South 2nd Street	SB	TR	1.46	232.9	F	1.64	318.3	F *	1.49	248.0	F	1.64	317.2	F *
Wythe Ave @	WB	LT	0.45	26.2	C	0.49	27.3	C	0.46	26.4	C	0.38	24.9	C
South 4th Street	SB	TR	1.42	216.8	F	1.68	332.4	F *	1.45	228.0	F	1.39	199.3	F
Wythe Ave @	WB	LT	0.58	29.0	C	0.85	44.0	D	0.59	29.3	C	0.75	35.9	D
South 6th Street	SB	TR	1.19	114.3	F	1.47	235.6	F *	1.22	124.2	F	1.34	176.5	F *

Saturday midday Peak Hour

			2010 FEIS Scenario						Proposed Modified Development Scenario					
			2020 NoBuild SAT MD Peak Hour			2020 Build SAT MD Peak Hour			2023 NoBuild SAT MD Peak Hour			2023 Build SAT MD Peak Hour		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	EB	TR	0.12	20.7	C	0.12	20.7	C	0.13	20.8	C	0.13	20.8	C
Grand Street	WB	LT	0.13	20.8	C	0.16	21.2	C	0.14	20.9	C	0.15	21.1	C
	SB	LTR	1.06	66.2	E	1.08	71.7	E *	1.08	72.4	E	1.02	52.8	D
Wythe Ave @	WB	LT	0.11	19.3	B	0.14	19.7	B	0.12	19.3	B	0.13	19.6	B
South 2nd Street	SB	TR	1.03	57.9	E	1.13	91.7	F *	1.04	62.6	E	0.95	39.5	D
Wythe Ave @	WB	LT	0.60	30.2	C	0.54	28.7	C	0.61	30.5	C	0.43	25.9	C
South 4th Street	SB	TR	1.12	85.8	F	1.15	97.6	F *	1.13	90.1	F	0.93	33.8	C
Wythe Ave @	WB	LT	0.31	23.2	C	0.45	25.8	C	0.31	23.2	C	0.43	25.3	C
South 6th Street	SB	TR	0.73	17.4	B	0.90	29.5	C	0.75	18.0	B	0.84	23.7	C

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = De facto Left, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, v/c = volume-to-capacity, LOS = Level of Service, * = Significant Adverse Impact

TABLE 24a
LOS Analysis of Kent Avenue at Grand Street—Proposed Modified Development v. 2010 Project

Approach	Lane Group	No-Build			2010 Project			Proposed Modified Development		
		V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Weekday AM Peak Hour										
EB	LT	0.09	18.7	C	0.14	28.5	D	0.17	33.1	D
WB	TR	0.12	16.9	C	0.19	25.6	D	0.34	31.2	D
NB	L	0.00	7.5	A	0.01	7.7	A	0.01	8.2	A
Weekday Midday Peak Hour										
EB	LT	0.03	17.5	C	0.06	31.3	D	0.07	34.7	D
WB	TR	0.09	15.8	C	0.19	29.1	D	0.34	34.9	D
NB	L	0.00	7.5	A	0.00	8.1	A	0.01	8.7	A
Weekday PM Peak Hour										
EB	LT	0.09	28.5	D	0.21	68.8	F	0.15	46.8	E
WB	TR	0.20	24.4	C	0.42	62.0	F	0.45	44.3	E
NB	L	0.01	7.6	A	0.01	8.0	A	0.01	8.1	A
Saturday Midday Peak Hour										
EB	LT	0.05	16.0	C	0.10	28.2	D	0.10	26.9	D
WB	TR	0.11	14.9	B	0.21	26.5	D	0.27	26.2	D
NB	L	0.00	7.5	A	0.00	7.9	A	0.00	8.2	A

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = De facto Left, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, v/c = volume-to-capacity, LOS = Level of Service

TABLE 24b
LOS Analysis of Kent Avenue at South 5th Street—Proposed Modified Development v. 2010 Project

Approach	Lane Group	No-Build			2010 Project			Proposed Modified Development		
		V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Weekday AM Peak Hour										
EB	LT							0.10	24.5	C
NB	L	0.00	7.6	A	0.00	8.2	A			
NB	TR							0.89	26.1	C
Weekday Midday Peak Hour										
EB	LT							0.08	24.3	C
NB	L	0.00	7.6	A	0.00	9.1	A			
NB	TR							0.76	17.8	B
Weekday PM Peak Hour										
EB	LT							0.11	24.7	C
NB	L	0.00	7.6	A	0.00	8.8	A			
NB	TR							0.99	43.4	D
Saturday Midday Peak Hour										
EB	LT							0.08	24.3	C
NB	L	0.00	7.5	A	0.00	8.7	A			
NB	TR							0.68	15.4	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = De facto Left, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, v/c = volume-to-capacity, LOS = Level of Service

As also shown in Table 24b, the unsignalized intersection of Kent Avenue and South 5th Street was anticipated to experience LOS A during all peak analysis hours with the 2010 Project. With the Proposed Modified Development, South 5th Street would be connected to the proposed River Street extension and would serve one-way eastbound traffic exiting the project site. In addition, as previously noted, the intersection would be signalized as part of the Proposed Modified Development; the proposed traffic

signal would be installed in conjunction with completion of the final phase of the street network linking South 5th Street and the proposed River Street extension to Kent Avenue. As South 5th Street would not experience elevated traffic volumes prior to completion of this final phase, installing the traffic signal at an earlier stage of the project's development would be unwarranted. Installation of new traffic signals requires detailed Signal Warrant Studies. A Signal Warrant Study for the proposed traffic signal at the intersection of Kent Avenue and South 5th Street has been prepared and submitted to DOT and is currently being reviewed and is pending approval.

As indicated in Table 24b, in the future with the Proposed Modified Development, all movements at the proposed signalized intersection of Kent Avenue and South 5th Street would operate at LOS C or better during the weekday AM and midday and Saturday midday peak analysis periods; the northbound through movement would operate at mid-LOS D with 43.4 seconds of delay per vehicle during the weekday PM peak hour. As the anticipated delay would be below the 45.0 seconds/vehicle CEQR impact threshold during all peak analysis periods, the Proposed Modified Development would not result in a significant adverse impact at this study area intersection, and therefore the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

As indicated above, the Proposed Modified Development would result in lower incremental vehicle volumes at all primary study area intersections, and no new significant adverse impacts are anticipated. Specific primary study area intersection approaches/lane groups and time periods of impacts associated with the Proposed Modified Development are listed below, reflecting the results of the LOS analyses for the four now signalized Wythe Avenue primary study area intersections. As previously stated, it is anticipated that similar or lesser impacts would occur at all intersections identified as experiencing significant adverse impacts with the 2010 Project.

Signalized Intersections

- Kent Avenue and Metropolitan Avenue: the northbound through- and right-turn movement during the weekday PM peak hour;
- Kent Avenue and South 3rd Street: the northbound through- and right-turn movement during the weekday PM peak hour;
- Kent Avenue and Broadway: the northbound through- and right-turn movement during the weekday AM and PM peak hours;
- Wythe Avenue and Metropolitan Avenue: the westbound approach during the weekday AM and PM peak hours; and the southbound approach during the weekday AM, midday, and PM peak hours;
- Wythe Avenue and Grand Street: the southbound approach during the weekday AM peak hour;
- Wythe Avenue and South 2nd Street: the southbound approach during the weekday AM and PM peak hours;
- Wythe Avenue and South 4th Street: the southbound approach during the weekday AM and midday peak hours;
- Wythe Avenue and South 6th Street: the southbound approach during the weekday AM and PM peak hours;
- Wythe Avenue and Broadway: the southbound approach during the weekday AM and PM peak hours;

- Bedford Avenue and South 6th Street: the westbound approach during the weekday PM peak hour;
- Metropolitan Avenue and Driggs Avenue: the westbound approach during the weekday AM and PM peak hours;
- Broadway and Driggs Avenue: the westbound approach during the weekday midday and PM peak hours;
- Roebling Street and South 4th Street: the southbound approach during the weekday AM and PM peak hours;
- Metropolitan Avenue and Marcy Avenue: the westbound left-turn movement during the weekday AM and PM peak hours;
- Metropolitan Avenue and Rodney Street: the eastbound de facto left-turn movement during the weekday AM, midday, and PM peak hours;
- Broadway and Havemeyer Street: the westbound approach during the weekday AM peak hour and the eastbound approach during the weekday PM peak hour; and
- Broadway and Marcy Avenue: the westbound approach during the weekday AM, midday, and PM peak hours; and the eastbound approach during the weekday PM peak hour.

Unsignalized Intersections

- Kent Avenue and South 2nd Street: the westbound approach during the weekday AM, midday, and PM and Saturday midday peak hours;
- Kent Avenue and South 4th Street: the westbound through- and right-turn movement during the weekday AM, midday, and PM and Saturday midday peak hours;
- Kent Avenue and South 6th Street: the westbound approach during the weekday AM, midday, and PM peak hours;
- Wythe Avenue and South 1st Street: the eastbound approach during the weekday AM and PM peak hours;
- Wythe Avenue and South 3rd Street: the eastbound approach during the weekday AM, midday, and PM and Saturday midday peak hours;
- Wythe Avenue and South 5th Street: the eastbound approach during the weekday AM, midday, and PM and Saturday midday peak hours;
- Berry Street and South 6th Street: the westbound approach during the weekday PM peak hour; and
- Williamsburg Bridge exit/Roebling Street and Broadway: the southbound approach during the weekday PM and Saturday midday peak hours.

To mitigate the potential traffic impacts at the 17 signalized and 8 unsignalized locations identified above, a variety of mitigation measures could be implemented, including signal timing modifications, new lane restripings, changes to parking regulations, changes to bicycle lane classification, installation of new stop controls, and installation of new traffic signals. As with the 2010 Project, these measures would mitigate the potential traffic impacts at all of the locations identified above and are discussed in detail in Section T, "Mitigation." It should be noted that the mitigation measures are subject to review and approval by DOT.

Secondary Study Area

The 2010 FEIS identified five signalized intersections and two unsignalized intersections in the secondary study area that would have experienced significant adverse impacts during one or more peak hour due to incremental traffic generated by the 2010 Project: Kent Avenue at Clymer Street and Williasmburg Street West (signalized), Flushing Avenue at Williamsburg Street West and Classon Avenue/BQE Off-Ramp (signalized), Wythe Avenue at Williamsburg Street (signalized), and Wythe Avenue at South 8th and South 9th Streets (unsignalized). The mitigation measures to fully mitigate these potential significant adverse traffic impacts were all operational and included signal timing changes at the signalized intersections and changes in bicycle lane classification and parking prohibitions at the unsignalized intersections.

While the Level 1 (Project Trip Generation) and Level 2 (Project Trip Assignment) Screening Assessments demonstrated that the Proposed Modified Development would result in a net decrease in total vehicle trips during all peak hours (compared to the 2010 Project), both the Proposed Modified Development and the 2010 Project would represent a significant increase in study area traffic compared to both existing and No-Action conditions (595, 386, 623, 481 vehicle trips during the weekday AM, midday, and PM and Saturday midday peak hours for the Proposed Modified Development; and 712, 530, 934, and 706 during the weekday AM, midday, and PM and Saturday midday peak hours for the 2010 Project) . As such it is anticipated that the secondary study area operational mitigation measures identified in the 2010 FEIS, which were proposed to address the general increase in traffic due to the 2010 Project, would still be necessary for the Proposed Modified Development.

However, as one of the secondary study area intersections that was previously identified as experiencing a significant adverse impact has since been signalized (Wythe Avenue at South 8th Street). a revised LOS analysis was conducted for this intersection for all peak analysis hours. To accurately compare the Proposed Modified Development to the 2010 Project, LOS analyses were prepared for both projects, and the No-Action LOS analyses were conducted for their respective build year volumes (2020 for the 2010 Project and 2023 for the Proposed Modified Development). The results are shown in Table 25. As shown in the table, under the intersection's now signalized condition, significant adverse impacts would occur with the 2010 Project during the weekday AM, midday, and PM peak hours; no impact would occur at this intersection during the Saturday midday peak hour with the 2010 Project. In comparison, with the Proposed Modified Development significant adverse impacts are anticipated at this intersection during the weekday AM and PM peak hours; no significant adverse impacts would occur at this now signalized intersection during the weekday or Saturday midday peak hours. As shown in Section T, "Mitigation," by implementing the same measures identified for this previously unsignalized intersection, the significant adverse impact at the southbound approach of Wythe Avenue and South 8th Street would be fully mitigated.

The Proposed Modified Development's traffic monitoring program (TMP), described in greater detail in Section T, "Mitigation," would serve as a guide to determine when implementation of the secondary study area mitigation measures would be warranted.

Transit

Subway

The 2010 FEIS determined that the 2010 Project would result in the potential for significant adverse impacts to the Marcy Avenue subway station's Manhattan-bound control area during the weekday AM peak period and to the Queens-bound control area during the weekday PM peak period. The FEIS

identified measures to mitigate the impacts to the Marcy Avenue station's Manhattan-bound and Queens-bound secondary control areas for the J/M/Z subway lines, which consisted of replacing the existing High Entrance and Exit Turnstile (HEET) at both of the control areas with two low-turnstiles at each location. This would increase the control area capacity and would mitigate the significant adverse impacts to the aforementioned control areas. The FEIS noted that the MTA-NYCT had reviewed the feasibility of installing two regular turnstiles in place of each of the HEETs at the secondary control areas, and had agreed to the installation of regular turnstiles at the aforementioned locations.

TABLE 25
LOS Analysis of Wythe Avenue at South 8th Street—Proposed Modified Development v. 2010 Project

Weekday AM Peak Hour													
		2010 FEIS Scenario						Proposed Modified Development Scenario					
		2020 NoBuild AM Peak Hour			2020 Build AM Peak Hour			2023 NoBuild AM Peak Hour			2023 Build AM Peak Hour		
Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
WB	LT	0.29	23.0	C	0.30	23.3	C	0.30	23.1	C	0.31	23.4	C
SB	TR	1.18	110.9	F	1.30	158.5	F *	1.21	122.6	F	1.30	160.3	F *
Weekday midday Peak Hour													
		2010 FEIS Scenario						Proposed Modified Development Scenario					
		2020 NoBuild MD Peak Hour			2020 Build MD Peak Hour			2023 NoBuild MD Peak Hour			2023 Build MD Peak Hour		
Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
WB	LT	0.28	22.8	C	0.30	23.4	C	0.28	22.9	C	0.32	23.7	C
SB	TR	0.97	42.1	D	1.03	55.4	E *	1.00	47.1	D	1.00	48.7	D
Weekday PM Peak Hour													
		2010 FEIS Scenario						Proposed Modified Development Scenario					
		2020 NoBuild PM Peak Hour			2020 Build PM Peak Hour			2023 NoBuild PM Peak Hour			2023 Build PM Peak Hour		
Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
WB	LT	0.36	24.2	C	0.40	25.2	C	0.37	24.5	C	0.40	25.2	C
SB	TR	1.45	227.0	F	1.62	307.3	F *	1.48	241.5	F	1.57	284.1	F *
Saturday midday Peak Hour													
		2010 FEIS Scenario						Proposed Modified Development Scenario					
		2020 NoBuild SAT MD Peak Hour			2020 Build SAT MD Peak Hour			2023 NoBuild SAT MD Peak Hour			2023 Build SAT MD Peak Hour		
Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
WB	LT	0.08	20.2	C	0.09	20.3	C	0.08	20.3	C	0.09	20.3	C
SB	TR	0.81	21.2	C	0.88	27.7	C	0.82	22.2	C	0.89	28.1	C

As noted above, subsequent to completion of the FEIS, modifications to the 2010 Project were proposed, which included commitments by the 2010 Project's applicant related to shuttle bus service. The shuttle bus would have provided service from the project site to the Broadway entrance of the Marcy Avenue J/M/Z subway station during the peak morning and evening commuting periods, providing a more direct connection for the project-generated transit users between the project site and the Marcy Avenue station. The July 10, 2010 Technical Memorandum discussed changes to station access that would result from implementation of the shuttle bus service. Specifically, the FEIS transit analysis assumed that 80 percent

of the patrons taking the J/M/Z lines at the Marcy Avenue station would use the local Q59 bus route, while the remaining 20 percent would walk. With the provision of a free shuttle bus service (which would be more convenient and faster as compared to the local NYCT bus service), it was assumed that patrons walking and using the Q59 bus would shift to the shuttle bus in the future conditions. Thus, the assessment in the July 10, 2010 Technical Memorandum anticipated that 75 percent of the patrons taking the J/M/Z lines at the Marcy Avenue station would use the shuttle bus, 15 percent would walk and the remaining 10 percent would use the Q59 bus. Also, given the proximity of the secondary control area to the Q59 bus stop and the project site, it was assumed that patrons walking or taking Q59 to the Marcy Avenue station would use the secondary control area (25 percent of the J/M/Z subway riders), whereas all the patrons using the shuttle bus service would use the main control area (75 percent of the J/M/Z subway riders).

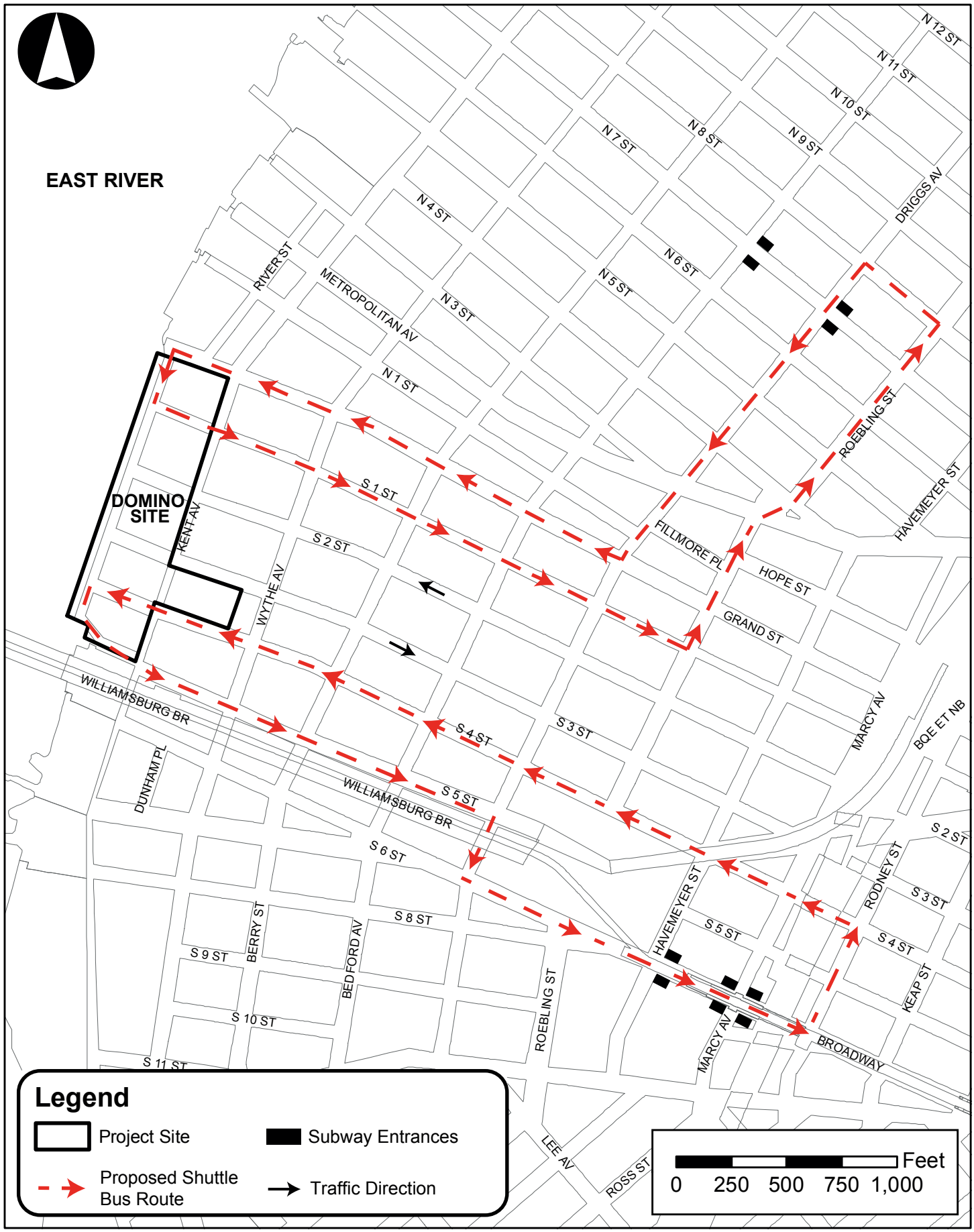
The July 10, 2010 Technical Memorandum noted that with the shift in patrons from the secondary to the main control area of the Marcy Avenue (J/M/Z) subway station with the provision of shuttle bus service in the future conditions, the secondary control area was expected to operate at better service conditions than identified in the FEIS, and thus there would be no potential for any new or additional significant adverse impacts on the secondary control area not already identified in the FEIS. To determine if this potential shift would result in significant adverse impacts at the main control area of the Marcy Avenue (J/M/Z) subway station, an analysis of the control area elements at the main station was performed in the July 10, 2010 Technical Memorandum, which concluded that the main control areas and the stairways would have adequate capacity to accommodate the shift of transit riders, and that the additional transit riders at the main control area resulting from the shuttle bus service would not result in any new significant adverse impacts in either peak hour.

Updated Assumptions for Proposed Modified Development

The 2010 FEIS also assumed that a widening of the Bedford Avenue station's S3 stairway by two feet (which was proposed as a mitigation measure in the *Greenpoint-Williamsburg Rezoning FEIS*) would occur by the 2020 analysis year, and this widening was therefore incorporated in the No-Action analysis of the 2010 FEIS. However, as the *Greenpoint-Williamsburg Rezoning FEIS* had a Build Year of 2013, and as the stair widening has not been implemented to date nor has the City allocated funding for this widening, the analysis for the Proposed Modified Development conservatively assumes that the widening of the Bedford Avenue station's S3 stairway would not be implemented in the No-Action. Therefore, for comparative analysis purposes, the analysis below compares the 2023 With-Action condition for the Proposed Modified Development without the S3 stair widening to the 2010 FEIS With-Action conditions without the stair widening.

Like the 2010 Project, the Proposed Modified Development would include a shuttle bus connecting the project site to the Marcy Avenue J/M/Z subway station. In addition, a second shuttle route for the Proposed Modified Development would be implemented to serve the Bedford Avenue station (refer to Figure 33 for anticipated shuttle routes). As detailed in the Transportation Planning Factors Memorandum in Appendix 6, the free shuttle bus service would be provided from the project site to the Driggs Avenue entrance of the Bedford Avenue station and to the Broadway entrance of the Marcy Avenue J/M/Z subway station during the peak morning and evening commuting periods, providing a more direct connection for the project-generated transit users between the project site and both the Marcy Avenue and Bedford Avenue stations. As previously stated, given the distances to these stations and the service provided by the free shuttle, it is expected that 85 percent of subway demand would use the new shuttles. Ten percent of the remaining subway trips to both stations are assumed to walk to/from the station, and the remaining five percent are assumed to use the local buses.

Proposed Shuttle Bus Route



With a route of approximately 1.7 miles for each new shuttle loop, and assuming 44-passenger capacity buses, it is estimated that for the future full build-out conditions each route would be served by up to two shuttle buses, each making up to six loops during the weekday AM and PM peak hours (for a total of up to twelve vehicle trips to the Bedford Avenue station and twelve vehicle trips to the Marcy Avenue station). In terms of frequency, this would translate to one bus leaving the Domino site for either the Bedford Avenue or the Marcy Avenue stations approximately every five minutes during the morning and evening peak periods in the full build out conditions. For non-peak periods, the frequency would be lower.[31]

It is important to note however that, as the project is developed, the Applicant would monitor demand for shuttle bus service to determine the capacity of the shuttle bus fleet and hours of operation. Based on the project-generated demand identified in the Technical Memorandum for the Proposed Modified Development's full build out, it is anticipated that up to four shuttle buses would be used. However, prior to full build out, the capacity of the shuttle bus fleet could vary from what is analyzed in the Technical Memorandum depending on demand. In addition, should the City fulfill its mitigation requirement of widening Bedford Avenue station's S3 stairway by two feet as specified in the *Greenpoint-Williamsburg Rezoning FEIS*, a new analysis would be undertaken to determine if shuttle service to the Bedford Avenue Station is warranted.

Level 1 (Project Trip Generation) Screening Assessment

According to the general thresholds used by the Metropolitan Transportation Authority and specified in the *CEQR Technical Manual*, detailed transit analyses are not required if a proposed project is projected to result in less than 200 peak hour rail or bus transit riders, because a proposed development that generates such a low number of transit riders is unlikely to create a significant impact on the current transit facilities. If a proposed action would result in an increase of 200 or more trips at a single subway station or on a single subway line, a detailed subway analysis is warranted.

As shown in Table 22 above, the Proposed Modified Development is expected to generate a total of approximately 1,746, 907, 2,000, and 984 subway trips during the weekday AM, midday, and PM and Saturday midday peak hours, respectively. When compared to the subway trips projected in the 2010 FEIS (1,123, 653, 1,352, and 546, respectively), the Proposed Modified Development would result in a net increase of 623 subway trips in the weekday AM peak hour, 254 in the weekday midday, 648 in the PM peak hour, and 438 in the Saturday midday peak hour.

As the net increment in subway trips resulting from the Proposed Modified Development would exceed 200 trips in all peak hours (compared to the 2010 Project), an assessment was conducted to determine whether the mitigation measures identified in the 2010 FEIS would be sufficient to accommodate the anticipated additional subway trips.

Level 2 (Project Trip Assignment) Screening Assessment

Tables 26a and 26b provide a comparison of future subway stairway capacity for the 2010 Project and the Proposed Modified Development. As noted above, for comparative analysis purposes, no widening of the Bedford Avenue station's S3 stairway is assumed in the No-Action analysis for either the 2010 Project or the Proposed Modified Development. Tables 26a and 26b assume that the 2010 Project mitigation

[31] For the purpose of the project trip generation, shuttle frequency during the weekday midday and Saturday midday peak periods were determined proportionately, based on anticipated subway demand in these peak hours as compared to the weekday AM and PM peak hours.

measures outlined in the 2010 FEIS (described above) would be in place (e.g., shuttle service). In addition, all stairway widths at the Bedford Avenue station have been updated to 5 feet, based on recent field verification. Table 26b further reflects the fact that the Proposed Modified Development would provide a separate shuttle route to serve subway riders to the Bedford Avenue station, as shown in Figure 33.

TABLE 26a
Subway Station Stairway Analysis—2010 Project with Mitigation

Stairway	Stairway	Width (ft.)	Effective Width	15 Minutes Volumes				Surging Factor	Friction Factor	V/C Ratio	LOS
				Increment		With-Action					
				Enter	Exit	Enter	Exit				
AM Peak Hour											
Bedford Avenue Station (L)											
Bedford Avenue / N 7th Street (NE Corner)	S4	5.0	4.0	43	4	396	68	0.80	0.90	0.89	C
Bedford Avenue / N 7th Street (SE Corner)	S3	5.0	4.0	59	4	627	93	0.80	0.90	1.38	E
Driggs Avenue / N 7th Street (NE Corner)	S2	5.0	4.0	0	15	100	39	0.80	0.90	0.28	A
Driggs Avenue / N 7th Street (SE Corner)	S1	5.0	4.0	0	16	189	96	0.80	0.90	0.57	B
Havemeyer/ Marcy Avenue Station (J/M/Z)											
Broadway / Havemeyer (NE Corner) Manhattan-bound	S5	5.0	4.0	33	9	297	99	0.80	0.90	0.78	C
Broadway / Havemeyer (SE Corner) Queens-bound	S6	5.0	4.0	5	4	40	76	0.80	0.90	0.25	A
Broadway /Marcy Avenue Station (J/M/Z)											
Broadway/Marcy Avenue (SE Corner): Queens-bound	S1	5.0	4.0	15	12	15	26	0.80	0.90	0.09	A
Broadway/Marcy Avenue (SW Corner) : Queens-bound	S3	5.0	4.0	0	0	13	50	0.80	0.80	0.16	A
Broadway/Marcy Avenue (NE Corner) : Manhattan-bound	S2	5.0	4.0	100	26	139	46	0.80	0.80	0.41	A
Broadway/Marcy Avenue (NW Corner) : Manhattan-bound	S4	5.0	4.0	0	0	88	143	0.80	0.90	0.49	B
PM Peak Hour											
Bedford Avenue Station (L)											
				Enter	Exit	Enter	Exit				
Bedford Avenue / N 7th Street (NE Corner)	S4	5.0	4.0	28	10	164	323	0.80	0.90	1.05	D
Bedford Avenue / N 7th Street (SE Corner)	S3	5.0	4.0	38	10	306	458	0.80	0.90	1.63	E
Driggs Avenue / N 7th Street (NE Corner)	S2	5.0	4.0	0	39	29	179	0.80	0.90	0.47	B
Driggs Avenue / N 7th Street (SE Corner)	S1	5.0	4.0	0	43	68	321	0.80	0.90	0.87	C
Havemeyer/ Marcy Avenue Station (J/M/Z)											
Broadway / Havemeyer (NE Corner) Manhattan-bound	S5	5.0	4.0	10	5	109	43	0.80	0.90	0.30	A
Broadway / Havemeyer (SE Corner) Queens-bound	S6	5.0	4.0	15	33	73	269	0.80	0.90	0.76	C
Broadway /Marcy Avenue Station (J/M/Z)											
Broadway/Marcy Avenue (SE Corner): Queens-bound)	S1	5.0	4.0	38	100	38	154	0.80	0.80	0.48	B
Broadway/Marcy Avenue (SW Corner) : Queens-bound	S3	5.0	4.0	0	0	35	121	0.80	0.80	0.39	A
Broadway/Marcy Avenue (NE Corner) : Manhattan-bound	S2	5.0	4.0	30	15	50	20	0.80	0.80	0.16	A
Broadway/Marcy Avenue (NW Corner) : Manhattan-bound	S4	5.0	4.0	0	0	46	36	0.80	0.90	0.17	A

Notes:
Methodology based on 2012 CEQR Technical Manual guidelines
Surging factors applied only to exiting volumes

TABLE 26b
Subway Station Stairway Analysis—Proposed Modified Development with 2010 Project Mitigation

Stairway	Stairway	Width (ft.)	Effective Width	15 Minutes Volumes				Surging Factor	Friction Factor	V/C Ratio	LOS
				Increment		With-Action					
				Enter	Exit	Enter	Exit				
AM Peak Hour											
Bedford Avenue Station (L)											
				Enter	Exit	Enter	Exit				
Bedford Avenue / N 7th Street (NE Corner)	S4	5.0	4.0	0	6	353	73	0.80	0.90	0.82	C
Bedford Avenue / N 7th Street (SE Corner)*	S3	5.0	4.0	13	13	593	102	0.80	0.90	1.33	E
Driggs Avenue / N 7th Street (NE Corner)	S2	5.0	4.0	93	86	193	115	0.80	0.90	0.62	B
Driggs Avenue / N 7th Street (SE Corner)	S1	5.0	4.0	23	21	212	102	0.80	0.90	0.63	B
Havemeyer/ Marcy Avenue Station (J/M/Z)											
				Enter	Exit	Enter	Exit				
Broadway / Havemeyer (NE Corner) Manhattan-bound	S5	5.0	4.0	25	3	289	93	0.80	0.90	0.75	C
Broadway / Havemeyer (SE Corner) Queens-bound	S6	5.0	4.0	3	13	38	85	0.80	0.90	0.27	A
Broadway /Marcy Avenue Station (L)											
				Enter	Exit	Enter	Exit				
Broadway/Marcy Avenue (SE Corner): Queens-bound	S1	5.0	4.0	16	72	16	86	0.80	0.90	0.23	A
Broadway/Marcy Avenue (SW Corner) : Queens-bound	S3	5.0	4.0	0	0	13	50	0.80	0.80	0.16	A
Broadway/Marcy Avenue (NE Corner) : Manhattan-bound	S2	5.0	4.0	143	18	182	38	0.80	0.80	0.48	B
Broadway/Marcy Avenue (NW Corner) : Manhattan-bound	S4	5.0	4.0	0	0	88	143	0.80	0.90	0.49	B
PM Peak Hour											
Bedford Avenue Station (L)											
				Enter	Exit	Enter	Exit				
Bedford Avenue / N 7th Street (NE Corner)*	S4	5.0	4.0	0	6	138	325	0.80	0.90	1.01	D
Bedford Avenue / N 7th Street (SE Corner)*	S3	5.0	4.0	17	12	294	459	0.80	0.90	1.61	E
Driggs Avenue / N 7th Street (NE Corner)	S2	5.0	4.0	122	83	151	232	0.80	0.90	0.82	C
Driggs Avenue / N 7th Street (SE Corner)	S1	5.0	4.0	30	21	98	296	0.80	0.90	0.87	C
Havemeyer/ Marcy Avenue Station (J/M/Z)											
				Enter	Exit	Enter	Exit				
Broadway / Havemeyer (NE Corner) Manhattan-bound	S5	5.0	4.0	21	5	120	43	0.80	0.90	0.32	A
Broadway / Havemeyer (SE Corner) Queens-bound	S6	5.0	4.0	3	22	61	258	0.80	0.90	0.71	C
Broadway /Marcy Avenue Station (L)											
				Enter	Exit	Enter	Exit				
Broadway/Marcy Avenue (SE Corner): Queens-bound)	S1	5.0	4.0	13	122	13	176	0.80	0.80	0.49	B
Broadway/Marcy Avenue (SW Corner) : Queens-bound	S3	5.0	4.0	0	0	35	121	0.80	0.80	0.39	A
Broadway/Marcy Avenue (NE Corner) : Manhattan-bound	S2	5.0	4.0	119	30	139	35	0.80	0.80	0.38	A
Broadway/Marcy Avenue (NW Corner) : Manhattan-bound	S4	5.0	4.0	0	0	46	36	0.80	0.80	0.19	A

Notes:
Methodology based on 2012 CEQR Technical Manual guidelines
Surging factors applied only to exiting volumes
* S3 Required 1.9" Width Increment Threshold (WIT) below the impact threshold of 5" with v/c ratio 1.30 - 1.39 in the AM peak hour.
* S3 Required 1.9" Width Increment Threshold (WIT) below the impact threshold of 2" with v/c ratio 1.60 - and up in the PM peak hour.
* S4 Required 0.4" Width Increment Threshold (WIT) below the impact threshold of 8" with v/c ratio 1.00 - 1.09 in the PM peak hour.

NYCT has defined significant stairway impacts in terms of the width increment threshold (WIT) needed to bring the stair back to its No-Action v/c ratio or bring it to a v/c ration of 1.00, whichever is greater. As stated in the 2012 *CEQR Technical Manual*, in instances where the No-Action v/c ration is less than one but the With-Action v/c ratio is greater than one, the WIT should be calculated to bring the v/c ratio back to 1.00, rather than to the No-Action v/c.

As shown in Tables 26a and 26b, in the future conditions for the 2010 Project and the Proposed Modified Development, the v/c ratio at the Bedford Avenue/North 7th Street SE stairway would be equal to or greater than 1.00 in both the weekday AM and PM peak hours. With a v/c ratio of 1.33 at the Bedford Avenue SE stairway in the weekday AM peak hour with the Proposed Modified Development, a width increment threshold (WIT) of 1.9" is less than the 5.0" impact threshold specified in the *2012 CEQR Technical Manual*. In the weekday PM peak hour, with a v/c ratio of 1.61 with the Proposed Modified

Development, a WIT of 1.9" is less than the 2.0" impact threshold specified in the 2012 *CEQR Technical Manual*. As such, no mitigation is required at the Bedford Avenue/North 7th Street SE stairway in either the weekday AM or PM peak hours with the Proposed Modified Development.

Similarly, while the v/c ratio at the Bedford Avenue/North 7th Street NE stairway with the Proposed Modified Development would be equal to 1.01 in the weekday PM peak hour, as the WIT of 0.4" is much less than the CEQR 8.0" impact threshold, no mitigation is required at this stairway.

As shown in Tables 26a and 26b, for both the 2010 Project and the Proposed Modified Development all other subway stairways would have v/c ratios of less than 1.00. Excluding the Bedford Avenue/North 7th Street SE and NE stairways and Driggs Avenue SE stairway, v/c ratios would range from 0.16 to 0.92 with the Proposed Modified Development in both analysis periods, compared to 0.09 to 0.89 for the 2010 Project with the shuttle mitigation.

For subway station control areas, impacts are considered significant if the proposed project causes a v/c ratio to increase from v/c below 1.00 to v/c of 1.00 or greater. Where a facility is already at or above its capacity (a v/c ratio of 1.00 or greater) in the No-Action condition, a 0.01 increase in the v/c ratio is considered significant. As shown in Table 27a and 27b, with the control area mitigation measures proposed in the 2010 FEIS, the v/c ratios in the 2023 With-Action condition for the Proposed Modified Development would remain well below the CEQR impact threshold, with a maximum v/c ratio of 0.86 at the Broadway/Havemeyer Manhattan-bound two-way turnstile, the same v/c ratio expected as a result of the 2010 Project. As shown in Tables 27a and 27b, for both the 2010 Project and the Proposed Modified Development, all other control areas would also have v/c ratios of less than 1.00. As such, the mitigation measures identified in the 2010 FEIS, along with the proposed additional shuttle, would be sufficient to accommodate the subway trips generated by the Proposed Modified Development, and no further mitigation measures would be needed. Therefore, the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Bus

The 2010 FEIS determined that the 2010 Project would result in significant adverse bus line haul impacts to the following bus routes:

- The guideline capacity would be exceeded on the northbound and southbound B62 bus route during both the weekday AM and PM peak periods for all local load point locations, while the guideline capacity would be exceeded for all the area-wide peak load point locations during the weekday AM peak period.
- The guideline capacity would be exceeded on the eastbound and westbound Q59 bus route during both the weekday AM and PM peak periods for all local and area-wide load point locations.

The FEIS identified measures that could mitigate the bus line haul impacts on the B62 and Q59 bus routes, consisting of the provision of additional buses, ranging from 1 to 7 in each affected peak hour and direction for each route. The FEIS noted that NYCT has agreed that in the event of ridership increases on the Q59 and B62 bus routes (such that it exceeds the MTA/NYCT guidelines), the service frequency would be adjusted accordingly to accommodate the demand. Therefore, with the increased service frequency on the Q59 and B62 bus routes or other equivalent measures, the FEIS indicated that all of the bus line haul impacts would be mitigated and the bus service would operate at acceptable levels.

TABLE 27a
Subway Control Area Analysis—2010 Project with Mitigation

Control Area Elements	Quantity	15-Minute Volumes				Surging Factor	Friction Factor	V/C Ratio	LOS
		Increment		With-Action					
		Enter	Exit	Enter	Exit				
AM Peak Hour									
Bedford Avenue Station (L)									
				Enter	Exit				
Bedford Avenue: Two-way Turnstiles	4	90	6	1011	178	0.80	0.90	0.76	C
Bedford Avenue: Emergency Gate	2	0	0	0	9				
Driggs Avenue : HEET (Exit only)	1	0	21	0	114	0.80	1.00	0.26	A
Driggs Avenue : Emergency Gate	1	0	0	9	3				
Driggs Avenue : HEET	3	0	4	307	19	0.80	0.90	0.46	B
Marcy Avenue Station (J/M/Z)									
Broadway / Havemeyer (Manhattan-bound): Emergency Gate	1	0	3	0	70				
Broadway / Havemeyer (Manhattan-bound): Two-way Turnstiles	1	33	6	297	45	0.75	0.90	0.89	C
Broadway / Havemeyer (Queens-bound): Emergency Gate	1	0	0	0	11				
Broadway / Havemeyer (Queens-bound): Two-way Turnstiles	1	5	4	36	76	0.75	0.90	0.27	A
Broadway/ Marcy Avenue Station (JMZ)									
Manhattan Bound									
Emergency Exit	1		0	8	8	-	-	-	-
HEET(Exit only)	2		22	0	114	0.75	1.00	0.14	A
Two-way Turnstiles	3	100	4	320	45	0.75	0.90	0.32	A
Queens Bound									
Emergency Exit	1			0	6	-	-	-	-
HEET(Exit only)	2		12	0	48	0.75	1.00	0.06	A
HEET	1			9	23	0.75	0.90	0.08	A
Two-way Turnstiles	3	15		48	10	0.75	0.90	0.05	A
PM Peak Hour									
Bedford Avenue Station (L)									
				Enter	Exit				
Bedford Avenue: Two-way Turnstiles	4	66	20	432	826	0.80	0.90	0.73	C
Bedford Avenue: Emergency Gate	2		0	3	14				
Driggs Avenue : HEET (Exit only)	1		30	0	201	0.80	1.00	0.45	B
Driggs Avenue : Emergency Gate	1			0	43				
Driggs Avenue : HEET	3	0	52	102	263	0.80	0.90	0.37	A
Marcy Avenue Station (J/M/Z)									
Broadway / Havemeyer (Manhattan-bound): Emergency Gate	1		1	0	8				
Broadway / Havemeyer (Manhattan-bound): Two-way Turnstiles	1	10	4	118	28	0.75	0.90	0.38	A
Broadway / Havemeyer (Queens-bound): Emergency Gate	1		3	0	28				
Broadway / Havemeyer (Queens-bound): Two-way Turnstiles	1	15	30	64	259	0.75	0.90	0.76	C
Broadway/ Marcy Avenue Station (JMZ)									
Manhattan Bound									
Emergency Exit	1			5	4	-	-	-	-
HEET(Exit only)	2		15	0	33	0.75	1.00	0.04	A
Two-way Turnstiles	3	30		108	19	0.75	0.90	0.11	A
Queens Bound									
Emergency Exit	1			2	15	-		-	-
HEET(Exit only)	2		100	0	176	0.75	1.00	0.21	A
HEET	1			31	36	0.75	0.90	0.23	A
Two-way Turnstiles	3	38		78	70	0.75	0.90	0.12	A

Notes:
Methodology based on 2012 CEQR Technical Manual guidelines
Surging factors applied only to exiting volumes

TABLE 27b
Subway Station Control Area Analysis—Proposed Modified Development with 2010 Project Mitigation

Control Area Elements	Quantity	15-Minute Volumes				Surging Factor	Friction Factor	V/C Ratio	LOS
		Increment		With-Action					
		Enter	Exit	Enter	Exit				
AM Peak Hour									
Bedford Avenue Station (L)									
Bedford Avenue: Two-way Turnstiles	4	13	19	934	191	0.80	0.90	0.72	C
Bedford Avenue: Emergency Gate	2	0	0	0	9				
Driggs Avenue : HEET (Exit only)	1	0	90	0	183	0.80	1.00	0.41	A
Driggs Avenue : Emergency Gate	1	0	0	9	3				
Driggs Avenue : HEET	3	116	17	423	32	0.80	0.90	0.64	B
Marcy Avenue Station (J/M/Z)									
Broadway / Havemeyer (Manhattan-bound): Emergency Gate	1	0	1	0	68				
Broadway / Havemeyer (Manhattan-bound): Two-way Turnstiles	1	25	2	289	41	0.75	0.90	0.86	C
Broadway / Havemeyer (Queens-bound): Emergency Gate	1	0	0	0	11				
Broadway / Havemeyer (Queens-bound): Two-way Turnstiles	1	3	13	34	85	0.75	0.90	0.29	A
Broadway/ Marcy Avenue Station (JMZ)									
Manhattan Bound									
Emergency Exit	1		0	8	8	-	-	-	-
HEET(Exit only)	2		13	0	105	0.75	1.00	0.13	A
Two-way Turnstiles	3	143	5	363	46	0.75	0.90	0.36	A
Queens Bound									
Emergency Exit	1			0	6	-	-	-	-
HEET(Exit only)	2		44	0	80	0.75	1.00	0.10	A
HEET	1		16	9	39	0.75	0.90	0.11	A
Two-way Turnstiles	3	16	12	49	22	0.75	0.90	0.06	A
PM Peak Hour									
Bedford Avenue Station (L)									
Bedford Avenue: Two-way Turnstiles	4	17	17	383	823	0.80	0.90	0.70	B
Bedford Avenue: Emergency Gate	2		1	3	15				
Driggs Avenue : HEET (Exit only)	1		46	0	217	0.80	1.00	0.49	B
Driggs Avenue : Emergency Gate	1			0	43				
Driggs Avenue : HEET	3	152	58	254	269	0.80	0.90	0.60	B
Marcy Avenue Station (J/M/Z)									
Broadway / Havemeyer (Manhattan-bound): Emergency Gate	1		1	0	8				
Broadway / Havemeyer (Manhattan-bound): Two-way Turnstiles	1	21	4	129	28	0.75	0.90	0.41	A
Broadway / Havemeyer (Queens-bound): Emergency Gate	1		2	0	27				
Broadway / Havemeyer (Queens-bound): Two-way Turnstiles	1	3	20	52	249	0.75	0.90	0.71	C
Broadway/ Marcy Avenue Station (JMZ)									
Manhattan Bound									
Emergency Exit	1			5	4	-	-	-	-
HEET(Exit only)	2		30	0	48	0.75	1.00	0.06	A
Two-way Turnstiles	3	119		197	19	0.75	0.90	0.19	A
Queens Bound									
Emergency Exit	1			2	15	-		-	-
HEET(Exit only)	2		122	0	198	0.75	1.00	0.24	A
HEET	1			31	36	0.75	0.90	0.23	A
Two-way Turnstiles	3	13		53	70	0.75	0.90	0.10	A

Notes:
Methodology based on 2012 CEQR Technical Manual guidelines
Surging factors applied only to exiting volumes

Level 1 (Project Trip Generation) Screening Assessment

According to the general thresholds used by the Metropolitan Transportation Authority and specified in the *CEQR Technical Manual*, detailed transit analyses are not required if a proposed project is projected to result in less than 200 peak hour rail or bus transit riders, because a proposed development that generates such a low number of transit riders is unlikely to create a significant impact on the current transit facilities. According to the *CEQR Technical Manual*, if a proposed action would result an increase

of 50 or more bus trips being assigned to a single bus line (in one direction), a detailed bus analysis would be warranted.

As shown in Table 22 above, the Proposed Modified Development is expected to generate a total of approximately 207, 289, 267, and 218 bus trips during the weekday AM, midday, and PM and Saturday midday peak hours, respectively. When compared to the bus trips estimated in the 2010 FEIS (270, 261, 352, and 265, respectively), the Proposed Modified Development would result in a net increase of 28 bus trips in the weekday midday peak hour, but a net decrease of 63, 85, and 47 bus trips in the weekday AM and PM and Saturday midday peak periods, respectively.

As the net increments in bus transit resulting from the proposed modifications (compared to the 2010 FEIS) fall well below the CEQR threshold for analysis, they are not expected to result in any significant adverse bus transit impacts not already disclosed in the 2010 FEIS. As such, the proposed modifications would not alter the conclusions regarding the bus transit operating conditions presented in the 2010 FEIS, and the Proposed Modified Development would require the same potential mitigation measures as identified in the FEIS, which would be coordinated with NYCT.

Additionally, in July, 2012, the MTA announced that they will be implementing a new bus route that will connect the Williamsburg waterfront, Greenpoint, and Long Island City. The proposed bus route will begin at the Marcy Avenue station and extend north to train stations serving the G, 7, E, and M lines in Long Island City, running along Kent Avenue (northbound) and Wythe Avenue (southbound), along the eastern boundary of the project site. The proposed new bus route will add additional bus capacity to the study area, further distributing demand and reducing the impacts of the Proposed Modified Development on area buses.

As such, the Proposed Modified Development would not result in any new significant adverse impacts to transit conditions, and the findings of the 2010 FEIS and subsequent Technical Memoranda relative to transit conditions would not change.

Pedestrians

The 2010 FEIS determined that the 2010 Project would result in a significant adverse pedestrian impact on the south crosswalk at Bedford Avenue and North 7th Street during the AM peak period, which would be mitigated by restriping the crosswalk from 12.0 feet wide to 12.3 feet wide. No other impacts were identified in the 2010 FEIS.

Level 1 (Project Trip Generation) Screening Assessment

As shown in Table 28, the 2010 FEIS concluded that the 2010 Project would generate a total of 2,283, 2,908, 3,430, and 2,620 pedestrian trips during the weekday AM, midday, and PM and Saturday midday peak hours, respectively (includes walk/other,[32] subway, and bus transit trips). As described above, a shuttle bus to the Marcy Avenue station was proposed subsequent to completion of the 2010 FEIS, and incorporated as a commitment in the Restrictive Declaration for the project site. Although the shuttle's traffic implications were assessed in the July 10, 2010 Technical Memorandum, the shuttle bus was not reflected in the pedestrian analyses of the 2010 FEIS and subsequent Technical Memoranda. As such, the projected decrease in subway-generated pedestrian trips resulting from the provision of the shuttle was not disclosed for the 2010 Project.

[32] Walk/other trips include bike and ferry trips, which were included for consistency with the 2010 FEIS analysis, which did not distinguish between walk/other trips.

TABLE 28
Comparison of With-Action Pedestrian Volumes—2010 FEIS v. Proposed Modified Development

Analyzed Conditions	Pedestrian by Mode	AM	MD	PM	SAT MD
2010 FEIS Pedestrian Volumes	Subway	1,123	653	1,352	546
	Bus	270	261	352	265
	Walk	890	1,994	1,726	1,809
	Total	2,283	2,908	3,430	2,620
Proposed Modified Development Pedestrian Volumes	Subway	1,746	907	2,000	984
	Bus	207	289	267	218
	Walk	1,262	3,229	1,816	1,896
	Total	3,215	4,425	4,083	3,098
	Net between FEIS & Proposed Modified Development	932	1,517	653	478
Proposed Modified Development Pedestrian Volumes With Shuttle Service to Subway Stations	Subway	264	140	300	149
	Bus	207	289	267	218
	Walk	1,262	3,229	1,816	1,896
	Total	1,733	3,658	2,383	2,263
	Net between FEIS & Proposed Modified Development	-550	750	-1,047	-357

As previously stated, the Proposed Modified Development would include shuttle service to the Marcy Avenue station as well as the Bedford Avenue station as part of the project. It is assumed that approximately 85 percent of the subway riders would choose to travel by shuttle to the station, 5 percent would travel by NYCT bus, and the remaining 10 percent would walk. As shown in Table 28, accounting for the resulting reduction in pedestrian volumes to both subway stations, the Proposed Modified Development is expected to generate a total of approximately 1,733, 3,658, 2,383, and 2,263 pedestrian trips (i.e., walk/other, subway and bus trips combined) during the weekday AM, midday, and PM and Saturday midday peak hours, respectively. Compared to the total pedestrian trips estimated in the 2010 FEIS, the Proposed Modified Development would result in a net decrease of 550, 1,047, and 357 pedestrian trips in the weekday AM and PM and Saturday midday peak hours, respectively. The total weekday midday pedestrian trips would increase by 750.

As the net increment of total pedestrian trips resulting from the Proposed Modified Development would be greater than with the 2010 Project during the weekday midday period, a Level 2 Screening Assessment is warranted for that period, and is discussed below. As net pedestrian trips in all other peak hours would be lower than with the 2010 Project, no further assessment is warranted for the weekday AM and PM and Saturday midday periods.

Level 2 (Project Generated Trip Assignment) Screening Assessment

Table 29, below, provides a breakdown, by use, of the net 750 pedestrian trips generated by the Proposed Modified Development during the weekday midday peak hour. As shown in the table, as a result of the Proposed Modified Development's net increase in commercial/office spaces compared to the 2010 Project, the majority of the net additional weekday midday pedestrian trips would result from the project site's commercial/office uses; commercial/office uses would generate approximately 1,042 net pedestrian trips, 954 of which would be walk/other trips. The remainder of the net weekday midday pedestrian trips, compared to the 2010 Project, would be generated by the project site's local retail uses; a net total of 376 pedestrian trips would result from local retail uses (a combined net increase of 419 walk/other trips and a net decrease of 43 bus- and subway-related pedestrian trips). The number of pedestrian trips generated on the project site by the proposed other uses and public open space would be less, compared to the 2010 Project.

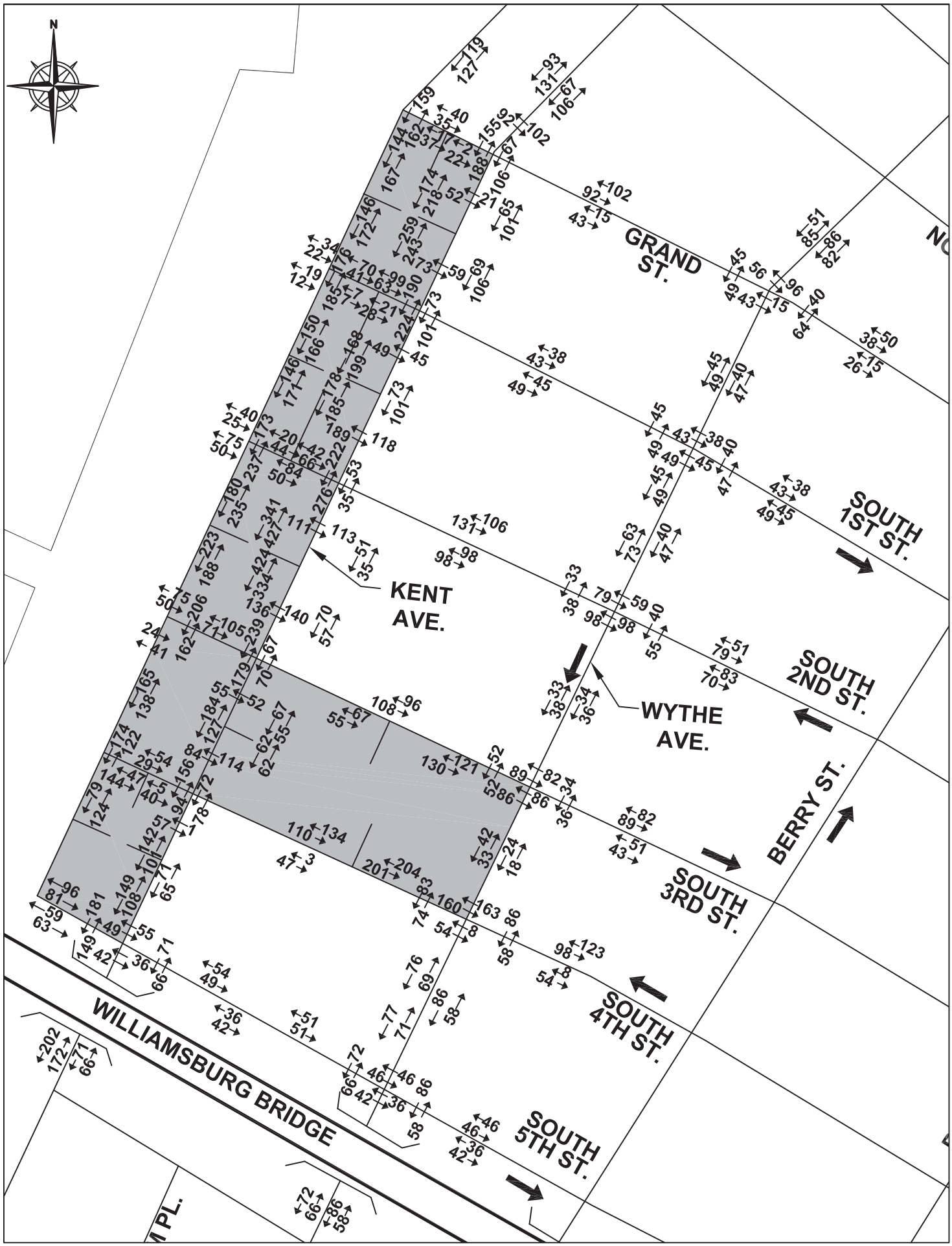
TABLE 29
Weekday Midday Pedestrian Trip Origins—2010 FEIS v. Proposed Modified Development

Land Use:		Local Retail		Residential		Commercial/Office		Health club		Open Space		PS school		Staff		TOTAL ALL USES	
2010 FEIS Pedestrian Trips:																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	**Subway**	36	40	241	241	7	11	33	33	4	7					321	332
	Bus	42	46	46	46	7	11	29	30	2	2					126	135
	Walk/Other	600	673	87	87	83	131	111	131	41	50					922	1,072
																1,369	1,539
Proposed Modified Development Pedestrian Trips:																	
Pedestrian Trips with Shuttle services to subway stations																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	**Subway**	7	8	41	41	7	12	10	11	1	1	0	0	0	0	66	73
	Bus	50	56	29	29	41	64	10	8	1	1	0	0	0	0	131	158
	Walk/Other	795	897	96	96	457	711	82	69	13	13	0	0	0	0	1,443	1,786
		852	961	166	166	505	787	102	88	15	15	0	0	0	0	1,640	2,017
Net Pedestrian Trips:																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	**Subway**	-29	-32	-200	-200	0	1	-23	-22	-3	-6	0	0	0	0	-255	-259
	Bus	8	10	-17	-17	34	53	-19	-22	-1	-1	0	0	0	0	5	23
	Walk/Other	195	224	9	9	374	580	-29	-62	-28	-37	0	0	0	0	521	714
		174	202	-208	-208	408	634	-71	-106	-32	-44	0	0	0	0	271	478

These findings are consistent with the 2012 *CEQR Technical Manual,* which states that during the midday peak hour it is likely that pedestrian trips focus on local eateries, shopping facilities, and other retail establishments. For these periods, connectivity to parking lots and garages and to subway stations and bus stops are far less pronounced, and a broader-brushed assignment of these off-peak pedestrian patterns may be made as part of the midday assessment.

Based on the pedestrian trip generators provided in Table 29, above, a Level 2 (Project Trip Assignment) Screening Assessment was conducted to determine whether the anticipated 750 additional weekday midday pedestrian trips generated by the Proposed Modified Development would result in any significant adverse pedestrian impacts not previously disclosed in the 2010 FEIS. Figure 34 presents the 2023 pedestrian assignment during this peak analysis hour. As shown in Figure 34, the majority of the weekday midday peak hour pedestrian trips would be internal trips, made between the Proposed Modified

2023 Pedestrian Assignment - Weekday MD Peak Hour



Development's approximately 540,060 gsf of office and not-for-profit/artist studio uses and 72,407 gsf of local retail, with office and not-for-profit/artist studio workers frequenting the ground floor restaurants located throughout the project site or picking up lunch and enjoying their lunch break at the proposed waterfront park. The proposed sidewalks throughout the project site are anticipated to have sufficient capacity to accommodate the internal pedestrian trips generated during the weekday midday peak hour. The majority of the proposed sidewalks throughout the project site would be 15 feet wide, with one 17 foot sidewalk along South 2nd Street (immediately adjacent to the Refinery Building) and 30 foot sidewalks along South 1st and South 2nd Streets immediately adjacent to Building B; the western sidewalk of Kent Avenue immediately adjacent to the Refinery Building would be approximately 11 feet wide. Additional public paths would be located in the adjacent waterfront park.

As shown in Figure 34 and described above, high volumes of project-generated pedestrian trips are anticipated along the proposed River Street extension. As such, an LOS analysis was conducted to determine whether the proposed sidewalk widths along this corridor would sufficiently accommodate the projected peak weekday midday pedestrian volumes. The LOS analysis was conducted on those sidewalk elements that would experience the highest pedestrian volumes: the northeast and southeast corners of the proposed River and South 2nd Street extensions. Table 30 shows the results of the LOS analysis. As indicated in the table, approximately 415 pedestrians are expected at the northeast corner (with an effective width of 8.5 feet), resulting in a platoon-adjusted LOS B. At the southeast corner (with an effective width of 23.5 feet), approximately 411 pedestrians are anticipated, resulting in a platoon-adjusted LOS A. As these worst-case River Street pedestrian elements would operate at LOS C or better with pedestrian flow rates below 6.0 pedestrians per minute per foot of width (pmf) in the With-Action condition, no significant impact would occur pursuant to CEQR impact critera. As pedestrian volumes on the remaining proposed River Street pedestrian elements would be lower, a similar acceptable LOS is expected, and no significant adverse pedestrian impacts would result.

TABLE 30
River Street Worst-Case Weekday Midday Sidewalk Conditions

Location	Total Width (feet)	Effective Width (feet)[1]	With-Action Volumes	Peak Hour Volumes	Flow Rate (PMF)	Average Flow LOS	Platoon-Adjusted LOS
River Street & South 2nd Street (NE corner)	15.0	8.5	415	415	1.00	A	B
River Street & South 2nd Street (SE corner)	35.0	23.5	411	411	0.40	A	A

Notes:
LOS = Level of Service; PMF = Pedestrians per minute per foot of width
[1] Adjusted based on 5 foot street tree avoidance and 1.5 foot wall avoidance.

In addition, as shown in Figure 34, total 2023 With-Action pedestrian trips on all existing pedestrian elements (i.e, sidewalks, crosswalks, and intersection corners) would exceed 200 hourly trips per hour on certain elements most proximate to the project site; the highest hourly pedestrian volumes would be approximately 341 southbound and approximately 427 northbound trips at the southwest corner of Kent Avenue and South 2nd Street, for a total of 768 pedestrian trips on this sidewalk element. This would translate to approximately 192 pedestrian trips per 15-minute increment. Even accounting for platoon flow at this 11-foot wide sidewalk, due to the low existing and No-Action pedestrian volumes, the With-Action LOS would be C or better, not exceeding 6.0 pmf. As pedestrian volumes on the remaining study area sidewalks would be lower, similar acceptable LOS are anticipated for all study area pedestrian elements. As such, the Proposed Modified Development would not result in significant adverse pedestrian impacts at any of the study area sidewalk elements shown in Figure 34.

The 2010 FEIS included an analysis of pedestrian conditions at sidewalks, crosswalks, and corners near the Bedford Avenue subway station. As previously stated, the 2010 FEIS concluded that the previous project would have resulted in significant adverse pedestrian impacts on the south crosswalk at Bedford Avenue and North 7th Street during the weekday AM peak hour; no significant adverse impacts were anticipated at any of the other analyzed sidewalk elements. The disclosed significant adverse impact during the weekday AM peak hour was primarily a result of the high pedestrian volumes associated with the 2010 Project's subway trips.

As the 2010 Project would not have resulted in a significant adverse impact at this sidewalk element during the weekday midday peak period (the only analysis period during which the Proposed Modified Development's pedestrian volumes would be greater than the 2010 Project), and subway-related pedestrian trips during this peak hour are approximately 79 percent less for the Proposed Modified Development compared to the 2010 Project (see Table 28, above), the Proposed Modified Development would similarly not result in a significant adverse pedestrian impact at this crosswalk during the weekday midday peak hour. In addition, as total subway-related pedestrian volumes during the weekday midday peak hour would be significantly less than those anticipated with the 2010 Project, no additional analyzed pedestrian elements would experience a significant adverse impact during this peak hour.

As such, the pedestrian analysis findings of the 2010 FEIS and subsequent Technical Memoranda would not change.

Parking

The 2010 FEIS assumed a total of 1,694 accessory parking spaces as part of the 2010 Project. However, subsequent to the FEIS the applicant withdrew the application for the parking special permit and CPC approved a program with 1,428 parking spaces. The 2010 FEIS determined that the parking spaces provided on-site would accommodate the majority of the parking demand generated by the 2010 Project during the weekday and Saturday conditions. However, there would be a shortfall of a maximum of up to 45 parking spaces during the weekday morning (9 AM–10 AM) hour, and a maximum of up to 20 parking spaces during the Saturday late evening hours (9 PM–11 PM) at the project site garages. This overflow parking demand during the weekday and Saturday conditions was expected to be accommodated by off-site parking available in the ¼-mile study area and beyond. Therefore, the 2010 FEIS concluded that the 2010 Project would not result in significant adverse parking impacts in the study area.

As discussed above, the Proposed Modified Development would include a total of 1,050 accessory parking spaces; approximately 300 spaces would be located in Building B and approximately 750 spaces would be located in Building E. Access to the Site B parking facility would be provided from South 1st Street; access to the parking facility in Building E would be provided from South 3rd and South 4th Streets. Tables 31a and 31b provide weekday and Saturday parking accumulation demand tables for the Proposed Modified Development, based on the new land uses and updated mode choice analyses detailed above.

TABLE 31a
Weekday Parking Accumulation

	Neigbourhood Retail			Residential			Office/Not-for-profit Artist Studio Employees			Office/Not-for-profit Artist Studio Visitors			Not-for-profit Sports & Fitness Center/ Commercial Health Club			Open Spaces		School Staff		Total
	72,407 gsf		Accum.	Overnignt 2,282 du	844	Accum.	540,060 gsf		Accum.	540,060 gsf		Accum.	86,789 gsf		Accum.	4.8 acres		29 gsf		Accum.
	338 Total auto trips/day			1844 Total auto trips/day			1298 Total auto trips/day			78 Total auto trips/day			194 Total auto trips/day			18 Total auto trips/day		20 Total auto trips/day		
	In	Out		In	Out		In	Out		In	Out		In	Out		In	Out	In	Out	
12-1 AM	3	2	1	3	3	844	5	3	2	0	0	0	3	2	1	0	0	1	0	849
1-2	3	2	2	3	3	844	3	2	3	0	0	0	3	2	2	0	0	1	0	853
2-3	3	2	3	3	3	844	3	2	4	0	0	0	3	2	3	0	0	0	0	856
3-4	3	3	3	3	3	844	2	2	4	0	0	0	3	3	3	0	0	0	0	856
4-5	2	2	3	3	3	844	2	2	4	0	0	0	3	3	3	0	0	0	0	856
5-6	1	1	3	6	19	831	2	2	4	0	0	0	1	2	2	0	0	0	0	842
6-7	1	1	3	16	55	792	12	2	14	1	0	1	1	1	2	0	0	0	0	814
7-8	1	1	3	19	57	754	61	1	74	3	0	4	9	2	9	0	0	0	0	846
8-9	5	5	3	27	157	624	146	9	211	9	1	12	3	5	7	1	0	10	0	870
9-10	5	4	4	33	50	607	74	15	270	4	1	15	5	2	10	0	0	0	0	919
10-11	9	5	8	33	58	582	17	10	277	2	1	16	5	2	13	0	0	0	0	909
11-12	13	12	9	35	49	568	5	14	268	1	4	13	8	2	19	0	0	0	0	890
12-1 PM	30	34	5	46	46	568	9	13	264	4	7	10	9	8	20	0	0	0	0	880
1-2	32	30	7	47	48	567	12	6	270	7	3	14	7	4	23	1	1	0	0	894
2-3	18	20	5	49	47	569	14	7	277	4	2	16	4	4	23	1	1	0	0	903
3-4	15	11	9	70	42	597	10	12	275	2	2	16	4	4	23	2	1	0	1	933
4-5	14	9	14	105	69	633	19	95	199	1	6	11	5	4	24	1	1	0	4	890
5-6	15	19	10	142	61	714	9	173	35	1	11	1	7	2	29	1	1	0	5	793
6-7	9	11	8	93	47	760	9	38	6	1	2	0	12	9	32	1	1	0	1	809
7-8	3	7	4	84	38	806	8	10	4	0	0	0	9	14	27	0	1	0	0	843
8-9	1	5	0	62	29	839	2	6	0	0	0	0	6	22	11	0	1	0	0	851
9-10	0	0	0	17	18	838	0	0	0	0	0	0	4	10	5	0	0	0	0	844
10-11	0	0	0	11	9	840	0	0	0	0	0	0	3	8	0	0	0	0	1	840
11-12	0	0	0	10	6	844	0	0	0	0	0	0	0	0	0	0	0	0	0	844
	186	186		920	920		424	424		40	40		117	117		8	8	12	12	

TABLE 31b
Saturday Parking Accumulation

	Neigbourhood Retail			Residential			Office/Not-for-profit Artist Studio Employees			Office/Not-for-profit Artist Studio Visitors			Not-for-profit Sports & Fitness Center/ Commercial Health Club			Open Spaces		School Staff		Total
	72,407 gsf		Accum.	Overnignt 2,282 du	844	Accum.	540,060 gsf		Accum.	540,060 gsf		Accum.	86,789 gsf		Accum.	4.8 acres		0 gsf		Accum.
	396 Total auto trips/day			3252 Total auto trips/day			282 Total auto trips/day			18 Total auto trips/day			114 Total auto trips/day			24 Total auto trips/day		0 Total auto trips/day		
	In	Out		In	Out		In	Out		In	Out		In	Out		In	Out	In	Out	
12-1 AM	3	2	1	5	5	844	0	0	0	0	0	0	3	2	1	0	0	0	0	846
1-2	3	2	2	5	5	844	0	0	0	0	0	0	3	2	2	0	0	0	0	848
2-3	3	2	3	5	5	844	0	0	0	0	0	0	3	2	3	0	0	0	0	850
3-4	3	3	3	5	5	844	0	0	0	0	0	0	3	3	3	0	0	0	0	850
4-5	2	2	3	5	5	844	0	0	0	0	0	0	3	3	3	0	0	0	0	850
5-6	1	1	3	11	34	821	0	0	0	0	0	0	1	2	2	0	0	0	0	826
6-7	1	1	3	28	98	751	3	0	3	0	0	0	1	1	2	0	0	0	0	759
7-8	1	1	3	34	148	637	11	0	14	1	0	1	5	1	6	0	0	0	0	661
8-9	6	6	3	36	195	478	27	2	39	2	0	3	2	3	5	1	1	0	0	528
9-10	6	3	6	47	130	395	16	3	52	1	1	3	3	1	7	1	1	0	0	463
10-11	15	8	13	47	130	312	6	5	53	1	1	3	3	1	9	1	1	0	0	390
11-12	14	14	13	54	114	252	5	14	44	0	1	2	5	1	13	1	1	0	0	324
12-1 PM	38	38	13	67	187	132	16	19	41	1	2	1	4	2	15	1	1	0	0	202
1-2	22	16	19	130	130	132	29	19	51	2	1	2	6	5	16	1	1	0	0	220
2-3	19	13	25	146	130	148	14	7	58	1	0	3	2	2	16	2	1	0	0	251
3-4	14	14	25	124	46	226	5	6	57	0	0	3	2	2	16	2	1	0	0	329
4-5	16	17	24	117	117	226	4	21	40	0	1	2	3	2	17	1	1	0	0	311
5-6	19	19	24	239	33	432	2	37	5	0	2	0	4	1	20	1	1	0	0	483
6-7	11	18	17	169	36	565	2	6	1	0	0	0	7	6	21	1	1	0	0	606
7-8	7	16	8	146	24	687	1	2	0	0	0	0	5	8	18	1	1	0	0	715
8-9	7	11	4	124	26	785	1	1	0	0	0	0	3	10	11	0	1	0	0	801
9-10	4	6	2	44	8	821	0	0	0	0	0	0	2	6	7	0	1	0	0	830
10-11	0	1	1	23	8	836	0	0	0	0	0	0	0	7	0	0	0	0	0	837
11-12	0	1	0	16	8	844	0	0	0	0	0	0	0	0	0	0	0	0	0	844
	215	215		1627	1627		142	142		9	9		73	73		14	14	0	0	

As shown in Tables 31a and 31b, the Proposed Modified Development is expected to generate a maximum overnight demand of 844 parking spaces generated by the residential uses; overnight residential parking demand would be fully accommodated by the on-site accessory parking. Combined

with the parking demand of the other proposed uses, the total parking accumulation is expected to be 870 vehicles (83 percent capacity), 880 vehicles (84 percent capacity), and 793 (76 percent capacity) during the weekday AM, midday, and PM peak hours, respectively, and 202 vehicles (19 percent capacity) during the Saturday midday peak hour. The maximum expected parking accumulation (933 vehicles) would occur during the weekday 3 PM to 4 PM analysis hour, with approximately 117 available parking spaces. As such, the proposed 1,050 parking spaces would be sufficient to meet the anticipated parking demand, and the Proposed Modified Development would not result in a significant adverse parking impact. Therefore, the 2010 FEIS and subsequent Technical Memoranda's parking analysis conclusions remain unchanged.

Pedestrian Safety

The 2010 FEIS identified the intersections of Marcy Avenue at Metropolitan Avenue and Havemeyer Street at Broadway (South 6th Street) as high pedestrian and bicycle accident locations. For the T-intersection of Marcy Avenue and Metropolitan Avenue, the FEIS indicated that safety at this location could be improved by providing a high visibility crosswalk across the westbound Metropolitan Avenue and by restriping the faded crosswalks across the eastbound Metropolitan Avenue and across Marcy Avenue with high visibility crosswalks. For the intersection of Havemeyer Street and Broadway (South 6th Street), which is equipped with high visibility crosswalks across Broadway, the 2010 FEIS indicated that safety at this location could be improved by restriping the Havemeyer Street approaches with high visibility crosswalks and installing signs warning turning vehicles to yield to pedestrians on the northbound, eastbound, and westbound approaches. Based on the operational analyses of the future pedestrian conditions and consideration of relative changes in pedestrian levels, it was determined that, with the installation of the improvements noted above, project-generated trips would not result in significant adverse impacts on pedestrian safety in the study area.

The most recent three-year accident data (2009-2011) for nearby intersections was obtained from the New York State Department of Transportation (NYSDOT). The data obtained quantify the number of reportable accidents (involving fatality, injury, or more than $1,000 in property damage), fatalities, and injuries during the study period, as well as a yearly breakdown of pedestrian- and bike-related accidents at each location. According to the 2012 *CEQR Technical Manual*, a high pedestrian/bicycle accident location is one where there were five or more pedestrian- and bicycle- related accidents and/or 48 or more total reportable and non-reportable crashes within any consecutive twelve months of the most recent three-year period for which data is available.

As shown in Table 37, between 2009 and 2011, a total of five pedestrian-related accidents and a total of twelve bicycle-related accidents occurred at study area intersections. No more than three accidents occurred at any of the study area intersections during the three-year period, with the highest number of accidents (three) occurring at the Wythe Avenue/South 5th Street and Wythe Avenue/Broadway intersections. Three bicycle accidents occurred at the Wythe Avenue/South 5th Street intersection in 2010, whereas at the intersection of Wythe Avenue/Broadway, two bicycle accidents occurred in 2009 and one bicycle accident occurred in 2010. No pedestrian accidents occurred at these intersections during the 2009 to 2011 period. The only pedestrian accidents that occurred were in 2011, with one occurring at each of the following intersections: Wythe Avenue/South 1st Street, Wythe Avenue/South 4th Street, and Berry Avenue/Grand Street; two pedestrian accidents occurred at the intersection of Berry Avenue and South 4th Street in 2011. As the total number of pedestrian/bicycle accidents was less than five during each of the twelve-month periods presented above, and none of the intersections had 48 or more total reportable or non-reportable crashes, none of the study area intersections are high pedestrian/bicycle accident locations based on 2012 *CEQR Technical Manual* criteria.

TABLE 32
Pedestrian- and Bicycle-Related Accidents in the Surrounding Area (2009-2011)

North-South	East-West	Pedestrian			Bicycle			Combined Pedestrian/Bicycle			Total Accidents
Roadway	Roadway	2009	2010	2011	2009	2010	2011	2009	2010	2011	
Kent Ave.	Metropolitan Ave.	0	0	0	0	0	0	0	0	0	0
Kent Ave.	N. 1st St	0	0	0	0	0	0	0	0	0	0
Kent Ave.	Grand St.	0	0	0	0	0	0	0	0	0	0
Kent Ave.	S. 1st St	0	0	0	0	0	0	0	0	0	0
Kent Ave.	S. 2nd St	0	0	0	0	0	0	0	0	0	0
Kent Ave.	S. 3rd St	0	0	0	0	0	0	0	0	0	0
Kent Ave.	S. 4th St	0	0	0	0	0	1	0	0	1	1
Kent Ave.	S. 5th St	0	0	0	0	0	0	0	0	0	0
Kent Ave.	S. 6th St	0	0	0	1	0	0	1	0	0	1
Kent Ave.	Broadway	0	0	0	0	0	0	0	0	0	0
Kent Ave.	S. 8th St	0	0	0	0	0	0	0	0	0	0
Kent Ave.		0	0	0	1	0	1	1	0	1	2
Wythe Ave.	Metropolitan Ave.	0	0	0	0	0	0	0	0	0	0
Wythe Ave.	N. 1st St	0	0	0	0	0	0	0	0	0	0
Wythe Ave.	Grand St.	0	0	0	0	0	0	0	0	0	0
Wythe Ave.	S. 1st St	0	0	1	0	0	0	0	0	1	1
Wythe Ave.	S. 2nd St	0	0	0	0	0	0	0	0	0	0
Wythe Ave.	S. 3rd St	0	0	0	2	0	0	2	0	0	2
Wythe Ave.	S. 4th St	0	0	1	0	0	1	0	0	2	2
Wythe Ave.	S. 5th St	0	0	0	0	3	0	0	3	0	3
Wythe Ave.	S. 6th St	0	0	0	0	0	0	0	0	0	0
Wythe Ave.	Broadway	0	0	0	2	1	0	2	1	0	3
Wythe Ave.	S. 8th St	0	0	0	0	0	0	0	0	0	0
Wythe Ave.		0	0	2	4	4	1	4	4	3	11
Berry Ave.	N. 1st St	0	0	0	0	0	0	0	0	0	0
Berry Ave.	Grand St.	0	0	1	1	0	0	1	0	1	2
Berry Ave.	S. 4th St	0	0	2	0	0	0	0	0	2	2
Berry Ave.	S. 6th St	0	0	0	0	0	0	0	0	0	0
Berry Ave.		0	0	3	1	0	0	1	0	3	4
Source: DOT											

It should also be noted that the Proposed Modified would include a waterfront park that would be separated from the project site buildings and the surrounding neighborhood by the proposed River Street extension. During the weekday midday peak analysis period (the period during which pedestrian trips would be the highest), the intersection that would experience the greatest combined pedestrian and vehicular volumes would be the proposed intersection of River and South 3rd Streets. It is anticipated that approximately 190 pedestrians would cross River Street (combined east and west directions) at this intersection and a total of approximately 68 vehicles are expected in the through- and left-turn movements. Pedestrian and vehicular volumes at all other intersections would be lower, comparatively. Measures to reduce pedestrian and vehicular conflicts along the proposed River Street extension would include the installation of all-way stop controls at the intersections of South 1st, South 2nd, South 3rd, and South 4th Streets, as well as pedestrian crosswalks.

In addition, the Proposed Modified Development would include a 375-seat elementary school, which would therefore result in an increase in the number of school children using crosswalks in the vicinity of the project site during the weekday AM and PM peak periods at the start and end of each school day. The installation of signs alerting drivers to the presence of the school, and high visibility crosswalks within the project site and adjacent to the proposed elementary school are measures that could be employed to enhance pedestrian safety in the vicinity of the project site. Typically, as the design is advanced on a school project, meetings are held with DOT-School Safety to develop street striping/signage plans.

N. Air Quality

The 2010 FEIS air quality analysis concluded that the 2010 Project would not cause any significant adverse air quality impacts on sensitive uses in the surrounding community, nor would it be adversely affected by new or existing air emission sources in the project area. The FEIS analysis found that emissions and dispersion of nitrogen dioxide (NO_2), carbon monoxide (CO), and particulate matter smaller than 10 microns (PM_{10}) from the 2010 Project's stationary sources would not violate National Ambient Air Quality Standards (NAAQS), and that the maximum incremental increase in 24-hour annual average concentrations of particulate matter smaller than 2.5 microns ($PM_{2.5}$) from stationary sources would be below significant impact thresholds at both on-site and off-site locations. However, to ensure the avoidance of impacts, limitations on fuel type, minimum stack heights, and restrictions on the locations of sensitive land uses were included in the Restrictive Declaration for the 2010 Project.

The 2010 FEIS also included an industrial source analysis to assess pollutant levels from the existing NYPA facility located north of the project site (between Grand and North 1st Streets). The results of the industrial source analysis demonstrated that there would be no significant adverse air quality impacts on the 2010 Project. The analysis determined that the maximum concentrations of NO_2, CO, and PM_{10} from the NYPA facility, when added to ambient background levels, would be below the NAAQS. Emissions of $PM_{2.5}$ were analyzed in accordance with the City's $PM_{2.5}$ interim guidance criteria, which determined that the maximum incremental increases in $PM_{2.5}$ concentrations from this source on the 2010 Project would be below the annual significant impact criterion of 0.3 micrograms per cubic meter ($\mu g/m^3$), as well as the 24-hour average interim guidance criterion of up to 5 $\mu g/m^3$. Maximum 24-hour average $PM_{2.5}$ incremental concentrations from the NYPA facility could exceed the City's 24-hour interim guidance criterion of 2 $\mu g/m^3$ at a limited number of locations on elevated receptors on Buildings A and B under the modeled conservative operating scenario. Exceedances on Building B were determined not to be significant, consistent with the City's application of this criterion, based on the magnitude, and the limited frequency and extent of these occurrences. To ensure the avoidance of any potential significant adverse impacts on Building A from NYPA facility emissions, limitations on the placement of operable windows and air intakes were included in the Restrictive Declaration for the 2010 Project. These limitations specified that (a) there shall be no air intake valves or ducts above 110 feet for Building A, and (b) any window or other apertures located above 110 feet for Building A shall be sealed or otherwise inoperable. With these measures in place, no significant adverse air quality impacts were predicted from emissions of $PM_{2.5}$ from the NYPA facility.

According to the *CEQR Technical Manual* screening threshold criteria for this area of the City, if a project would generate 170 or more peak hour auto trips, there would be a potential for significant mobile source air quality impacts and a detailed analysis is required. As discussed in the "Traffic" section above, there would be a net decrease in vehicle trips under the Proposed Modified Development during all peak hours as compared to the number of trips estimated for the 2010 Project and analyzed in the 2010 FEIS and a Level 2 Screening Assessment showed that the Proposed Modified Development would not generate 170 or more peak hour auto trips at any intersection. As such, the number of trips under the Proposed Modified Development would also be below the CEQR threshold that would require a detailed mobile source air quality analysis. However, as the Proposed Modified Development would alter the previous site plan and include two garages rather than the four garages included in the 2010 Project, a mobile source air quality analysis was undertaken to determine whether vehicular emissions generated within or near the proposed garages would significantly impact nearby sensitive land uses.

In addition, as the Proposed Modified Development would change the proposed building envelopes and mix of uses on the project site, a stationary source air quality assessment was prepared to determine whether these modifications would result in any new significant adverse stationary source impacts

compared to the 2010 Project. The *Domino Sugar Redevelopment Stationary Source Air Quality Report*, prepared by Philip Habib and Associates in October, 2013, is provided as Appendix 7, and the results of the report are summarized in the Stationary Source Analysis, included below.

In addition, the following air quality analysis reflects the recently revised criteria for evaluating potential 24-hour $PM_{2.5}$ impacts. NYCDEP now defines the 24-hour significant threshold value (STV) for $PM_{2.5}$ as half the difference between the 24-hour $PM_{2.5}$ NAAQS of 35 $\mu g/m^3$ and the 3-year average of applicable $PM_{2.5}$ background concentrations. The STV should be based on the maximum impact estimated for any year of the five year analysis period. Following this recently revised significance threshold guidance, the 24-hour $PM_{2.5}$ background concentration applicable for the Proposed Modified Development was developed using NYSDEC available monitoring data for 2010-2012 for the Brooklyn JHS 126 monitoring station. Based on the data for these three years, the applicable 3-year average 98th percentile $PM_{2.5}$ background value is 24 $\mu g/m^3$. As such, an STV of 5.5 $\mu g/m^3$ (half the difference between the NAAQS and the 24 $\mu g/m^3$ background value) was used for this analysis.

Mobile Source Analysis

As stated above, the Proposed Modified Development would result in a net reduction in vehicle trips compared to the 2010 Project and therefore would not warrant a detailed vehicle emissions analysis. However, due to the modified garage locations and sizes associated with the Proposed Modified Development, a mobile source air quality analysis of the proposed parking facilities was undertaken.

Garage Analysis

The Proposed Modified Development would include two accessory parking garages—a 750-space facility in Building E (on the upland parcel) and a 300-space facility in Building B (on the waterfront parcel). As the 750-space facility would hold more vehicles, have a higher number of vehicles entering and exiting during peak hours, and be developed earlier (2016) than the 300-space facility (2020), when anticipated vehicular emissions would be higher, the detailed garage analysis focused on the larger 750-space (176,900 gsf) facility in Building E.

The garage analysis was conducted in accordance with guidance provided in the 2012 *CEQR Technical Manual* for mechanically ventilated enclosed garages to estimate the potential impacts of the garage exhaust and uses computational procedures presented in EPA's "Workbook of Atmospheric Dispersion Estimates" (AP-26). This methodology was used to estimate CO concentrations at various distances from the proposed Building E garage and assumes that the concentration within the garage would be equal to the concentration in the vent exhaust; the appropriate initial horizontal and vertical dispersion coefficients at the proposed vent faces were used. Based on the current Building E design, two exhaust vents were considered for this analysis, and CO concentrations were estimated near these anticipated vent locations at elevated, near sidewalk, and far sidewalk receptors.

The analysis assumed that all departing autos would idle for one minute before traveling to the garage exits, and all arriving and departing autos would travel at 5 miles per hour (mph) within the garage. The mean traveling distance within the garage was estimated based on the garage floor area (176,900 gsf). Contributions from emissions generated by street traffic were added to project-generated impacts and appropriate background levels to estimate total concentration. As the proposed garage would be used almost exclusively by gasoline-powered automobiles and not diesel-fueled trucks, CO was the only pollutant considered in the analysis, and the maximum estimated 8-hour CO concentration (together with the CO background value) was then compared to the 8-hour CO NAAQS of 9 parts per million (ppm).

As departing ("cold") autos emit considerably higher rates of CO than arriving ("hot") autos, (1) maximum hourly CO emission rates within the garage were calculated for the time period with the maximum number of departing autos in any hour, and (2) maximum hourly CO emission rates over a consecutive 8-hour period were computed for the 8-hour time period that is expected to average the largest number of departing autos per hour.

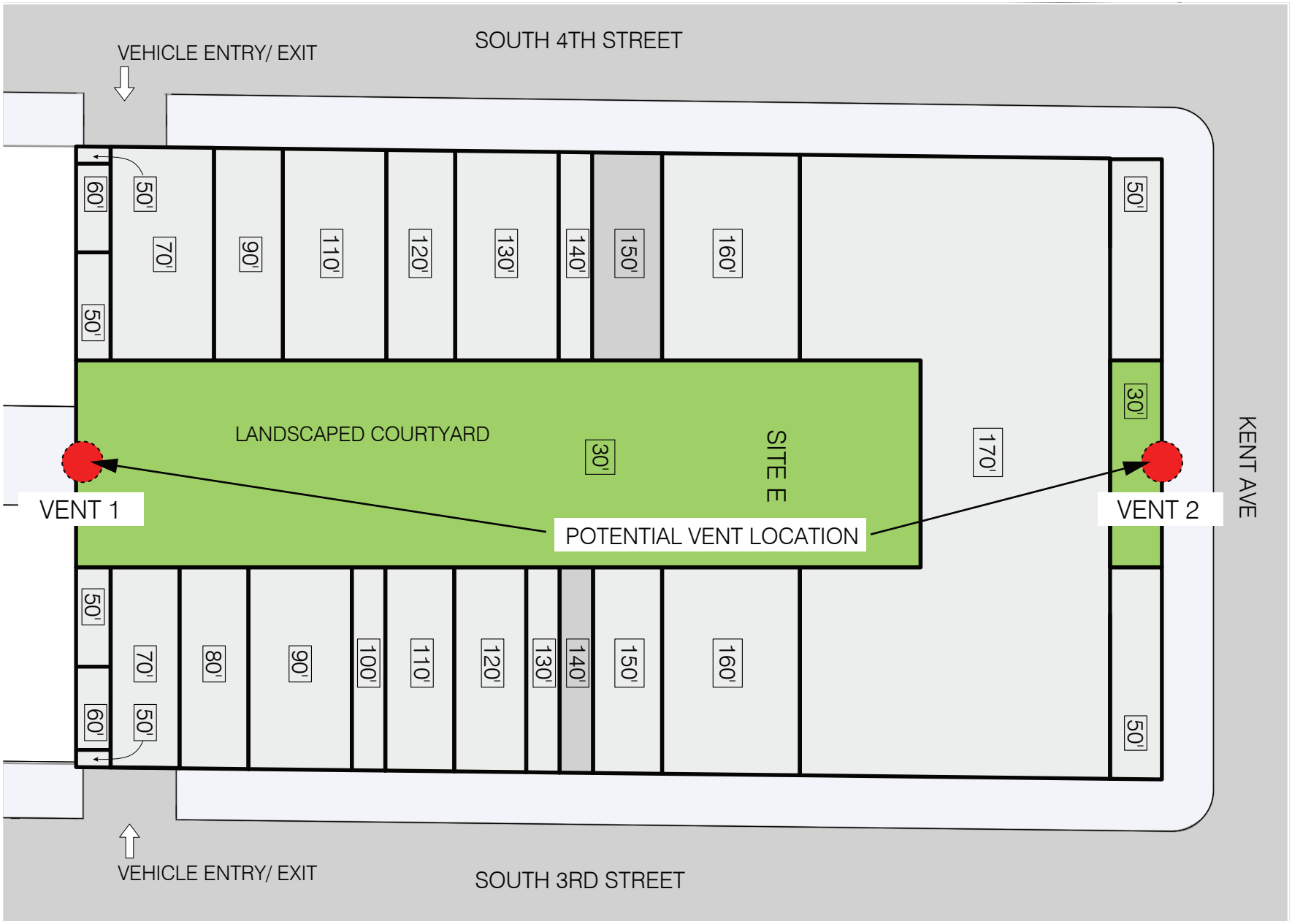
Table 33, below, presents the anticipated Building E hourly parking demand. As indicated in the table, the maximum number of arriving and departing vehicles in one hour (109 in and 192 out between 5:00PM and 6:00PM) and 8 hours (an average of 71 in and 78 out between 12:00PM and 8:00PM) were used for the analysis.

TABLE 33
Hourly Building E Garage Parking Demand

Time Period	Volume		Total Vehicles in the Building E Garage
	In	Out	
12-1 AM	12	8	560
1-2	10	8	562
2-3	10	8	564
3-4	10	10	564
4-5	9	9	564
5-6	8	18	554
6-7	22	41	535
7-8	66	41	560
8-9	145	115	590
9-10	88	49	631
10-11	42	51	623
11 AM-12 PM	36	51	608
12-1 PM	**53**	**60**	601
1-2	**58**	**40**	610
2-3	**53**	**45**	618
3-4	**62**	**43**	637
4-5	**93**	**129**	601
5-6	**109***	**192***	518
6-7	**78**	**68**	528
7-8	**64**	**43**	549
8-9	47	35	561
9-10	12	14	559
10-11	8	11	556
11-12	6	5	557
Maximum 8-Hour Average	***71***	***78***	

Notes: Bold values indicate the highest 8-hour period; Values with * indicate the highest 1-hour period.

As stated above and indicated in Figure 35, two vent locations were evaluated—one along the eastern edge of the interior courtyard of the proposed Building E (Vent 1) and one above the sidewalk along Kent Avenue (Vent 2). For the courtyard vent, following DCP guidance, a series of conservative assumptions were used: (1) a stack height of 6 feet; (2) a distance from vent to a six-foot tall pedestrian receptor of 5 feet; and (3) a height of a window receptor of 10 feet.



Building E Analyzed Garage Vent Locations

Vent 1 Analysis

Due to the protected nature of the interior courtyard, no line source contributions from on-street traffic were considered.

For the 8-hour averaging period, the Building E parking garage would contribute 0.5 ppm to the courtyard window and 0.6 ppm to the pedestrian receptor located 5 feet from Vent 1. With an added background value of 2.8 ppm, the total 8-hour averaged CO concentration would be approximately 3.4 ppm, which is less than the NAAQS of 9 ppm and the *de minimis* criterion specified in the 2012 *CEQR Technical Manual*. Therefore, no significant garage exhaust emission impacts on local air quality are predicted for this analyzed vent location.

Vent 2 Analysis

Analysis of parking garage emissions was conducted following CEQR procedure for mechanically-ventilated parking garages (2012 *CEQR Technical Manual* Air Quality Appendix Page 3-5). CO emissions within the garage and cumulative CO impacts from garage and adjacent street emissions were calculated. Two receptors were analyzed: one is located at 5 feet (1.52 m) from the vent, and the second one located at 50 feet (15.24 m) across the street. The contribution from on-street traffic on South 4th Street was calculated based on predicted traffic volumes of approximately 470 vehicles per hour using equations provided in the *CEQR Technical Manual*'s "Air Quality Technical Appendix" and was then added to the project-generated impacts.

With an added 8-hour background value of 2.8 ppm, the total 8-hour averaging CO concentrations would be 3.4 ppm for the near sidewalk receptor (at a distance of 5 feet from the vent) and 3.3 ppm for the far sidewalk receptor (at a distance of 50 feet from the vent). As both of the forecasted CO concentration levels would be below the NAAQS of 9 ppm and the CEQR *de minimis* criterion, no significant adverse air quality impacts are predicted for this vent location.

As the Proposed Modified Development would not result in any significant adverse mobile source air quality impacts, the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Stationary Source Analysis

The potential stationary source air quality impacts of the Proposed Modified Development were estimated following the procedures and methodologies prescribed in the *CEQR Technical Manual*. The key issues addressed are:

- The potential of the heating, ventilation, and air conditioning (HVAC) system emissions of the proposed buildings to significantly impact other proposed buildings on the development site (project-on-project impacts);
- The potential of the HVAC emissions of the proposed buildings—individually and cumulatively—to significantly impact existing land uses (project-on-existing impacts);
- The potential of the combined HVAC emissions of all development buildings combined to significantly impact neighborhood $PM_{2.5}$ levels;
- The potential of the HVAC emissions of existing commercial, institutional, or residential developments located within 400 feet of the Proposed Modified Development (where the stacks

of these existing facilities would be lower or similar to the height of the proposed buildings) to significantly impact the proposed buildings;

- The potential of existing large combustion source emissions (that the *CEQR Technical Manual* defines as a power plant, cogeneration facility, etc., located within 1,000 feet of development sites) to significantly impact the Proposed Modified Development, and
- The potential of the toxic air emissions generated by nearby existing industrial sources to significantly impact the Proposed Modified Development.

The *Domino Sugar Redevelopment Stationary Source Air Quality Report*, prepared by Philip Habib and Associates in October, 2013, which is provided as Appendix 7, addresses these issues, the results of which are summarized below.

Project-on-Project Analysis

Each of the five buildings comprising the Proposed Modified Development will have its own HVAC system that will use natural gas. 24-hour $PM_{2.5}$ and 1-hour/annual NO_2 emission rates for the building-on-building analysis were developed using natural gas fuel usage factors from the CEQR Air Quality Technical Appendix, fuel consumption rates for each building size, and $PM_{2.5}$ and NO_2 emission factors obtained from EPA's "Compilation of Air Pollutant Emission Factors" (AP-42).

The New York City Building Code requires that a rooftop stack be at least 10 feet away from a taller building. However, as all of the proposed buildings are separated by distances of more than 30 feet, this Building Code requirement is not applicable to the Proposed Modified Development, and stack location for each of the proposed buildings was determined on a case-by-case basis depending on the building roof size and the proximity of taller nearby buildings. Stack heights were assumed to be 3 feet above the building height, as per CEQR recommendations.

The results of the building-on-building analysis are greatly influenced by the location of each building relative to each taller building and the prevailing wind direction. As shown in Tables 34 through 36, no significant building-on-building HVAC emissions impacts are predicted with the proposed stack locations specified below.

$PM_{2.5}$ Analysis Results

- Building A's HVAC emissions (residential towers and commercial base) would not cause a significant adverse air quality impact on Building B with the analyzed Building A stack location on the roof of Building A's residential component, approximately 55 feet from the lot line facing Building B. As shown in Table 34, at this stack location, the maximum estimated 24-hour $PM_{2.5}$ impact of Building A's HVAC emissions on Building B is estimated to be 1.37 $\mu g/m^3$ and the maximum annual average impact is estimated to be 0.049 $\mu g/m^3$, which are less than the STVs.
- For the Refinery Building on Building B, the maximum 24-hour $PM_{2.5}$ impact of the Refinery Building's HVAC emissions (located at least 70 feet from South 2nd Street/145 feet from the lot line facing building B) is estimated to be 0.57 $\mu g/m^3$ and the maximum annual average impact is estimated to be 0.036 $\mu g/m^3$ (see Table 34). As these maximum $PM_{2.5}$ impacts are less than the STVs, the Refinery Building's $PM_{2.5}$ emissions would not cause significant air quality impacts on Building B.

- With the stack located at the same location as was used for the Refinery Building on Building B analysis, both the maximum 24-hour and annual $PM_{2.5}$ impacts on Building D (0.15 μg/m^3 and 0.004 μg/m^3, respectively) are less than the STVs. Therefore, the Refinery Building's $PM_{2.5}$ emissions would not cause significant air quality impacts on Building D.
- For the Building E on Building D analysis, the HVAC stack was located at least 100 feet south from Kent Avenue and 50 feet from South 4th Street on the highest tier of Building E. The maximum 24-hour $PM_{2.5}$ impact of the HVAC emissions is estimated to be 0.58 μg/m^3 and the maximum annual average impact is estimated to be 0.017 μg/m^3 (see Table 34). As these maximum $PM_{2.5}$ impacts are less than the STVs, the Building E emissions would not cause significant air quality impacts on Building D.
- For the Building E on Refinery Building analysis, the HVAC stack was located at the same location as was used in the Building E on Building D analysis. The maximum 24-hour $PM_{2.5}$ impact is estimated to be 1.41 μg/m^3, and the maximum annual average $PM_{2.5}$ impact is estimated to be 0.065 μg/m^3, both of which are less than the STVs. These results show that Building E $PM_{2.5}$ emissions would not cause significant air quality impacts on the Refinery Building.

TABLE 34
Project-on-Project HVAC $PM_{2.5}$ Emission Impacts

Analysis Year	Maximum 24-Hour Impact (μg/m^3)	Maximum Annual Impact (μg/m^3)
Building A on Building B		
2008	0.95	0.047
2009	0.86	0.048
2010	1.01	**0.049***
2011	**1.37***	0.042
2012	1.36	0.042
Refinery Building on Building B		
2008	0.22	0.029
2009	0.24	0.029
2010	0.18	0.028
2011	**0.57***	0.033
2012	0.25	**0.036**
Refinery Building on Building D		
2008	0.08	0.003
2009	0.12	0.003
2010	0.07	0.003
2011	**0.15***	0.004
2012	0.13	**0.004***
Building E on Building D		
2008	0.24	0.017
2009	0.24	0.018
2010	0.20	0.015
2011	**0.58***	0.016
2012	0.25	**0.017***
Building E on the Refinery Building		
2008	1.35	0.051
2009	1.34	0.052
2010	0.80	0.049
2011	**1.41***	**0.065***
2012	1.26	0.052

Notes: * denotes maximum estimated value

- As shown in Table 35, the maximum $PM_{2.5}$ neighborhood HVAC impact of all project buildings combined is 0.006 μg/m^3, which is approximately six percent of the neighborhood $PM_{2.5}$ STV of 0.1 μg/m^3. As such, project site HVAC emissions would not cause significant neighborhood impacts.

TABLE 35
Neighborhood $PM_{2.5}$ Analysis Results

Analysis Year	Estimated $PM_{2.5}$ Concentration over 1 km by 1 km Receptor Grid (μg/m^3)	CEQR Neighborhood Threshold (μg/m^3)
2008	0.004	0.1
2009	0.006	
2010	0.006	
2011	0.006	
2012	0.006	
Maximum Value	**0.006**	

NO_2 Analysis Results[33]

- As shown in Table 36, the result of Building A's HVAC NO_2 emissions impact on Building B (residential towers and commercial base) on Building B shows that the maximum 1-hour NO_2 eighth highest daily 1-hour concentration averaged over five years is 119.4 μg/m^3, and the total maximum annual average NO_2 concentrations for Building A is 38.9 μg/m^3. As these values are less than the NAAQS, Building A's HVAC NO_2 emissions would not result in a significant air quality impact on Building B.
- For the Refinery Building on Building B, both the 1-hour and annual NO_2 concentrations are less than the NAAQS. The maximum 1-hour NO_2 eighth highest daily 1-hour concentration averaged over five years is 117.1 μg/m^3, and the total maximum annual average NO_2 concentrations for Building A is 38.8 μg/m^3 (see Table 36). As these values are less than the NAAQS, the Refinery Building's HVAC NO_2 emissions would not result in a significant air quality impact on Building B.
- The Refinery Building's NO_2 emissions would not cause a significant air quality impact on Building D. The maximum 1-hour NO_2 eighth highest daily 1-hour concentration averaged over five years is 117.0 μg/m^3, and the total maximum annual average NO_2 concentrations for Building A is 38.7 μg/m^3, below the 1-hour and annual NO_2 NAAQS of 188 μg/m^3 and 100 μg/m^3, respectively. As these values are less than the NAAQS, the Refinery Building's HVAC NO_2 emissions would not result in a significant air quality impact on Building D.
- As shown in Table 36, the result of Building E emissions impact on the Refinery Building is that the maximum 1-hour NO_2 eighth highest daily 1-hour concentration averaged over five years is 117.7 μg/m^3, and the total maximum annual average NO_2 concentration for Building A is 38.9 μg/m^3, below the 1-hour and annual NO_2 NAAQS. Therefore, Building E NO_2 emissions would not cause a significant air quality impact on the Refinery Building.
- For Building E on Building D, the maximum 1-hour NO_2 eighth highest daily 1-hour concentration averaged over five years is 117.5 μg/m^3, and the total maximum annual average NO_2 concentrations for Building A is 38.8 μg/m^3. As both the 1-hour and annual NO_2

[33] The stack locations for the NO_2 analysis are the same as those used in the $PM_{2.5}$ analysis.

concentrations are less than the NAAQS for these pollutants, Building E's HVAC NO_2 emissions would not result in a significant air quality impact on Building D.

TABLE 36
Project-on-Project HVAC NO_2 Emission Impacts

Analysis Year	Total 1-hour NO_2 Concentration ($\mu g/m^3$)	Annual NO_2 Impact ($\mu g/m^3$)	Total Annual NO_2 Concentration ($\mu g/m^3$)
Building A on Building B			
2008	120.4	0.170	38.9
2009	120.4	0.177	38.9
2010	120.4	**0.178***	**38.9***
2011	124.9	0.152	38.8
2012	111.0	0.154	38.8
5-Year Average	**119.4**		
Refinery Building on Building B			
2008	120.4	0.093	38.8
2009	120.4	0.094	38.8
2010	120.4	0.091	38.8
2011	117.9	**0.106***	**38.8**
2012	106.4	0.099	38.8
5-Year Average	**117.1**		
Refinery Building on Building D			
2008	120.4	0.010	38.7
2009	120.4	0.012	38.7
2010	120.4	0.011	38.7
2011	117.3	0.013	38.7
2012	106.4	**0.014***	**38.7***
5-Year Average	**117.0**		
Building E on Building D			
2008	120.4	0.063	38.8
2009	120.4	**0.065***	**38.8***
2010	120.4	0.055	38.8
2011	119.9	0.058	38.8
2012	106.4	0.061	38.8
5-Year Average	**117.5**		
Building E on the Refinery Building			
2008	120.4	0.186	38.9
2009	120.4	0.190	38.9
2010	120.4	0.180	38.9
2011	118.9	**0.239***	**38.9***
2012	108.5	0.193	38.9
5-Year Average	**117.7**		

Notes: * denotes maximum estimated value

The results of the building-on-building analysis are based on the minimum distances that the exhaust stacks would be located from the receptor building. Should the stacks on the roofs of each building be located further from the receptor buildings, the estimated impacts would be less than those presented, and therefore also less significant.

Project-on-Existing Analysis

As all of the proposed buildings are taller than nearby (i.e., within 400 feet) existing buildings, no significant impacts on existing sensitive land uses are anticipated and a quantitative analysis of the potential project impacts on existing buildings is not warranted. However, based on DCP guidance, a cumulative analysis was conducted to estimate the potential impacts of the HVAC emissions of all of the project buildings combined on existing land uses. The receptors for the cumulative impact analysis included ground-level receptors placed around the base of each project site building, Grand Ferry Park, and receptors on existing buildings and publicly-accessible ground-level locations. The results of this analysis are presented in Table 37. As shown, all predicted 24-hour $PM_{2.5}$ impacts and total 1-hour NO_2 concentrations are less than the $PM_{2.5}$ STV and 1-hour NO_2 NAAQS, respectively.

TABLE 37
Cumulative Estimated Pollutant Impact and Total Concentrations

Analysis Year	24-Hour $PM_{2.5}$ Impact ($\mu g/m^3$)	Total 1-hour NO_2 Concentrations ($\mu g/m^3$)
2008	0.68	120.4
2009	0.65	120.4
2010	0.67	120.4
2011	**0.91***	119.9
2012	0.83	106.4
	5-Year 1-hour NO_2 Average	117.5

Notes: * denotes maximum estimated value

Cluster Analysis

As all five proposed buildings comprising the Proposed Modified Development vary greatly in height (from 170 to 535 feet) and are located with streets in between, these buildings do not meet the CEQR definition of an emission cluster and a cluster analysis is not warranted.

Potential Impacts from Large Existing Combustion Emission Sources

The NYPA 1st Street Facility, which has a current air pollution control (Title V) permit issued by NYSDEC, is located within 400 feet of the Proposed Modified Development. In particular, the exhaust stack of this facility is located within approximately 215 to 220 feet from Building A of the Proposed Modified Development and the emissions from this facility, therefore, have the potential to significantly impact the sensitive receptors (i.e., operable windows) of the residential units of the proposed buildings. No other large emission sources were identified.

An air quality dispersion modeling analysis was therefore conducted to estimate whether the potential impacts of the NYPA stack emissions on the residential receptors of Buildings A and B (i.e., those buildings closest to the NYPA plant) would be significant. The results of the analysis are shown in Table 38, and discussed below. A separate analysis was undertaken for the commercial portion of Building A, and is discussed in the following section.

TABLE 38
NYPA Emissions Impact on Building A and B Receptors

Analysis Year	Estimated Maximum 24-Hour $PM_{2.5}$ Impact ($\mu g/m^3$)		Total Estimated 8th Highest Maximum Daily 1-Hour NO_2 Concentration Averaged Over 5 Years ($\mu g/m^3$)		1-Hour NO_2 NAAQS
	Building A (Residential Towers)	Building B	Building A (Residential Towers)	Building B	
2008	**4.63***	1.34	162.4	120.7	188
2009	4.46	1.45	120.4	120.4	
2010	3.27	**1.57***	120.4	120.4	
2011	3.75	0.99	151.7	124.6	
2012	3.90	1.37	113.0	108.5	
5-Year 1-Hour NO_2 Average			**133.6**	**118.9**	

Notes: * denotes maximum estimated value

$PM_{2.5}$ Analysis Results (Building A (Residential Towers) and Building B)

As shown in Table 38, the maximum estimated 24-hour average $PM_{2.5}$ impact at the residential receptors of Building A receptors is 4.63 $\mu g/m^3$, which is less than the STV of 5.5 $\mu g/m^3$. Based on the results of this analysis, no significant adverse $PM_{2.5}$ impact would occur at Building A residential receptors as a result of NYPA emissions.

The maximum estimated 24-hour average $PM_{2.5}$ impact at Building B, which is all residential, is estimated to be 1.57 $\mu g/m^3$, which is less than the STV of 5.5 $\mu g/m^3$, and no significant adverse $PM_{2.5}$ impact would occur at a sensitive receptor on Building B as a result of NYPA stack emissions. In addition, based on results of analysis for Building B, which would be the second-most impacted building, no exceedances of the STV of 5.5 $\mu g/m^3$ are anticipated at any of the other proposed buildings.

Potential NYPA Impact on Commercial Uses of Building A

The air intake system for the proposed commercial uses of Building A has not yet been designed. However, any air intake ducts and/or any operable windows for the commercial uses would have to be located so as not to be significantly affected by the NYPA emissions. As such, an analysis was conducted to determine acceptable locations on the commercial portion of Building A for air intake ducts and/or operable windows. The applicable 24-hour significant threshold value of 5.5 $\mu g/m^3$ was used for this analysis.

Receptors were placed at the floor level of each façade of the Building A commercial portion in 10-foot increments starting from 50 feet and extending up to the top of the commercial portion of the building, at a height of 285 feet. Any locations where the estimated maximum $PM_{2.5}$ impact from the NYPA plant's emissions is greater than the STV (5.5 $\mu g/m^3$) would not be an acceptable location for either an air intake duct or an operable window. The result of this analysis is that air intake ducts and operable windows should not be allowed on the northern façade of the commercial part of Building A at elevations from 160 to 260 feet (approximately from the 16th to the 26th floor). Maximum estimated impacts on the northern façade of the commercial portion of Building A below 160 feet and above 260 feet, as well as at any location on the east, west, and south facades of the tower, would be less than the applicable STV, and would therefore be acceptable locations for air intake ducts and/or operable windows.

NO_2 Analysis Results (Building A (Residential Towers) and Building B)

For Building A residential receptors, the total estimated eighth highest daily 1-hour NO_2 concentration, averaged over five years, is 133.6 μg/m^3, which is less than the 1-hour NO_2 NAAQS of 188 μg/m^3 (see Table 38). For Building B, which is all residential, the total estimated eighth highest daily 1-hour NO_2 concentration, averaged over five years, is 118.9 μg/m^3, which is less than the 1-hour NO_2 NAAQS of 188 μg/m^3. Based on modeling results, no exceedances of the 1-hour NO_2 NAAQS at the residential receptors of Building A and B receptors as a result of NYPA stack emissions are predicted.

Analysis of Toxic Air Emissions from Existing Industrial Sources

Emissions of toxic pollutants from the operation of nearby existing industrial emission sources could affect sensitive land uses within the Proposed Modified Development. An analysis was therefore conducted to determine whether the potential impacts of these emissions would be significant.

Emissions from existing industrial facilities located within 400 feet of the project site that are permitted to exhaust toxic pollutants were considered in this analysis. Seventeen permits were identified from the NYCDEP Clean Air Tracking System database as being from facilities located within 400 feet of the Proposed Modified Development. Based on a review of these permits:

- Four permits were for facilities that no longer exist or ceased their operations, and were therefore eliminated from further consideration; and
- Five permits were for the facilities that are currently located on lots that would be occupied in the future by the Proposed Modified Development, and were therefore eliminated from further consideration.

No non-permitted industrial sources of toxic pollutants were found during the field visit for this area. As such, the potential impacts of the emissions from the currently operating facilities that have existing permits were evaluated. The result of this analysis is that no exceedances of EPA/NYSDEC/NYCDEP guideline thresholds values for both carcinogenic and non-carcinogenic toxic pollutants are predicted on the Proposed Modified Development.

(E) Designation Language

Several of the Proposed Modified Development's buildings would require (E) designations for their central heating systems that would specify the type of fuel to be used, stack location, and the height of the stack(s) above the roof.

No (E) designation regarding stack location are necessary for Buildings B and D because they are taller than nearby buildings and their emissions would not cause impacts at any rooftop stack location. However, an (E) designation for these buildings would restrict fuel use to only natural gas.

The (E) designation text for each of the proposed buildings related to air quality would be as follows:

Building A (E) designation

"Any new development on the above-referenced property must ensure that the fossil fuel-fired heating and hot water equipment will utilize only natural gas, and must be fitted with low NO_x burners with a maximum emission concentration of 30 ppm, and that heating and hot water equipment exhaust stack(s) are located at least 438 feet above grade, at least 35 feet from South

1st Street, and at least 95 feet from the lot line facing Building B, to avoid any potential significant air quality impacts.

In addition, air intake ducts and operable windows would not be allowed on the northern façade of the commercial base of Building A at elevations from 160 to 260 feet (approximately from the 16th to the 26th floor)."

Refinery Building (E) designation

"Any new development on the above-referenced property must ensure that the fossil fuel-fired heating and hot water equipment will utilize only natural gas, and must be fitted with low NO_x burners with a maximum emission concentration of 30 ppm, and that heating and hot water equipment exhaust stack(s) are located at least 193 feet above grade, at least 70 feet from South 2nd Street, and at least 145 feet line facing Building B, to avoid any potential significant air quality impacts."

Building E (E) designation

"Any new development on the above-referenced property must ensure that the fossil fuel-fired heating and hot water equipment will utilize only natural gas, and must be fitted with low NO_x burners with a maximum emission concentration of 30 ppm, and that heating and hot water equipment exhaust stack(s) are located at least 173 feet above grade, at least 100 feet from Kent Avenue, and at least 50 feet from South 4st Street, to avoid any potential significant air quality impacts."

Building B (E) designation

"Any new development on the above-referenced property must ensure that the fossil fuel-fired heating and hot water equipment will utilize only natural gas, and must be fitted with low NO_x burners with a maximum emission concentration of 30 ppm, and that exhaust stack(s) are located at least 533 feet above grade, to avoid any potential significant air quality impacts."

Building D (E) designation

"Any new development on the above-referenced property must ensure that the fossil fuel-fired heating and hot water equipment will utilize only natural gas, and must be fitted with low NO_x burners with a maximum emission concentration of 30 ppm, and that exhaust stack(s) are located at least 538 feet above grade, to avoid any potential significant air quality impacts."

With the above mentioned controls in place, no significant adverse impacts related to air quality would result from the Proposed Modified Development. The (E) designations for the Applicant's development sites are based on the Applicant's illustrative building design for these sites. Any changes to the heights or configurations of the buildings or tiers may necessitate revisions to the (E) designations.

O. Greenhouse Gas Emissions

The 2010 FEIS included an analysis of greenhouse gas (GHG) emissions associated with the previous project, as well as identifying project-specific measures to reduce GHG emissions and improve energy efficiency. As stated in the 2010 FEIS, the site selection, the reuse of the existing Refinery Building, the dense and mixed-use design, the commitment to achieve a significant reduction in energy uses, and other measures incorporated in the 2010 Project would result in lower GHG emissions than would otherwise be achieved by similar residential and commercial uses, and, thus, would advance New York City's GHG reduction goals as stated in *PlaNYC*. The Proposed Modified Development would incorporate and enhance these energy-efficient factors, and, as shown in the analysis below, would not result in a significant adverse GHG impact.

GHGs are those gaseous constituents of the atmosphere from both natural and anthropogenic (i.e., resulting from the influence of human beings) emission sources, that absorb infrared radiation (heat) emitted from the earth's surface, the atmosphere, and clouds. This property causes the general warming of the earth's atmosphere, or the "greenhouse effect." Although the contribution of any single project to climate change is infinitesimal, the combined GHG emissions from all human activity have a severe impact on global climate. While the emission of criteria pollutant and toxic air emissions are assessed in the context of health-based standards and local impacts, there are no thresholds for assessing the significance of a project's contribution to climate change. Therefore, the intent of a GHG emissions analysis is not to identify the relative increment in GHG emissions due to a proposed project as compared with the No-Action condition, but rather to present the total GHG emissions associated with a project (on-site fuel use, electricity use, vehicle use, waste generation, and construction) and identify the measures incorporated into a project to limit those emissions.

The 2010 FEIS predicted that GHG emissions from the 2010 Project would have been approximately 39,699 metric tons of carbon dioxide equivalent (CO_2e), including GHG emissions from HVAC systems, off-site emissions associated with the production of electricity used on-site, emissions from vehicle use attributable to the 2010 Project, emissions indirectly produced as a result of solid waste that would be generated by the development and disposed of in landfills, as well as average annual and total GHG emissions that would result from construction of the 2010 Project, including on-site construction equipment, delivery trucks, and upstream emissions from the production of steel, rebar, aluminum, and cement used for construction. The CO_2e is a sum which includes the quantity of each GHG weighted by a factor of its effectiveness as a GHG using CO_2 as a reference.

Similar to the 2010 Project, the Applicant would commit to the same measures aimed at reducing energy consumption and GHG emissions as the 2010 Project. Specifically, the Applicant would commit to the following measures: energy efficient systems and design measures and efficient practices; the commitment to exceed the building energy performance required by the current building code by at least 10 percent;[35] the creation of a dense mixed-use development on a brownfield site proximate to transit, commercial uses, and open space, thereby reducing the dependence on personal vehicles; the reuse of much of the existing site materials on site, including preserving the Refinery Building façade, recycling or using other debris for site fill; striving to use recycled materials, including recycled steel and fly ash in concrete; using locally-purchased materials to the extent practicable; providing individual controls for 90 percent of the building's occupants, with lighting and site lighting linked to building management systems to minimize energy consumption when not in use; implementing quality assurance and control procedures at every stage of the design and construction cycle to ensure that environmentally responsible practices

[35] The following quantitative GHG emissions assumes only a 10 percent energy efficiency would be achieved, as was assumed for the 2010 Project.

are followed by the owner and design team and that, when installed, the buildings' systems are operating as designed.

As shown in Table 39, due to the higher carbon intensity of commercial buildings (9.43 metric tons CO_2e/sf) compared to multi-family residential buildings (6.59 metric tons CO_2e/sf), the Proposed Modified Development would result in a slightly greater amount of operational GHG emissions (20,193 metric tons CO_2e compared to 16,842 metric tons CO_2e). However, due to the anticipated decrease in vehicle trips generated by the Proposed Modified Development, mobile source GHG emissions would be significantly less than those disclosed in the 2010 FEIS (9,652 metric tons CO_2e for the Proposed Modified Development compared to 20,474 metric tons CO_2e for the 2010 Project). As a result, the Proposed Modified Development would result in lower annual combined operations and mobile source GHG emissions than the 2010 Project.[36]

TABLE 39
Annual Operations and Mobile Source GHG Emissions—Proposed Modified Development v. 2010 Project

Sector	2010 Project[1,2] Metric Tons of CO_2e	Proposed Modified Development[1] Metric Tons of CO_2e	Proposed Modified Development v. 2010 Project[1] Metric Tons of Co_2e
Operations[3]	16,842	20,193	3,351
Mobile Source	20,474	9,652	- 10,822
Combined	***37,316***	***29,845***	***-7,471***

Notes:
[1] Metric tons CO_2e.
[2] Table 19b-4 of the 2010 FEIS.
[3] Estimates include the commitment to reducing energy use by 10 percent, as compared with energy use in buildings designed to meet building code requirements.

As stated in the 2012 *CEQR Technical Manual,* sources of GHG emissions due to construction include: (1) direct emissions resulting from the operation of construction vehicles and equipment; and (2) emissions resulting from the manufacture or transport of construction materials (generally, steel and concrete) used for the project. As discussed in greater detail in Section S, "Construction," the Proposed Modified Development would result in a net decrease in construction workers and truck trips during both the peak construction and peak combined construction and operation analysis periods. As such, the Proposed Modified Development would result in lower GHG emissions from truck travel associated with construction material deliveries and disposal, as well as lower GHG emissions from construction worker trips, and direct emissions resulting from the operation of construction vehicles and equipment, compared to the 2010 Project.

Upstream emissions associated with the use of steel, aluminum, and cement typically comprise a large component of overall emissions from construction. GHG emissions from the chemical process and fossil fuel energy use in cement manufacturing account for more than 60 percent of industrial source GHG emissions in the United States. Iron and steel production also rank as top sources of manufacturing GHG emissions, largely because of the use of coal-based resources, as well as the process-related CO_2 and methane emissions. In addition, aluminum production is an energy-intensive process, due to the resultant emissions. Emissions associated with the production of construction materials other than steel, aluminum, and concrete are negligible in comparison.

[36] An assessment of solid waste greenhouse gas emissions is unwarranted pursuant to CEQR, as the Proposed Modified Development would not fundamentally change the City's solid waste management system.

As described above, the Applicant would commit to construction measures that would help achieve relatively low GHG emissions ("best practices"). Specific construction best practices that the Applicant would commit to include the reuse of much of the existing site materials on site, including preserving the Refinery Building façade, recycling or using other debris for site fill; striving to use recycled materials, including recycled steel and fly ash (a byproduct of coal-fired power generation) in concrete; and using locally-purchased materials to the extent practicable. The use of fly ash as a replacement for ordinary portland cement (OPC) would result in significant reductions in production-related GHG emissions; through substitution of 15 to 20 percent fly ash, GHG emissions can be reduced by approximately eight to eleven percent.

As the Proposed Modified Development would result in lower GHG emissions from direct emissions during construction and the Applicant would commit to construction measures that would help achieve relatively low GHG emissions associated with the manufacture or transport of construction materials, Proposed Modified Development is not expected to increase construction-related GHG emissions compared to the 2010 Project.

In addition, as stated in the 2010 FEIS, GHG emissions from the Proposed Modified Development do not represent a net increment, since similar GHG emissions would occur if residential units and associated uses were constructed elsewhere, and could be higher if constructed (a) with less energy efficiency, (b) as lower density residential development further from employment and commercial uses, and/or (c) with less access to transit service.

According to the 2012 *CEQR Technical Manual*¸ the assessment of consistency with the City GHG reduction goal should answer the following question: is the project consistent with the goal of reducing GHG emissions, specifically the attainment of the City's established GHG reduction goal or reducing its Citywide GHG emissions by 30 percent below 2005 levels by 2030? Four main goals are cited in the 2012 *CEQR Technical Manual*: pursue transit-oriented development; generate clean, renewable, power through replacement of inefficient power plants with state-of-the-art technology and expanding the use of clean distributed generation; construct new resource- and energy-efficient buildings (including the use of sustainable construction materials and practices), and improve the efficiency of existing buildings; and encourage sustainable transportation through improving public transit, improving the efficiency of private vehicles, and decreasing the carbon intensity of fuels. The Applicant is committed to ensure that the Proposed Modified Development is consistent with these goals. In addition to committing to the same measures identified in the 2010 FEIS and discussed above, all of the project site buildings would be LEED certified.

Climate Change

Although the 2012 *CEQR Technical Manual* does not include standards for conducting a climate change analysis and such an analysis was not included in the 2010 FEIS, because of the unique characteristics of the project site, including its location in a floodplain, a discussion of early integration of climate change considerations is included below.

The proposed revisions to the WRP address climate change and sea level rise. If finalized, the WRP would require consideration of climate change and sea level rise in planning and design of waterfront development. The proposed WRP revisions, among other provisions would require waterfront developments to: (1) consider potential risks related to coastal flooding to features specific to the project, including but not limited to critical electrical and mechanical systems, residential living areas, and public access areas; (2) minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the condition and site, the use of the property to be protected, and the surrounding area; (3) integrate consideration of the latest New York City projections of climate

change and sea level rise (as published by the New York City Panel on Climate Change (NPCC), or any successor thereof) into the planning and design of projects in the City's coastal zone; (4) incorporate design techniques in projects that address the potential risks identified and/or enhance the capacity to incorporate adaptive techniques in the future, with the goals of protecting lives, minimizing damage to systems and natural resources, preventing loss of property, and, if practicable, promote economic growth and provide additional benefits such as provision of public space and intertidal habitat; (5) provide a quantitative analysis of potential adverse impacts on existing resources (including ecological systems, public access, visual quality, water-dependent uses, infrastructure, and adjacent properties) as a result of the anticipated effects of climate change; (6) design new structures located directly in the water or at the water line so as to protect inland structures and uses from flooding and storm surge when appropriate and practicable; and (7) as appropriate and to the extent practicable, promote the greening of the waterfront with a variety of material for aesthetic and ecological benefit, use water- and salt-tolerant planting in areas subject to flooding and salt spray, maximize water-absorption functions of planted areas, preserve and enhance natural shoreline edges, design shoreline edges that foster a rich marine habitat, and design sites that anticipate the effects of climate change, such as sea level rise and storm surges. The Proposed Modified Development would conform to the requirements of the WRP.

In addition, the Applicant is committed to ensuring that the Proposed Modified Development incorporates resilience measures. Specifically, the Proposed Modified Development would decrease the total building footprints, pull the proposed buildings further back from the waterfront, and increase the total amount of permeable surface area by adding more open space and incorporating permeable materials and pavers throughout the project site. In addition, all critical systems (such as the mechanical, electrical, plumbing, communications, and fire suppression systems) would be located above the 100-year floodplain to minimize potential flood damage. As such, the Proposed Modified Development would incorporate more resilience measures than were originally included in the 2010 Project, and the Proposed Modified Development would be consistent with the proposed revisions of the WRP addressing climate change.

P. Noise

2010 Project

The 2010 FEIS concluded that the original Domino Sugar project would not have any significant adverse noise impacts. The analysis concluded that the traffic generated by the 2010 Project would not result in any significant adverse noise impacts and, with the incorporation of attenuation levels specified in the Restrictive Declaration, noise levels within the buildings would comply with all applicable noise requirements.

For the 2010 Project, noise monitoring was carried out at eleven sites to obtain on-site background noise levels associated with local traffic as well as roadway and subway traffic over the Williamsburg Bridge. Sites 1 through 9 were at ground level. Sites 10 and 11 were elevated. Table 40 shows their highest L_{eq} and L_{10} noise levels, and Figure 36 shows the site locations.

TABLE 40
Projected With Action Noise Levels, 2010 Project

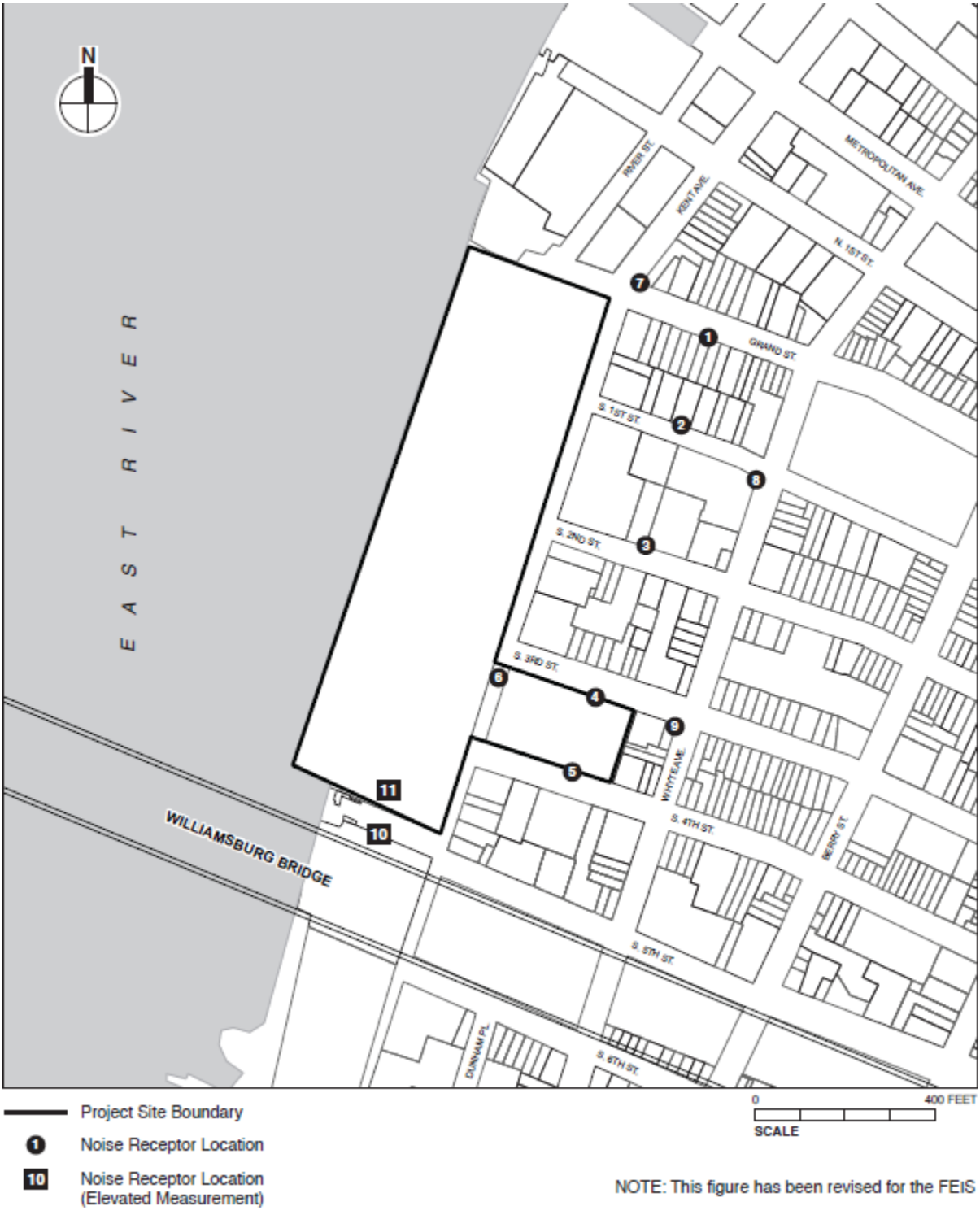
Noise Monitor Site	Worst-Case Period	L_{eq}	L_{10}	Comments
1	PM	66.8	68.6	Grand St. between Kent and Wythe Aves.
2	AM	71.1	73.3	South 1st St. between Kent and Wythe Aves.
3	AM	66.4	68.7	South 2nd St. between Kent and Wythe Aves.
4	PM	74.2	76.5	South 3rd St. between Kent and Wythe Aves.
5	PM	66.4	68.6	South 4th St. between Kent and Wythe Aves.
6	AM	74.8	77.9	Kent Ave. between South 4th and 3rd Sts.
7	MD	70.3	73.9	NE corner of Grand St. and Kent Ave.
8	AM	71.9	75.3	SW corner of South 1st St. and Wythe Ave.
9	PM	71.0	73.1	SW corner of South 3rd St. and Wythe Ave.
10	PM	82.5	86.5	Pedestrian walkway on Williamsburg Bridge
11	PM	70.0	73.7	Roof of Adant Building

Source: 2010 FEIS, Tables 20-8 and 20-10

Future noise levels were projected using the Traffic Noise Model (TNM) for Noise Monitoring Sites 2, 4, and 5 and the proportionality equation for all other ground-level sites. The attenuation requirements for various building facades were based on the anticipated peak Action $L_{10(1)}$ values at the nine noise ground-level receptors on Grand, South 1st, South 2nd, South 3rd, and South 4th Streets, as well as Kent and Wythe Avenues.

Noise attenuation recommendations for the south-facing facades (facing the Williamsburg Bridge) were based on elevated noise monitoring sites. One noise monitoring site was on the roof of the existing Adant House at the south end of the project site (Noise Monitoring Site 11 in the 2010 FEIS), adjacent to the Williamsburg Bridge. At this site, a continuous measurement was performed between 8 AM and 6 PM. Another was located on the pedestrian walkway of the Williamsburg Bridge (Noise Monitoring Site 10 of the 2010 FEIS). A 20-minute spot measurement was performed at Noise Monitoring Site 10 during the PM weekday period, which was determined to be the loudest hour of the day by the measurement at Noise Monitoring Site 11. The monitored noise levels at these sites were not modified for future conditions because noise from the traffic and rail sources on the Bridge were expected to be substantially similar to existing conditions.

2010 FEIS Noise Monitoring Sites



Source: 2010 FEIS

Recommended noise attenuation values for buildings are designed to maintain interior noise levels of 45 dBA or lower for residential and community facility uses, and 50 dBA or lower for retail and office uses. They are determined from exterior $L_{10(1)}$ noise levels. The projected L_{10} noise levels for With-Action conditions were used to determine the window/wall attenuation for the proposed buildings according to the categories shown in Table 41, which is taken from the 2001 *CEQR Technical Manual*. As part of the 2010 Project's Restrictive Declaration, noise attenuation measures were required on all five sites.

TABLE 41
Required Attenuation Values to Achieve Acceptable Interior Noise Levels
2001 CEQR Technical Manual

	Marginally Acceptable	**Marginally Unacceptable**		**Clearly Unacceptable**		
Noise level with proposed action	$65<L_{10}<70$	$70<L_{10}<75$	$75<L_{10}<80$	$80<L_{10}<85$	$85<L_{10}<90$	$90<L_{10}<95$
Attenuation	25 dBA	(I) 30 dBA	(II) 35 dBA	(I) 40 dBA	(II) 45 dBA	(III) 50 dBA

Source: New York City Department of Environmental Protection, 2001.

Proposed Modified Development

Similar to the 2010 Project, the Proposed Modified Development would introduce new sensitive receptors in proximity to a heavily trafficked thoroughfare with an active subway line (the Williamsburg Bridge, located to the south of the site). Due to changes in the size and configuration of the proposed buildings, the extension of River Street from Grand Street to Fifth Street, the proposed additional outdoor recreation areas, and the revised noise attenuation values set forth in the 2010 and 2012 versions of the *CEQR Technical Manual*, the analyses for traffic noise and for sensitive receptors (residential buildings and outdoor recreation space) have been reviewed and updated where appropriate.

Traffic Noise

According to the 2012 *CEQR Technical Manual*, initial noise analysis impact screening considers whether the project would: (1) generate any mobile or stationary sources of noise; and/or (2) be located in an area with existing high ambient noise levels. As the Proposed Modified Development would generate less vehicular traffic, and therefore less mobile source noise, it would not generate new noise impacts along existing roadways that were not disclosed in the 2010 FEIS and subsequent Technical Memoranda.

A key difference between the 2010 Project and the Modified Project is the proposed additional outdoor recreation areas, including Domino Square (in place of the 2010 Project's Building C), and the proposed internal street network, including the extension of River Street from its existing terminus at Grand Street to South 5th Street. As these modifications to the site plan create additional sensitive receptors as well as an additional traffic noise source, additional studies were carried out: monitoring of ambient noise levels along the proposed River Street extension; and the use of the TNM model to ascertain the potential for impacts.

Noise monitoring was carried out during the peak weekday AM, midday, and PM periods at two sites along the River Street extension on Wednesday, October 9, 2013. Figure 37 shows the locations of the two sites, which are designated as Noise Monitoring Sites 12 and 13.



★ = *Noise Monitoring Locations*
Source: *Sandstone Environmental Associates, Inc.*

Noise levels were monitored according to the procedures outlined in the 2012 *CEQR Technical Manual*. The instruments used were two Larson Davis 831 Sound Level Meters, which are ANSI Type I-certified instruments. Each device was mounted on a tripod at a height of five feet above the ground and at least five feet from any wall. The noise monitors were calibrated before and after use. Wind screens were used during all sound measurements except for calibration. All measurement procedures conformed to the requirements of ANSI Standard S1.13-1971 (R1976).

Noise levels were dominated by traffic and rail passbys on the Williamsburg Bridge. Truck traffic, in particular, was an audible contribution to the noise levels. Noise from local traffic on Kent Avenue was not significant. Helicopter flyovers also contributed to the noise levels, particularly when they hovered over the Bridge. No concurrent traffic counts were carried out because the vehicles at ground level were blocked by existing buildings, and the vehicles on the Bridge were blocked by the Bridge beams and parapets. Table 42 shows the results of the October 9, 2013 noise monitoring.

TABLE 42
Monitored Noise Levels at Sites 12 and 13

ID	Site	Time	L_{eq}	L_{10}	L_{min}	L_{max}	L_{01}	L_{50}	L_{90}
12	S. 3rd St & East River	8:35am - 8:55am	**65.0**	67.7	59.2	72.8	71.5	63.5	60.8
		12:00pm - 12:20pm	63.7	66.5	58.5	71.8	70.0	62.2	59.8
		5:00pm - 5:20pm	64.7	**68.0**	58.5	76.5	71.8	62.3	60.0
13	S. 1st St & River	9:09am - 9:29am	60.7	62.7	55.6	68.3	62.7	59.9	58.0
		12:24pm - 12:44pm	60.0	61.9	55.3	67.2	64.1	59.6	57.2
		5:26pm - 5:46pm	**61.4**	**62.7**	54.9	78.5	71.9	59.1	57.1

Notes: Numbers in bold type are the highest for that site.
Source: Sandstone Environmental Associates, Inc.

In determining potential impacts to a sensitive receptor from a proposed project, NYCDEP considers a significant impact to be:

- An increase of 3 dBA or more where the no action noise level is an L_{eq} of 62 dBA or more; or
- An increase of up to 5 dBA where the no action noise L_{eq} is below 62 dBA, providing the total resulting L_{eq} is equal to or less than 65 dBA; or
- A noise level that exceeds the marginally acceptable levels (i.e., an L_{10} of 70 dBA), where the proposed project is a sensitive receptor.

Based on the monitored noise levels, the allowable noise level increment would be 3 dBA. Noise levels on the future River Street right-of-way do not currently exceed an L_{10} of 70 dBA, which would exceed marginally acceptable levels.

As no traffic would occur on the River Street right-of-way under existing and No-Action conditions, the proportionality equation cannot be used, and the future volumes must be modeled with the Federal Highway Administration's (FHWA's) TNM. The TNM incorporates state-of-the-art sound propagation and shielding algorithms over ground of different types, atmospheric absorption, and the shielding effects of barriers, berms, ground, buildings, and trees. The TNM propagation algorithms assume neutral atmospheric conditions but do not account for atmospheric variables such as wind or temperature gradients. Inputs included projected 2023 traffic volumes and vehicular types based on the results of Section M, "Transportation." A speed of 25 mph was assumed.

As the AM and PM weekday peaks had the highest project-generated traffic volumes, these two peak hours were used in the TNM model to ascertain future traffic noise on River Street. The vehicular mix for the two periods includes passenger cars, medium trucks, and school buses as shown in Table 43. The two side streets that would experience the highest traffic volumes (South 3rd Street and South 2nd Street) were included in the modeling.

TABLE 43
2023 Future Traffic Volumes on River Street: With-Action Condition

Roadway	AM Peak Hour					PM Peak Hour				
	Autos/ LDV	MT	HT	Bus	Total	Autos/ LDV	MT	HT	Bus	Total
River Street										
S 5th to S 4th	21	4	0	13	38	29	0	0	12	41
S 4th to S 3rd	15	0	0	1	16	21	0	0	0	21
S 3rd to S 2nd	77	11	0	1	89	88	3	0	0	91
S 2nd to S 1st	0	2	0	0	2	0	0	0	0	0
S 1st to Grand St	21	5	0	14	40	25	0	0	12	37
Grand St to N 1st St	17	0	0	0	17	16	0	0	0	16
N 1st to Metropolitan Ave	17	0	0	0	17	16	0	0	0	16
South 3rd St										
River St to Kent Ave	62	11	0	0	73	66	3	0	0	69
Kent Ave to Driveway	169	10	0	0	179	220	5	0	0	225
Driveway to Wythe Ave	195	10	0	0	205	300	5	0	0	305
Wythe Ave to Berry St	198	7	0	0	205	182	4	0	0	186
South 2nd St										
River St to Kent Ave	38	9	0	1	48	88	3	0	0	91
Kent Ave to Wythe Ave	82	2	0	0	84	70	2	0	0	72
Wythe Ave to Berry St	96	3	0	0	99	83	3	0	0	86

Modeled L_{eq}s were then added to monitored background sound levels to determine whether future traffic volumes resulting from the Proposed Modified Development would cause noise levels to increase by 3 dBA or more. TNM does not calculate L_{10}s. The differences between the monitored L_{eq}s and L_{10}s can be used to calculate the L_{10}s for the modeled L_{eq}s or 3 dBA can be added to the L_{eq}s to estimate the L_{10}s.

Table 44 shows the TNM results. As shown in the table, modeled traffic noise was lower than the monitored background noise at all sites. Therefore, the future traffic on River Street would not cause a noise level increment of 3 dBA. The highest noise increment would be 1.5 dBA for the peak AM period and 1.0 dBA for the peak PM period. Both would occur at the northeast corner of South 1st Street and River Street, although the 0.5 dBA increase for the peak PM period would occur at several other locations.. If, as a worst case, the L_{10} is estimated as 3 dBA higher than the L_{eq}, none of the sites would reach an L_{10} of 70 dBA or more. Therefore, no impacts associated with the proposed extension of River Street are anticipated.

TABLE 44
TNM Modeled Noise Levels (dBA)

TNM Receptor		AM Peak Hour				PM Peak Hour			
		Existing	2023 Projection			Existing	2023 Projection		
ID	Description	Monitored Leq	TNM Leq,	Total Leq	Increase	Monitored Leq	TNM Leq	Total Leq	Increase
1	Building, SE corner South 4th & River Streets	65.0	56.5	65.6	0.6	64.7	55.5	65.2	0.5
2	Waterfront Open Space, SW corner South 4th & River Streets	65.0	55.4	65.5	0.5	64.7	54.3	65.1	0.4
3	Domino Square, SE corner South 3rd & River Streets	65.0	55.2	65.4	0.4	64.7	52.6	65.0	0.3
4	Waterfront Open Space, SW corner South 3rd & River Streets	65.0	52.6	65.2	0.2	64.7	50.2	64.9	0.2
5	Building, NE corner South 3rd & River Streets	65.0	55.0	65.4	0.4	64.7	52.3	64.9	0.2
6	Building, SE corner South 2nd & River Streets	60.7	55.0	61.7	1.0	61.4	52.7	61.9	0.5
7	Waterfront Open Space, SW corner South 2nd & River Streets	60.7	55.1	61.8	1.1	61.4	52.4	61.9	0.5
8	Building, NE corner South 2nd & River Streets	60.7	55.1	61.8	1.1	61.4	52.5	61.9	0.5
9	Building, SE corner South 1st & River Streets	60.7	50.9	61.1	0.4	61.4	48.2	61.6	0.2
10	Waterfront Open Space, SW corner South 1st & River Streets	60.7	50.2	61.1	0.4	61.4	47.2	61.6	0.2
11	Building, NE corner South 1st & River Streets	60.7	56.8	62.2	**1.5***	61.4	55.3	62.4	**1.0***

Source: Sandstone Environmental Associates, Inc.
Notes: * denotes highest noise increment.

Building Attenuation

The window/wall attenuation specified in the 2010 Project has been reevaluated for the following reasons:

- The 2010 and 2012 versions of the *CEQR Technical Manual* do not show the same noise attenuation requirements for residential and commercial buildings as the 2001 version of the Manual. Table 45 shows the current requirements.
- The 2010 Project may have been overly conservative because it did not account for the lower noise levels that would be experienced by the upper stories of buildings.
- The noise levels along the western sides of the buildings on the waterfront parcel due to the currently planned River Street extension may affect the required noise level attenuation.

TABLE 45
Required Attenuation Values to Achieve Acceptable Interior Noise Levels
2012 CEQR Technical Manual

	Marginally Unacceptable				Clearly Unacceptable
Noise level with proposed action	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Attenuation[A]	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	$36 + (L_{10} - 80)$[B] dBA

Notes:
[A]The above composite window-wall attenuation values are for residential dwellings and community facility development. Commercial office spaces and meeting rooms would be 5 dBA less in each category. All the above categories require a closed window situation and hence alternate means of ventilation.
[B]Required attenuation values increase by 1 dBA increments for L_{10} values greater than 80 dBA.
Source: NYCDEP, 2012.

As a conservative assumption, and to account for the fact that noise from the Williamsburg Bridge would replace local traffic noise at an elevation of about 50 feet, noise levels were assumed to remain the same up to approximately the 5th floor (the first 50 feet of height). Noise levels for these floors would reflect street level traffic. Above the fifth floor, dominant noise sources would be traffic and rail noise from the Williamsburg Bridge as well as helicopters hovering around the Bridge and traveling along the East River. The helicopter traffic would affect the upper floors of all the proposed buildings, particularly on the western facades. To help account for this, no attenuation for distance from the Bridge was calculated for the higher floors.

Noise levels calculated for each façade were based on projected noise levels for the monitored sites in the 2010 FEIS. The supplemental monitoring sites were not used for the western facades because they reflect current background noise levels, not the noise levels that would occur with implementation of the Proposed Modified Development. All attenuation requirements assume that the floors will be residential. Although retail uses are projected for the ground floors, some ground floors include space for a school or community facility. Therefore, to ensure that all future uses would have sufficient window/wall noise attenuation, all uses were treated is if they were residential.

For noise levels above the fifth floor, Noise Monitoring Site 11 was selected over Noise Monitoring Site 10 because it was on the roof of the Adant Building, which is closer to the proposed buildings than Noise Monitoring Site 10 (on the pedestrian walkway of the Williamsburg Bridge). The walkway location used for Noise Monitoring Site 10 was surrounded by traffic lanes. Thus, the Noise Monitoring Site would receive traffic noise from the bottom, left, right, front, and back sides of the Noise Monitoring Site, as well as noise from vibration and reverberation on the surrounding metal structure. Given this location within the noise source itself, Noise Monitoring Site 10 would not represent traffic noise that attenuated at a rate of 3 dBA per distance doubling; the noise would surround it instead of acting as a line source. In addition, the 2010 FEIS's noise analysis showed similar results for the projected noise levels from Noise Monitoring Sites 10 and 11.

Building A

Building A is the northernmost building. Table 46 shows the required attenuations for the facades as well as the noise monitoring locations used to determine the noise levels. The table also show a comparison with the recommended attenuation measures for the same building site in the 2010 FEIS. In comparison to the 2010 FEIS, the differences are significant for the eastern façade, where the recommended attenuation has been reduced from 35 dBA to 31 dBA as indicated in the table.

TABLE 46
Window/Wall Attenuation for Building A

Noise Monitoring Site			**Eastern Façade of Building A**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
6	74.8	77.9	1-5	50	74.8	77.9	35	35
11	70.0	73.7	6-42	100	70.0	73.7	31	35
Noise Monitoring Site			**Western Façade of Building A**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
7	70.3	73.9	1-5	50	70.3	73.9	31	30
11	70.0	73.7	6-42	100	70.0	73.7	31	30
Noise Monitoring Site			**Southern Façade of Building A**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
2	71.1	73.3	1-5	50	71.1	73.3	31	30
11	70.0	73.7	6-42	100	70.0	73.7	31	30
Noise Monitoring Site			**Northern Façade of Building A**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
7	70.3	73.9	1-5	50	70.3	73.9	31	30
11	67.0*	70.7*	6-42	100	67.0	70.7	28	30

Notes: *Reduced by 3 dBA because the building shields noise from the Bridge.
Source: Sandstone Environmental Associates, Inc.

Building B

Table 47 shows the recommended noise attenuation for Building B. As shown in the table, the results are similar to the results for Building A. The 2010 Project and Modified Project have similar recommendations for all facades except the eastern façade, where the windows for floors six through 51 would need 31 dBA of attenuation instead of 35 dBA of attenuation.

TABLE 47
Window/Wall Attenuation for Building B

Noise Monitoring Site			Eastern Façade of Building B				Recommended Attenuation	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
6	74.8	77.9	1-5	50	74.8	77.9	35	35
11	70.0	73.7	6-51	100	70.0	73.7	31	35
Noise Monitoring Site			**Western Façade of Building B**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
2	71.1	73.3	1-5	50	71.1	73.3	31	30
11	70.0	73.7	6-51	100	70.0	73.7	31	30
Noise Monitoring Site			**Southern Façade of Building B**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
2	71.1	73.3	1-5	50	71.1	73.3	31	30
11	70.0	73.7	6-51	100	70.0	73.7	31	30
Noise Monitoring Site			**Northern Façade of Building B**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
2	71.1	73.3	1-5	50	71.1	73.3	31	30
11	67.0*	70.7*	6-51	100	67.0	70.7	28	30

Notes: *Reduced by3 dBA because the building shields noise from the Bridge.
Source: Sandstone Environmental Associates, Inc.

Building D

Compared to the 2010 Project, the building most proximate to the adjacent Williamsburg Bridge (Building D) would be located approximately 21 feet further from the Bridge (128 feet versus 107 feet for the 2010 Project), which is the primary source of the high ambient noise levels in the surrounding area. Therefore, the noise levels calculated at Building D by distance attenuation would be similar to or lower than the ones determined in the 2010 FEIS. In addition, Building D would be higher than the one analyzed in the 2010 FEIS, resulting in even lower noise levels on the higher floors.

The Adant House (the location of Noise Monitoring Site 11) is approximately 100 feet from the Williamsburg Bridge. As a conservative measure, no credit was taken for the slightly greater distance (128 feet) planned for the most southern façade of the Proposed Modified Development's Building D.

Table 48 shows the required attenuations for the facades of Building D and compares them with the 2010 FEIS. Because the L_{10} noise levels for floors 1 through 5 on the eastern façade are so close to the threshold for the Marginally Unacceptable IV category, they were conservatively treated as being in that category. In most cases, the recommended attenuation for the Proposed Modified Development would be the same as or lower than the 2010 Project. However the attenuation for the upper floors for the eastern and southern façades has been reduced from 35 dBA to 31 dBA.

TABLE 48
Window/Wall Attenuation for Building D

Noise Monitoring Site			Eastern Façade of Building D				Recommended Attenuation	
ID	L_{eq}	L_{10}	Floor	Height	L_{eq}	L_{10}	Modified Project	2010 Project
6	74.8	77.9	1-5	50	74.8	77.9	35	35
11	70.0	73.7	6-53	100	70.0	73.7	31	35
Noise Monitoring Site			**Western Façade of Building D**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
6	71.8*	74.9*	1-5	50	71.8	74.9	31	31
11	70.0	73.7	6-53	100	70.0	73.7	31	31
Noise Monitoring Site			**Southern Façade of Building D**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
6	74.8	77.9	1-5	50	74.8	77.9	35	31
11	70.0	73.7	6-53	100	70.0	73.7	31	31
Noise Monitoring Site			**Northern Façade of Building D**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
4	74.2	76.5	1-5	50	74.2	76.5	33	30
11	67.0*	70.7*	6-53	100	67.0	70.7	28	30

Notes: *Reduced by3 dBA because the building shields noise from the Bridge.
Source: Sandstone Environmental Associates, Inc.

Building E

Table 49 shows the required attenuations for the facades of the Site E building and compares them with the 2010 FEIS. Recommendations for the western and northern facades are significantly lower than the values of 35 dBA recommended for the 2010 FEIS. As indicated in the table, for the eastern and southern facades, the recommendations are similar.

Refinery Building

Table 50 shows the required attenuations for the facades of the Refinery Building and compares them with the 2010 FEIS. As shown in the table, compared to the 2010 Project, the recommendations are similar except for the eastern façade, where the recommended attenuation for the higher floors has been reduced from 35 dBA to 31 dBA.

Conclusions and Recommendations

Traffic Noise

The Proposed Modified Development would not result in any new significant noise impacts not addressed in the 2010 FEIS. At existing receptor sites, traffic noise would be the same as, or lower than, the noise levels projected for the 2010 Project because traffic volumes would generally be lower. For new receptor sites along the waterfront, traffic from the proposed River Street extension would not cause an increase of 3 dBA over background levels or place the future receptors into an area that exceeds marginally acceptable noise levels.

TABLE 49
Window/Wall Attenuation for Building E

Noise Monitoring Site			Eastern Façade of Building E				Recommended Attenuation	
ID	L_{eq}	L_{10}	Floor	Height	L_{eq}	L_{10}	Modified Project	2010 Project
9	71.0	73.1	1-5	50	71.0	73.1	31	30
11	70.0	73.7	6-17	100	70.0	73.7	31	30
Noise Monitoring Site			**Western Façade of Building E**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
6	74.8	77.9	1-5	50	74.8	77.9	35	35
11	70.0	73.7	6-17	100	70.0	73.7	31	35
Noise Monitoring Site			**Southern Façade of Building E**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
5	66.4	68.6	1-5	50	66.4	68.6	25	30
11	70.0	73.7	6-17	100	70.0	73.7	31	30
Noise Monitoring Site			**Northern Façade of Building E**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
4	74.2	76.5	1-5	50	74.2	76.5	33	35
4	71.2*	73.5*	6-17	100	71.2	73.5	31	35

Notes: * Reduced by 3 dBA due to the elevation and because the building shields noise from the Bridge.
Source: Sandstone Environmental Associates, Inc.

TABLE 50
Window/Wall Attenuation for the Refinery Building

Noise Monitoring Site			Eastern Façade of Refinery				Recommended Attenuation	
ID	L_{eq}	L_{10}	Floor	Height	L_{eq}	L_{10}	Modified Project	2010 Project
6	74.8	77.9	1-5	50	74.8	77.9	35	35
11	70.0	73.7	6-16	100	70.0	73.7	31	35
Noise Monitoring Site			**Western Façade of Refinery**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
4	74.2	76.5	1-5	50	74.2	76.5	33	30
11	70.0	73.7	6-16	100	70.0	73.7	31	30
Noise Monitoring Site			**Southern Façade of Refinery**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
4	74.2	76.5	1-5	50	74.2	76.5	33	30
11	70.0	73.7	6-16	100	70.0	73.7	31	30
Noise Monitoring Site			**Northern Façade of Refinery**				**Recommended Attenuation**	
ID	**L_{eq}**	**L_{10}**	**Floor**	**Height**	**L_{eq}**	**L_{10}**	**Modified Project**	**2010 Project**
4	74.2	76.5	1-5	50	74.2	76.5	33	30
4	71.2*	73.5*	6-16	100	71.2	73.5	31	30

Notes: * Reduced by 3 dBA because the building shields noise from the Bridge
Source: Sandstone Environmental Associates, Inc.

Building Attenuation

The required noise attenuation for the buildings was reevaluated. This included use of the revised noise attenuation requirements in the 2012 *CEQR Technical Manual* and the use of the rooftop measurements to estimate attenuation for floors above the fifth floor. The analysis showed that some facades would be able to reduce their attenuation requirements from 35 dBA to 28, 31, or 33 dBA. In a few instances, the recommended noise levels are slightly higher.

Chapter 20, "Noise," of the 2010 FEIS provided noise attenuation requirements for the 2010 Project's proposed buildings based on exterior L_{10} noise levels. The previous applicant controlled the site. Therefore, as noted in the Notice of Completion of the Final Environmental Impact Statement dated May 28, 2010, these requirements were to be included in a Restrictive Declaration that would "[p]rovide for the implementation of Project Components Related to the Environment and mitigation measures, consistent with the EIS."

As previously stated, in conjunction with the Proposed Modified Development, the Restrictive Declaration would be modified. The modified Restrictive Declaration would include the revised window/wall noise attenuation measures based on the updated information included in the above analysis. The provisions of the modified Restrictive Declaration would mandate the required attenuation levels to ensure that interior noise levels would be at 45 dBA or less for residential uses and 50 dBA or less for commercial uses. Where the projected L_{10} noise levels would be 70 dBA or more, the (E) designation and modified Restrictive Declaration provisions also would require alternate means of ventilation to permit a closed-window condition during warm weather.

Table 51 summarizes the noise attenuation requirements for the Proposed Modified Development. As shown in the table, there are four levels of required noise attenuation. Depending on the ambient noise levels they would require attenuation of 28, 31, 33, or 35 dBA of window/wall attenuation.

For Applicant-controlled sites requiring 28 dBA of attenuation, the text for the modified Restrictive Declarations is as follows.

> "To ensure an acceptable interior noise environment, future residential/commercial uses must provide a closed-window condition with a minimum of 28 dBA window/wall attenuation to maintain an interior noise level of 45 dBA. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning."

For Applicant-controlled sites requiring 31 dBA of attenuation, the text for the modified Restrictive Declarations is as follows.

> "To ensure an acceptable interior noise environment, future residential/commercial uses must provide a closed-window condition with a minimum of 31 dBA window/wall attenuation to maintain an interior noise level of 45 dBA. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning."

TABLE 51
Summary of Required Window/Wall Attenuation

Facade	Maximum Noise Level at Nearest Monitoring Site		CEQR Categories	Required Attenuation (dBA)
	L_{eq} (dBA)	L_{10} (dBA)		
Building A				
Facing East	74.8 70.0	77.9 73.7	Marginally Unacceptable IV* Marginally Unacceptable II	35 1st Fl. to 5th Fl. 31 6th Fl. to 42nd Fl.
Facing West	70.3 70.0	73.9 73.7	Marginally Unacceptable II Marginally Unacceptable II	31 1st Fl. to 5th Fl. 31 6th Fl. to 42nd Fl.
Facing South	71.1 70.0	73.3 73.7	Marginally Unacceptable II Marginally Unacceptable II	31 1st Fl. to 5th Fl. 31 6th Fl. to 42nd Fl.
Facing North	70.3 67.0	73.9 70.7	Marginally Unacceptable II Marginally Unacceptable I	31 1st Fl. to 5th Fl. 28 6th Fl. to 42nd Fl.
Building B				
Facing East	74.8 70.0	77.9 73.7	Marginally Unacceptable IV* Marginally Unacceptable II	35 1st Fl. to 5th Fl. 31 6th Fl. to 55th Fl.
Facing West	71.1 70.0	73.3 73.7	Marginally Unacceptable II Marginally Unacceptable II	31 1st Fl. to 5th Fl. 31 6th Fl. to 55th Fl.
Facing South	71.1 70.0	73.3 73.7	Marginally Unacceptable II Marginally Unacceptable II	31 1st Fl. to 5th Fl. 31 6th Fl. to 55th Fl.
Facing North	71.1 67.0	73.3 70.7	Marginally Unacceptable II Marginally Unacceptable I	31 1st Fl. to 5th Fl. 28 6th Fl. to 55th Fl.
Building D				
Facing East	74.8 70.0	77.9 73.7	Marginally Unacceptable IV* Marginally Unacceptable II	35 1st Fl. to 5th Fl. 31 6th Fl. to 53rd Fl.
Facing West	71.8 70.0	74.9 73.7	Marginally Unacceptable II Marginally Unacceptable II	31 1st Fl. to 5th Fl. 31 6th Fl. to 53rd Fl.
Facing South	74.8 70.0	77.9 73.7	Marginally Unacceptable IV Marginally Unacceptable II	35 1st Fl. to 5th Fl. 31 6th Fl. to 53rd Fl.
Facing North	74.2 67.0	76.5 70.7	Marginally Unacceptable III Marginally Unacceptable I	33 1st Fl. to 5th Fl. 28 6th Fl. to 53rd Fl.
Building E				
Facing East	71.0 70.0	73.1 73.7	Marginally Unacceptable II Marginally Unacceptable II	31 1st Fl. to 5th Fl. 31 6th Fl. to 17th Fl.
Facing West	74.8 70.0	77.9 73.7	Marginally Unacceptable IV* Marginally Unacceptable II	35 1st Fl. to 5th Fl. 31 6th Fl. to 17th Fl.
Facing South	66.4 70.0	68.7 73.7	Marginally Acceptable Marginally Unacceptable II	25 1st Fl. to 5th Fl. 31 6th Fl. to 17th Fl.
Facing North	74.2 71.2	76.5 73.5	Marginally Unacceptable III Marginally Unacceptable I	33 1st Fl. to 5th Fl. 31 6th Fl. to 17th Fl.
Refinery Building				
Facing East	74.8 70.0	77.9 73.7	Marginally Unacceptable IV* Marginally Unacceptable II	35 1st Fl. to 5th Fl. 31 6th Fl. to 16th Fl.
Facing West	74.2 70.0	76.5 73.7	Marginally Unacceptable III Marginally Unacceptable II	33 1st Fl. to 5th Fl. 31 6th Fl. to 16th Fl.
Facing South	74.2 70.0	76.5 73.7	Marginally Unacceptable III Marginally Unacceptable II	33 1st Fl. to 5th Fl. 31 6th Fl. to 17th Fl.
Facing North	74.2 71.2	76.5 73.5	Marginally Unacceptable III Marginally Unacceptable I	33 1st Fl. to 5th Fl. 31 6th Fl. to 16th Fl.

Notes: *Rounds off to 78 dBA
Source: Sandstone Environmental Associates, Inc.

For Applicant-controlled sites requiring 33 dBA of attenuation, the text for the modified Restrictive Declarations is as follows.

> "To ensure an acceptable interior noise environment, future residential/commercial uses must provide a closed-window condition with a minimum of 33 dBA window/wall attenuation to maintain an interior noise level of 45 dBA. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning."

For Applicant-controlled sites requiring 35 dBA of attenuation, the text for the modified Restrictive Declarations is as follows.

> "To ensure an acceptable interior noise environment, future residential/commercial uses must provide a closed-window condition with a minimum of 35 dBA window/wall attenuation to maintain an interior noise level of 45 dBA. To maintain a closed-window condition, an alternate means of ventilation must also be provided. Alternate means of ventilation includes, but is not limited to, air conditioning."

With the attenuation measures specified above, the Proposed Modified Development would not result in any significant adverse noise impacts and would meet 2012 CEQR guidelines.

Q. Public Health

The 2010 FEIS includes a screening-level assessment to determine whether a public health analysis was warranted. The assessment determined that the 2010 Project would not have resulted in significant adverse impacts related to hazardous materials, groundwater, solid waste management practices that could attract vermin noise and odors. In addition, construction and operation of the 2010 Project was not expected to result in significant adverse air quality impacts or public health impacts and the traffic associated with the 2010 Project was not expected to change NO_2 concentration appreciably. As such the 2010 FEIS concluded that the 2010 Project would not result in significant public health concerns.

Pursuant to CEQR methodology, a public health assessment needs to examine a range of potential issues that are project specific. For the Proposed Modified Development, this would be related to the potential for public health impacts on future residents and open space users that would be introduced to the project site. For determining whether a public health assessment is appropriate, the 2012 *CEQR Technical Manual* lists the following as public health concerns for which a public health assessment may be warranted:

- Increased vehicular traffic or emissions from stationary sources resulting in significant adverse air quality impacts;
- Increased exposure to heavy metals (e.g., lead) and other contaminants in soil/dust resulting in significant adverse impacts;
- The presence of contamination from historic spills or releases of substances that might have affected or might affect groundwater to be used as a source of drinking water;
- Solid waste management practices that could attract vermin and result in an increase in pest populations (e.g., rats, mice, cockroaches, and mosquitoes);
- Potentially significant adverse impacts to sensitive receptors from noise or odors;
- Vapor infiltration from contaminants within a building or underlying soil (e.g., contamination originating from gasoline stations or dry cleaners) that may result in significant adverse hazardous materials or air quality impacts;
- Actions for which the potential impact(s) result in an exceedance of accepted federal, State, or local standards; or
- Other actions that might not exceed the preceding thresholds but might, nonetheless, result in significant health concerns.

As presented in Section I, "Hazardous Materials," Section K, "Solid Waste and Sanitation Services," Section M, "Transportation", Section N, "Air Quality," Section P, "Noise," and Section S, "Construction," the Proposed Modified Development would not result in significant adverse impacts not previously disclosed in the 2010 FEIS and subsequent Technical Memoranda. In addition, the Proposed Modified Development would improve the public health conditions by reducing project-generated vehicular traffic (see Section M, "Transportation"). As such, the findings of the 2010 FEIS remain valid, and the Proposed Modified Development would not result in a significant adverse impact to public health.

R. Neighborhood Character

The 2010 FEIS concluded that the original Domino Sugar project would not result in any significant adverse impacts to neighborhood character. The analysis concluded the 2010 Project would have had a strong positive effect on the area by creating a vibrant new mixed-use development with public waterfront access and open space on a vacant site. As described in greater detail below, the Proposed Modified Development would not alter the conclusions of the 2010 FEIS and subsequent Technical Memoranda regarding impacts on neighborhood character.

As defined in the 2012 *CEQR Technical Manual*, neighborhood character is an amalgam of various elements that give neighborhoods their distinct "personality." These elements may include a neighborhood's land use, urban design, visual resources, historic resources, socioeconomics, traffic, and/or noise. As described in the preceding analyses, the Proposed Modified Development would not result in any new significant adverse impacts to these elements that were not disclosed in the 2010 FEIS and subsequent Technical Memoranda.

Similar to the 2010 Project, the Proposed Modified Development would redevelop the project site with residential, retail, commercial office, and community facility uses, which would be consistent with the mixed-use character of the study area. Similarly, the additional approximately 441,322 gsf of commercial office space, compared to the 2010 Project, would be in keeping with the recent trend towards new office buildings in the study area. Although the Proposed Modified Development would introduce a substantial new residential and worker population, the mix of market-rate and affordable units would ensure that a substantial portion of the new population would have incomes that reflect existing household incomes, and the neighborhood retail and startup creative and technology companies anticipated in the additional commercial space are not expected to alter or accelerate existing economic patterns or result in significant adverse indirect business displacement.

The Proposed Modified Development would continue the pattern emerging throughout Greenpoint and Williamsburg of mid- to high-rise waterfront developments. The four new buildings would be designed to both complement and enhance the landmarked Refinery Building and the Brooklyn skyline, creating an iconic skyline at this geographic center of the Brooklyn waterfront that is complimentary to existing landmarks.

The Proposed Modified Development would improve upon the 2010 Project by creating an additional 1.98 acres of publicly accessible waterfront open space, including waterfront public access areas, additional public access areas, and public easement areas, and would integrate the project site into the existing street network with the extension of River Street. Similar to the 2010 Project, the Proposed Modified Development would demolish most of the existing buildings on the project site, while retaining, restoring, and adaptively reusing the Refinery Building and incorporating the Domino Sugar sign, two elements of the site that contribute to the character of the surrounding neighborhood. The new development would be visible in the surrounding area, but would not obstruct any existing significant view corridors. The additional open space adjacent to the Refinery Building and along the waterfront, combined with the reduced building footprints would open up new views of visual resources that contribute to the neighborhood's character.

Compared to the 2010 FEIS, the Proposed Modified Development would result in less vehicular traffic. As discussed in Section M, "Transportation," the incremental change in the overall traffic generated from the Proposed Modified Development compared to the 2010 Project would be -117, -127, -306, and -212 vph during the weekday AM, midday and PM and Saturday midday peak hours, respectively, compared to

the 2010 FEIS. As with the 2010 Project, increased activity and noise levels would be noticeable at some locations, but would not be significantly adverse to neighborhood character.

Overall, the Proposed Modified Development would not result in any significant adverse impacts to neighborhood character. As such, the conclusions of the 2010 FEIS and subsequent Technical Memoranda regarding neighborhood character remain unchanged.

S. Construction

As stated in the 2012 *CEQR Technical Manual,* construction activities, although temporary in nature, can sometimes result in significant adverse impacts that may affect a number of technical areas assessed for the proposed project's operational period. The 2010 FEIS analyzed the potential construction impacts of the 2010 Project regarding open space, historic resources, traffic and parking, transit and pedestrians, air quality, and noise. Of these, significant adverse impacts during construction were expected to occur only for traffic and noise. As described in greater detail below, as construction of the Proposed Modified Development would include similar stages and activities compared to the 2010 Project, no additional construction impacts are anticipated, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Construction Schedule

The 2010 Project's construction schedule and phasing (analyzed in the 2010 FEIS and set forth in the Restrictive Declaration) was expected to occur over a nine-year period, beginning in January 2012 and finishing in late 2020. The duration of construction on individual sites would have ranged from approximately 2 to 3.5 years, with construction occurring simultaneously on two of the parcels throughout the nine-year construction period. Construction would have begun on the upland parcel with Building E, and proceeded along the waterfront from south to north. The shortest task (approximately 2 years) would have been the construction of Building E, and the longest task (approximately 40 months) would have been the construction of Building B. To reduce or eliminate the potential adverse construction impacts of the 2010 Project, the applicant committed to a variety of measures, including an air emissions reduction program and noise reduction measures.

Figure 38 presents the anticipated construction schedule for the Proposed Modified Development. The anticipated construction schedule was created by the Applicant, who owns, manages, and operates a general contracting company that would execute the construction of all of the proposed buildings and open space that comprise the project site. It represents the general contractor's best estimate based upon the current building designs and prior experience constructing buildings of similar size and scale.

As shown in Figure 38, construction of the Proposed Modified Development would take place over a period totaling approximately 10.5 years (including abatement and demolition). Site work has already commenced under the existing permit for the 2010 Project and is being undertaken in accordance with the requirements of the current Restrictive Declaration: asbestos abatement of the existing structures began in early 2013 and was completed in September 2013. Demolition of the existing structures on the waterfront lot, as well as interior demolition work at the Refinery Building, began in October 2013 and is expected to be complete in early 2014. A third party construction monitor/reporter has been retained and approved by DCP to oversee and certify the implementation of the specified environmental mitigation measures in accordance with the Restrictive Declaration throughout the demolition period. Demolition and abatement concurrently on all sites would increase efficiencies and result in economies of scale. As there will be no further abatement and demolition activity during the Proposed Modified Development's construction period, it is the post-demolition construction activities that are the subject of the construction analysis in the current Technical Memorandum.

FIGURE 38
Anticipated Construction Schedule for Proposed Modified Development

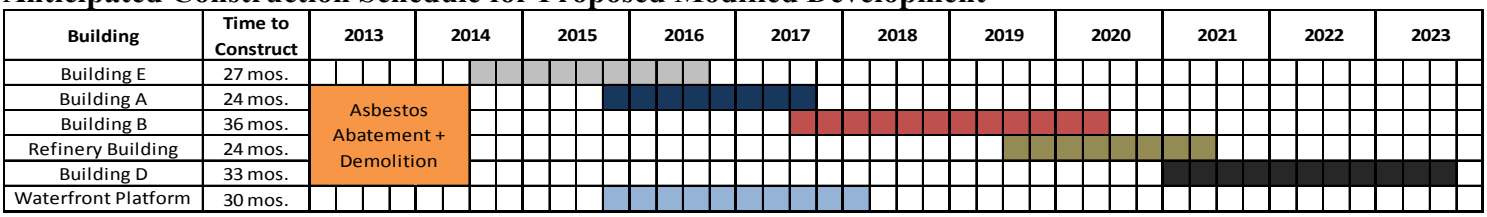


TABLE 52
Construction Components and Project Durations—2010 Project v. Proposed Modified Development

Project Component	2010 Project			Proposed Modified Development		
	Estimated Duration[1]	Start Date	Finish Date	Estimated Duration[2]	Start Date	Finish Date
Abatement & Demolition	*N.A. - Included in construction duration for each individual building*			*14 months*	*March 2013*	*April 2014*
Building E	23 months	Jan. 2012	Nov. 2013	27 months	July 2014	Sept. 2016
Building A	24 months	Nov. 2018	Oct. 2020	24 months	Oct. 2015	Sep. 2017
Building B	40 months	Jul. 2016	Oct. 2019	36 months	July 2017	June 2020
Refinery Building	35 months	Dec. 2013	Oct. 2016	24 months	July. 2019	June 2021
Building C	28 months	Dec. 2014	Mar. 2017	--	--	--
Building D	36 months	Jan. 2012	Dec. 2014	33 months	Jan. 2021	Sept. 2023
Waterfront Platform	30 months[3]	Apr. 2013	Sep. 2015	30 months	Oct. 2015	March 2018
Overall Development Construction Period (including abatement and demolition)			106 months (~ 9 years)			125 months (~ 10.5 years)

Notes:
[1] Construction includes abatement and demolition (10 months for the Building D site and 13 months for the Building B site).
[2] Does not include abatement/demolition.
[3] While construction of the 2010 Project's waterfront platform was expected to begin in April 2013 and end in September 2015, for a total duration of 30 months, work on the waterfront platform would have only occurred during 22 months of this 30-month period.

As shown in Figure 38 and Table 52, the shortest construction duration would be 24 months (for Building A as well as the Refinery Building's renovation and addition), and the longest task would be for Building B (36 months). However, as previously stated, the construction schedules for each respective building (shown in Table 52) does not include the demolition and asbestos abatement which would occur under the existing Restrictive Declaration prior to project approval (see Figure 38). The slightly shorter construction durations indicated in Table 52 are also a result of the reduced building footprints and minimal in-ground excavation (described in greater detail in the following sections) as well as the decrease in more labor intensive construction associated with residential uses in exchange for less labor intensive office construction (due to fewer demising walls, plumbing fixtures, appliances, and finishes). Similar to the 2010 Project, during no point in the schedule would more than two new buildings' construction be underway.

Additionally, as shown in Table 52, the Proposed Modified Development would reverse the sequencing of building construction on the waterfront parcel compared to the 2010 Project to further alleviate potential air quality, noise, and community facility impacts. Specifically, the Proposed Modified Development would be constructed north to south along the waterfront platform (beginning with Building

A and concluding with Building D), compared to the south to north construction sequencing (beginning with Building D and concluding with Building A) analyzed in the 2010 FEIS. As in the 2010 Project, construction of Building E (on the upland parcel) would begin prior to construction on the waterfront parcel.

Construction Activities

Similar to the 2010 Project, post-demolition construction activities for the Proposed Modified Development would include four primary elements: reconstruction of the waterfront platform, construction of four new buildings, the adaptive reuse of the Refinery Building, and the development of publicly accessible open space and internal street network. No new construction activities that were not previously analyzed in the 2010 FEIS are being proposed.

Waterfront Platform Reconstruction

Construction activities associated with the Proposed Modified Development's waterfront platform reconstruction would involve the same general activities as those previously disclosed in the 2010 FEIS over a comparable time period (approximately 2.5 years for the Proposed Modified Development, same as with the 2010 Project): removal of the existing deck and piles; installation of new piles, pile caps, and deck slabs; and installation of a cast-in-place deck topping and fender system. As with the 2010 Project, the reconstruction would take into account avoiding in-water work during fish spawning seasons, even though the East River is not considered to be prime spawning grounds. It should be noted that the New York State Department of Environmental Conservation (NYSDEC) has indicated that fish spawning may no longer be an issue for this location, and the Applicant will coordinate with DEC during the construction process. Most of the construction would be done from barges with negligible on-land activities.

The first step of the waterfront platform's reconstruction would be to remove the existing decking and cribbing using large, barge-mounted cranes. The existing timber piles supporting the existing deck would be pulled or cut at the mudline, and new precast, prestressed concrete piles (fabricated off-site) would be driven. Adjacent to the southern half of the pile-supported platform, a new sheet pile bulkhead would be installed landward of the Mean High Water (MHW) elevation and new pile caps connecting the piles together would be formed and poured on-site. After the pile caps are constructed, precast, prestressed concrete deck planks would be installed using cranes. As the final step of the waterfront platform reconstruction, a timber fender system would be installed on the water side of the new platform to protect it from damage.

As previously mentioned, in conjunction with the 2010 Project, NYSCDEC approved the previous bulkhead plan (Permits 2-6101-0052/00010, 2-6101-0052/00011, and 2-6101-0052/00012). The approved permits include drawings of the proposed bulkhead, noting the construction of the stone riprap aprons associated with the proposed stormwater outfalls. As the Proposed Modified Development includes changes in design of the platform, the existing NYSDEC permits will be modified accordingly. Approval from the United States Army Corps of Engineers (USACE) in conjunction with the Joint Permit bulkhead construction previously approved by NYSDEC is pending.

As two small portions of the project site now fall within a Preliminary Work Map Zone A, which has a flood elevation of 12 feet NAVD88 (13.1 NGVD or 10.55 Brooklyn Borough Highway Datum), minor modifications to the existing NYSDEC and pending USACE Joint Permit for the bulkhead plan are anticipated. The modifications would result in minor increases in the height of the reconstructed bulkhead to adhere to the Preliminary Work Map requirements (released June 10, 2013) and minimize potential

flood risks. These minor modifications would not result in additional in-water construction not previously analyzed in the 2010 FEIS and subsequent Technical Memoranda. As such, construction of the Proposed Modified Development's waterfront platform would not result in significant adverse impacts not previously disclosed in the 2010 FEIS and subsequent Technical Memoranda.

New Building Construction

The Proposed Modified Development would result in a minor increase in the amount of built square footage, with each phase of the respective buildings' anticipated construction period expected to last approximately the same amount of time as the 2010 Project estimated. However, differences resulting from the Proposed Modified Development that are anticipated to minimize any potential significant adverse impacts as a result of building construction include (1) completing abatement and demolition activities prior to project approval (and in accordance with the existing Restrictive Declaration); (2) elimination of the previously approved Building C; (3) more efficient reconstruction of the Refinery Building for office uses versus residential uses in 2010; (4) increasing the distance between the building construction sites; and (5) decreasing in-ground disturbances and building footprints.

Building construction on the project site is generally associated with five primary phases: abatement and demolition; excavation and foundation; superstructure; exterior construction; and interior construction and finishing. As previously mentioned, with the Proposed Modified Development, abatement and demolition have already begun and are expected to be completed prior to project approval and in accordance with the existing Restrictive Declaration, and are therefore not considered in the Proposed Modified Development's construction analysis. As abatement and demolition activities on the project site are expected to be completed prior to approval of the Proposed Modified Development, potential impacts associated with the abatement of asbestos and lead-based paints, resulting dust containing traces of lead, traffic generated by the up to 20 workers employed to this task, and the removal of one or two tarped truckloads of bagged material per day would not be part of this analysis. In addition, as previously noted, the concurrent abatement and demolition work on all of the development sites will result in greater construction efficiencies and economies of scale.

The Proposed Modified Development would decrease the total number of proposed building sites: the previously approved 2010 Project's 587,668 gsf Building C would be replaced with additional open space. Building C of the 2010 Project was expected to take a total of 28 months to construct; as analyzed in the 2010 FEIS, during seven months of Building C's construction it was assumed that no additional new building construction would be underway. Therefore, eliminating Building C would result in a decreased overall construction period, as discussed above. In addition, reducing the number of new building sites by 1/5 would allow for consolidated construction activities and economies of scale. Consolidating building construction activities to five sites rather than six would translate to the need for less excavation, foundation, and site work, as well as less equipment and construction staging overall. It is therefore anticipated that the Proposed Modified Development's consolidated construction schedule would also decrease potential construction vehicle-related traffic, air quality, and noise impacts.

By reducing the proposed building footprints and entirely eliminating Building C, the Proposed Modified Development would significantly increase the distances between the proposed buildings, and therefore the distances between building construction sites in the locations where the 2010 FEIS found the maximum impacts due to adjacent and concurrent construction (Building C, the bulkhead, and the Refinery Building). The distances between the Proposed Modified Development's building construction sites would be upwards of 75 feet, with a distance of approximately 302 feet between the Refinery Building and Building D. In comparison, the distance between 2010 Project's building construction sites ranged from 60 feet to a maximum of 70 feet. Comparing the distances between occupied project site buildings and development sites that are expected to be under construction (refer to Figure 38 and Table 52), the

smallest distance between a construction site and a new sensitive receptor (residential use) would be approximately 75 feet between Buildings A and B, compared to the minimum of approximately 60 feet between Building C and the Refinery Building and between Buildings A and B analyzed in the 2010 FEIS and subsequent Technical Memoranda. As the Proposed Modified Development would increase the distances between project site buildings, project-on-project impacts associated with construction-related noise, air quality, and vibration would be decreased compared to the 2010 Project.

In addition to the elimination of the 2010 Project's Building C, the Proposed Modified Development would generally reduce excavation footprints. As indicated in Table 53, the 2010 Project would have resulted in combined excavation footprints of approximately 295,233 gsf, compared to approximately 219,009 gsf with the Proposed Modified Development. This would represent an approximately 26 percent reduction in the combined excavation footprints. Consolidating building construction activities on smaller building sites would further minimize the amount of excavation, foundation, and site work required.

TABLE 53
Comparison of Building Excavation and Foundation Work – 2010 Project v. Proposed Modified Development

		2010 Project	Proposed Modified Development	Change In Total Excavation	
				Cu. Yd.	%
Building A	**Excavation Footprint (sf)**	50,343	24,777		
	Material to be Excavated (Cu. Yd.)	27,686	6,656	-21,029	-76
Building B	**Excavation Footprint (sf)**	62,718	40,150		
	Material to be Excavated (Cu. Yd.)	55,525	16,141	-39,385	-71
Refinery Building	**Excavation Footprint (sf)**	43,088	36,955		
	Material to be Excavated (Cu. Yd.)	15,986	5,475	-10,511	-66
Building C	**Excavation Footprint (sf)**	48,133	32,390		
	Material to be Excavated (Cu. Yd.)	21,748	2,399	-19,348	-89
Building D	**Excavation Footprint (sf)**	35,424	27,141		
	Material to be Excavated (Cu. Yd.)	16,974	5,072	-11.902	-70
Building E	**Excavation Footprint (sf)**	55,527	57,596		
	Material to be Excavated (Cu. Yd.)	69,963	41,184	-28,779	-41
Total	***Excavation Footprint (sf)***	***295,233***	***219,009***		
	Material to be Excavated (Cu. Yd.)	***207,882***	***76,927***	***-130,955***	***-63***

Further, the amount of in-ground disturbances associated with the development sites would significantly decrease due to the elimination of Building C as well as two of the 2010 Project's below-grade parking garages and the anticipated construction technologies that would be utilized. In total, the Proposed Modified Development would result in a 63 percent decrease in cubic yards of excavated material (see Table 53). This significant decrease would translate to shorter construction periods for most of the buildings, and significantly less intensive work through a major reduction in earth-moving machinery and hauling of debris. This would in turn result in lower total emissions during the construction period, shorter durations of potential noise impacts from excavation equipment, and fewer truck trips, as discussed in the following sections.

Refinery Building Rehabilitation

The rehabilitation of the Refinery Building under the Proposed Modified Development calls for the construction of entirely commercial space, unlike the 2010 Project which includes primarily residential space. In addition, the Proposed Modified Development would include modifications to the rooftop addition previously approved by the Landmarks Preservation Commission (LPC) and the preservation of much of the existing building's core. Work associated with the rehabilitation of the landmark Refinery Building would involve abatement and interior demolition, minor excavation and foundation work, superstructure, exterior construction, and interior construction and finishing. As previously mentioned, unlike the 2010 Project, with the Proposed Modified Development the abatement and interior demolition phase of construction would occur prior to the project's approval and in accordance with the existing Restrictive Declaration and LPC permit, and is therefore not included in the construction assessment.

A foundation for the proposed rehabilitation of the Refinery Building would be constructed by retrofitting the existing foundation, with new piles added at each existing wet column location where a column is required. During the superstructure phase of the Refinery Building reconstruction (lasting approximately eleven months) a new steel structure would be erected within the existing exterior walls and the elevator system would be put in place. Exterior construction (lasting approximately ten months) would include the restoration of masonry on the façade and stack, installation of New York City LPC-approved windows on the existing structure, and construction of the new rooftop addition. All exterior work would be done in accordance with the pending Certificate of Appropriateness (COA) from LPC. The interior construction and finishing phase would occur over approximately sixteen months, including landscaping. The change in use from residential to office under the Proposed Modified Development would reduce the construction period for the Refinery Building and the associated impacts. Office space requires much less intensive interior construction as compared to residential space, which results in significantly reduced construction materials, less labor and fewer construction period truck deliveries.

Public Open Space and Road Construction

As with the 2010 Project, the Proposed Modified Development's public open space would be constructed in tandem with the buildings along the waterfront (as required under the New York City Zoning Resolution and as analyzed in the 2010 FEIS), with the landscaping of the reconstructed waterfront platform occurring sequentially as each site is built out. It is further anticipated that the proposed Domino Square would occur in tandem with Building D's development (refer to Figure 10). Public access would be maintained to previously built open space and the new components would be connected to the previously built sections as developed. A connection between the Proposed Modified Development's open space and Grand Ferry Park would be constructed concurrent with the development of the public open space at the northern end of the project site.

As previously mentioned, the Proposed Modified Development would include the extension of the existing River Street from its current southern terminus at Grand Street to South 4th Street. With the proposed extension of River Street, the Proposed Modified Development would increase the total street frontage adjacent to the construction sites by approximately 51 percent (or 1,471 linear feet) compared to the 2010 Project (from approximately 2,893 linear feet of road frontage to approximately 4,364 feet of road frontage. The majority of the construction of this street, as well as the proposed extensions of South 1st, South 2nd, South 3rd, and South 4th Streets would occur on the project site, with very limited closure of curb lanes or sidewalks on Kent Avenue, and Grand and River Streets to achieve connections to these streets. The project site's internal street network would also serve as a staging area for construction vehicles and equipment throughout the approximately 9 ½-year post-demolition construction period.

In addition, it is anticipated that construction of the proposed extended street network would occur in tandem with the adjacent waterfront building and public open space, while ensuring that the proposed one-way southbound River Street extension would never terminate at the proposed one-way westbound extensions of South 2nd and South 4th Streets, thereby ensuring uninterrupted vehicular traffic flow. Figure 39 shows the three anticipated phases of the street network construction and the adjacent buildings they would be constructed in conjunction with. The majority of the construction of the proposed internal street network would occur on the project site, with temporary closure of curb lanes or sidewalks on Grand and River Streets.

Number of Construction Workers and Material Deliveries

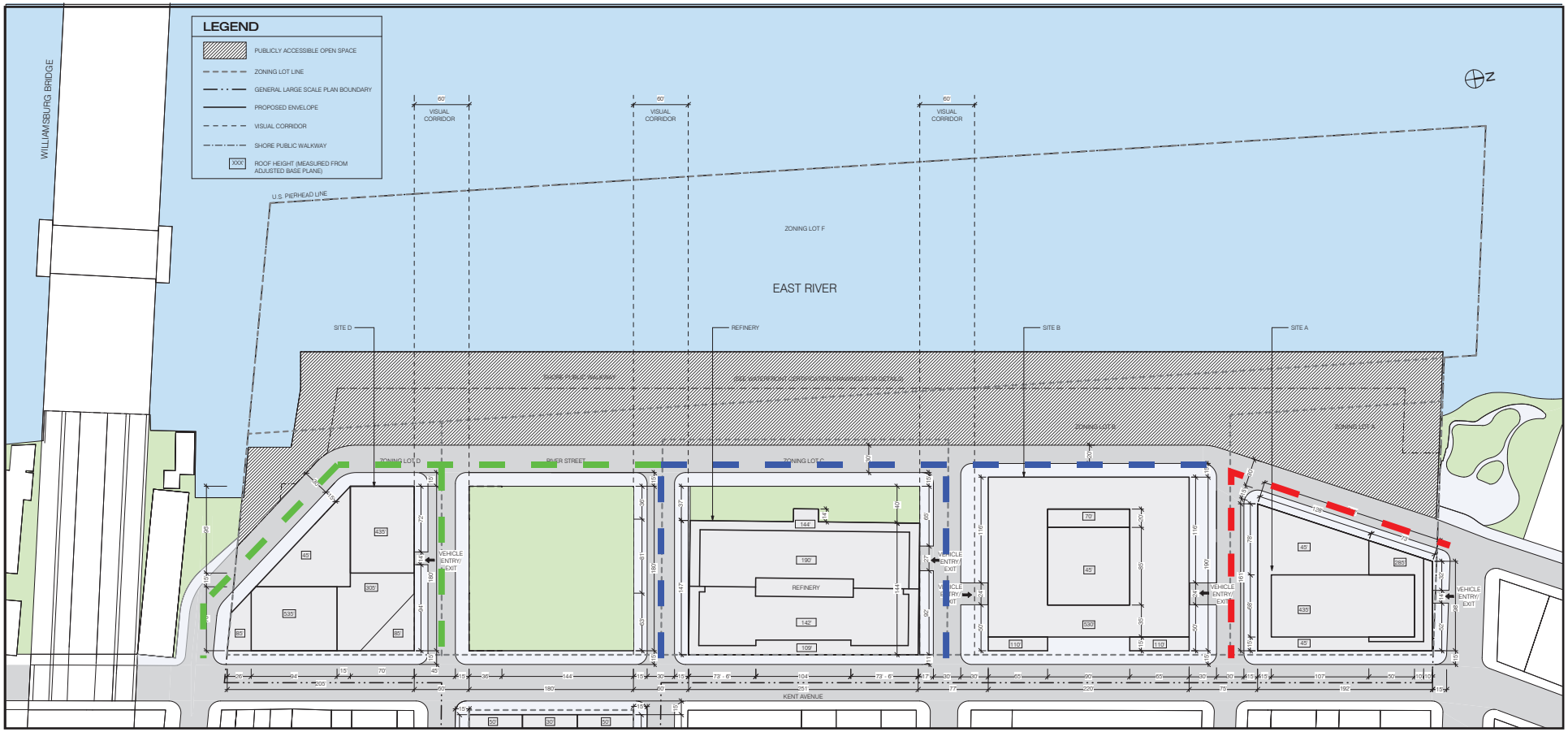
Table 54, below, presents the estimated number of workers and deliveries to the project site by calendar quarter for construction beginning after the project site asbestos abatement and demolition is complete. The significant decrease in in-ground disturbances, change in use of the Refinery Building from residential to commercial, decrease in labor-intensive residential square footage and increase in less labor-intensive office construction, the use of predominantly panelized systems for the building facades (which are largely fabricated off-site), consolidated construction schedule, and economies of scale resulting from the elimination of Building C are expected to result in a decreased number of construction workers and daily truck trips compared to the 2010 Project.

TABLE 54
Number of Construction Workers and Delivery Trucks per Day

Year	**2014**				**2015**				**2016**			
Quarter			*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Workers			33	133	167	217	153	172	230	313	235	153
Trucks			18	14	10	17	19	33	26	28	31	26
Year	**2017**				**2018**				**2019**			
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Workers	67	40	65	123	233	292	378	318	193	143	197	227
Trucks	20	14	22	14	21	13	17	20	20	17	22	25
Year	**2020**				**2021**				**2022**			
Quarter	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*	*1st*	*2nd*	*3rd*	*4th*
Workers	243	177	38	22	87	177	233	242	217	242	227	167
Trucks	24	17	8	8	17	16	13	14	17	20	20	17
Year	**2023**				**Proposed Modified Development**				**2010 Project—Comparison**			
Quarter	*1st*	*2nd*	*3rd*		***Peak***		***Average***		***Peak***		***Average***	
Workers	143	78	27		378		166		610		259	
Trucks	15	11	7		33		17		44		25	

Sources: Two Trees Management, LLC; 2010 Domino Sugar Rezoning FEIS; US Department of Labor CPI; 2004 RIMS II
Note: This table represents average conditions within each quarter.

As shown in Table 54, the construction of the Proposed Modified Development is expected to generate an average of 166 daily workers, with a peak of approximately 378 workers during the third quarter of 2018. This would represent a net reduction of approximately 36 percent in the average daily workers, compared to the 2010 Project. In addition, the average number of truck trips generated during construction of the Proposed Modified Development would be 17 trucks per day, peaking at approximately 33 trucks in the last quarter of 2015, compared to an average of 25 trucks per day, peaking at approximately 44 trucks for the 2010 Project. This would represent a reduction in the average daily truck trip of approximately 32 percent and a reduction of approximately 25 percent in peak truck trips compared to the 2010 Project.



Legend

- Phase 1 - in conjunction with construction of Building A
- Phase 2 - in conjunction with construction of Building B
- Phase 3 - in conjunction with construction of Building D

Anticipated Street Network Construction Phasing

It is further anticipated that because the earthwork and off-road truck intensive activities are projected to occur later in the Proposed Action than in the No Action condition, all non-road equipment will comply with the federal Tier 3 and Tier 4 emissions standards for non-road diesel engines. This, together with the EPA mandated reductions in sulfur content for non-road diesel fuels that went into effect in 2010, will effectively reduce particulate emissions by up to 90 percent.

Analysis

As described above, the Proposed Modified Development: (1) would not introduce any new construction activities not previously analyzed in the 2010 FEIS; (2) would eliminate Building C, build smaller footprint buildings, decrease the amount of in-ground disturbances, increase the minimum distance between construction sites and sensitive receptors, and decrease the overall construction timeline; and (3) would commit to all of the construction impact prevention measures associated with the 2010 Project. As such, it is anticipated that the Proposed Modified Development would substantially decrease the potential for construction-related traffic, noise, air quality, vibration, open space, and historic resource impacts, and would therefore not introduce any new or additional significant adverse impacts not previously disclosed in the 2010 FEIS and subsequent Technical Memoranda. However, as the Proposed Modified Development would modify the construction schedule previously analyzed, the analysis below focuses on the five key areas of the 2010 FEIS's construction impact assessment: open space, historic resources, traffic and parking, transit and pedestrians, air quality, and noise.

Open Space

As stated in the 2010 FEIS, construction of the Building A would occur immediately adjacent to Grand Ferry Park. To mitigate any potential adverse impacts on this open space resource, special measures would be taken, including erecting a solid fence between the project site and the park to reduce noise and minimize dust, installing netting on the façade of Building A facing the park to prevent any material from falling, and implementing dust control measures to ensure compliance with the New York City Air Pollution Control Code. In addition, the 2010 Project included the construction of a connection between the project site's publicly accessible open space and Grand Ferry Park. Creating this connection would have required construction activity within the southern portion of the park, with measures taken to minimize any temporary disruption to the open space during construction. As such, the 2010 Project would not have resulted in significant adverse construction-period impacts on open space.

Similar to the 2010 Project, the Proposed Modified Development would involve construction adjacent to neighboring Grand Ferry Park as well as the construction of a connection between this open space and the proposed 6.85 acres of open space on the project site (including waterfront public access areas, additional public access areas, and public easement areas). In addition, the Proposed Modified Development would extend River Street, which lies directly south of Grand Ferry Park, through the project site. While the development of these two elements would require construction activity within the southern portion of Grand Ferry Park, the improved connection to the Williamsburg street grid and to the Proposed Modified Development's waterfront park would enhance the use of Grand Ferry Park by providing increased access, especially from the north and south. In addition, measures would be taken to minimize any temporary disruptions to this open space during construction, and the proposed River Street extension would separate the waterfront open space from construction activities on the waterfront parcel, allowing continued use of the public open space, thereby minimizing potential disturbances associated with construction on the adjacent parcels, compared to the 2010 Project.

As such, with these measures, construction of the Proposed Modified Development would not result in significant adverse impacts on open space.

Historic Resources

The 2010 Project would have included the preparation of a Construction Protection Plan (CPP) for the landmark Refinery Building describing the measures to be implemented during the building's rehabilitation, as well as measures to protect the Refinery Building during construction of adjacent buildings. In addition, to avoid any inadvertent construction-related impacts on the former American Sugar Refinery Buildings and the former Matchett Candy factory (both located within 90 feet of the project site), a CPP would have been developed in consultation with the SHPO and the LPC. Protection measures for the adjacent Williamsburg Bridge would have been developed in coordination with SHPO, LPC, and DOT. With these mitigation measures in place, construction of the 2010 Project would not have resulted in significant adverse impacts on historic resources.

Prior to construction of the Proposed Modified Development, the Applicant would coordinate with SHPO, LPC, and DOT to develop CPPs to avoid any construction-related impacts, including ground-borne vibration, falling debris, and accidental damage from heavy machinery. The CPP would follow the guidelines set forth in the 2012 *CEQR Technical Manual*, including conforming to LPC's *New York City Landmarks Preservation Commission Guidelines for Construction Adjacent to a Historic Landmark* and *Protection Programs for Landmark Buildings*, as well as complying with the DOB's *Technical Policy and Procedure Notice (TPPN)* #10/88.

In addition, the increased distances between the Refinery Building and the proposed adjacent structures is expected to result in a decreased likelihood of vibration impacts to this historic resource. As stated in the 2010 FEIS, vibration impacts to the existing Refinery Building can be avoided provided certain high-vibration-producing equipment are not used within critical distances of the landmarked structure. Critical distances for typical high-vibration-producing equipment range from: (1) 4 to 17 feet to avoid major structural damages; (2) 15 to 73 feet to avoid minor damages from impulsive sources; and (3) 6 to 120 feet to avoid minor damages from steady sources. Therefore, the approximately 7 percent and 403 percent increase in the distances between the Refinery Building and the proposed buildings to the north and south, respectively, would decrease the likelihood of a vibration impact to this historic resource.

As such, construction of the Proposed Modified Development would not result in any new or additional significant adverse construction-period impacts to historic resources, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Traffic and Parking

Traffic

Although the projected construction activities for the 2010 Project would have yielded less total traffic than the total project-generated traffic, the 2010 FEIS concluded that significant adverse traffic impacts could have occurred at some of the study area intersections through which construction-related traffic would travel. Therefore, a quantified construction analysis for peak 2016 construction and peak 2020 construction and operation traffic was conducted for the 21 intersections that were identified to be significantly impacted under the full project build-out. The analysis concluded that "lesser" mitigation measures, such as signal timing adjustments, could be implemented during the construction period to alleviate traffic impacts. It was concluded that these timing adjustments could be implemented at DOT's

discretion to mitigate potential impacts at these intersections during construction. Early implementation of the build mitigation for traffic impacts would have fully mitigated the identified significant adverse impacts during the construction period.

In addition, the 2010 FEIS stated that the majority of construction activities would have been accommodated on-site, with temporary closure of curb lanes or sidewalks on Kent Avenue and temporary narrowing or relocating of Kent Avenue bicycle lanes, and that construction of the 2010 Project would not have resulted in significant adverse parking impacts.

For a reasonable worst-case analysis of potential transportation-related impacts during construction, the daily workforce and truck trip projections in the peak quarters (presented in Table 54, above) were used as the basis for estimating peak hour construction trips. These projections were refined to account for worker modal splits and vehicle occupancy, as well as arrival and departure distribution. With post-demolition construction beginning in 2014, trip-making attributable to construction activities would peak in the third quarter of 2018 with an estimated 378 workers and 17 truck deliveries per day. At that time, only Building A and E would be completed. In comparison, the peak period for construction-related traffics associated with the 2010 Project was expected to occur in the first quarter of 2017 (610 daily workers and 30 daily truck deliveries), at which point only Buildings D and E would have been completed.

A secondary peak construction scenario for the Proposed Modified Development (the second quarter of 2022) was defined when all of the proposed buildings except for Building E would be completed and operational. The 2010 FEIS similarly determined a peak construction and operations traffic quarter (the first quarter of 2020), at which point all of the 2010 Project's buildings except for Building A were expected to be completed and operational.

As in the 2010 FEIS, construction worker modal splits for both of the construction-related traffic peak periods conservatively assumes a 70 percent auto usage and a vehicle occupancy rate of 1.39.[37] The distribution of worker and vehicle trips were similarly based on the same assumptions utilized in the 2010 FEIS. For construction workers, the majority (approximately 80 percent) of the arrival and departure trips would take place during the hour before and after each shift. For construction trucks, deliveries would occur throughout the day when the construction site is active. Construction truck deliveries typically peak during the hour before the regular day shift, overlapping with construction worker arrival traffic. Table 55, below, compares the total construction and operations trips during the two peak construction-related traffic analysis periods for both the 2010 Project and the Proposed Modified Development.

As shown in Table 55, the 2018 third quarter construction scenario would yield more peak construction vehicle trips than those projected for the second quarter of 2022; operational trips in the third quarter of 2018 would be approximately one third of the operational trips projected in the second quarter of 2022. Due to the significantly greater operational trips during the second quarter of 2022, the combined construction and operation traffic during this peak construction scenario would be greater than during the third quarter of 2018 in all three analysis hours. However, peak construction and operational traffic during both peak construction scenarios would be less than both the 2010 Project's full build out weekday vehicle volumes (712, 530, and 934 net vph during the weekday AM, midday, and PM peak hours) and the Proposed Modified Development's full build out weekday traffic (595, 386, and 623 net vph during the weekday AM, midday, and PM peak hours). Hence, overall traffic conditions during construction in the traffic study area are expected to be better than the 2023 future with the Proposed Modified Development condition presented in Section M, "Transportation."

[37] 2000 Census reverse Journey to Work data.

TABLE 55
Comparison of Weekday Construction and Operational Trip Generation—2010 Project v. Proposed Modified Development

	Peak Construction Scenario																				
	2010 Project									Proposed Modified Development									Net Increment of PCEs		
	Construction Trips in PCEs (Q1 2016)			Operational Trips in PCEs (Buildings D and E)			Total PCEs			Construction Trips in PCEs (Q3 2018)			Operational Trips in PCEs (Buildings A and E)			Total PCEs					
Time	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6AM - 7AM	262	16	278	4	2	6	266	18	284	161	8	169	12	23	35	173	31	204	-93	13	-80
3PM - 4PM	0	187	187	124	20	244	124	307	431	0	115	115	47	37	84	47	152	199	-77	-155	-232
5PM - 6PM	0	59	59	170	132	302	170	191	361	0	38	38	76	84	160	76	122	198	-94	-69	-163
	Peak Construction + Operation Scenario																				
	2010 Project									Proposed Modified Development									Net Increment of PCEs		
	Construction Trips in PCEs (Q1 2020)			Operational Trips in PCEs (No Building A)			Total PCEs			Construction Trips in PCEs (Q2 2022)			Operational Trips in PCEs (No Building D)			Total PCEs					
Time	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
6AM - 7AM	123	10	133	15	8	23	138	18	156	108	10	118	37	56	93	145	66	211	7	48	55
3PM - 4PM	0	79	79	260	254	514	260	333	593	0	73	73	163	142	305	163	215	378	-97	-118	-215
5PM - 6PM	0	34	34	363	362	725	363	396	759	0	24	24	225	340	565	225	364	589	-138	-32	-170

Notes:
Numbers of construction worker vehicles were calculated with a 70 percent auto split and vehicle occupancy of 1.39.
PCEs = passenger car equivalents where 1 truck trip equals 2 PCEs and one 44-seat shuttle equals 1.5 PCEs.

In addition, the peak daily construction and operational trips would be less than with construction of the 2010 Project during all construction peak hours, with the exception of the 6:00AM to 7:00AM analysis hour during the peak construction and operation scenario (second quarter of 2022 for the Proposed Modified Development and first quarter of 2020 for the 2010 Project). It should be noted, however, that based on ATR data collected at the time of the 2010 FEIS, the 6:00AM to 7:00AM background traffic volumes are approximately 40 percent lower than the 8:00AM to 9:00AM commuter peak hour volumes.

As described above, total construction and operational vehicle trips are generally expected to be less than was anticipated with the 2010 Project, and therefore, similar or slightly lesser significant adverse impacts due to construction-related travel are anticipated at certain intersections surrounding the project site. However, as the Proposed Modified Development would result in significant changes to the area street network through the proposed extension of River, South 1st, South 2nd, South 3rd, and South 4th Streets and would construct the project site buildings in a different sequence than the sequence considered in the 2010 FEIS, a quantified traffic analysis was prepared to identify significant adverse impacts during construction that may differ from those identified for the project's final build out and which may require different mitigation measures or early implementation of proposed build mitigation measures.

As discussed above, the 2022 second quarter construction scenario would result in more combined project-generated trips during the peak construction analysis hours than the 2018 third quarter construction scenario. However, because the construction trip component during the second quarter of 2022 would make up a small portion of the total trips (construction and operational) associated with the Proposed Modified Development and would occur less than one year prior to the 2023 Build Year, the conditions would be more reflective of the final build out, which is already addressed in Section M, "Transportation." Therefore, it is more appropriate to consider the 2018 second quarter construction

scenario as the representative worst-case condition for assessing potential construction traffic impacts and mitigation measures. This approach is consistent with the methodology used in the 2010 FEIS, which included a quantified traffic analysis of the 2010 Project's 2016 first quarter construction scenario.

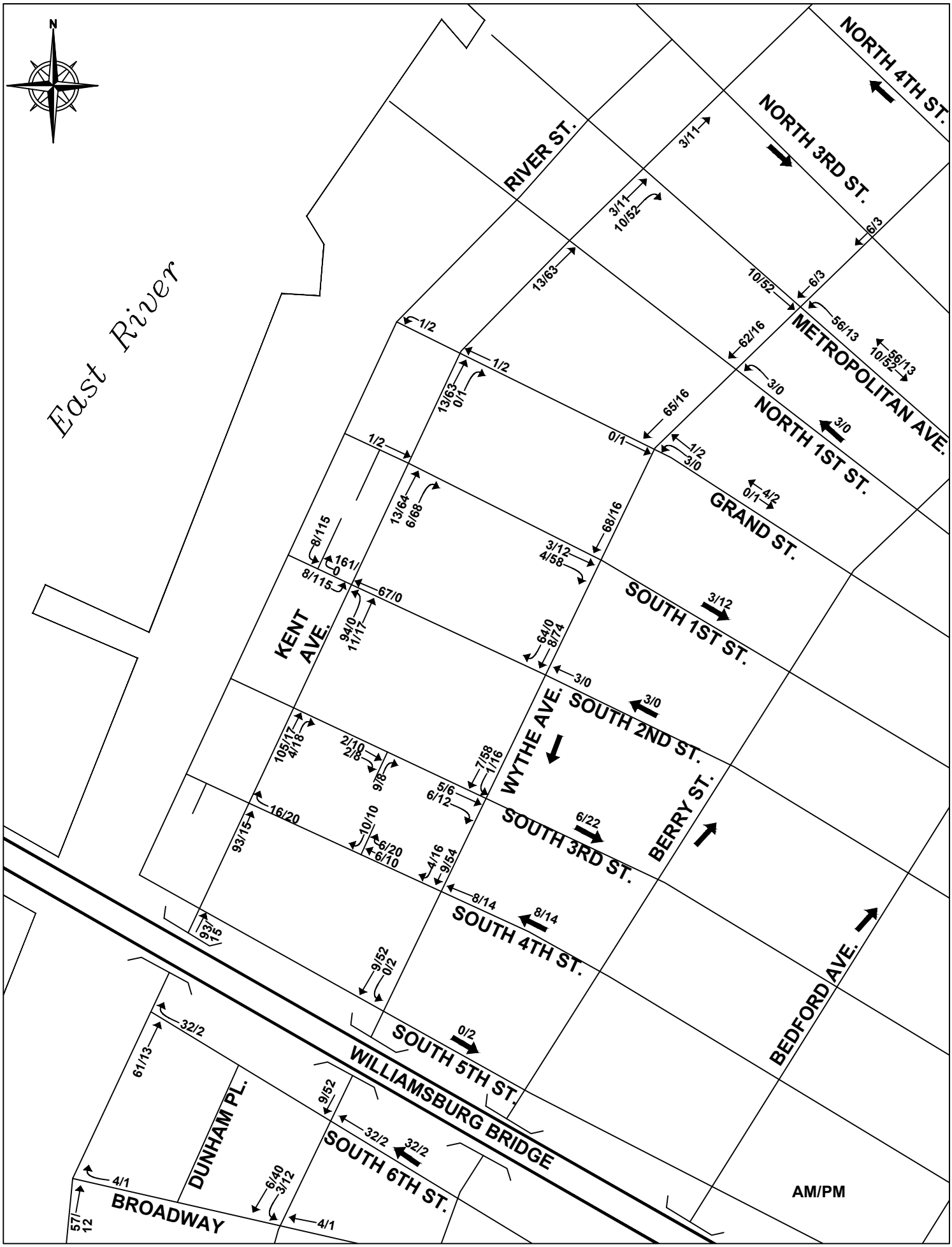
As shown in Figure 39, during the 2018 peak construction scenario (when Building B is under construction and Buildings A and E are operational), only Phase 1 of the proposed internal street network would be complete: River Street would be extended to South 1st Street, and one-way South 1st Street would be extended to the west. While the southernmost portion of the waterfront lot would not be part of the street network at this point, it is assumed that construction vehicles and construction worker vehicles would access the Building B construction site via South 2nd Street (immediately south of Building B), with construction-related vehicle trips both entering and exiting via this access point onto adjacent Kent Avenue.

Figure 40 presents the combined construction and operational vehicle traffic during the second quarter 2022 6:00AM to 7:00AM and 3:00PM to 4:00PM peak analysis hours. As the 5:00PM to 6:00PM analysis hour would be comprised almost entirely of operational trips (with only 38 total construction trips), the trip assignment focused on the two peak analysis periods that would have a greater proportion of trips attributable to construction activities on the project site. Additionally, these are the same peak construction hours that were analyzed in the 2010 FEIS. Operational vehicle trips were assigned using the same methodology described in Section M, "Transportation." Construction worker trips were assigned to the traffic network based on the same methodology assumed in the 2010 FEIS: a majority (55 percent) of the construction worker auto trips were assumed to access the project site from the BQE, while 15 percent of the trips would access the project site from the Williamsburg Bridge from Manhattan and New Jersey, and 30 percent of the trips would be from other available local streets. Delivery trips made by construction trucks were assigned to DOT-designated truck routes, with the majority of the trips accessing the project site from the BQE.

Anticipated traffic volumes for all approaches would be lower than the projected full build out traffic volumes disclosed in the 2010 FEIS, and the incremental traffic impacts would therefore be expected to be lower during the Proposed Modified Development's peak construction period. As such, locations where potential impacts could occur during construction in the 2018 analysis year would be the same as or part of the set of locations identified in Section M, "Transportation." A mitigation screening assessment was therefore undertaken to: (1) determine whether significant adverse traffic impacts warranting mitigation would occur at those intersections that would experience significant adverse impacts in the 2023 build year during the Proposed Modified Development's 2018 peak construction and operational period; and (2) whether the mitigation measures recommended for the Proposed Modified Development's full build out would be warranted at this time or if "lesser" mitigation measures (i.e., signal timing adjustments) could be implemented in the interim. As traffic volumes during the 6:00AM to 7:00AM peak construction hour would be less than those anticipated for the peak construction traffic period analyzed in the 2010 FEIS, and the 2010 Project's 6:00AM to 7:00AM peak construction and operational traffic would not have resulted in any significant adverse traffic impacts, the mitigation screening assessment focused on the 3:00PM to 4:00PM peak hour.

Table 56 provides a summary of the locations that were expected to experience significant adverse traffic impacts during the 2010 Project's peak construction period (first quarter 2016), compared to those intersections that would experience a significant adverse traffic impact during the Proposed Modified Development's peak construction period (third quarter 2018). As shown in the table, construction of the 2010 Project would have required early mitigation implementation at five signalized intersections and seven unsignalized intersections. These adjustments would be implemented at DOT's discretion, and, with their implementation, all significant adverse traffic impacts would be mitigated. For the Proposed

2018 Construction - Total (PCE) Increment - Weekday AM/PM Peak Hour



Modified Development, combined construction and operational traffic in the third quarter of 2018 would require early mitigation implementation at four signalized and six unsignalized intersections.

Due to the lower peak construction and operational traffic volumes associated with the Proposed Modified Development, the Proposed Modified Development would generally result in lower traffic volumes than the 2010 Project. In addition, due to the revised construction phasing (north to south along the waterfront parcel for the Proposed Modified Development, compared to the south to north phasing assumed in the 2010 FEIS), the few approaches where peak construction volumes for the Proposed Modified Development would be greater than the volumes anticipated for the 2010 Project's peak construction period are all located at northern study area intersections (see Table 56).

As the 2010 FEIS concluded, through the early implementation of lesser mitigation measures (described below), all construction-related impacts of the Proposed Modified Development would be mitigated. These mitigation measures are generally the same as those disclosed in the 2010 FEIS's construction traffic analysis, with the following adjustments to the early mitigation implementation due to the revised north to south construction phasing: the intersection of Kent Avenue at Metropolitan Avenue would no longer require early mitigation implementation; and whereas the 2010 Project would have necessitated the early implementation of new traffic signals (the proposed build mitigation) along Kent Avenue at both South 4th and South 6th Streets, the early implementation of a new traffic signal would only be necessary at Kent Avenue and South 2nd Street for the Proposed Modified Development. These adjustments would be implemented at DOT's discretion, and, with their implementation, all significant adverse construction period traffic impacts would be mitigated.

Wythe Avenue and Metropolitan Avenue (Signalized)

The impact at the southbound approach could be mitigated by shifting 1 second of green time from the eastbound/westbound phase to the southbound phase.

Wythe Avenue and Grand Street (Signalized)

The impact at the southbound approach could be mitigated via early implementation of proposed build mitigation—converting the existing Class II bike lane to a Class III bike lane and daylighting the east curb on the southbound approach to provide two travel lanes.

Wythe Avenue and South 4th Street (Signalized)

The impact at the southbound approach could be mitigated via early implementation of proposed build mitigation—converting the existing Class II bike lane to a Class III bike lane and daylighting the east curb on the southbound approach to provide two travel lanes.

Wythe Avenue and South 6th Street (Signalized)

The impact at the southbound approach could be mitigated via early implementation of proposed build mitigation—converting the existing Class II bike lane to a Class III bike lane and daylighting the east curb on the southbound approach to provide two lanes.

TABLE 56
Summary of Intersections Requiring Mitigation during the 3:00PM-4:00 PM Peak Construction Traffic Analysis Periods—Proposed Modified Development v. 2010 Project

Intersection	Approach	Lane Group	Incremental vph		Intersections Requiring Early Mitigation	
			2010 Project	Proposed Modified Development	2010 Project	Proposed Modified Development
Signalized Intersections						
Kent Avenue and Metropolitan Avenue	EB WB NB 	LT TR L TR	 121	 63	 X	
Kent Avenue and South 3rd Street	EB NB 	LT L TR	59 205	50 35	 	
Wythe Avenue and Metropolitan Avenue	EB WB SB	TR LT LTR	104 29 11	52 1 12	 X	 X
Wythe Avenue and Grand Street	EB WB SB	TR LT LTR	4 40	1 16	 X	 X
Wythe Avenue and South 2nd Street	SB	LT	72	74		
Wythe Avenue and South 4th Street	WB SB	LT TR	53 176	14 70	 X	 X
Wythe Avenue and South 6th Street	WB SB	LT TR	9 108	2 52	 X	 X
Wythe Avenue and Broadway	EB WB SB	TR L T LTR	 1 108	 1 52	 X	 X
Wythe Avenue and South 8th Street	WB	LT	79	40	X	X
Metropolitan Avenue and Driggs Avenue	EB WB SB	TR LT LTR	94 28 10	47 13 5	 	
Broadway and Driggs Avenue	EB WB SB	TR LT LTR	29 30 14	12 7	 X	 X
Broadway and Marcy Avenue	EB WB SB	TR LT LTR	29 20	12 4	X X	X X
Unsignalized Intersections						
Kent Avenue and South 2nd Street	EB WB NB	TR TR LTR	64 116	115 17	 	X
Kent Avenue and South 4th Street	EB WB WB SB	L R TR L	80 108 10	 20 15	 X 	
Kent Avenue and South 6th Street	EB WB NB	L TR L	 9 	 2 	 X 	
Wythe Avenue and South 1st Street	EB SB	TR LT	55 40	70 16	 	
Wythe Avenue and South 3rd Street	EB SB	TR LT	148 72	18 74	X 	X
Wythe Avenue and South 5th Street	EB SB	TR LT	 115	 54	 	
Wythe Avenue and South 9th Street	EB SB	TR LT	 79	 40	 	
Berry Street and South 6th Street	WB NB	TR LT	29 	4 	 	
Broadway and Roebling Street- SBR	SB	R	10	3		

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = De facto Left, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound

Wythe Avenue and Broadway (Signalized)

The impact at the southbound approach could be mitigated via early implementation of proposed build mitigation—daylighting the southbound approach to provide a wider travel lane.

Wythe Avenue and South 8th Street (Signalized)

The impact at the westbound approach could be mitigated via early implementation of proposed build mitigation—converting the existing Class II bike lane to a Class III bike lane and daylighting the east curb on the southbound approach to provide two travel lanes.

Broadway and Driggs Avenue (Signalized)

The impact at the westbound approach could be mitigated by shifting 2 seconds of green time from the southbound phase to the eastbound/westbound phase.

Broadway and Marcy Avenue (Signalized)

The impacts at the eastbound and westbound approaches could be mitigated by shifting 3 seconds of green time from the southbound phase to the eastbound/westbound phase.

Wythe Avenue and South 3rd Street (Two-Way Stop Control)

The impact at the eastbound approach could be mitigated via early implementation of proposed build mitigation—converting existing two-way stop control to all-way stop control.

Kent Avenue and South 2nd Street (Two-Way Stop Control)

The impact at the westbound approach could be mitigated via early implementation of proposed build mitigation—installing a new traffic signal.

Curb Lane Closures and Staging

Because the majority of construction activities would be accommodated on-site, construction trucks would be staged primarily within the project site, or on newly completed streets adjacent to or south of active construction sites. As mentioned above the Proposed Modified Development would extend River Street through the site, creating an internal street network which, as in full build out conditions, is expected to lessen any potential construction-related traffic and parking impacts. Specifically, the internal streets could be used to stage construction equipment and activities, decreasing the need to stage equipment along Kent Avenue and thereby reducing potential traffic impacts caused by lane closures. In addition, the streets could alleviate traffic associated with construction activities, offering increased opportunities to divert construction-related traffic off of Kent Avenue.

Maintenance and protection of traffic plans would be developed for any curb lane and sidewalk closures. Approval of these plans and implementation of all temporary sidewalk and curb lane closures during construction would be coordinated with DOT's Office of Construction Mitigation and Coordination (OCMC).

Parking

Construction activities would generate the maximum parking demand when the total number of worker vehicles to the project site is at its peak; as indicated in Table 54, the peak daily construction workers would be 378 workers in the 3rd quarter of 2018. Based on the above-discussed construction worker trip generation assumptions of 70 percent auto usage with a vehicle occupancy rate of 1.39 (the same assumptions used in the 2010 FEIS), project site construction workers would generate a maximum daily parking demand of up to 191 spaces in the third quarter of 2018. The parking demand would be accommodated within the project site. However, as proposed buildings are constructed and occupied, temporary imbalances in terms of parking supply and demand may occur. In such a case, some construction workers may need to seek off-site parking in the study area.

Transit and Pedestrians

The 2010 FEIS stated that approximately 25 percent of construction workers would have traveled to and from the project site via transit, which would have represented only nominal increases in transit demand. Additionally, any temporary relocation of bus stops along bus routes operating adjacent to the project site would have been coordinated with and approved by DOT and NYCT to maintain proper access. In addition, the approximately 5 percent of construction workers expected to travel to and from the project site on foot would have been small in number, distributed among numerous sidewalks and crosswalks in the area, and would have primarily occurred outside of the peak hours. Adequate protection or temporary sidewalks and appropriate signage would have been provided in accordance with DOT requirements. Therefore, construction of the 2010 Project was not expected to result in significant adverse impacts to transit and pedestrians.

Assuming that 25 percent of construction workers would travel by transit and 5 percent would walk, the Proposed Modified Development would result in nominal increases in transit demand and pedestrian traffic during the 2018 peak construction worker period (an estimated 95 construction workers traveling by transit and an estimated 19 additional construction workers walking) and the 2022 peak construction and operational period (an estimated 61 construction workers traveling by transit and an estimated 12 additional construction workers walking). Similar to the 2010 Project, any temporary relocation of bus stops would be coordinated with and approved by DOT and NYCT, and temporary sidewalk closures would be in accordance with DOT requirements.

As such, construction of the Proposed Modified Development would not result in significant adverse impacts to transit and pedestrians, and the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain valid.

Air Quality

The 2010 FEIS concluded that construction of the previous project would not have resulted in significant adverse air quality impacts. The 2010 Project would have included an emissions reduction program for all construction activities to ensure that the construction would have resulted in the lowest practicable diesel particulate matter (DPM) emissions and fugitive dust emissions. The program would have minimized diesel equipment use, utilized ultra low fuel diesel fuel exclusively, used the best available technology to reduce emissions of DPM, and utilized equipment designed to meet EPA Tier 2 or newer standards. In addition, to minimize hourly NO_2 emissions, non-road diesel-powered vehicles and construction equipment that met the EPA Tier 3 Non-road Diesel Engine Emission Standard would have been used in construction, and construction equipment that met Tier 4 would have been used when available and practicable. The quantitative analyses of potential impacts on air quality from construction of the 2010

Project concluded that no significant adverse impacts from construction sources were expected at the closest sensitive receptors during peak emission periods. Dispersion modeling determined that the maximum predicted incremental concentrations of $PM_{2.5}$ resulting from construction of the 2010 Project would have exceeded the City's applicable interim guidance criteria at a few receptor locations. However, as these occurrences would have been limited in duration and extent, the 2010 FEIS concluded that no significant adverse air quality impacts for $PM_{2.5}$ would have resulted from the 2010 Project's on-site construction sources.

Similar to the 2010 Project, the most likely effects on local air quality during construction activities for the Proposed Modified Development would result from: engine emissions generated by on-site construction equipment and trucks entering/leaving the site during construction; fugitive dust emissions generated by soil excavation and other construction activities; and mobile source emissions generated by project-related construction trucks and worker vehicles traveling to and from the site on local roads. Construction of the Proposed Modified Development would implement an emissions reduction program for all construction activities to ensure that construction would result in the lowest practicable DPM emissions and fugitive dust emissions. All appropriate fugitive dust control measures—including watering of exposed areas and dust covers for trucks—would also be employed during construction of each site. In addition (as discussed above), construction of the Proposed Modified Development would: (1) not include demolition and asbestos abatement; (2) involve less in-ground disturbances; and (3) involve the construction of fewer buildings than the 2010 Project. These modifications are expected to decrease the air quality emissions resulting from construction activities, compared to the 2010 Project.

However, as the Proposed Modified Development would be constructed in a sequence that is different from the sequence considered in the 2010 FEIS, a detailed analysis of potential air quality impacts during the proposed construction phase was undertaken. This revised analysis was conducted based on changes in building construction schedules, emissions rates (based on the revised construction staging schedule), and potentially-affected sensitive land uses (occupied residences). The updated analysis was conducted assuming that the construction emissions of a project site building with a later completion date could impact a nearby project site building with an earlier anticipated construction date, and that these impacts would only occur after the completed building was occupied. Additional analyses were conducted for (1) Building E (located near existing residential uses); and (2) Building B, the largest proposed building with the longest anticipated construction period (36 months).

In order to compare the relative potential impacts of the construction of the Proposed Modified Development with the 2010 Project's construction scenario, analyses were conducted by comparing maximum 24-hour $PM_{2.5}$ emission rates (which is the critical pollutant and time period for this type of analysis) for the periods when construction impacts could occur.

Building D on Building E

Construction of Building E (the first building to be developed) is anticipated to be complete by September 2016, while construction of Building D (the final building to be developed) would continue until September 2023. As such, emissions from the construction activities associated with Building D (expected to begin in January 2021) could impact Building E's sensitive land uses. The maximum 24-hour $PM_{2.5}$ emission rate for the construction of Building D is estimated to be approximately 246 grams/day. In comparison, for the 2010 Project, construction of Building E (the first of the 2010 Project's buildings to be developed) was expected to be complete by November 2013, while construction of Building D (the second of the 2010 Project's buildings to be developed) would continue until December 2014. As such, emissions released from the construction activities associated with Building D after November 2013 could have affected Building E. The maximum 24-hour $PM_{2.5}$ emission rate for the construction of Building D was estimated to be approximately 806 grams/day. As the maximum short-

term $PM_{2.5}$ emission rates for Building D are lower under the Proposed Modified Development than under the 2010 Project, the potential impacts of the Modified Development $PM_{2.5}$ emissions from Building D would be lower than those estimated for the 2010 Project.

Refinery Building on Building B

For the Proposed Modified Development, construction of Building B would be completed by June 2020 while construction of the Refinery Building would begin in July 2019 and continue until July 2021. As such, emissions released from the construction activities associated with the Refinery Building after Building B is completed (July 2020) could impact Building B. The maximum 24-hour $PM_{2.5}$ emission rate for the period of construction activity during which Refinery Building emissions could potentially impact Building B would be approximately 250 grams/day. In comparison, with the 2010 Project's analyzed construction schedule, construction of the Refinery Building would have been completed before Building B, and would have resulted in a maximum 24-hour $PM_{2.5}$ emission rate of approximately 838 grams/day. As the maximum short-term $PM_{2.5}$ emission rates for construction of the Proposed Modified Development's Refinery Building are lower than with the 2010 Project, the potential impacts of the Proposed Modified Development would be lower than those estimated for the 2010 Project.

Refinery Building on Building E

As stated above, construction associated with the Refinery Building would start in July 2019 and continue until July 2021 for the Proposed Modified Development; Building E (located to the southeast of the Refinery Building) would be completed before this date (by September 2016). As such, emissions released from construction activities associated the Refinery Building could impact Building E. The maximum 24-hour $PM_{2.5}$ emission rate from construction activities associated with the Refinery Building is estimated to be approximately 132 grams/day. In comparison, with the 2010 Project construction on the Refinery Building was anticipated to be completed in August 2016, with construction of Building E complete by November 2013. As such, emissions released from construction of the Refinery Building similarly could have affected Building E's sensitive uses. The maximum 24-hour $PM_{2.5}$ emission rate for the period during which Refinery Building construction emissions could potentially impact Building E residential uses was estimated to be 838 grams/day for the 2010 Project. As the maximum short-term $PM_{2.5}$ emission rates for construction of the Proposed Modified Development's Refinery Building are significantly lower than with the 2010 Project, the potential impacts of the $PM_{2.5}$ emissions from construction activities associated with the Refinery Building would be lower than those estimated for the 2010 Project.

Building D on the Refinery Building

As previously stated, with the Proposed Modified Development, construction of Building D (the final building to be constructed) is anticipated to begin in January 2021 and be completed by September 2023, while construction of the Refinery Building would occur between July 2019 and July 2021. As such, emissions from construction activities associated with Building D (after completion of the Refinery Building), could affect the Refinery Building. The maximum 24-hour $PM_{2.5}$ emission rate for Building D construction during the period in which emissions could potentially impact the Refinery Building (after construction of the Refinery Building is complete) is estimated to be approximately 246 grams/day. In comparison, the maximum 24-hour $PM_{2.5}$ emission rate for the worst month of the 2010 Project's Building D construction period was estimated to be approximately 806 grams/day. As the maximum short-term $PM_{2.5}$ emission rates for construction of Building D (assuming these emissions have the potential to impact the Refinery Building) are lower with the Proposed Modified Development than with

the 2010 Project, the potential impacts of the $PM_{2.5}$ emissions from Building D's construction would be lower than those estimated for the 2010 Project.

Building E on Existing Land Uses

Building E would be the first building completed under the Proposed Modified Development. As such, construction emissions of Building E would not impact any of the other proposed project site buildings. However, Building E construction emissions could impact nearby existing land uses. As such, an analysis of Building E was conducted. The maximum 24-hour $PM_{2.5}$ emission rate for the worst month of construction activity associated with Building E is estimated to be approximately 588 grams/day. In comparison, the maximum 24-hour $PM_{2.5}$ emission rate from Building E for the worst month of the construction period was estimated to be approximately 774 grams/day with the 2010 Project. As the maximum $PM_{2.5}$ short-term emission rates for Building E are lower with the Proposed Modified Development than those with the 2010 Project, the potential impacts of the Proposed Modified Development would be lower than those estimated for the 2010 Project.

Building B Construction Emissions

As previously stated, with the proposed modified construction schedule, Building B (the largest of the proposed buildings with the longest anticipated construction schedule) would be under construction between July 2017 and June 2020 (36 months), and could potentially impact Building A residential tenants (anticipated completion date of September 2017), as well as existing sensitive receptors. As such, a detailed analysis was conducted to estimate potential air quality impacts of the emissions generated during the construction activities associated with Building B, and is included in Appendix 9, "Detailed Analysis of Potential Air Quality Impacts Associated with Construction of Building B." As construction activities on Site B would occur concurrently with reconstruction of the southernmost portion of the waterfront platform, emissions generated by platform construction activities were included in the analysis for Site B.

Methodology

As discussed in Appendix 9, dispersion modeling was conducted to estimate potential 24-hour $PM_{2.5}$ impacts on elevated, ground-level, and sidewalk receptors (for comparison with 24-hour STV of 5.5 $\mu g/m^3$), annual impacts on discrete elevated and ground level receptors (for comparison with the annual STV of 0.3 $\mu g/m^3$), and annual impacts on neighborhood receptors (for comparison with the neighborhood STV of 0.1 $\mu g/m^3$). Short-term $PM_{2.5}$ emission rates were estimated for each type of construction equipment (in grams per second) with total emissions of approximately 209 grams/day for Building B and 430 grams per day for the southern portion of the waterfront platform (which would occur concurrently). Annual $PM_{2.5}$ emission rates were developed by adjusting short-term emission rates using the total annual emission rate for Building B, which is 325 grams per day.

The large and small pieces of equipment were considered as point sources that were placed at fixed locations for the modeling analyses. Emissions generated from the project-related construction trucks and worker vehicles traveling on site, together with dust emissions generated by soil excavation and other construction activities, were simulated as area sources in the modeling analysis, and the emissions generated with Building B construction were distributed evenly across the Building B construction site and the emissions generated by waterfront platform reconstruction were distributed over the waterfront platform construction site.

Receptor "groups" included residential locations, locations within Grand Ferry Park, and the sidewalks surrounding the construction site along Kent Avenue and South 1st Street. Ground-level receptors were placed at a height of 1.8 meters; sidewalk receptors were placed behind the construction fence approximately 5 feet into the street and spaced 10 feet apart; and the elevated receptors on Building A were placed at a height of 50 feet, which is the first floor with operable windows of the southern residential tower closest to the Building B construction site.

The AERMOD dispersion model was used for all analyses. Regulatory default options were used for the point sources. Downwash effects were included and the urban dispersion coefficient was used for a 2,000,000 population. The parameters assigned for the emission sources (both point and area sources) were similar to those used in the 2010 FEIS.

Results

The result of this analysis shows that the highest 24-hour $PM_{2.5}$ and annual impacts occur at nearby sidewalk receptors, with the impacts at the elevated receptors substantially less. As shown in Appendix 9, the maximum predicted 24-hour average $PM_{2.5}$ incremental concentration, which occurred at a sidewalk receptor along the Kent Avenue (4.38 ug/m^3) is less than the 24-hour $PM_{2.5}$ STV of 5.5 μg/m^3. Similarly, the maximum estimated annual $PM_{2.5}$ impact (0.179 μg/m^3) is below the STV of 0.3 μg/m^3 and the annual $PM_{2.5}$ neighborhood concentration (7.38 x 10^{-6} μg/m^3) is below STV of 0.1 μg/m3. As such, construction activities associated with Building B would not cause any significant air quality impacts at any of ground-level, elevated, or neighborhood receptors.

As construction of the Proposed Modified Development would not result in any significant adverse air quality impacts, the conclusions of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

Noise

The 2010 FEIS concluded that, even with the implementation of measures to control noise sources and noise pathways, the noise levels due to construction activities at a few sensitive receptors immediately adjacent to the project site would have exceeded the CEQR impact criteria. Significant adverse noise impacts resulting from construction activities were expected to affect the residential building with facades on South 2nd and South 3rd Streets between Kent and Wythe Avenue, at all floors, from 2014 through 2020; the residential building on the corner of South 4th Street and Kent Avenue, at all floors, from 2012 through 2016; and the residential buildings with a façade along Grand Street between Kent and Wythe Avenues, at all floors above the first floors, from 2018 through 2019. Noise level increases at the affected locations were expected to reach up to 9.2 dBA during the worst-case construction period, and absolute noise levels were expected to reach the mid to upper 70s of dBA. To mitigate noise impacts related to construction of the 2010 Project, the applicant would have made attenuation measures such as upgraded windows and/or alternate means of ventilation, available to any of the residences that did not already have these measures where significant adverse impacts had been identified. In addition, the 2010 FEIS concluded that on-site construction activities would have produced $L_{10(1)}$ noise levels at Grand Ferry Park up to 68.1 dBA, which would have exceeded the CEQR-recommended levels for passive open space. However, no effective practical mitigation could have been implemented to avoid this noise impact during construction of Building A.

As stated in the 2012 *CEQR Technical Manual*, if a transportation analysis is not needed with regard to construction activities, a noise assessment of construction vehicles is likely not warranted. Often, determination of the need for a construction-related noise analysis involves considerations of construction

equipment and activities, and an assessment of noise for construction activities is likely not warranted if the project's construction activities: (1) are considered short-term; (2) are not located near sensitive receptors; (3) do not involve construction of multiple buildings where there is a potential for on-site receptors on buildings to be completed before the final build-out; and (4) the pieces of diesel equipment that would operate in a single location at peak construction are limited in number. In assessing the aforementioned criteria, further analysis should be performed if the proposed project would cause construction equipment to be operating within 1,500 feet of a receptor for a period of time exceeding two years.

While the Proposed Modified Development would involve similar construction activities over a comparable time period compared to the 2010 Project, a preliminary assessment was undertaken to determine whether the revised construction schedule of the Proposed Modified Development would result in new significant adverse construction-related noise impacts and whether a more detailed analysis would be warranted. The preliminary assessment was conducted based on proposed changes in construction schedule and phasing and construction traffic (based on the revised construction staging schedule).

Preliminary Assessment

Construction Duration

According to the construction schedule for the Proposed Modified Development, the development order is as follows: Building E, followed by Building A, Building B, the Refinery Building, and Building D (see Table 52). Based on this anticipated construction schedule, the project is not considered short-term. Potential sensitive receptors include existing residential buildings along the east-west side streets, as well as future residential redevelopment on lots that are currently vacant or devoted to industrial uses.

As indicated in Table 52, Building A at the northern end of the site would take the same number of months for construction as was previously projected. Building B, which is south of Building A, would be constructed in fewer months. The Refinery Building, which is the next development site south of Building B, also would be constructed in fewer months compared to the 2010 Project. Therefore, the total duration of exposure to construction noise for residents on Grand Street, South 1st Street, and South 2nd Street, as well as residents on Kent Avenue between Grand Street and South 2nd Street, would be the same as or less than the exposure analyzed for the 2010 project for these three sites.

In comparison to the 2010 Project, construction of Building E would take four months longer than anticipated with the 2010 Project, and therefore a more detailed analysis of potential additional significant adverse noise impacts associated with construction on this site is warranted.

Building D at the southern end of the project site would be constructed in less time than projected in the 2010 Project. Therefore, residents along South 4th and 5th Streets, as well as those on Kent Avenue from South 3rd to South 5th Streets, would experience construction noise for a period that is the same as or shorter than the exposure projected for the 2010 Project.

In addition, construction of the waterfront platform would occur over a total of 30 months for both the Proposed Modified Development and the 2010 Project. Thus the potential exposure for future residents would be the same.

Construction Phasing

As previously stated, the construction phasing for the Proposed Modified Development has changed, compared to the 2010 Project. By eliminating the development of Building C and lengthening the construction period (from approximately nine years for the 2010 Project to approximately 10.5 years including the demolition and abatement activities for the Proposed Modified Development that are currently underway), construction of the Proposed Modified Development would be less intensive at any given period. Under the 2010 Project, the construction period for Buildings D and E, which are at the same intersection, would have overlapped for over a year. Under the Proposed Modified Development, the Building E and Building D construction schedules would not overlap, and Building D (at the southern end of the waterfront lot) would be the only building under construction at that southern end of the site in the latter stages of development. Thus, the cumulative noise levels would be lower.

At the center of the site, the previous schedule had the Refinery Building construction overlapping Buildings B and C, which are directly adjacent to it to the north and south, respectively. Under the Proposed Modified Development, the only adjacent site that the Refinery Building's construction would overlap is Building B. However the total number of months that construction of Building B and the Refinery Building would overlap would be greater with the Proposed Modified Development (15 months) than was previously analyzed for the 2010 Project (3 months). As such, a more detailed analysis of the cumulative impacts of construction on these two sites under the Proposed Modified Development is warranted.

At the northern end of the site, construction of Building A would have overlapped construction of adjacent Building B for over two years with the 2010 Project. With the Proposed Modified Development, the construction of these two sites would overlap by only two to three months, reducing the duration of the combined noise levels to nearby homes.

The waterfront platform is not close to residential structures on Kent Avenue and adjacent side streets. However, with the 2010 Project, construction of the waterfront platform would have been ongoing after Sites D and E were completed, and therefore could have resulted in adverse construction-related noise impacts for residents of these completed buildings. Under the Proposed Modified Development, only Building E would be completed before construction of the waterfront platform is completed. This would reduce the number of project site residents potentially exposed to construction noise associated with construction of the waterfront platform.

Construction Traffic

Construction traffic includes trucks delivering materials, trucks removing excavated materials, and personal vehicles driven by workers. Overall, the Proposed Modified Development would have fewer trucks and workers than the 2010 Project (see Table 54). Although the construction period would be slightly longer for the Proposed Modified Development, it would require approximately 24 percent fewer trucks and 30 percent fewer workers. As shown in Table 54, the maximum number of average daily trucks in any quarter would be 44 for the 2010 Project compared to only 33 for the Proposed Modified Development. Similarly, the maximum number of average daily workers in any quarter would be 610 for the 2010 Project compared to 378 for the Proposed Modified Development. In addition, the staging area would be generally moved west from Kent Street, where it would have been staged with the 2010 Project. As construction of the Proposed Modified Development would generate less vehicular traffic than the 2010 Project, a more detailed analysis of the resultant elevated noise levels is unwarranted.

Detailed Analysis

While based on the preliminary assessment it is anticipated that construction of the Proposed Modified Development would not result in new significant adverse construction noise impacts, a detailed analysis was undertaken for two worst-case construction periods: (1) Building B's construction (July 2017 to June 2020), which would represent the longest single site construction period (36 months) and would overlap with the Refinery Building's construction (July 2019 to July 2021) for a period of 15 months; and (2) Building E's construction period (July 2014 to September 2016), which would be longer than projected for the 2010 Project (27 months compared to 23 months) and would be located directly adjacent to existing residential buildings.

As stated in the 2012 *CEQR Technical Manual*, a significant adverse construction noise impact would occur if sensitive receptors would experience: (1) cumulative construction noise levels exceeding ambient noise levels by 3 dBA or more for a period of two years or more; (2) cumulative construction noise levels exceeding 85 dBA for a duration of a construction phase; or (3) cumulative construction noise levels exceeding ambient noise levels by 15 dBA or more for a duration of a construction phase (i.e., more than four weeks). The use of 15 dBA is based on information from NYSDEC's "Assessing and Mitigation Noise Impacts" document as the threshold of an objectionable human reaction.

Actions to Minimize Construction Noise Impacts

The construction process in New York City is highly regulated to ensure that construction period impacts are eliminated or minimized. For noise, mitigation measures would comply with Title 15 of the Rules of the City of New York, Chapter 28, Citywide Construction Noise Mitigation, which specifies requirements for a Construction Noise Mitigation Plan, required noise mitigation measures for general construction, and additional measures to be taken if DEP receives noise complaints concerning a construction site. The various requirements are typically incorporated into construction contract documents to ensure compliance with the applicable regulations. The Proposed Modified Development would adhere to the construction noise controls mandated in the 2010 FEIS.

In addition, path controls (such as portable noise barriers, enclosures, acoustical panels and acoustic curtains) would be employed where feasible and practical. These barriers are required to be constructed of sufficiently massive material to achieve a sound transmission class (STC) rating of 30 or greater. The perimeters of the construction sites would have acoustic fences that are 16 feet high; acoustic barriers with height in excess of 16 feet would not be practicable and could pose a safety concern. The 16 foot acoustic fences that would be employed during construction of the Proposed Modified Development would serve to reduce noise for the first floor and much of the second floor of nearby residences.

To further aid in reducing construction noise, during the excavation/foundation and superstructure phases, Building B construction staging would be located away from Kent Avenue and the sensitive receptors located upland of the project site. Upon completion of the superstructure phase, the erected building structure would act as a barrier, further minimizing potential construction noise impacts from equipment used during the later construction phases. As a result, noise from some types of equipment (i.e., table saws, spray-on fire proof pump, masonry bench saw, mortar mixer, etc) are not included in the calculation of cumulative noise levels, as they would be used indoors at scattered locations throughout the building, and would not be concentrated in an outdoor location. In addition, on the upland parcel, one of the noisiest operations associated with Building E's construction, bending rebars, would be carried out at locations at least 150 feet from nearby residences, and all hoists used in construction of Building E would be located on facades facing away from sensitive receptors, such that the distance to any building with a

direct line of sight would be 300 feet or more or where the Building E superstructure would block the noise.

Furthermore, equipment noise levels quieter than those shown in the 2012 *CEQR Technical Manual* would be achieved through better engine mufflers, refinements in fan design and improved hydraulic systems. Temporary access to electricity is already available at the project site (in conjunction with the demolition phase which is currently underway), and where feasible and practical, electric equipment would be substituted for diesel equipment. Table 57 shows the equipment noise levels that the Proposed Modified Development would commit to, as similarly assumed in the 2010 FEIS's construction noise analysis. The noise levels in columns B and C of Table 57 were used in the analysis; specific types and volumes of equipment were provided for each month for each building for use in the construction analysis. All hoists would be electric.

TABLE 57
Committed Equipment Noise Levels (L_{max})

Equipment List	[A] DEP & FTA Typical Noise Level at 50 feet[1]	[B] Project-Committed Noise Level at 50 feet[2]	[C] Noise Level with Path Controls at 50 feet[3]
Asphalt Paver	85	85	75
Asphalt Roller	85	74	
Backhoe/Loader	80	77	
Compressors	80	67	
Concrete Pump	82	79	
Concrete Trucks	85	79	
Cranes	85	77	
Cranes (Tower Cranes)	85	85	75
Delivery Trucks	84	79	
Drill Rigs	84	84	74
Dump Trucks	84	79	
Excavator	85	77	
Excavator with Ram Hoe	90	90	80
Fuel Truck	84	79	
Generators	82	68	
Hoist	85	80	70
Impact Wrenches	85	85	75
Jackhammer	85	82	72
Mortar Mixer	00	63	
Power Trowel	85	85	75
Powder Actuated Device	85	85	75
Pump (Spray On Fire Proof)	82	76	
Pump (Water)	77	76	
Rebar Bender	80	80	
Rivet Buster	85	85	75
Rock Drill	85	85	75
Saw (Chain Saw)	85	75	
Saw (Concrete Saw)	90	85	75
Saw (Masonry Bench)	85	76	
Saw (Circular & Cut off)	76	76	
Saw (Table Saw)	76	76	
Sledge Hammers	85	85	75
Street Cleaner	80	80	
Tractor Trailer	84	79	
Vibratory Plate Compactor	80	80	
Welding Machines	73	73	

Notes:
1 Sources: Citywide Construction Noise Mitigation, Chapter 28, Department of Environmental Protection of New York City, 2007. Transit Noise and Vibration Impact Assessment, FTA, May 2000.
2 Mandated noise levels are achieved by using quieter equipment, better engine mufflers, and refinements in fan design and improved hydraulic systems.
3 Path controls include portable noise barriers, enclosures, acoustical panels, and curtains, whichever feasible and practical.

It should also be noted that the construction equipment assumptions in the 2010 FEIS were developed by a construction consultant (not by the general contractor that would have developed the site) and were not site-specific. For example, the 2010 FEIS's construction noise analysis assumed that deep pile foundations would be required on all development sites. However, based on a site-specific geotechnical investigation, a shallow foundation with spread footings is more suitable for the upland parcel. As such, no pile driving would occur during the construction of Building E, thereby eliminating the high noise levels associated with pile driving activities on this site.

Sensitive Receptors

Potential construction impacts typically occur within 20 feet of ground level, as combustion engines and disruption of the ground floor surface occur within this envelope. Buildings that are wholly or partially shielded from the ground level operations generally are not the worst-case receptor points. A field survey was undertaken on August 26, 2013 to identify the location of existing sensitive receptors located within 1,000 feet of the project site, and included residential and community facility uses, houses of worship, and public parks; planned No-Action residential development within this 1,000 foot radius was considered as well. A complete list of all of the identified existing and No-Action sensitive receptors is included in Appendix 10. In addition, as Building A would be completed and occupied prior to Building B's completion, this project site building is included in the analysis as a sensitive receptor. As stated in Section P, "Noise," the windows on Building A that face Building B would have an OITC rating of 30 dBA. All identified sensitive receptors were assigned to a representative Receptor Site group, and are shown in Figure 41.

The closest distances between the construction noise sources and the property lines of the Receptor Sites were used for the analysis with the exception of Receptor Site 3-9, located directly east of the upland parcel. As the two buildings represented by Receptor Site 3-9 have long rear yards of at least 60 feet, the windows on the existing buildings would be at least 60 feet from the Building E lot line. Therefore, this 60-foot distance was considered in determining potential construction noise levels.

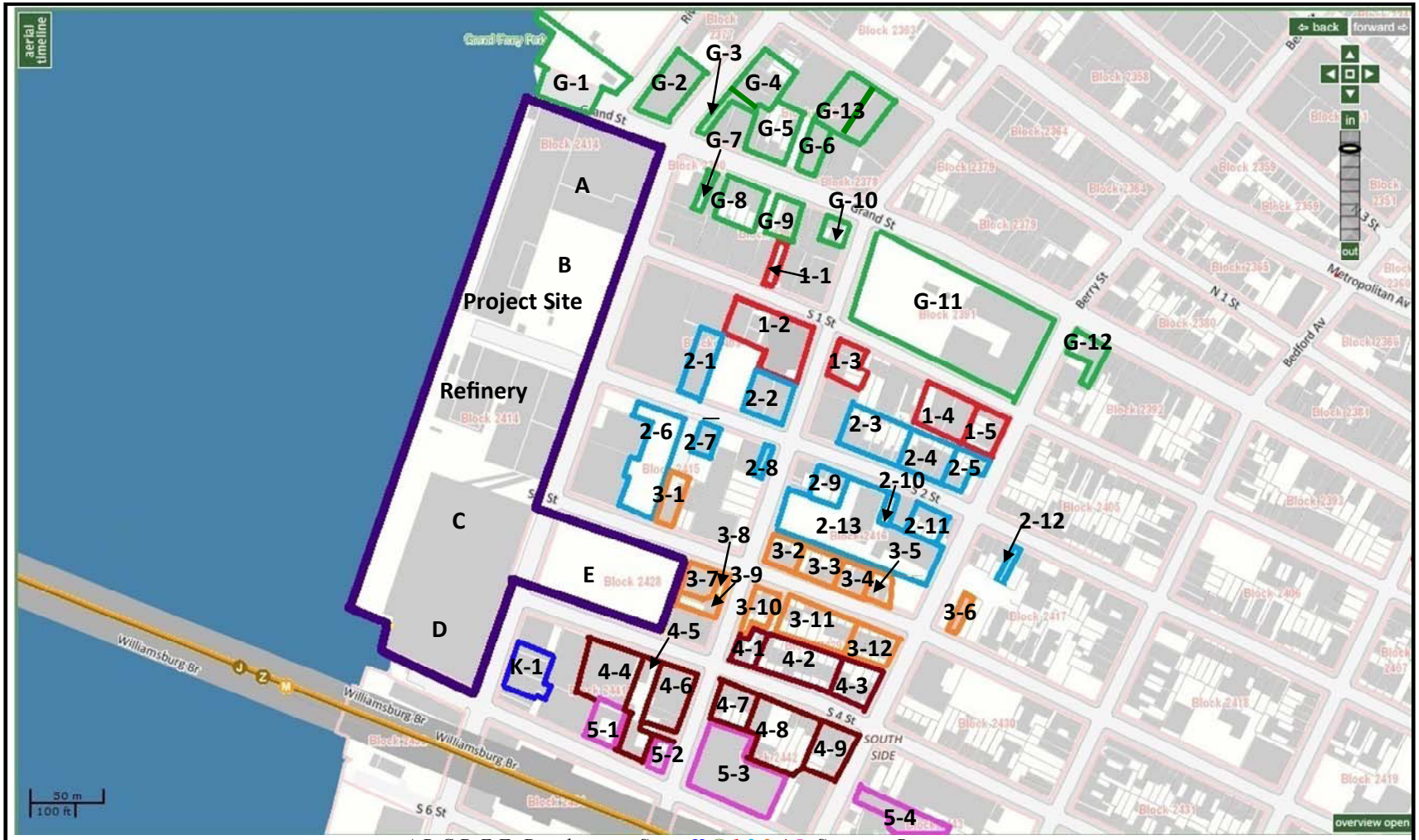
Analysis Methodology

Ambient noise levels were assigned to the sensitive receptors based on the noise monitoring sites from the 2010 FEIS. Ambient noise levels from these sites correspond to the street frontage of the buildings closest to the construction sites except for Receptor Sites 3-7 and 3-9 (immediately east of the Building E upland parcel), as the street frontages of these buildings do not face the upland parcel. As the residential buildings at Receptor Sites 3-7 and 3-9 have rear yards or balconies that face the upland parcel, and the worst-case noise levels would therefore occur at these locations, ambient noise levels from Noise Receptor Site 4 from the 2010 FEIS located directly adjacent to the upland parcel (on South 4th Street between Kent and Wythe Avenues) was used.

The equipment utilization and L_{max} noise levels at a distance of 50 feet were obtained from Table 57. However, an L_{max} cannot be added to background noise levels. Therefore, the noise levels were converted to an L_{eq} for use in the analysis. The formula for converting the maximum noise level to an L_{eq} is shown below:[38]

$$L_{max} + 10 \times \log (\text{operating time/project time})$$

[38] Noise and Vibration Control Engineering: Principles and Applications, edited by Leo L. Beranek and Istvan L. Ver, John Wiley & Sons, 1992, p. 652.



A,B,C,D,E,F: Development Sites; K,G,1,2,3,4,5: Sensitive Receptors
Source: Sandstone Environmental Associates, Inc.

If the equipment has an Lmax of 85 dBA at 50 feet, and it operates 40 percent of the time over a 1-hour period, then the L_{eq}(1 hr) at 50 feet would be about 4 decibels less, or 85 – 4 = 81 dBA. Beyond 50 feet, the noise level would attenuate at a rate of 6 dBA per distance doubling. Thus, at 100 feet, the L_{eq} would be 75 dBA (81 – 6 = 75).

At each sensitive receptor location, the noise levels from the three construction sites included in the detailed analysis (Buildings B and E, and the Refinery Building) were logarithmically added together and the noise levels were adjusted for distance using the formula for 6 decibels per distance doubling. Where an existing or newly constructed building would provide shielding, a 10 dBA credit was applied. A 20 dBA credit was used in calculating the shielding effects of Building A for the Grand Ferry Park locations. These noise levels were then added to ambient noise levels shown in the 2010 FEIS (described above) to obtain cumulative noise levels.

Results

The results, shown in Table 58, indicate that only one of the receptor sites (Receptor Site 3-7) would experience construction noise levels greater than 15 dBA, and therefore experience a significant adverse construction noise impact. Site 3-7, which is on 56 South 3rd Street between Kent and Wythe Avenues, directly east of the upland parcel, is a former one-story industrial building that is being enlarged and converted into a four-story residential building; this building did not contain and sensitive receptor uses at the time of the 2010 FEIS. As indicated in the table, the worst-case noise level increments at this location would be 20.1 dBA during the third quarter of 2014, and 6.1 to 12.8 dBA from the fourth quarter of 2014 through the second quarter of 2016. Although Site 3-7 has no windows on the western side (facing the Building E construction site), it does have windows at the rear (south) of the building, that would have a direct line of sight to the Building E construction site.

While fifteen other sites would experience noise level increments that would exceed 3.0 dBA for various periods of time, the magnitude and duration of these increases would not reach the impact criteria established for construction periods, and therefore they would not represent a significant adverse noise impact pursuant to CEQR methodology.

The above detailed analysis of construction of two of the Proposed Modified Development's five buildings indicates that noise levels would be equal to or lesser than construction associated with the 2010 Project. However, as construction of the Proposed Modified Development is expected to result in incremental increases in noise levels in the surrounding area, the Applicant is committing to the construction noise mitigation measures identified in the 2010 FEIS. As discussed in Section T, "Mitigation," the Applicant would be required to make attenuation measures (i.e., upgraded windows and/or alternate means of ventilation) available to any of the residences that are impacted but do not already have these measures. In addition, the Applicant would make the same attenuation measures available to the future residences at Site 3-7 (a former industrial building that was not considered a sensitive receptor at the time of the 2010 FEIS), if they do not already have these measures.

As with the 2010 Project, due to the proximity of the project site to Grand Ferry Park, construction of the Proposed Modified Development is expected to result in elevated noise levels. While this is not desirable, there is no effective practical mitigation that could be implemented to avoid these levels during construction. Noise levels in many parks and open space areas throughout the City that are located near heavily trafficked roadways and/or near construction sites, experience comparable, and sometimes higher, noise levels.

As construction of the Proposed Modified Development would not result in any new significant adverse impacts not previously disclosed in the 2010 FEIS, the findings of the 2010 FEIS and subsequent Technical Memoranda remain unchanged.

TABLE 58
Summary of Potential Noise Level Increments

Group ID[1]	Location	Construction Noise Level Increments, No Mitigation					
		Range > 3 dBA	Duration (Weeks)	Range > 15 dBA	Duration (Weeks)	Noise > 85 dBA	Duration (Weeks)
1-2	SW corner of South 3rd St. & Berry St.	3.1-4.3	52	0	0	0	0
2-1	South 2nd St., midblock between Kent & Wythe Aves., north side	5.8-9.1	91	0	0	0	0
2-6	Redevelopment on South 2nd & 3rd Sts. between Grand & Kent Aves.	4.8-14.6	52, 91[2]	0	0	0	0
3-1	South 3rd St., midblock between Kent & Wythe Aves., north side	3.0-14.6	52	0	0	0	0
3-7	South 3rd St. between Kent & Wythe Aves., south side	3.4-20.1	65*	20.1	13*	0	0
3-8	SW corner Wythe Ave. & South 4th St.	3.2	13	0	0	0	0
3-9	Wythe Ave., midblock between South 3rd & 4th St., western side	4.7-13.9	52	0	0	0	0
4-1	NE corner of Wythe Avenue & South 4th St.	4.2-9.1	52	0	0	0	0
4-4	South 4th St., midblock between Kent & Wythe Aves., south side	4.7-14.2	52	0	0	0	0
4-5	South 4th St., midblock between Kent & Wythe Aves., south side	3.0-14.6	65	0	0	0	0
4-6	SW corner of Wythe Avenue & South 4th St.	3.1-10.7	52	0	0	0	0
4-7	South 4th St., midblock between Wythe Ave., & Berry St., south side	4.2-7.1	52	0	0	0	0
4-8	South 4th St., midblock between Wythe Ave., & Berry St., south side	3.6-6.3	52	0	0	0	0
5-3	NE corner of Wythe Avenue & South 5th St.	3.4-5.2	39	0	0	0	0
K-1	Kent Avenue midblock between South 4th and South 5th Sts.	5.6	1.3	0	0	0	0
Building A	NW corner Grand St. and Kent Ave.	9.7-14.0	91	0	0	0	0

Source: Sandstone Environmental Associates, Inc.
Notes:
[1] See Figure 41.
[2] Two discontinuous periods separated by 104 weeks.
* denotes significant adverse impact.

T. Mitigation

The 2010 FEIS contained a series of mitigation measures to address potential significant adverse impacts identified in the areas of community facilities, shadows, historic resources, traffic and parking, transit and pedestrians, construction traffic, and constructions noise. These measures were examined to minimize or eliminate the anticipated impacts of the 2010 Project. As described in greater detail below, based on the analyses contained within the preceding sections of this Technical Memorandum, similar mitigation measures would be necessary to minimize any potential significant adverse impacts resulting from the Proposed Modified Development; certain mitigation measures could be altered or reduced to reflect minimized impacts associated with the Proposed Modified Development.

Community Facilities and Services

Public Schools

As stated previously, the new population introduced by the 2010 Project would have resulted in a significant adverse impact on elementary schools within the ½-mile study area and Sub-district 3, and on intermediate schools within Sub-district 3. To address the 2010 Project's potential significant adverse impact on elementary and intermediate schools, the applicant would have entered into an agreement with SCA to provide an option to locate an approximately 100,000 sf public elementary and intermediate school within the Refinery Building's community facility space. As part of this agreement, and as formalized in the project site's Restrictive Declaration, at different phases of the proposed project, the applicant would have provided the SCA with an opportunity to determine whether a school was needed.

As described above in Section C, "Community Facilities and Services," the Proposed Modified Development would generate approximately 662 elementary students and 274 intermediate students and would include a 375-seat elementary school in Building B. Based on the most recent SCA enrollment projections, with the 662 elementary school students generated by the Proposed Modified Development and the proposed increase in elementary school capacity, Sub-district 3 of CSD14 would have a deficit of 862 seats and a utilization rate of approximately 123.75 percent. As the With-Action elementary school utilization rate would represent a 6.08 percentage point increase over the No-Action projected utilization rate, the Proposed Modified Development would result in a significant adverse elementary school impact.

The Applicant is committed to including a 375-seat elementary school, and would need to include an additional 32 seats to mitigate the significant adverse elementary school impact. As stated in Section C, "Community Facilities and Services," the Applicant received the standard Programs of Requirements from the SCA and determined that the proposed 70,624 sf elementary school in Building B could accommodate the additional 32 seats, if necessary. The Applicant has entered into a Letter of Intent with SCA and will consult with the SCA six months in advance of design start for Building B to determine whether the proposed 375-seat elementary school could adequately meet actual elementary school demand in CSD 14, Sub-district 3. With the additional 32 elementary seats, the significant adverse elementary school impact associated with the Proposed Modified Development will be mitigated. However, as the Proposed Modified Development's school seat demand would materialize over time, a significant adverse impact on public elementary schools could occur as early as completion of the 561st dwelling unit. Therefore, if background projections and the Proposed Modified Development's school seat demand materialize as projected in the analysis, there is the potential for a temporary unmitigated significant adverse impact to occur upon completion of Building A before the proposed Building B school is constructed and operational.

As stated in Section C, "Community Facilities and Services," similar to the 2010 Project, the Proposed Modified Development would result in a significant adverse impact on CSD 14, Sub-district 3 intermediate schools. With the 274 intermediate school students generated by the Proposed Modified Development, study area intermediate schools would operate at 169.16 percent utilization, for a total deficit of 684 intermediate school seats. This would represent a 27.70 percentage point increase in intermediate school utilization, above the CEQR threshold of impact significance. Since the Proposed Modified Development would be constructed sequentially, the significant adverse intermediate school impact could occur upon completion of the 413th dwelling unit. The Proposed Modified Development would need to provide 153 intermediate school seats to mitigate the potential significant adverse intermediate school impact resulting from the full build-out.

However, as stated in Section C, "Community Facilities and Services," additional intermediate school capacity is anticipated in the Sub-district by 2023, and it is possible that the additional capacity will not be necessary at the time of the Proposed Modified Development's construction. The Applicant has entered into a Letter of Intent with SCA and will consult with the SCA six months in advance of design start for Building B to determine whether the additional intermediate school capacity is needed to meet actual intermediate school demand on CSD 14, Sub-district 3. If the SCA determines that the additional 153 intermediate school seats are still necessary at that time, the Applicant would expand the proposed 70,624 sf elementary school in Building B to accommodate the additional intermediate seats. If background projections and the Proposed Modified Development's elementary school seat demand materialize as projected in the analysis, there is the potential for a temporary unmitigated significant adverse impact to occur upon completion of Building A before the proposed Building B school is constructed and operational.

Because the proposed larger mitigation school could result in impacts different from those analyzed in the Technical Memorandum, a qualitative discussion of the possible impacts of locating a larger mitigation school on the project site is included below.

Potential Environmental Impacts of Larger Mitigation School

As discussed above, in addition to the proposed 375-seat elementary school in Building B, it is possible that a larger mitigation school would be needed to fully mitigate the identified significant adverse elementary and intermediate school impacts. The Applicant has consulted with SCA and determined that a larger mitigation school could be accommodated in the existing Building B by eliminating some of the other uses currently proposed for the building. This larger mitigation school would accommodate 32 additional elementary school students and 153 additional intermediate school students (for a total of 560 school seats), and be approximately 19,376 gsf larger than the school currently proposed. For the purpose of this analysis it is assumed that the larger mitigation school would replace approximately 6,000 gsf of retail currently proposed for Building B, with the remaining floor area coming from Building B's office or residential floor area.

As the larger mitigation school could result in impacts different from those identified in this Technical Memorandum, this discussion is provided for each analysis area where the larger mitigation school could have potential impacts: solid waste and sanitation services, energy, and transportation. As the larger mitigation school would not represent a new land use, would result in a net reduction in the total project site daytime population and potentially a reduction in the residential population, and would not alter the Building B floor plate nor the building's form in a way that would alter the pedestrian experience, the larger mitigation school would result in similar or lesser impacts in the areas of land use, zoning, and public policy; socioeconomic conditions; community facilities and services; open space; shadows; historic and cultural resources; urban design and visual resources; natural resources; hazardous materials;

water and sewer infrastructure; air quality; greenhouse gas emissions; noise; public health; neighborhood character; or construction.

Solid Waste & Sanitation Services

As stated in Section K, "Solid Waste and Sanitation Services," the Proposed Modified Development would result in a net increase in total solid waste generation on the project site compared to the 2010 Project; the total amount of solid waste generated by commercial uses (and handled by private carters) would increase, while the total amount of solid waste generated by residential and institutional uses (and handled by DSNY) would decrease.

As disposable wastes and recyclable materials from the larger mitigation school would be collected by DSNY, and the larger mitigation school would replace some commercial uses, the total amount of solid waste handled by DSNY under this mitigation scenario would increase, while the total amount of solid waste handled by private carters would decrease. However, with a maximum additional 11,118 pounds of solid waste that would be handled by DSNY with the larger mitigation school, the additional solid waste would be negligible compared with the 12,000 tons per day handled by DSNY, and would not have a significant impact on New York City's solid waste disposal system.

Energy

Section L, "Energy" of the Technical Memorandum concluded that the Proposed Modified Development would result in a net increase in energy demand compared to the 2010 Project, due largely to the larger energy usage rate (63.4 kWh/sf/year) associated with commercial uses. As the standard energy usage rate for schools is even greater (73.5 kWh/sf/year), as defined in Table 15-1 of the 2012 *CEQR Technical Manual*, the larger mitigation school would result in a slightly greater net increase in energy demand. However, as with the Proposed Modified Development, this additional energy consumption of a larger mitigation school would be very small compared with the existing energy demands of New York City, and would not overburden the energy generation, transmission, and distribution system. As such, no significant adverse energy impact would result. It should also be noted that the Applicant would commit to all project building being LEED certified, among other sustainability measures.

Transportation

As discussed in Section M, "Transportation," the Proposed Modified Development would generally result in a net decrease in vehicle trips and bus trips, while increasing the total number of subway and pedestrian trips, compared to the 2010 Project. These conclusions would remain generally the same with the larger mitigation school. While weekday AM peak hour vehicle trips would be slightly higher than under the Proposed Modified Development scenario (up to 626 total vehicle trips, compared to 595 with the Proposed Modified Development), total vehicle trips would remain below those anticipated with the 2010 Project. In addition, total vehicle trips during all other peak hours would be less than under the Proposed Modified Development. As such, no additional traffic impacts would result with the larger mitigation school.

Transit trips would be less with the larger mitigation school than under the Proposed Modified Development, with a maximum of 644 subway person trips during the weekday PM peak hour, compared to 648 subway person trips with the Proposed Modified Development. As with the Proposed Modified Development, total bus trips would be less than with the 2010 Project during all peak hours with the exception of the weekday midday peak hour. With the larger mitigation school, up to 280 bus person trips

are anticipated during the weekday midday peak hour, compared to a maximum of 289 bus person trips during this same peak analysis hours with the Proposed Modified Development. As the larger mitigation school would result in fewer transit trips than under the Proposed Modified Development, no additional significant adverse impacts would result.

Similarly, the larger mitigation school would result in fewer walk only/other trips, with a maximum of 3,087 trips during the weekday midday peak hour (compared to a maximum of 3,229 trips during the same peak analysis hour with the Proposed Modified Development).

As the larger mitigation school would generally result in a reduction in total trips compared to the scenario analyzed in Section M, "Transportation," the conclusion remain unchanged.

Child Care Facilities

The 2010 FEIS concluded that the projected 128 children potentially eligible for subsidized child care generated by the 2010 Project would have exacerbated a deficit of slots within the study area, increasing the collective capacity of public child care facilities by over five percent. To mitigate this potential significant adverse impact on publicly-funded child care and Head Start facilities, the applicant would have coordinated with ACS to consider the need for and the implementation of measures to provide any needed additional capacity in day care facilities within the 1-½ mile study area or within Brooklyn Community District 1. The 2010 Project would have needed to provide 27 child care slots to reduce the increase in the utilization rate to less than 5 percent.

Assuming the maximum number of affordable dwelling units (660), the Proposed Modified Development would introduce approximately 117 children eligible for publicly-funded child care, a net reduction of eleven children compared to the 2010 Project. As such, the changes proposed to the Domino Sugar program would reduce the impact on area child care facilities from what was disclosed in the 2010 FEIS. As concluded in Section C, "Community Facilities," in the future with the Proposed Modified Development, study area child care facilities would operate at 113.4 percent capacity with a shortage of approximately 266 slots. As the With-Action study area child care utilization rate would represent a 5.9 percentage point increase in child care utilization, compared to the No-Action condition, the Proposed Modified Development would result in a significant adverse child care impact, pursuant to CEQR. To avoid exceeding the significant impact threshold, the number of affordable units included in the Proposed Modified Development would need to be reduced to 547, which would generate only 97 children eligible for publicly-funded group child care.

Since the Proposed Modified Development would be developed sequentially, the potential to result in an increase in a deficiency of available publicly-funded child care slots by 5 percent or more could occur upon completion of approximately 554 affordable residential units that introduce children eligible for publicly-funded child care (or approximately 99 children eligible for publicly-funded child care). At this point, however, it is not possible to know exactly which type of mitigation would be most appropriate or when its implementation would be necessary, because the demand for publicly-funded child care depends not only on the amount of residential development in the area but on the proportion of new residents who are children of low-income families (not all children meet the social and income eligibility criteria).

Furthermore, the analysis presented in Section C, "Community Facilities," is based on the existing inventory of public child care providers in the area and does not reflect likely shifts in demand or creation of new child care capacity. Several factors may limit the number of children in need of publicly-funded child care slots in ACS-contracted facilities: families in the study area could make use of alternatives to publicly-funded child care facilities, such as family child care centers (in private homes) or private child

care centers (using ACS vouchers). The voucher system could spur the development of new private child care facilities to meet the need of eligible children that would result from the increase in low-income and low- to moderate-income housing units in the area in future. Lastly, parents of eligible children are not restricted to enrolling their children in child care facilities in a specific geographical area, and could make use of public and private child care providers beyond the 1½-mile study area (such as facilities closer to their place of employment).

Possible mitigation measures for this significant adverse impact will be developed in consultation with ACS and may include provision of suitable space on-site for a child care center, provision of a suitable location off-site and within a reasonable distance (at a rate affordable to ACS providers), or funding or making program or physical improvements to support additional capacity. As a City agency, ACS does not directly provide new child care facilities; instead, it contracts with providers in areas of need. ACS is also working to create public/private partnerships to facilitate the development of new child care facilities where there is an area of need. As part of this initiative, ACS may be able to contribute capital funding, if it is available, towards such projects to facilitate the provision of new facilities.

The revised Restrictive Declaration for the Proposed Modified Development will require the Applicant to work with ACS to consider the need for and the implementation of one or more of the aforementioned measures to provide additional capacity, if required, to mitigate the significant adverse impact to publicly-funded child care facilities within the 1½-mile study are or within Brooklyn Community Board 1. Based on the results of the analysis presented in Section C, "Community Facilities," which accounts for the current inventory of publicly-funded child care facilities and conservative future background projections, the Proposed Modified Development would need to provide 18 child care slots to reduce the increase in the utilization rate to less than 5 percent.

Shadows

As described in Section E, "Shadows," the 2010 FEIS found that the development of Building A would have resulted in a significant adverse shadow impact on Grand Ferry Park. During the fall, winter, and early spring, the park's vegetation and utility would have been significantly affected due to increased shadows on sunlight-sensitive features. The significant adverse impact would have occurred upon full construction of Building A. To mitigate the significant adverse shadow impact on Grand Ferry Park disclosed in the 2010 FEIS, the applicant consulted with DPR and DCP to develop a mitigation program. The applicant would have been required to pay DPR $25,000 each year on an annual basis for ten consecutive years for monitoring and maintenance of affected plantings within Grand Ferry Park and replacement, as necessary, with shade-tolerant species. While these funds would have enhanced the quality of Grand Ferry Park, they would not have reduced the incremental shadow cast by the 2010 Project. Therefore, the impact remained non-mitigable.

The Proposed Modified Development would reduce the shadow impact on Grand Ferry Park by approximately 40 percent, compared to the 2010 Project. As described in further detail in Section E, "Shadows," the Proposed Modified Development would result in shorter incremental shadow durations on Grand Ferry Park on all four analysis days due to the proposed modified massing. Only on the March 21/September 21 analysis day would the hours of direct sunlight between the new incremental shadow exiting and the end of the shadow analysis period be less than the recommended four to six hours of sunlight per day necessary to maintain healthy plant growth. On this analysis day, Grand Ferry Park would receive approximately 3.5 hours of direct sunlight between the shadow exiting at 12:15 PM and the end of the analysis period at 4:26 PM; the northwestern portion of this open space resource would receive incremental sunlight compared to the 2010 Project. In addition, Grand Ferry Park would be almost entirely in sunlight during the remaining analysis periods of the growing season. Although the overall

impact would be lessen with the Proposed Modified Development, the significant adverse impact during the March 21/September 21 analysis day would continue to exist.

With the Proposed Modified Development, the same measures to mitigate the significant adverse shadow impacts on Grand Ferry Park would be implemented in consultation with DPR.

Historic Resources

Both the 2010 Project and the Proposed Modified Development would demolish all S/NR-eligible structures—with the exception of the Refinery Building—on the project site. Therefore, both the 2010 Project and the Proposed Modified Development would result in a significant adverse impact on architectural resources.

As stated in the 2010 FEIS, measures to mitigate significant adverse impacts would have been implemented in consultation with SHPO and would have been set forth in either an MOA or LOR, signed by the applicant, SHPO, and other involved agencies. Mitigation measures would have included preparation of HAER documentation of the buildings on the project site and consultation with SHPO with respect to adaptive reuse design of the Refinery Building at both the pre-final and final design stages. In addition, industrial artifacts would have been included as part of the proposed open space design, and the three sets of original wood doors on the Refinery Building's Kent Avenue façade would have been incorporated into the design and rehabilitation of the Refinery Building. Pursuant to the terms of the MOA or LOR, the salvage and reuse of industrial artifacts would have been contingent upon their feasibility for salvage and reinstallation.

With the Proposed Modified Development, the same measures to mitigate the significant adverse impacts on architectural resources would be implemented. The Applicant will implement measures including documenting the S/NR-eligible buildings on the project site, consulting with SHPO with respect to the adaptive reuse design of the Refinery Building, and displaying and reusing industrial artifact. These mitigation measures would be set forth in either an MOA or LOR, signed by the Applicant, SHPO, and other involved agencies.

Transportation

Traffic

The 2010 FEIS's traffic analysis concluded that the 2010 Project would have resulted in significant traffic impacts at 24, 11, 31, and 6 intersections during the weekday AM, midday, and PM, and Saturday midday peak hours, respectively. Recommended mitigation measures included adjusting signal timing, re-striping lanes, prohibiting parking, changing bicycle lane classifications, and installing new traffic signals at unsignalized intersections. With these mitigation measures in place, all of the affected approaches/lane groups would have been mitigated back to the same or better service conditions than the analyzed No-Action conditions. Additionally, as part of the traffic mitigation, the applicant would have committed to conducting a traffic monitoring program (TMP) at the time of completion and occupancy of Buildings E and A. DOT would have reviewed and approved the TMPs' proposed scopes.

As described in Section M, "Transportation," the Proposed Modified Development would generate a total of approximately 595, 403, 628, and 494 vph during the weekday AM, midday, and PM and Saturday midday peak hours, respectively. Compared to the previous project analyzed in the 2010 FEIS, this would represent an incremental change of -117, -127, -306, and -212 vph during the weekday AM, midday, and PM and Saturday midday peak hours, respectively. As the Proposed Modified Development would result

in lower incremental traffic volumes, similar or lesser traffic impacts compared to the 2010 Project are anticipated. As such, the Applicant would commit to the same primary and secondary study area traffic impact mitigation measures (included in Appendix 5). It is anticipated that these same mitigation measures would fully mitigate the potential traffic impacts at these locations. Table 59 presents the updated LOS analysis for the five previously unsignalized primary and secondary study area Wythe Avenue intersections that are now signalized with mitigation, confirming that the same mitigation measures proposed for these intersections (shown in Table 59 and Appendix 5) would fully mitigate the significant adverse traffic impacts anticipated as a result of the Proposed Modified Development.

All of the proposed mitigation measures will be subject to review and approval from the DOT. In addition, installation of new traffic signals at the unsignalized locations require detailed Signal Warrant Studies, which have been conducted and submitted to DOT, and are currently under review and pending approval.

Because the Proposed Modified Development would be developed sequentially with the first building (Building E) anticipated to be completed in 2016, potential significant adverse traffic impacts on certain study area intersections could occur earlier than the 2023 Build Year. As such, some of the mitigation measures identified for the 2023 Build conditions would have to be implemented at earlier stages of the project's construction. However, as the mitigation measures proposed for the 2023 Build conditions were developed incorporating the traffic activities generated by the full build out of the Proposed Modified Development together with the background growth rate and No-Action study area development identified in the 2010 FEIS, it is possible that implementing these measures in 2016 could "over-mitigate" the traffic conditions at some of the impacted locations.

Therefore, as with the 2010 Project, and as required by the Restrictive Declaration tied to the project site, the Applicant would conduct two traffic monitoring programs (TMPs), which may include such analyses as DOT deems necessary. Such monitoring would be conducted at the time of completion and occupancy of the first building with proposed office uses, Building A (analyzed as 2017), and the completion of Building D, which corresponds to the project's full build out (analyzed as 2023). The Applicant will submit for DOT's review and approval a TMP for a proposed scope for the monitoring of the interim and full build out conditions. At the time of the TMP, if DOT determines that alternate mitigation measures would more adequately address the traffic conditions, the Applicant will work with DOT and alternate mitigation measures may be instated.

Transit

Subway

The 2010 FEIS determined that the 2010 Project would result in the potential for significant adverse impacts to the Marcy Avenue subway station's Manhattan-bound control area during the AM peak period and to the Queens-bound control area during the PM peak period. The FEIS identified measures to mitigate the impacts to the Marcy Avenue station's Manhattan-bound and Queens-bound secondary control areas for the J/M/Z subway lines, which consisted of replacing the existing High Entrance and Exit Turnstile (HEET) at both of the control areas with two low-turnstiles at each location. This would increase the control area capacity and would mitigate the significant adverse impacts to the aforementioned control areas. The FEIS noted that the MTA-NYCT has reviewed the feasibility of installing two regular turnstiles in place of each of the HEETs at the secondary control areas, and has agreed to the installation of regular turnstiles at the aforementioned locations.

TABLE 59
No-Action, Future with the Proposed Project, and Future with the Proposed Project with Mitigation LOS Analysis – Wythe Avenue Now Signalized Intersections

Weekday AM Peak Hour

			2010 FEIS Scenario									Proposed Modified Development Scenario								
			2020 No Build			2020 Build			2020 Build W/Mitigation			2023 NoBuild			2023 Build			2023 Build W/Mitigation		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	EB	TR	0.12	20.7	C	0.11	20.5	C	0.11	20.5	C	0.12	20.7	C	0.11	20.6	C	0.11	20.6	C
Grand Street	WB	LT	0.30	23.7	C	0.32	24.0	C	0.30	23.7	C	0.31	23.9	C	0.35	24.6	C	0.34	24.3	C
	SB	LTR	1.06	64.9	E	1.24	133.6	F *	0.56	14.9	B	1.08	72.0	E	1.21	120.2	F *	0.54	14.7	B
Wythe Ave @	WB	LT	0.24	20.9	C	0.28	21.8	C	0.26	21.2	C	0.25	21.0	C	0.28	21.7	C	0.26	21.3	C
South 2nd Street	SB	TR	1.14	97.2	F	1.48	240.3	F *	0.69	18.8	B	1.17	106.6	F	1.27	149.9	F *	0.60	16.8	B
Wythe Ave @	WB	LT	0.24	22.4	C	0.42	25.7	C	0.41	25.4	C	0.24	22.5	C	0.42	25.6	C	0.41	25.3	C
South 4th Street	SB	TR	1.01	50.7	D	1.48	243.2	F *	0.68	17.5	B	1.03	56.1	E	1.24	134.3	F *	0.57	15.1	B
Wythe Ave @	WB	LT	0.27	22.6	C	0.38	24.5	C	0.38	24.4	C	0.28	22.7	C	0.39	24.6	C	0.39	24.5	C
South 6th Street	SB	TR	0.96	39.1	D	1.11	83.9	F *	0.51	14.2	B	0.98	43.4	D	1.09	76.7	E *	0.50	14.1	B
Wythe Ave @	WB	LT	0.29	23.0	C	0.30	23.3	C	0.29	23.0	C	0.30	23.1	C	0.31	23.4	C	0.30	23.1	C
South 8th Street	SB	TR	1.18	110.9	F	1.30	158.5	F *	0.60	15.6	B	1.21	122.6	F	1.30	160.3	F *	0.60	15.6	B

Weekday midday Peak Hour

			2010 FEIS Scenario									Proposed Modified Development Scenario								
			2020 No Build			2020 Build			2020 Build W/Mitigation			2023 No Build			2023 Build			2023 Build W/Mitigation		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	WB	LT	0.35	24.3	C	0.42	25.8	C	0.41	25.4	C	0.36	24.5	C	0.43	25.9	C	0.34	25.5	C
South 4th Street	SB	TR	0.89	28.6	C	1.04	59.5	E *	0.48	13.8	B	0.91	30.8	C	1.04	61.0	E *	0.48	13.8	B

Weekday PM Peak Hour

			2010 FEIS Scenario									Proposed Modified Development Scenario								
			2020 No Build			2020 Build			2020 Build W/Mitigation			2023 No Build			2023 Build			2023 Build W/Mitigation		
Signalized Intersection	Approach	Lane Group	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS	V/C Ratio	Delay (sec/veh)	LOS
Wythe Ave @	WB	LT	0.20	20.4	C	0.26	21.5	C	0.23	20.9	C	0.21	20.5	C	0.24	21.1	C	0.22	20.7	C
South 2nd Street	SB	TR	1.46	232.9	F	1.64	318.3	F *	0.77	21.3	C	1.49	248.0	F	1.64	317.2	F *	0.77	21.3	C
Wythe Ave @	WB	LT	0.58	29.0	C	0.85	44.0	D	0.85	43.0	D	0.59	29.3	C	0.75	35.9	D	0.74	35.5	D
South 6th Street	SB	TR	1.19	114.3	F	1.47	235.6	F *	0.68	17.2	B	1.22	124.2	F	1.34	176.5	F *	0.62	15.9	B
Wythe Ave @	WB	LT	0.36	24.2	C	0.40	25.2	C	0.37	24.5	C	0.37	24.5	C	0.40	25.2	C	0.38	24.6	C
South 8th Street	SB	TR	1.45	227.0	F	1.62	307.3	F *	0.75	19.1	B	1.48	241.5	F	1.57	284.1	F *	0.72	18.4	B

Notes: L = Left Turn, T = Through, R = Right Turn, DefL = De facto Left, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, v/c = volume-to-capacity, LOS = Level of Service

As described in Section M, "Transportation," when compared to the subway trips projected in the 2010 FEIS, the Proposed Modified Development would result in a net increase of 623 subway trips in the weekday AM peak hour, 254 in the weekday midday, 648 in the PM peak hour, and 438 in the weekday midday peak hour. However, with the Proposed Modified Development's shuttles to both the Marcy Avenue and Bedford Avenue stations, the mitigation measures specified in the FEIS would be sufficient to accommodate these additional trips, and therefore no additional mitigation measures would be needed to accommodate the additional subway trips resulting from the Proposed Modified Development.

Bus

The 2010 FEIS determined that the 2010 Project would result in significant adverse bus line haul impacts to the B62 and Q59 bus routes. The FEIS identified measures that could mitigate the bus line haul impacts on the B62 and Q59 bus routes, consisting of the provision of additional buses, ranging from 1 to 7 in each affected peak hour and direction for each route. The FEIS noted that NYCT has agreed that in the event of ridership increases on the Q59 and B62 bus routes (such that it exceeds the MTA/NYCT guidelines), the service frequency will be adjusted accordingly to accommodate the demand. Therefore, with the increased service frequency on the Q59 and B62 bus routes or other equivalent measures, the FEIS indicated that all of the bus line haul impacts would be mitigated and the bus service would operate at acceptable levels.

As described in Section M, "Transportation," when compared to the bus trips estimated in the 2010 FEIS, the Proposed Modified Development would result in a net increase of 28 bus trips in the weekday midday peak hour, but a net decrease of 63, 85, and 47 bus trips in the weekday AM and PM and Saturday midday peak periods, respectively. While the Proposed Modified Development would lessen the bus line haul impacts compared to the 2010 Project, to mitigate any potential adverse impacts the same mitigation measures as identified in the FEIS and modified in the July 10, 2010 Technical Memorandum would be implemented. It should also be noted that the MTA plans to implement a new bus route that will connect the Williamsburg waterfront, Greenpoint, and Long Island City. The proposed new bus route will add additional bus capacity to the study area, further distributing demand and reducing the impacts of the Proposed Modified Development on area buses. As such, it is anticipated that MTA/NYCT bus service frequency adjustments would be less compared to the 2010 Project.

Pedestrians

The 2010 FEIS determined that the 2010 Project would result in a significant adverse pedestrian impact on the south crosswalk at Bedford Avenue and North 7th Street during the AM peak period, which would be mitigated by restriping the crosswalk from 12.0 feet wide to 12.3 feet wide.

As described in Section M, "Transportation," the Proposed Modified Development would include a shuttle to the Marcy Avenue Station as well as a shuttle to the Bedford Avenue Station as part of the project. Accounting for the resulting reduction in pedestrian volumes to both stations, the Proposed Modified Development is expected to result in a net decrease of 550, 1,047, and 357 pedestrian trips in the weekday AM and PM and Saturday midday peak hours, respectively. The total weekday midday pedestrian trips would increase by 750.

As shown in the Level 2 (Project Generated Trip Assignment) Screening Assessment in Section M, above, the majority of the net 750 pedestrian trips in the weekday midday would result from the Proposed Modified Development's commercial/office uses, and would be distributed predominantly within the project site. While certain nearby pedestrian elements would experience incremental hourly volumes greater than 200, the proposed project site sidewalks would be sufficient to accommodate the expected pedestrian activity between the proposed buildings, and study area pedestrian elements would continue to operate at acceptable LOS. As such, the Proposed Modified Development is not expected to introduce any additional significant adverse pedestrian impacts to the surrounding area. Therefore, the mitigation included in the 2010 FEIS (restriping the south crosswalk at Bedford Avenue and North 7th Street from 12.0 feet wide to 12.3 feet wide) would be sufficient, and no additional mitigation would be necessary.

Construction

Traffic

As described in further detail in Section S, "Construction," because existing and No-Action traffic conditions at some of the study area intersections through which construction-related traffic would travel were determined to operate at unacceptable levels during commuter peak hours, the 2010 FEIS concluded that significant adverse traffic impacts could occur at some locations during construction of the 2010 Project. 11 of the 24 intersections during the 8 to 9 AM peak hour and 11 of the 31 intersections impacted during the 4:45 to 5:45 PM peak hour could have been mitigated with minor signal timing adjustments. It was concluded that these timing adjustments could be implement at DOT's discretion to mitigate potential impacts at these intersections during construction. Early implementation of the build mitigation for traffic impacts would have fully mitigated the identified significant adverse impacts during the construction period.

Similarly, while construction of the Proposed Modified Development would generate fewer truck and worker vehicle trips than the 2010 Project, it is expected to result in significant adverse impacts on traffic in the surrounding area. As stated in Section S, "Construction," during the peak 2018 (Q3) construction period, no significant adverse traffic impacts would be expected in the 6 to 7 AM peak hour. During the 3 to 4 PM peak hour, eight signalized intersections and two unsignalized intersections were identified as having significant adverse traffic impacts. Making adjustments to signal timings and applying other proposed build mitigation measures would fully mitigate the significant adverse impacts identified for the 3 to 4 PM peak hour. Table 60, below, presents a summary of the mitigation measures at analyzed intersections for the 2018 peak construction period.

Noise

The 2010 FEIS concluded that construction of the 2010 Project would have resulted in significant adverse noise impacts at a few sensitive receptors immediately adjacent to the project site. To mitigate any impacts at the identified locations, the applicant would have made attenuation measures (i.e., upgraded windows and/or an alternate means of ventilation) available to any of the residences that did not already have these measures. No practical mitigation could have been implemented to avoid the significant adverse noise impact on the adjacent Grand Ferry Park as a result of the construction of the 2010 Project.

As described in Section S, "Construction," construction of the Proposed Modified Development would not result in any additional noise impacts, compared to the 2010 Project. The significant adverse noise impacts on adjacent residences and Grand Ferry Park, disclosed in the 2010 FEIS, would remain. As such, similar mitigation measures would be necessary to reduce the impact. The Applicant would make attenuation measures (i.e., upgraded windows and/or an alternate means of ventilation) available to any of the residences that did not already have these measures. In addition, as stated in the construction noise analysis, a significant adverse construction noise impact would occur at the residences located at 56 South 3rd Street (a former industrial building located adjacent to the upland parcel that is currently being redeveloped with residential uses) due to construction of Building E. The Applicant would make the same mitigation attenuation measures available to these residences if they do not already have these measures. The significant adverse noise impact on Grand Ferry Park resulting from construction of the Proposed Modified Development would remain unmitigated.

TABLE 60
Mitigation Measures for 2018 Construction Conditions

Analyzed Intersection	6-7 AM Construction Hour	3-4 PM Construction Hour
Signalized Intersections		
Wythe Avenue and Metropolitan Avenue	Not impacted	Shift 1 second of green time from the eastbound/westbound phase to the southbound phase.
Wythe Avenue and Grand Street	Not impacted	Convert the existing Class II bike lane to a Class III bike lane and daylight the east curb on the southbound approach to provide two travel lanes.
Wythe Avenue and South 4th Street	Not impacted	Convert the existing Class II bike lane to a Class III bike lane and daylight the east curb on the southbound approach to provide two travel lanes.
Wythe Avenue and South 6th Street	Not impacted	Convert the existing Class II bike lane to a Class III bike lane and daylight the east curb on the southbound approach to provide two lanes.
Wythe Avenue and South 8th Street	Not impacted	Convert the existing Class II bike lane to a Class III bike lane and daylight the east curb on the southbound approach to provide two travel lanes.
Wythe Avenue and Broadway	Not impacted	Daylight the southbound approach to provide a wider travel lane.
Broadway and Driggs Avenue	Not impacted	Shift 2 seconds of green time from the southbound phase to the eastbound/westbound phase.
Broadway and Marcy Avenue	Not impacted	Shift 3 seconds of green time from the southbound phase to the eastbound/westbound phase.
Unsignalized Intersections		
Kent Avenue and South 2nd Street	Not impacted	Install a new traffic signal.
Wythe Avenue and South 3rd Street	Not impacted	Convert the existing two-way stop control to all-way stop control.

IV. CONCLUSION

The purpose of this Technical Memorandum was to determine whether the proposed changes to the previously approved Domino Sugar project would result in any significant adverse environmental impacts that were not identified in the 2010 FEIS and subsequent Technical Memoranda. As described in further detail above, compared to the 2010 Project, the Proposed Modified Development would result in the construction of an additional 172,220 gsf of building area and the provision of an additional 1.98 acres of open space. All technical areas of the 2010 FEIS were reviewed to determine whether the proposed modifications would result in any new or additional significant adverse impacts that were not previously disclosed.

As outlined above, the Proposed Modified Development would not result in any new or additional significant adverse impacts, compared to the 2010 Project. While the Proposed Modified Development would result in increased transit and pedestrian volumes, as discussed in the technical analyses, these anticipated increases would not exacerbate the previously-identified impacts, and the mitigation measures disclosed in the 2010 FEIS would sufficiently address these increased transit and pedestrian impacts. The significant adverse impact on historic resources and the construction-related significant adverse traffic and noise impacts are expected to be similar to those disclosed in the 2010 FEIS.

The proposed changes to the Domino Sugar site program and massing would lessen the significant adverse elementary and intermediate school, child care, and shadow impacts disclosed in the 2010 FEIS and subsequent Technical Memoranda. In addition, due to the anticipated reduction in vehicular traffic, compared to the 2010 Project, the Proposed Modified Development would lessen mobile source air quality impacts. The Proposed Modified Development would also create additional open space, which would be better integrated into the existing neighborhood fabric.

As such, the proposed changes to the program and massing for development on the Domino Sugar site would not result in any significant adverse environmental impacts that had not been previously identified in the 2010 FEIS and subsequent Technical Memoranda. Therefore, no additional analysis or supplemental environmental impact statement is warranted for the proposed changes to the project described herein.

APPENDIX 1

PROPOSED ZONING TEXT AMENDMENTS

PROPOSED DOMINO LARGE SCALE- LOADING DOCK AND INCLUSIONARY HOUSING TEXT AMENDMENT

9/13/2013– DRAFT 4

Matter Underlined is new, to be added;
Matter in ~~Strikeout~~ is old, to be deleted;
Matter within # # is defined in Section 12-10;
* * * indicate where unchanged text appears in the Zoning Resolution

62-35
Special Bulk Regulations in Certain Areas within Community District 1, Brooklyn

On #waterfront blocks# in #Inclusionary Housing designated areas# in Community District 1, Borough of Brooklyn, the special #bulk# regulations of this Chapter are further modified as set forth in this Section, inclusive.

* * *

(7/26/10)

62-352
Inclusionary Housing

The provisions of Section 23-90 (INCLUSIONARY HOUSING), inclusive, shall apply in #Inclusionary Housing designated areas# on #waterfront blocks# in Community District 1, Borough of Brooklyn, as modified in this Section.

(a) Definitions

For the purposes of this Section, matter in italics is defined in Sections 12-10 or 23-911 (General definitions).

(b) #Floor area compensation#

(1) For #zoning lots# located in R8 Districts, or located partially in R8 Districts and partially in R6 Districts, the maximum permitted #floor area ratio# on such #zoning lots# may be increased in R6 Districts from 2.43 to 2.75, and in R8 Districts from 4.88 to 6.5; and for #zoning lots# located in R7-3 Districts, the maximum permitted #floor area ratio# on such #zoning lots# may be increased from 3.75 to 5.0, provided that:

(i) the amount of #low income floor area# is equal to at least 20 percent of

the total #floor area#, exclusive of ground floor non-#residential floor area#, on the #zoning lot#; or

(ii) the amount of #low income floor area# is equal to at least 10 percent of the total #floor area#, exclusive of ground floor non-#residential floor area#, on the #zoning lot#, and the #moderate income floor area# is equal to at least 15 percent of the total #floor area#, exclusive of ground floor non-#residential floor area#, on the #zoning lot#.

(2) For #zoning lots# located entirely within R6 Districts, the maximum permitted #floor area ratio# may be increased from 2.43 to 2.75, provided that:

(i) the amount of #low income floor area# is equal to at least 7.5 percent of the total #floor area#, exclusive of ground floor non-#residential floor area#, on the #zoning lot#; or

(ii) the amount of #low income floor area# is equal to at least five percent of the total #floor area#, exclusive of ground floor non-#residential floor area#, on the #zoning lot#, and the amount of #moderate income floor area# is equal to at least five percent of the total #floor area#, exclusive of ground floor non-#residential floor area#, on the #zoning lot#.

(3) For #zoning lots# in R8 Districts within a #large-scale general development# that is located in or partially within a C6 District, the permitted #floor area ratio# may be increased from 4.88 to 6.5, provided that the amount of #low income floor area# is equal to at least 10 percent of the #residential floor area#, and that the amount of #low income floor area# plus two-thirds of the amount of #moderate income floor area# is equal to at least 20 percent of the #residential floor area#.

For the purposes of this paragraph, (b), inclusive, #low income floor area# may be considered #moderate income floor area#~~, and #moderate income floor area# may be considered #middle income floor area#~~.

Any #zoning lot# located entirely within an R6 District that, in conjunction with a #zoning lot# located partially or entirely within an R8 District, utilizes a distribution of #floor area#, #lot coverage# or #residential# density without regard to #zoning lot lines# or district boundaries pursuant to Section 62-353 (Special floor area, lot coverage and residential density distribution regulations), shall comply with the provisions of paragraph (b)(1) of this Section.

*** * ***

74-745
~~Location of a~~ Accessory parking spaces and loading berths

For a #large- scale general development# the City Planning Commission may permit:

(a) Modification of location requirements

When a #large-scale general development# includes two or more #zoning lots#, the City Planning Commission may permit required or permitted #accessory# off-street parking spaces, bicycle parking spaces or loading berths to be located anywhere within a #large-scale general development# without regard for #zoning lot lines#, provided that the Commission shall find:

~~(a)~~(1) such off-street parking spaces, bicycle parking spaces and loading berths will be conveniently located in relation to the #use# to which such spaces or berths are #accessory#;

~~(b)~~(2) such location of off-street parking spaces, bicycle parking spaces and loading berths will result in a better site plan; and

~~(c)~~(3) such location of off-street parking spaces, bicycle parking spaces and loading berths will not unduly increase the number of spaces in any single #block#, draw excessive traffic through local #streets#, or otherwise adversely affect traffic conditions in the surrounding area.

Whenever required off-street parking spaces, bicycle parking spaces and loading berths are permitted to be located without regard for #zoning lot lines# in accordance with the provisions of this Section, the number of spaces required for each #building# shall be kept available for such #building# throughout its life.

(b) Waiver or reduction of loading berth requirements

When a #zoning lot# in a #large scale general development#, that is located within a waterfront area pursuant to Section 62-132(b), in Community District 1 in Brooklyn, contains one or more #retail or service uses# listed in Use Group 6A, 6C,7B,8B,9A,10A,12B,14A or 16A, and where no single such establishment exceeds 8,500 square feet in #floor area#, the City Planning Commission may waive the requirement for loading berths, or reduce the number of required loading berths, provided that:

(1) curbside deliveries will not create or contribute to serious traffic congestion or unduly inhibit vehicular or pedestrian movement and will not interfere with the efficient functioning of nearby #uses#;

(2) an efficient goods receiving system will be implemented within the #commercial# establishment to expedite the movement of goods from the curb to areas within the establishment;

(3) such modification allows for a better relationship of the #street walls# of the #building# containing such establishment with the sidewalks and surrounding area; and

(4) such modification will not impair or adversely affect the development of the surrounding area.

The City Planning Commission may prescribe additional conditions and safeguards to minimize adverse effects on the surrounding area.

End text

APPENDIX 2

WRP CONSISTENCY ASSESSMENT

For Internal Use Only:
Date Received: _____

WRP no._____
DOS no._____

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM
Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP or other local, state or federal discretionary review procedures, and that are within New York City's designated coastal zone, must be reviewed and assessed for their consistency with the *New York City Waterfront Revitalization Program (WRP)*. The WRP was adopted as a 197-a Plan by the Council of the City of New York on October 13, 1999, and subsequently approved by the New York State Department of State with the concurrence of the United States Department of Commerce pursuant to applicable state and federal law, including the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. As a result of these approvals, state and federal discretionary actions within the city's coastal zone must be consistent to the maximum extent practicable with the WRP policies and the city must be given the opportunity to comment on all state and federal projects within its coastal zone.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, other state agencies or the New York City Department of City Planning in their review of the applicant's certification of consistency.

A. APPLICANT

1. Name: Two Trees Management, LLC / Bonnie Campbell
2. Address: 45 Main Street, Suite 602, Brooklyn, NY 11201
3. Telephone: 718-222-2500 Fax: 718-222-2501 E-mail: bcampbell@twotrees-dumbo.com
4. Project site owner: Two Trees Management, LLC

B. PROPOSED ACTIVITY

1. Brief description of activity:

   The Proposed Actions would facilitate the construction of four new mixed-use buildings and the adaptive reuse of the existing Refinery Building (an LPC-designated historic resource). In total the Proposed Modified Development would include approximately 2,282 residential units, approximately approximately 504,308 gsf of commercial office space, approximately 114,638 gsf of other commercial uses, and approximately 150,935 gsf of community facility space, including a 375-seat elementary school, not-for-profit/artist studio spaces, and a not-for-profit sports and fitness center. The Proposed Modified Development requires a number of discretionary actions on the part of the New York City Planning Commission as well as a permit from the United States Army Corps of Engineers.

2. Purpose of activity:

   The Proposed Actions are intended to facilitate development of an underutilized waterfront site with an economically-integrated mix of uses that would activate the surrounding neighborhood as well as creating physical and visual access to the currently inaccessible waterfront. The Proposed Modified Development would also introduce approximately 6.85 acres of needed open space, including waterfront public access areas, additional public access areas, and public easement areas.

3. Location of activity: (street address/borough or site description):

   The Project Site comprises Brooklyn Block 2414 Lot 1, which is located along the East River waterfront between Grand and South 5th Streets and Block 2428, Lot 1, which is located on the east side of Kent Avenue between South 3rd and South 4th Streets. The Project Site is located within the coastal zone (see Figure 27 in the Technical Memorandum).

Proposed Activity Cont'd

4. If a federal or state permit or license was issued or is required for the proposed activity, identify the permit type(s), the authorizing agency and provide the application or permit number(s), if known:

   Three existing permits are in place from the New York State Department of Environmental Conservation (DEC) for the reconstruction of the bulkhead and are numbered: 2-6101-0052/00010, 2-6101-0052/00011, and 2-6101-0052/00012. The existing permits will require modification dues to changes in the design of the platform under the Proposed Modified Development. United States Army Corps of Engineers (USACE) approval of the Joint Permit is pending.

5. Is federal or state funding being used to finance the project? If so, please identify the funding source(s).

   The Applicant may seek State funding.

6. Will the proposed project require the preparation of an environmental impact statement?
   Yes _____ No ✔ If yes, identify Lead Agency:

7. Identify **city** discretionary actions, such as a zoning amendment or adoption of an urban renewal plan, required for the proposed project.

   The following discretionary actions are being requested to facilitate the Proposed Modified Development: Zoning Text Amendments to the Inclusionary Housing Program and Large-Scale General Development regulations; Special Permits to transfer development rights, for distribution of lot coverage, and to waive certain height, yard, and setback requirements, and modify location of use provisions, to modify parking location requirements, and loading berth requirements; Authorizations to modify certain waterfront public access area and visual corridor requirements, to modify requirements within waterfront public access areas, and for phased development of waterfront public access areas; and CPC Chair Certifications for waterfront public access area and visual corridor requirements, and for a waterfront zoning lot subdivision.

C. COASTAL ASSESSMENT

Location Questions:	**Yes**	**No**
1. Is the project site on the waterfront or at the water's edge?	✔	
2. Does the proposed project require a waterfront site?		✔
3. Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land underwater, or coastal waters?	✔	

Policy Questions	**Yes**	**No**

The following questions represent, in a broad sense, the policies of the WRP. Numbers in parentheses after each question indicate the policy or policies addressed by the question. The new Waterfront Revitalization Program offers detailed explanations of the policies, including criteria for consistency determinations.

Check either "Yes" or "No" for each of the following questions. For all "yes" responses, provide an attachment assessing the effects of the proposed activity on the relevant policies or standards. Explain how the action would be consistent with the goals of those policies and standards.

4. Will the proposed project result in revitalization or redevelopment of a deteriorated or under-used waterfront site? (1)	✔	
5. Is the project site appropriate for residential or commercial redevelopment? (1.1)	✔	
6. Will the action result in a change in scale or character of a neighborhood? (1.2)	✔	

Policy Questions cont'd	Yes	No
7. Will the proposed activity require provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (1.3)		✔
8. Is the action located in one of the designated Significant Maritime and Industrial Areas (SMIA): South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, or Staten Island? (2)		✔
9. Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)	✔	
10. Would the action involve the siting or construction of a facility essential to the generation or transmission of energy, or a natural gas facility, or would it develop new energy resources? (2.1)		✔
11. Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)		✔
12. Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)	✔	
13. Would the action involve mining, dredging, or dredge disposal, or placement of dredged or fill materials in coastal waters? (2.3, 3.1, 4, 5.3, 6.3)	✔	
14. Would the action be located in a commercial or recreational boating center, such as City Island, Sheepshead Bay or Great Kills or an area devoted to water-dependent transportation? (3)		✔
15. Would the proposed project have an adverse effect upon the land or water uses within a commercial or recreation boating center or water-dependent transportation center? (3.1)		✔
16. Would the proposed project create any conflicts between commercial and recreational boating? (3.2)		✔
17. Does the proposed project involve any boating activity that would have an impact on the aquatic environment or surrounding land and water uses? (3.3)		✔
18. Is the action located in one of the designated Special Natural Waterfront Areas (SNWA): Long Island Sound- East River, Jamaica Bay, or Northwest Staten Island? (4 and 9.2)		✔
19. Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitat? (4.1)		✔
20. Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1and 9.2)		✔
21. Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)	✔	
22. Does the project site contain a rare ecological community or would the proposed project affect a vulnerable plant, fish, or wildlife species? (4.3)	✔	
23. Would the action have any effects on commercial or recreational use of fish resources? (4.4)		✔
24. Would the proposed project in any way affect the water quality classification of nearby waters or be unable to be consistent with that classification? (5)		✔
25. Would the action result in any direct or indirect discharges, including toxins, hazardous substances, or other pollutants, effluent, or waste, into any waterbody? (5.1)		✔
26. Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)	✔	
27. Will any activity associated with the project generate nonpoint source pollution? (5.2)		✔
28. Would the action cause violations of the National or State air quality standards? (5.2)		✔

Policy Questions cont'd	Yes	No
29. Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)		✔
30. Will the project involve the excavation or placing of fill in or near navigable waters, marshes, estuaries, tidal marshes or other wetlands? (5.3)	✔	
31. Would the proposed action have any effects on surface or ground water supplies? (5.4)		✔
32. Would the action result in any activities within a federally designated flood hazard area or state-designated erosion hazards area? (6)	✔	
33. Would the action result in any construction activities that would lead to erosion? (6)		✔
34. Would the action involve construction or reconstruction of a flood or erosion control structure? (6.1)		✔
35. Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)		✔
36. Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)		✔
37. Would the proposed project affect a non-renewable source of sand ? (6.3)		✔
38. Would the action result in shipping, handling, or storing of solid wastes, hazardous materials, or other pollutants? (7)		✔
39. Would the action affect any sites that have been used as landfills? (7.1)		✔
40. Would the action result in development of a site that may contain contamination or that has a history of underground fuel tanks, oil spills, or other form or petroleum product use or storage? (7.2)	✔	
41. Will the proposed activity result in any transport, storage, treatment, or disposal of solid wastes or hazardous materials, or the siting of a solid or hazardous waste facility? (7.3)	✔	
42. Would the action result in a reduction of existing or required access to or along coastal waters, public access areas, or public parks or open spaces? (8)		✔
43. Will the proposed project affect or be located in, on, or adjacent to any federal, state, or city park or other land in public ownership protected for open space preservation? (8)	✔	
44. Would the action result in the provision of open space without provision for its maintenance? (8.1)		✔
45. Would the action result in any development along the shoreline but NOT include new water-enhanced or water-dependent recreational space? (8.2)		✔
46. Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)		✔
47. Does the proposed project involve publicly owned or acquired land that could accommodate waterfront open space or recreation? (8.4)		✔
48. Does the project site involve lands or waters held in public trust by the state or city? (8.5)		✔
49. Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)	✔	
50. Does the site currently include elements that degrade the area's scenic quality or block views to the water? (9.1)	✔	

Policy Questions cont'd	Yes	No
51. Would the proposed action have a significant adverse impact on historic, archeological, or cultural resources? (10)	✓	
52. Will the proposed activity affect or be located in, on, or adjacent to an historic resource listed on the National or State Register of Historic Places, or designated as a landmark by the City of New York? (10)	✓	

D. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with New York City's Waterfront Revitalization Program, pursuant to the New York State Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If the certification can be made, complete this section.

"The proposed activity complies with New York State's Coastal Management Program as expressed in New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program, and will be conducted in a manner consistent with such program."

Applicant/Agent Name: Two Trees Management, LLC / Bonnie Campbell

Address: 45 MAIN ST. SUITE 602

BROOKLYN NY 11201 Telephone 718-222-2500

Applicant/Agent Signature: Date: 10/15/13

Appendix 2:
Consistency with Local Waterfront Revitalization Program Policies

The Waterfront Revitalization Program (WRP) consists of ten policies, which are intended to maximize the benefits derived from economic development, environmental preservation, and public use of the waterfront, while minimizing the conflicts among these objectives. Each of the policies that were identified in the Consistency Assessment Form (CAF) as requiring further assessment are presented below, followed by a discussion of the Proposed Modified Development's consistency with the policy.

Policy 1: Support and facilitate commercial and residential redevelopment in areas well-suited to such development.

1.1 Encourage commercial and residential development in appropriate coastal zone areas.

The Proposed Modified Development would redevelop an approximately eleven-acre site within the coastal zone with a mix of residential, commercial office, retail, and community facility uses as well as providing approximately 6.85 acres of publicly-accessible open space and access to the waterfront, including waterfront public access areas, additional public access areas, and public easement areas. Given the project site's location adjacent to existing residential and mixed-use neighborhoods of Southside, South Williamsburg, and Northside, the proposed mix of residential and commercial development is appropriate and would be an improvement over its existing vacant condition. The Proposed Modified Development's commercial uses, open space, and 375-seat elementary school would serve residents of these adjacent neighborhoods, as well as residents of the Proposed Modified Development. The Proposed Modified Development would make use of a vacant site to create housing and employment opportunities that would economically revitalize this stretch of the Williamsburg waterfront. Therefore, the Proposed Modified Development is consistent with this policy.

1.2 Encourage non-industrial development that enlivens the waterfront and attracts the public.

As discussed above, the Proposed Modified Development would introduce retail, commercial office, and community facility uses (including a 375-seat elementary school) to a currently vacant waterfront site. These uses would serve the surrounding neighborhoods and attract the public to the project site. Furthermore, the Proposed Modified Development's approximately 2,282 residential units would introduce a substantial new residential population that would add activity to this currently underused waterfront area. The Proposed Modified Development's public open space, which would connect to Grand Ferry Park to the north, would include a mix of passive and active spaces, further attracting the public to the waterfront. Therefore, the Proposed Modified Development is consistent with this policy.

Policy 2: Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

2.1 Promote water-dependent uses in Significant Maritime and Industrial Area.

The project site is not located in a Significant Maritime and Industrial Area. As such, this policy does not apply.

2.2 Encourage working waterfront uses at appropriate sites outside the Significant Maritime and Industrial Area.

As discussed above, the project site is located along the East River waterfront in Williamsburg, adjacent to predominantly residential and mixed-use development. The project site is currently zoned for residential and commercial uses (R8, R6, and C6-2); manufacturing uses are not permitted in these zoning districts. Furthermore, the introduction of working waterfront uses on the currently vacant site would not be appropriate given the surrounding context and anticipated future land use trends. Therefore, this policy does not apply.

2.3 Provide infrastructure improvements necessary to support working waterfront uses.

The Proposed Modified Development includes replacement of the existing overwater platform at the project site. However, the project site neither currently houses a working waterfront use nor would it under the Proposed Modified Development. Therefore, this policy does not apply.

Policy 3: Promote the use of New York City's waterways for commercial and recreational boating and water-dependent transportation centers.

3.1 Support and encourage recreational and commercial boating in New York City's maritime centers.

The project site is not located in a commercial or recreational boating center, nor would the Proposed Modified Development include any recreational or commercial boating facilities. As such, this policy does not apply.

3.2 Minimize conflicts between recreational, commercial, and ocean-going freight vessels.

As stated above, the Proposed Modified Development does not include any recreational or commercial boating facilities. Therefore, this policy does not apply.

Policy 4: Protect and restore the quality and function of ecological systems within the New York City coastal area.

4.1 Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas, Recognized Ecological Complexes, and Significant Coastal Fish and Wildlife Habitats.

The project site is not located within a Special Natural Waterfront Area, Recognized Ecological Complex, or Significant Coastal Fish and Wildlife Habitat. As such, this policy does not apply.

4.2 Protect and restore tidal and freshwater wetlands.

As described in the "Natural Resources" section of the Technical Memorandum, the East River shoreline along the project site includes tidal wetlands. Reconstruction of the overwater platform would be conducted within the footprint of the existing platform and would not result in significant adverse impacts to littoral zone tidal wetlands.

Additionally, while the Proposed Modified Development will result in the removal of bottom material and the installation of new sheet piling and backfill in conjunction with construction of the proposed stone riprap aprons associated with two stormwater outfalls, any negative impacts

associated with these in-water project elements would be offset by the restoration of at least an equal area of shaded aquatic habitat through the removal of upland material between the Mean High Water (MHW) elevation and the new sheet bulkhead.

Therefore the Proposed Modified Development is consistent with this policy.

4.3 Protect vulnerable plant, fish, and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.

The National Marine Fisheries Service (NMFC) identified the endangered shortnose sturgeon (*Acipenser brevirostrum*), Atlantic surgeon (*Acipenser oxyrinchus oxyrinchus*), and four sea turtle species—the federally-threatened loggerhead (*Caretta caretta*) and federally-endangered Kemp's ridley (*Lepidochelys kempi*), green (*Chelonia mydas*), and leatherback (*Dermonchelys coriacea*)—as potentially occurring within the lower East River in the vicinity of the project site. However, as stated in the "Natural Resources" section of the Technical Memorandum, the Proposed Modified Development, which would include similar in-water construction activities to the 2010 Project, would not have any significant adverse impacts on these species.

As the 2010 FEIS stated, the preference of shortnose sturgeon and Atlantic sturgeon for deep-water habitat suggests that it is unlikely that individuals of these species would appear near the project site except as transients. Because water quality impacts associated with construction of both the 2010 Project and the Proposed Modified Development would be limited and localized to the shoreline, the deep channel habitat preferred by these species while in transit to and from spawning and nursery habitat would not be impacted during the proposed construction. Additionally, operation of the Proposed Modified Development would not result in any significant adverse impacts on water or sediment quality. Therefore, not significant adverse impacts would occur to the state- and federally-listed endangered shortnose sturgeon, or to the Atlantic sturgeon.

The four turtle species noted by NMFS, when present within in-shore waters, are more likely to occur in Long Island Sound and Peconic/Southern Bays. Because they neither nest nor reside in the area year-round, and are only rarely observed in this portion of the estuary, they are not expected to be adversely affected by construction or operation of the Proposed Modified Development.

Construction and operation of the Proposed Modified Development would not be expected to result in significant adverse impacts to the use of the Williamsburg Bridge for nesting by peregrine falcons (*Falco peregrinus*). In the event that peregrine falcon nesting activity is documented as occurring on or near the project site prior to or during construction of the Proposed Modified Development, measures to minimize potential adverse impacts to peregrine falcons would be developed in coordination with NYSDEC and DEP. These measures would focus on minimizing potential impacts to nesting, foraging, or roosting activity in adult falcons and offspring in the vicinity of proposed construction. Peregrine falcons are accustomed to the intensely developed habitats of New York City and are not expected to experience a significant adverse impact due to the Proposed Modified Development.

Therefore, the Proposed Modified Development is not expected to result in significant adverse impacts to any federally- or state-listed endangered species or habitats of concern.

4.4 Maintain and protect living aquatic resources.

As stated above, in conjunction with the construction of stone riprap aprons associated with two stormwater outfalls, the Applicant would restore at least an equal area of shaded aquatic habitat through the removal of upland material between the Mean High Water (MHW) elevation and the new sheet bulkhead. In addition, the replacement of the existing overwater platform with a new overwater platform of the same size would minimize any potential effects on the amount of aquatic biota affected by shading. As such, the Proposed Modified Development would only result in temporary localized effects on water quality and aquatic biota as a result of increased amounts of suspended sediment associated with construction activity.

Therefore, the Proposed Modified Development is consistent with this policy.

Policy 5: Protect and improve the water quality in the New York City coastal area.

5.1 Manage direct or indirect discharges to waterbodies.

Implementation of erosion and sediment control measures during construction of the Proposed Modified Development would minimize potential impacts on water quality in the East River. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared for the construction of the Proposed Modified Development. The SWPPP would include both structural and non-structural best management practices (BMPs). Implementation of erosion and sediment control measures and strormwater management measures identified in the SWPPP would minimize potential impacts on littoral zone tidal wetlands along the edges of the project site associated with discharge of stormwater runoff during land-disturbing activities resulting from construction of the Proposed Modified Development.

Future use of the Proposed Modified Development is not expected to result in long-term significant adverse impacts to existing NYSDEC-designated littoral zone wetlands. A new storm sewer system would be constructed by the Applicant on the project site that would separate stormwater and sanitary sewage flow. Similar to the storm sewer system analyzed in the 2010 FEIS, the Proposed Modified Development's new storm sewer would remove stormwater generated within the project site from the combined sewer overflow (CSO) discharges. Stormwater BMPs implemented within the project site would regulate the quality and rate of stormwater discharge from the project site. Therefore, the discharge of stormwater from the project site would not result in adverse impacts to littoral zone tidal wetlands within the project site, and the Proposed Modified Development is consistent with this policy.

5.3 Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.

The 2010 Project included the construction of stone riprap aprons associated with two stormwater outfalls, resulting in the removal of approximately 142 cubic yards of bottom material and the installation of new sheet piling and backfill. The 2010 FEIS stated that in-water construction would have adversely affected approximately 414 sf of NYSDEC-designated shaded littoral zone tidal wetlands. However, the analysis concluded that any negative impacts associated with these in-water project elements would be offset by the restoration of at least an equal area of shaded aquatic habitat through the removal of upland material between the Mean High Water (MHW) elevation and the new sheet bulkhead. In addition, the replacement of the existing overwater platform with a new overwater platform of the same size was expected to minimize any potential effects on the amount of aquatic biota affected by shading. As such, the 2010 FEIS concluded that

the original project would only result in temporary localized effects on water quality and aquatic biota as a result of increased amounts of suspended sediment associated with construction activity.

As the Proposed Modified Development would not increase the amount of in-water project elements from what was planned as part of the 2010 Project, the Proposed Modified Development would similarly not result in significant adverse impacts to water quality when excavating or placing fill in navigable fill. Therefore, the Proposed Modified Development is consistent with this policy.

Policy 6: Minimize loss of life, structures and natural resources caused by flooding and erosion.

6.1 Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the condition and use of the property to be protected and the surrounding area.

As stated in the "Natural Resource" section of the Technical Memorandum, small portions at the northwest and southwest boundary of the project site within Advisory Zone A of the Preliminary Work Maps, released by FEMA in June, 2013. Advisory Zone A is comprised of the area subject to storm surge flooding from the 1% annual chance coastal flood. These areas are not subject to high velocity wave action but are still considered high risk flooding areas. As shown in Figure 27, the advisory base (1% annual change/100-year) flood elevation is 12 feet NAVD88 (13.1 NGVD or 10.55 Brooklyn Borough Highway Datum). The advisory 0.2% annual chance (500-year) flood elevation is 16 feet NAVD88 (17.1 NGVD or 14.55 Brooklyn Borough Highway Datum).

The entirety of the area within Advisory Zone A of the Preliminary Work Maps would be comprised of permeable open space and roads. The use of the area within the 100-year floodplain for open space areas would not adversely affect the floodplain. In addition, the small portion of the proposed River Street extension that would be within the 100-year floodplain would be sloped to follow the natural grade of the site to the water, and would therefore not adversely affect the floodplain.

The Proposed Modified Development would improve upon the 2010 Project to minimize losses from flooding and erosion by employing a series of non-structural and structural management measures. The Proposed Modified Development would pull the proposed buildings away from the water and locate all critical systems above the floodplain. Additionally, the below grade parking level for Building B would be located outside of Advisory Zone A of the Preliminary Work Maps. For these reasons the Proposed Modified would minimize the potential for public and private losses due to flooding damage, and reduce the exposure of public utilities to flood hazards.

DEC has issued three permits to the Applicant for bulkhead construction (Permits 2-6101-0052/00010, 2-6101-0052/00011, and 2-6101-0052/00012). The approved DEC permits will require modifications due to changes in design of the platform. Specifically, as the approved top of the new overwater platform is at elevation +11 NGVD (+8.5 Brooklyn Borough Highway Datum), the Applicant will be working with DEC to modify this height so that it is in accordance with the new Preliminary Work Maps and would bring the height to the 10.55 Brooklyn Borough Highway Datum (the new Preliminary Work Maps) as feasible. As all of the proposed buildings would be located outside of Advisory Zone A of the Preliminary Work Maps and the Proposed Modified Development will meet the standards of the Best Available Flood Hazard Data available from FEMA at the time of construction, the Proposed Modified Development would be

consistent with the New York City Building Code requirement that residential buildings have a finished floor elevation (FFE) at or above the Base Flood Elevation (BFE) for the 100-year flood, and would meet the minimum elevation requirements for the lowest floor relative to the design floor elevation (DFE) as specified in Appendix G, "Flood Resistant Construction," of the New York City Building Code.

Therefore, the Proposed Modified Development would be consistent with this policy.

6.2 Direct public funding for flood prevention or erosion control measures to those locations where the investment will yield public benefit.

The Proposed Modified Development would not involve any direct public funding for flood prevention or erosion control measures. As such, this policy does not apply.

6.3 Protect and preserve non-renewable sources of sand for beach nourishment.

The project site does not contain any non-renewable sources of sand that could be used for beach nourishment. Therefore, this policy does not apply.

Policy 7: Minimize environmental degradation from solid waste and hazardous substances.

7.2 Prevent and remediate discharge of petroleum products.

As described in the "Hazardous Materials" section of the Technical Memorandum, as part of the 2010 Project a Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP) were developed and approved by the New York City Department of Environmental Protection (DEP) to avoid significant adverse impacts on construction workers, the surrounding community, and future site occupants. As stipulated in the Restrictive Declaration tied to the project site, prior to developing the site, development activities, including any remediation, would be conducted in accordance with the DEP-approved RAP and CHASP under the oversight of DEP and/or the New York City Mayor's Office of Environmental Remediation (NYCOER). Given the proposed changes in building footprints, layout of uses and open space, proposed street network, and the elapsed time since the 2010 Project's RAP and CHASP were prepared, these documents have been updated and revised to reflect the Proposed Modified Development. The updated RAP and CHASP are currently undergoing approval by DEP. All development activities associated with the Proposed Modified Development would be in accordance with these updated documents.

Therefore, the Proposed Modified Development is consistent with this policy.

7.3 Transport solid waste and hazardous substances and site solid waste and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.

As is standard in New York City, solid waste generated on the project site is expected to be collected either by the New York City Department of Sanitation (DSNY) or private solid waste management companies and transported to a licensed solid waste management facility. No solid waste or hazardous waste facilities, such as landfills or transfer stations, are proposed as part of the project. In addition, the Proposed Modified Development is not expected to conflict with the City's Solid Waste Management Plan. As such, the Proposed Modified Development is consistent with this policy.

Policy 8: Provide public access to and along New York City's coastal waters.

8.1 Preserve, protect, and maintain existing physical, visual, and recreational access to the waterfront.

The project site currently offers no physical public access to the waterfront, and views to the water across the project site are limited. The Proposed Modified Development would create approximately 6.85 acres of publicly-accessible open space, including an esplanade along the water's edge, large open spaces directly south of the Refinery Building as well as between the Refinery Building and the waterfront, and new circulation corridors between Kent Avenue and the waterfront along six streets extending onto the project site. The existing public access to the waterfront at Grand Ferry Park immediately to the north of the project site would be enhanced, as the approximately ¼-mile-long esplanade would connect to the park and provide continuous open space along the water's edge, where none currently exists. New, unobstructed views to the water would be created along the three streets (South 2nd, 3rd, and 4th Streets) where upland connections and visual corridors would be provided.

Incremental shadows of Grand Ferry Park resulting from the Proposed Modified Development would be significantly less than those associated with the previously-approved project, and would therefore better preserve this open space resource. The shadows would be of limited duration and only affect portions of this open space resources. While incremental shadows from the Proposed Modified Development on Grand Ferry Park would constitute a significant adverse impact (as with the 2010 Project), only on one analysis day would the open space resource receive less than the minimum 4 to 6 hours of direct sunlight necessary to maintain healthy plant growth. The Applicant will consult with DPR to reassess the previous mitigation (funding for the monitoring and maintenance of the affected planting, as well as their replacement with shade-tolerant species, if necessary) and more accurately address the lessened impacts on Grand Ferry Park compared to the 2010 Project.

In addition, as with the 2010 Project, the Proposed Modified Development would cast incremental shadows on PS 84 Williams Sheridan Playground, located two blocks east of the waterfront on Wythe Avenue. This open space resource is comprised of playground equipment and several paved areas used for recreation. Incremental shadows from the Proposed Modified Development would only fall on portions of this open space resource during the late afternoon hours, at which point other Playground amenities would receive direct sunlight. The Playground's few trees would continue to receive adequate sunlight throughout the year, and due to the limited duration and extent of the incremental shadows, the Proposed Modified Development would not adversely affect the public's enjoyment of this open space resource.

8.2 Incorporate public access into new public and private development where compatible with proposed land use and coastal location.

The Proposed Modified Development includes the creation of approximately 3.76 acres of waterfont public access areas and approximately 1.07 acres of additional public access areas extending along the waterfront from South 5th Street to Grand Street on the north, as well as 2.02 acres of public easement areas to improve public access to the waterfront. This proposed open space would complement Grand Ferry Park as well as other waterfront esplanades at sites to the north and south of the project site. The Proposed Modified Development is therefore consistent with this policy.

8.3 Provide visual access to coastal lands, waters, and open space where physically practical.

As described above, the Proposed Modified Development would include new public open space and visual corridors that would improve visual access to the East River. The Proposed Modified Development is therefore consistent with this policy.

8.4 Preserve and develop waterfront open space and recreation on publicly-owned land at suitable locations.

The project site does not currently include any publicly owned land. Therefore, this policy does not apply.

8.5 Preserve the public interest in and use of lands and waters help in public trust by the State and City.

Although the project site does not include any lands held in public trust, the Proposed Modified Development would provide direct public access to the water and facilitate the redevelopment of the area's East River waterfront. Furthermore, as described above, the public open space created under the Proposed Modified Development would be transferred to DPR. Therefore the Proposed Modified Development is consistent with this policy.

Policy 9: Protect scenic resources that contribute to the visual quality of the New York City coastal area.

9.1 Protect and improve visual quality associated with New York City's urban context and the historic and working waterfront.

The Proposed Modified Development would enhance the visual quality of this stretch of waterfront by restoring the Refinery Building, creating new public open space, and extending the east-west streets of the surrounding street grid and River Street into the project site to facilitate public access to the site and the waterfront. The Proposed Modified Development's new buildings, which would include residential, commercial office, retail, and community facility uses, would enliven the site and draw people to the waterfront.

The Refinery Building, a complex of three buildings individually known as the Filter, Pan, and Finishing Houses that was designated a New York City Landmark on September 25, 2007 would be restored and adaptively reused, and industrial artifacts from the buildings currently on the site would be incorporated into the Proposed Modified Development's open space, creating an "Artifact Walk." These elements of the Proposed Modified Development would retain the project site's historical context as part of Brooklyn's working waterfront while opening the site to public use. The Proposed Modified Development provides for a continuous waterfront walkway linking with the existing Grand Ferry Park and providing public access areas along the waterfront, maximizing both physical and visual access between the waterfront and the neighborhood.

Therefore, the Proposed Modified Development is consistent with this policy.

9.2 Protect scenic views associated with natural resources.

As stated in the "Urban Design and Visual Resources" section of the Technical Memorandum, the East River is a significant visual resource that is currently visually obstructed and publicly-inaccessible. The Proposed Modified Development would highlight this natural resource, opening

up new view corridors along the proposed extension of South 1st, 2nd, 3rd, and 4th Streets as well as from the proposed 6.85 acres of open space on the project site.

Policy 10: Protect, preserve, and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.

10.1 Retain and preserve designated historic resources and enhance resources significant to the coastal culture of New York City.

As described above, the Proposed Modified Development includes the restoration and adaptive reuse of the Refinery Building. The remaining buildings on the project site would be demolished. Although the entire waterfront parcel of the project site has been determined by the New York State Historic Preservation Office (SHPO) to be eligible for listing on the State/National Register of Historic Places (S/NR) based on its historical association with the sugar industry in New York, preservation of additional buildings on the site would not allow the Applicant to meet the project's objectives.

As described in the "Historic Resources" section of the Technical Memorandum, the demolition of the S/NR-eligible buildings would constitute a significant adverse impact on architectural resources. Measures to partially mitigate the Proposed Modified Development's adverse impacts on architectural resources would be implemented in consultation with SHPO and would be set forth in either a Memorandum of Agreement (MOA) or Letter of Resolution (LOR) to be signed by the Applicant, SHPO, and other involved agencies. Mitigation measures include preparation of Historic American Engineering Record (HAER) documentation of the buildings on the site and consultation with SHPO with respect to the adaptive reuse design of the Refinery Building at the pre-final and final design stages. In addition, industrial artifacts would be included in the rehabilitated Refinery Building and in the Artifact Walk where feasible. Pursuant to the terms of the MOA or LOR, the salvage and reuse of industrial artifacts would be contingent upon their feasibility for salvage and reinstallation.

With the restoration of the Refinery Building and the documentation of the remaining buildings on the project site, the Proposed Modified Development would be consistent with this policy.

10.2 Protect and preserve archaeological resources and artifacts.

As stated in the "Historic Resources" section of the Technical Memorandum, the New York City Landmarks Preservation Commission (LPC) determined that the project site is not sensitive for archaeological resources, and SHPO has concurred with LPC's finding. As described above, to retain a sense of the project site's industrial history, it is anticipated that industrial artifacts salvage from the existing buildings on the project site would be incorporated into an Artifact Walk as part of the proposed open space. Therefore, the Proposed Modified Development is consistent with this policy.

APPENDIX 3

NO-ACTION AFFORDABLE HOUSING DEVELOPMENTS WITHIN CHILD CARE STUDY AREA

Development Name, Location	Additional DU		
	Total Units	Market Rate/ Affordable >80% AMI	Affordable (<80% AMI)
UDAAP Project, 354-358 Bedford	59	59	59*
255 Berry Street	50	25	25
155 West Street	640	500	140
131 West Street	512	410	102
209 McGuinness Boulevard	140	112	28
13 Greenpoint Avenue	50	46	4
105 West Street	48	38	10
Greenpoint Landing	1,503	1,026	477
Between South 2nd & South 3rd Streets, Kent and Wythe Avenues	79	61	18
204 Wythe Avenue	157	126	31
Totals	***3238***	***2403***	***835***

Sources: DOB, DCP,

Notes:

* Assumes that all affordable units would be affordable to households earning less than 80% AMI

APPENDIX 4

NOVUS ENVIRONMENTAL PEDESTRIAN WIND SAFETY ASSESSMENT

University of Guelph Research Park
150 Research Lane, Suite 105
Guelph, ON, N1G 4T2
226.706.8080 | www.novusenv.com



Date: August 6, 2013

To: Two Trees Management, LLC

Re: **Pedestrian Wind Safety Assessment**
Test Results Summary
Domino Development
Brooklyn, NY
Novus Project # 12-0230

Novus Team:

Air Quality Scientist	Jenny Vesely, B.Eng., EIT
Senior Specialist:	Bill F. Waechter, C.E.T.
Partner, Specialist	R.L. Scott Penton, P.Eng.

Novus Environmental Inc. was retained by Two Trees Management, LLC to complete a pedestrian wind safety assessment for the proposed development at the existing Domino Sugar refinery in Brooklyn, NY. The development includes four new buildings, renovations to the existing refinery and added park space.

A 1:300 scale model of the proposed site and surroundings was built based on massing drawings dated July 22, 2013 and the landscaping plan dated July 11, 2013 (see **Appendix A**). The landscaping plan includes Marcescent trees on both sides of river street as well as the east-west streets between River St. and Kent Ave. Marcescent trees and the coniferous trees shown on the landscape plan west of Sites A and D, were also included on the model, as were existing coniferous trees in Grand Ferry Park. Images of the test model are shown in **Figure 1**.

The model was equipped with 122 omni-directional probes to record wind speed at the pedestrian-level (5 ft.) and tested at the Boundary-Layer Wind Tunnel at the University of Western Ontario in London, ON. **Figure 2** shows the measured sensor locations. The orientation of the model was adjusted in 10° intervals on the turn-table to permit measurement of wind speed at each probe location for 36 wind angles. The wind tunnel data were then combined with the wind climate model for this region to predict the occurrence of wind speeds in the pedestrian realm to compare against wind criterion for safety. The wind climate model was a composite of historical wind records from LaGuardia, JFK and Newark Airports.

For consistency, results of the test were compared against the same safety criterion used in the previous assessment of the 2010 CPIC design. This safety criterion states that gust speeds greater than 55 mph should not occur more than twice per season (i.e., “6-month” summer and winter season) or no more than three times per year. Results for each measured sensor location were compared against this criterion.

Results of the wind tunnel tests showed favorable results, with no exceedances of the safety criterion. There were two locations at which the gust speed of 55 mph was exceeded once annually, shown in **Table 1**. As the criterion allows for 3 events greater than 55 mph per year, the safety criterion was met. These events occurred during the winter season, and therefore the wind safety criterion permitting two events per season would also be met. All remaining 120 tested locations had no events exceeding this gust speed criterion.

In summary, results of this wind safety assessment of the July 22/13 design of the Domino Development proposed by Two Trees Management LLC, shows:

1. all 122 locations tested with the Two Trees Management design passed the criterion for wind safety; and,

2. the wind safety results for the Two Trees Management design are better than those reported for the 2010 CPC Design.

Table 1: Sensor Locations with Gust Speed of ≥ 1 Event for the 55 mph Wind Safety Criterion

Sensor ID	Sensor Location	Number of Events (>55 mph)
48	South corner of Site D	1
65	NW corner of Refinery	1

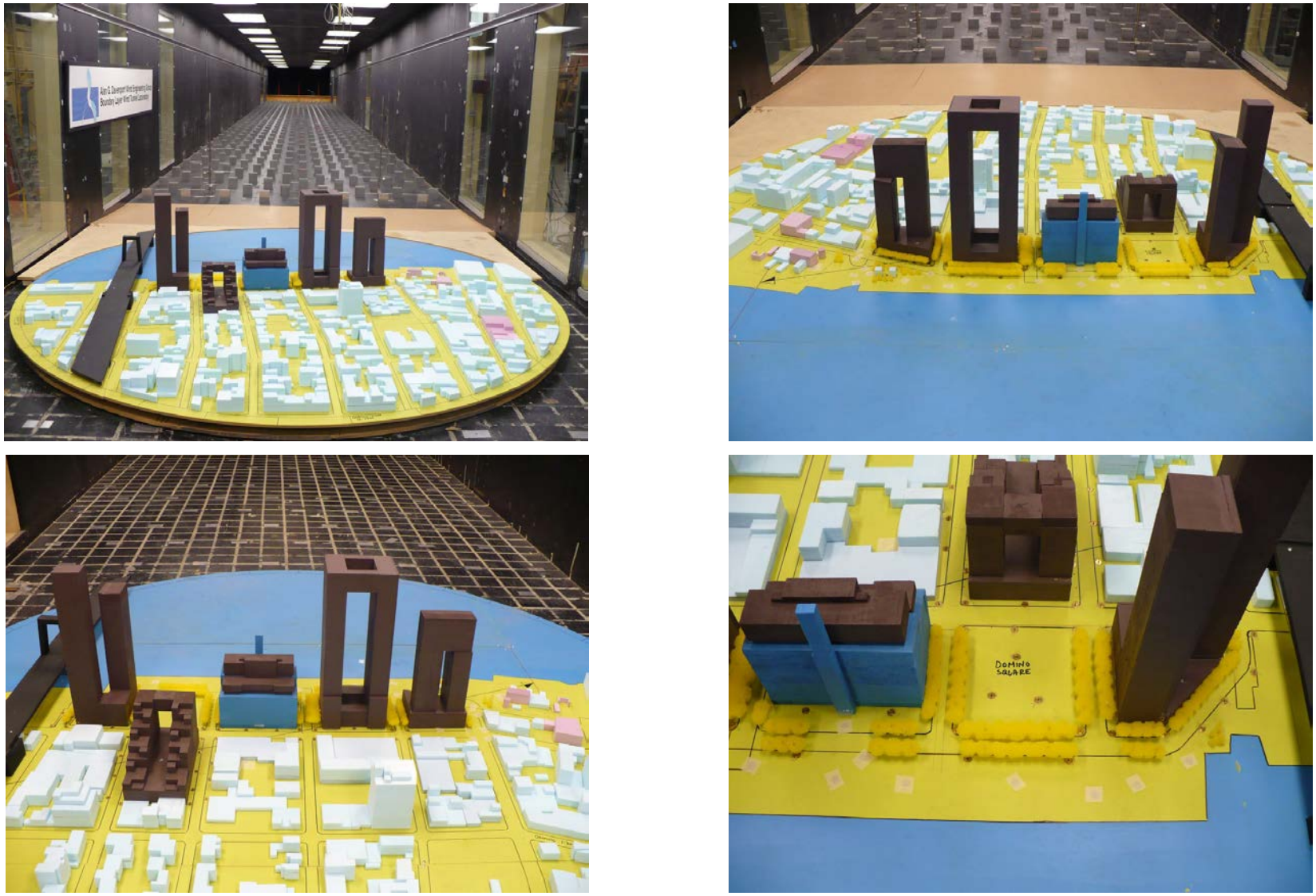


Figure 1: *Wind Tunnel Model*

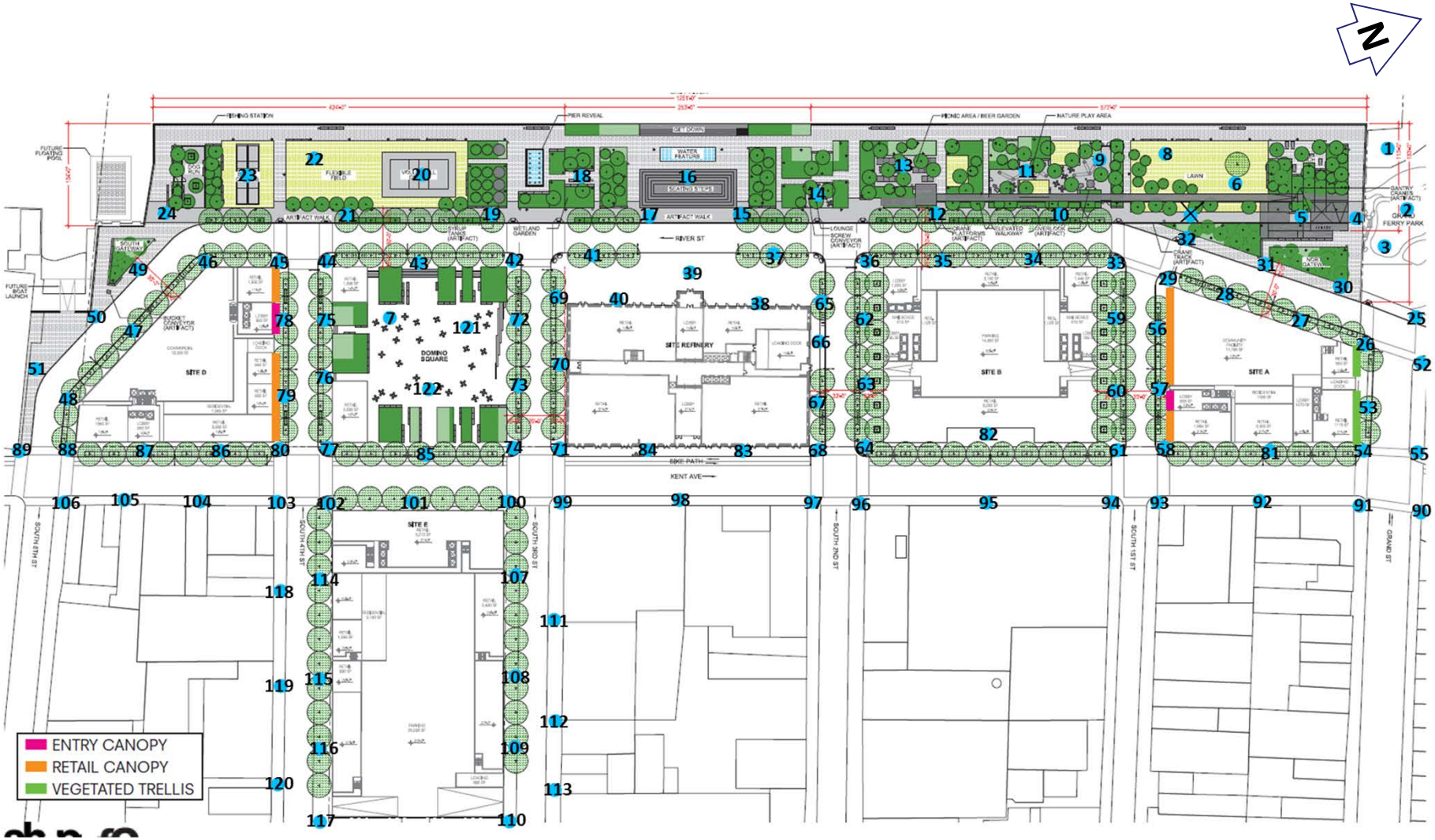


Figure 2: *Sensor Layout and Results Summary – Annual Wind Safety*



Appendix A

Landscaping Plan

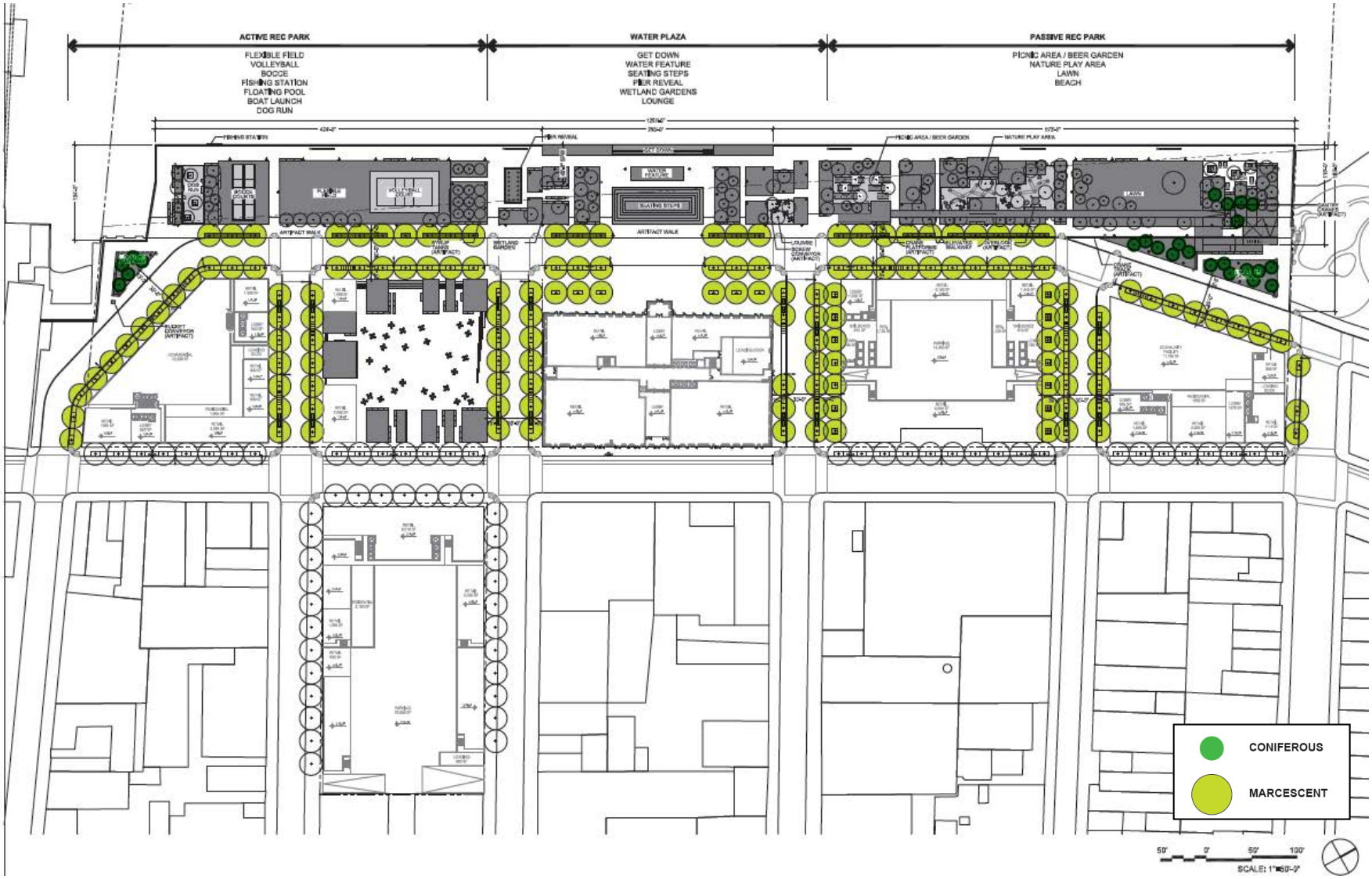


Figure A1: *Landscaping Plan Showing Marcescent and Coniferous Trees, Dated July 11, 2013*

APPENDIX 5

2010 FEIS TRAFFIC MITIGATION MEASURES

Table 23-2
Mitigation Measures[1]
Primary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Signalized				
Kent Avenue and Metropolitan Avenue	Not Impacted	Not Impacted	Reduce the buffer separating the exclusive left-turn lane and the through lane by 3 feet on the NB approach. Restripe the NB through lane from 11-foot to 14-foot wide. Shift 5 seconds of green time from the EB/WB phase to the NB phase.	Not Impacted
Kent Avenue and South 3rd Street	Not Impacted	Not Impacted	Install a No Standing Anytime regulation sign on the east curb of the NB approach. Reduce the buffer separating the exclusive left-turn lane and the through lane by 2 feet on the NB approach. Shift the through lane to the west by 2 feet. Restripe the NB approach to allow for a 11-foot through lane and a 10-foot right-turn lane.	Not Impacted
Kent Avenue and Broadway	Shift 3 seconds of green time from the EB/WB phase to the NB phase.	Not Impacted	Shift 2 seconds of green time from the EB/WB phase to the NB phase.	Not Impacted
Wythe Avenue and Metropolitan Avenue	Daylight the WB approach.	Shift 1 second of green time from the EB/WB phase to the SB phase.	Daylight the WB approach.	Not Impacted
	Daylight the SB approach.		Shift 1 second of green time from the EB/WB phase to the SB phase.	
Wythe Avenue and Broadway	Daylight the SB approach.	Not Impacted	Daylight the SB approach to allow for a 14-foot moving lane.	Not Impacted
Bedford Avenue and South 6th Street	Not Impacted	Not Impacted	Shift 5 seconds of green time from the NB phase to the WB phase.	Not Impacted
Metropolitan Avenue and Driggs Avenue	Daylight the WB approach.	Not Impacted	Shift 4 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted
	Shift 3 seconds of green time from the SB phase to the EB/WB phase.			
Broadway and Driggs Avenue	Not Impacted	Shift 2 seconds of green time from the SB phase to the EB/WB phase.	Daylight the WB approach.	Not Impacted
Roebling Street and South 4th Street	Shift 6 seconds of green time from the EB/WB phase to the SB phase.	Not Impacted	Shift 1 second of green time from the EB/WB phase to the SB phase.	Not Impacted
Metropolitan Avenue and Marcy Avenue	Shift 5 seconds of green time from the EB/WB phase to the exclusive WB phase.	Not Impacted	Shift 9 seconds of green time from the EB/WB phase to the exclusive WB phase.	Not Impacted
Metropolitan Avenue and Rodney Street	Shift 3 seconds of green time from the NB phase to the exclusive EB phase.	Shift 3 seconds of green time from the NB phase to the exclusive EB phase.	Shift 6 seconds of green time from the NB phase to the exclusive EB phase.	Not Impacted
Broadway and Havemeyer Street	Shift 1 second of green time from the NB phase to the EB/WB phase.	Not Impacted	Shift 3 seconds of green time from the NB phase to the EB/WB phase.	Not Impacted
Broadway and Marcy Avenue	Shift 3 seconds of green time from the SB phase to the EB/WB phase.	Shift 2 seconds of green time from the SB phase to the EB/WB phase.	Daylight the EB approach.	Not Impacted
			Daylight the WB approach.	

Table 23-2 (cont'd)
Mitigation Measures[1]
Primary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
	Unsignalized			
Kent Avenue and South 2nd Street	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 26 / 3 / 2 NB / 54 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 2 feet on the NB approach. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-foot and one 10-foot through lane.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 26 / 3 / 2 NB / 54 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 2 feet on the NB approach. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-foot and one 10-foot through lane.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 26 / 3 / 2 NB / 54 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 2 feet on the NB approach. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-foot and one 10-foot through lane. Daylight the east curb of the NB approach.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 26 / 3 / 2 NB / 54 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 2 feet on the NB approach. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-foot and one 10-foot through lane.
Kent Avenue and South 4th Street	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 34 / 3 / 2 NB / 46 / 3 / 2 Cycle Length = 90 Seconds Reduce the NB approach buffer separating the exclusive left-turn lane and the through lane by 2 feet. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-feet and one 10-feet through lane.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 34 / 3 / 2 NB / 46 / 3 / 2 Cycle Length = 90 Seconds Reduce the NB approach buffer separating the exclusive left-turn lane and the through lane by 2 feet. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-feet and one 10-feet through lane.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 34 / 3 / 2 NB / 46 / 3 / 2 Cycle Length = 90 Seconds Reduce the NB approach buffer separating the exclusive left-turn lane and the through lane by 2 feet. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-feet and one 10-feet through lane. Daylight the east curb of the NB approach.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 34 / 3 / 2 NB / 46 / 3 / 2 Cycle Length = 90 Seconds Reduce the NB approach buffer separating the exclusive left-turn lane and the through lane by 2 feet. Shift the NB approach through lane to the west by 2 feet. Restripe the NB approach to allow for one 11-feet and one 10-feet through lane.
Kent Avenue and South 6th Street	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 31 / 3 / 2 NB / 49 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 3 feet on the NB approach. Restripe the NB through lane from 11-foot to 14-foot wide.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 31 / 3 / 2 NB / 49 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 3 feet on the NB approach. Restripe the NB through lane from 11-foot to 14-foot wide.	Provide 2 phase signal with the following timing plan: Phase / Green / Amber / Red EB/WB / 31 / 3 / 2 NB / 49 / 3 / 2 Cycle Length = 90 Seconds Reduce the buffer separating the exclusive left-turn lane and the through lane by 3 feet on the NB approach. Restripe the NB through lane from 11-foot to 14-foot wide.	Not Impacted
Wythe Avenue and Grand Street	Convert the SB approach Class II bike lane to Class III Daylight the east curb of the SB approach to provide two 11.5-foot traffic moving lanes	Not Impacted	Convert the SB approach Class II bike lane to Class III Daylight the east curb of the SB approach to provide two 11.5-foot traffic moving lanes	Not Impacted
Wythe Avenue and South 1st Street	Convert the SB approach Class II bike lane to Class III Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes Replace Two-Way Stop-Control with All-Way Stop-Control	Not Impacted	Convert the SB approach Class II bike lane to Class III Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes Replace Two-Way Stop-Control with All-Way Stop-Control	Not Impacted
Wythe Avenue and South 2nd Street	Convert the SB approach Class II bike lane to Class III Daylight the east curb of the SB approach to provide two 10.5-foot traffic moving lanes	Not Impacted	Convert the SB approach Class II bike lane to Class III Daylight the east curb of the SB approach to provide two 10.5-foot moving lanes	Not Impacted

Table 23-2 (cont'd)
Mitigation Measures[1]
Primary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Unsignalized (continued)				
Wythe Avenue and South 3rd Street	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III
	Daylight the east curb of the SB approach to provide two 12-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 12-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 12-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 12-foot traffic moving lanes
	Replace Two-Way Stop-Control with All-Way Stop-Control	Replace Two-Way Stop-Control with All-Way Stop-Control	Replace Two-Way Stop-Control with All-Way Stop-Control	Replace Two-Way Stop-Control with All-Way Stop-Control
Wythe Avenue and South 4th Street	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III
	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes
Wythe Avenue and South 5th Street	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III	Convert the SB approach Class II bike lane to Class III
	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes
	Replace Two-Way Stop-Control with All-Way Stop-Control	Replace Two-Way Stop-Control with All-Way Stop-Control	Replace Two-Way Stop-Control with All-Way Stop-Control	Replace Two-Way Stop-Control with All-Way Stop-Control
Wythe Avenue and South 6th Street	Convert the SB approach Class II bike lane to Class III	Not Impacted	Convert the SB approach Class II bike lane to Class III	Not Impacted
	Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes		Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	
Berry Street and South 6th Street	Not Impacted	Not Impacted	Replace Two-Way Stop-Control with All-Way Stop-Control	Not Impacted
Broadway and Roebling Street - SBR [2]	Not Impacted	Not Impacted	Provide 3 phase signal with the following timing plan:	Provide 3 phase signal with the following timing plan:

Phase	Green	Amber	Red
EB/WB	31	3	2
SBR	55	3	2
EB/WB	19	3	2
Cycle Length = 120 Seconds			

Phase	Green	Amber	Red
EB/WB	22	3	3
SBR	38	3	2
EB/WB	15	3	2
Cycle Length = 90 Seconds			

Notes: L = Left Turn, T = Through, R = Right Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.
(1) This table has been revised for the FEIS.
(2) The proposed signal timing plan is developed in accordance with the upstream signalized intersection of Broadway and Roebling Street.

Table 23-3
Mitigation Measures [1]
Secondary Study Area Intersections

Intersection	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Signalized				
Kent Avenue and Clymer Street	Shift 2 seconds of green time from the NB phase to the EB/WB phase.	Not Impacted	Shift 2 seconds of green time from the NB phase to the EB/WB phase.	Not Impacted
Kent Avenue and Williamsburg Street West	Shift 5 seconds of green time from the SB phase to the EB/WB phase.	Not Impacted	Not Impacted	Not Impacted
Flushing Avenue and Williamsburg Street West	Shift 2 seconds of green time from the WB phase to the SB phase.	Not Impacted	Shift 3 seconds of green time from the WB phase to the SB phase.	Not Impacted
Flushing Avenue and Classon Avenue/BQE Off-Ramp	Shift 1 second of green time from the WB phase to the Classon Avenue NB phase.	Shift 1 second of green time from the WB phase to the Classon Avenue NB phase.	Shift 1 second of green time from the WB phase to the Classon Avenue NB phase.	Not Impacted
	Shift 4 seconds of green time from the WB phase to the BQE Off-Ramp NB phase.		Shift 1 second of green time from the WB phase to the BQE Off-Ramp NB phase.	
Wythe Avenue and Williamsburg Street West	Shift 3 seconds of green time from the SB phase to the EB phase.	Not Impacted	Shift 4 seconds of green time from the SB phase to the EB phase.	Not Impacted
Unsignalized				
Wythe Avenue and South 8th Street	Not Impacted	Not Impacted	Convert the SB approach Class II bike lane to Class III	Not Impacted
			Daylight the east curb of the SB approach to provide two 11-foot traffic moving lanes	
Wythe Avenue and South 9th Street	Not Impacted	Not Impacted	Daylight the east curb of the SB approach to provide two traffic moving lanes	Not Impacted

Notes: L = Left Turn, T = Through, R = Right Turn, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound.
(1) This table has been revised for the FEIS.

APPENDIX 6

TRANSPORTATION PLANNING FACTORS MEMO

Philip Habib & Associates
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TECHNICAL MEMORANDUM

TO: **NYCDCP**

FROM: **Philip Habib & Associates**

DATE: **October 28, 2013**

PROJECT: **Domino Sugar (PHA #1263)**

RE: **Transportation Planning Factors**

This memorandum summarizes the transportation planning factors used in the Domino Sugar Technical Memorandum's analyses of traffic, parking, transit, and pedestrian conditions for the environmental review of the proposed modifications to the Domino Sugar project. Travel demand forecasts based on these factors are also presented, along with the traffic and transit assignments for the Proposed Modified Development as necessary. These forecasts and assignments are then compared to those analyzed in the original 2010 FEIS in order to assess any required additional transportation analyses.

I. PROPOSED MODIFIED DEVELOPMENT

The proposed Domino Sugar project is a mixed-use waterfront development along Kent Avenue between South 5th and Grand Streets (Block 2414, Lot 1 and Block 2428, Lot 1) in the Williamsburg neighborhood of Brooklyn. The proposed project is a modification of a previously approved project for the Domino Sugar site, which was the subject of a May 2010 FEIS and subsequent Technical Memoranda dated June 4th, 2010 and July 10th, 2010 (City Environmental Quality Review (CEQR) #07DCP094K). The 2010 project was the subject of several ULURP actions (ULURP #C 100187 ZSK, C 100185 ZMK, N 100186 ZRK, C 100188 ZSK, N 100190 ZAK, N 100191 ZCK, and N 100192 ZCK) that were approved by the City Planning Commission in 2010.

The program originally analyzed for the development site in the 2010 FEIS was for approximately 3.14 million gross square feet (gsf) of total development, including 2,442,305 gsf of residential floor area, 146,451 gsf of community facility space, 226,275 gsf of commercial/office and retail uses, 1,694 off-street parking spaces, and four acres of new publicly-accessible open space (the "2010 Project"). While the previous applicant intended to build approximately 2,200 dwelling units (DU) on the development site, for analysis purposes the FEIS assumed that the project would include 2,400 DU, based on an average unit size of approximately 1,000 gsf (CEQR methodology).

In 2012, subsequent to the ULURP approvals granted by CPC and the filing of the Restrictive Declaration, the development site was sold by The Refinery LLC, the applicant for the 2010 Project, to Two Trees Management, LLC ("The current Applicant"). The current Applicant is proposing to modify the previously approved development on the Domino Sugar site. The Proposed Modified Development would be comprised of four new mixed-use buildings, the adaptive reuse of the existing landmarked

Refinery Building, and the development of a new publicly-accessible waterfront park. The total Proposed Modified Development would encompass approximately 3.052 million gross square feet (gsf) containing an estimated 2,282 dwelling units within 2,281,666 gsf of residential floor area, 504,308 gsf of office space, 114,638 gsf of other commercial uses (including approximately 72,407 gsf of retail and an approximately 42,231 gsf health club), and 150,935 gsf of community facility space, as well as approximately 1,050 parking spaces; the proposed community facility uses would be comprised of an approximately 70,624 sf 375-seat elementary school, approximately 35,753 gsf of not-for-profit/artist studio space, and an approximately 44,558 gsf not-for-profit sports and fitness center. Publicly-accessible open space along the waterfront and throughout the project site, including waterfront public access areas, public access areas, and public easement areas would total approximately 6.85 acres. Further, like the 2010 Project, the Proposed Modified Development would also include a shuttle connecting the project site to the Marcy Avenue J/M/Z subway station. However, the shuttle route for the Proposed Modified Development would also include the Bedford Avenue station.

Table 1: Proposed Development Program–2010 FEIS Program vs. Proposed Modified Development

	2010 Development Program Analyzed in FEIS (GSF)	**Proposed Modified Development Program (GSF)**	**Net Difference – Current Program Vs. 2010 FEIS Program (GSF)**
Residential	2,442,305 gsf (2,400 DUs)	2,281,666 gsf (2,282 DUs)	**-160,639 gsf (-118 DUs)**
Commercial Office	98,738 gsf	504,308 gsf	**405,570 gsf**
Other Commercial Uses	127,537 gsf	114,638 gsf	**-12,899 gsf**
Retail	*127,537 gsf*	*72,407 gsf*	***-55,130***
Health Club	--	*42,231 gsf*	***42,231 gsf***
Community Facility	146,451 gsf	150,935 gsf[6]	**4,484 gsf**
Parking	327,490 gsf (1,694 spaces)[1]	263,195 gsf (1,050 spaces)	**-64,295 gsf (-644 spaces)**
Total gsf (including parking)	***3,142,521 gsf***	***3,314,741 gsf***	***172,220 gsf***
Total gsf (excluding parking)	***2,815,031 gsf***	***3,051,546 gsf***	***236,515 gsf***
Public Open Space SF	212,097 sf (4.87 acres)[2]	298,429 sf (6.85 acres)	**86,332 sf (1.98 acres)**
Waterfront Public Access Area[3]	*159,902 sf (3.67 acres)*	*163,790 sf (3.76 acres)*	***3,888 sf (0.09 acres)***
Public Access Area[4]	*21,292 sf (0.49 acres)*	*46,623 sf (1.07 acres)*	***25,331 sf (0.58 acres)***
Public Easement Area[5]	*30,903 sf (0.71 acres)*	*88,016 sf (2.02 acres)*	***57,113 sf (1.31 acres)***

Notes:

[1] As stated in the July 10th, 2010 Technical Memoranda, subsequent to completion of the FEIS, the applicant withdrew the application for a parking special permit. The approved ULURP application included 1,428 parking spaces.

[2] While the ULURP application for the 2010 Project stated that the project would include approximately 4.87 acres of open space, the 2010 FEIS assumed only 4.03 acres. For conservative analysis purposes it is assumed that the 2010 Project would include the 4.87 acres disclosed in the ULURP application.

[3] Includes the shore public walkway, supplemental public access areas, and upland connections.

[4] Not included in the waterfront public access area.

[5] Includes sidewalks and private drives.

[6] Includes an approximately 70,624 gsf elementary school, an approximately 44,558 gsf not-for-profit sports and fitness center, and approximately 35,753 gsf of not-for-profit/artist studio space.

As shown in Table 1, compared to the 2010 Project, the Proposed Modified Development would result in a net increase of 405,570 gsf of office space and 4,484 gsf of community facility space as well as a reduction of 118 DU and 12,899 gsf of other commercial uses. In addition, the Proposed Modified Development would include an additional 1.98 acres of open space and 644 less parking spaces than the project analyzed in the 2010 FEIS.

II. TRANSPORTATION PLANNING FACTORS

In more than two years since the FEIS analyses for the 2010 Project were conducted, certain data sets that were used in the transportation analyses have become outdated. Therefore, in analyzing the Proposed Modified Development, the methodologies must be reexamined to determine the applicability of the data used and to reflect changes in *CEQR Technical Manual* methodology.

Table 2 shows the transportation planning factors to be used for the travel demand forecast generated by the Proposed Modified Development in the weekday AM, midday, and PM and Saturday midday peak hours. These include trip generation rates, temporal and directional distributions, mode choice factors, vehicle occupancies and truck trip factors for office, residential, retail, community facility (YMCA, school, and school staff), and open space uses. As cited in Table 2, the majority of the listed factors were based on accepted 2012 *CEQR Technical Manual* criteria and data from the 2010 American Community Survey (ACS) and other EISs for projects with similar uses and users, including the 2010 *Domino Sugar Rezoning FEIS* and the 2002 *Atlantic Avenue and Court Street EAS*; transportation planning factors for the proposed elementary school were based on the 2007 *PS 229 Addition, Brooklyn EAS*, which has a student to staff ratio of 1 to 13. As described in greater detail below, the office/not-for-profit/artist studio transportation planning factors were based on extensive surveys and analyses conducted in Brooklyn by Philip Habib & Associates (PHA) in October and November of 2012. These factors are detailed below.

Residential

The forecast of travel demand from the residential component of the Proposed Modified Development was based on trip rate and temporal distribution data cited in the 2012 *CEQR Technical Manual*. The residential modal split reflects a combination of 2010 ACS Journey-to-Work data (for weekday AM, midday, and PM peak hours) and modal splits from the 2010 *Domino Sugar Rezoning FEIS* (for Saturday); in-out splits and vehicle occupancies are similarly based on the 2010 *Domino Sugar Rezoning FEIS*. In addition, it is assumed that 85 percent of residential subway trips would include a shuttle component (see Table 2).

Local Retail

As the Proposed Modified Development's retail spaces are anticipated to range from an average of approximately 3,000 to 6,000 sf, they are assumed to be local retail uses, which would attract trips primarily from the residential and worker populations on site and in the surrounding neighborhoods. Similar to the transportation planning assumption for residential uses, for the purpose of local retail travel demand forecast, trip generation rates, temporal distributions, and vehicle occupancy rates were based on data from the 2012 *CEQR Technical Manual*, while modal splits and directional distributions were based on data from the 2010 *Domino Sugar Rezoning FEIS.* It is also assumed that 25 percent of the local retail trips are linked to the proposed project, and that 85 percent of all local retail subway trips would include a shuttle component (see Table 2).

Elementary (PS) School and Staff

As described above, the Proposed Modified Development would include a 375-seat elementary school with approximately 29 employees. For the purpose of the future school travel demand forecast, trip generation rates, and temporal and directional distributions, as well as modal split and vehicle occupancies for both the students and staff were based on the School Construction Authority's (SCA's) 2007 *PS 229 Addition, Brooklyn EAS.* It is assumed that 85 percent of all subway trips would include a shuttle component.

Table 2: Proposed Modified Development—Transportation Planning Factors

Land Use:	Local Retail	Residential	Office		Non-profit Art Studio		Not-for-Profit Sports & Fitness Center	Health club	Open Space	PS school	Staff
Size/Units:	72,408 sf	2,282 DU	504,308 sf		35,753 sf		44,558 sf	42,231 sf	4.8 acres	375 seats	29 staff
Trip Generation:	(1)	(1)	(1)(4)		(1)(4)		(1)	(1)	(1)	(6)	(6)
Weekday	205	8.075	17.1	0.9	17.1	0.9	44.7	44.7	139	2	2
Saturday MD	240	9.6	3.7	0.2	3.7	0.2	26.1	26.1	196	0	0
	per 1,000 sf	per DU	per 1,000 sf		per 1,000 sf		per 1,000 sf	per 1,000 sf	per acre	per student	per staff
Temporal Distribution:	(1)	(1)	(1)		(1)		(1)	(1)	(1)	(6)	(6)
AM	3.0%	10.0%	12.0%	12.0%	12.0%	12.0%	4.0%	4.0%	3.0%	50%	50%
MD	19.0%	5.0%	15.0%	15.0%	15.0%	15.0%	9.0%	9.0%	5.0%	0%	0%
PM	10.0%	11.0%	14.0%	14.0%	14.0%	14.0%	5.0%	5.0%	6.0%	5%	50%
Sat MD	10.0%	8.0%	17.0%	17.0%	17.0%	17.0%	9.0%	9.0%	6.0%	0%	0%
	(2)	(2,3)	(2, 4)		(2, 4)		(5)	(5)	(2)	(6)	(6)
			Emplyee	Visitors	Emplyee	Visitors					
Modal Splits:	All Periods	AM/MD/PM	SAT MD	AM/PM	Midday/S ATMD	All periods	AM/PM	Midday/S ATMD	All periods	All Periods	All Periods	All Periods	AM//PM	AM/MD/PM
Auto	5.0%	12.8%	19.0%	17.7%	2%	25.2%	17.7%	2%	25.2%	10.0%	10.0%	5.0%	0.0%	35.0%
Taxi /dropoff	5.0%	0.9%	1.0%	1.2%	1%	16.4%	1.2%	1%	16.4%	1.0%	1.0%	5.0%	10.0%	0.0%
Subway	0.8%	8.9%	5.7%	7.4%	1%	4.1%	7.4%	1%	4.1%	6.0%	6.0%	5.0%	0.0%	7.5%
Shuttle-Subway	4.2%	50.2%	32.3%	41.7%	6%	23.1%	41.7%	6%	23.1%	34.0%	34.0%	0.0%	0.0%	42.5%
Bus	5.0%	6.4%	7.0%	5.0%	7%	8.4%	5.0%	7%	8.4%	5.0%	5.0%	5.0%	1.0%	1.0%
School bus	0.0%	0.0%	0.0%	0.0%	0%	0.0%	0.0%	0%	0.0%	0.0%	0.0%	0.0%	13.0%	0.0%
Walk/Other	80.0%	20.8%	35.0%	27.0%	83%	22.8%	27.0%	83%	22.8%	44.0%	44.0%	80.0%	76.0%	14.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	(2)	(2)		(2)			(2)			(5)	(5)	(2)	(6)	(6)
In/Out Splits:	In Out	In Out		In Out			In Out			In Out	In Out	In Out	In Out	In Out	In Out
AM	50% 50%	15.0% 85.0%		94% 6%			94% 6%			41% 59%	41% 59%	50% 50%	100% 0%	100% 0%
MD	47% 53%	50.0% 50.0%		39% 61%			39% 61%			54% 46%	54% 46%	50% 50%	0% 0%	0% 100%
PM	44% 56%	70.0% 30.0%		5% 95%			5% 95%			75% 25%	75% 25%	50% 50%	0% 100%	50% 50%
SAT MD	55% 45%	50.0% 50.0%		60% 40%			60% 40%			54% 46%	54% 46%	50% 50%	0% 0%	0% 0%
Vehicle Occupancy:	(2)	(2)		(4)			(4)			(5)	(5)	(2)	(6)	(6)
	weekday Saturday													
Auto	2.20 2.10	1.28		1.26	1.6		1.26	1.6		2.00	2.00	2.0	1.1	1.1
Taxi	2.20 2.10	1.5		1.26	1.6		1.26	1.6		2.00	2.00	2.0	1.1	1.1
Truck Trip Generation:	(1)	(1)		(1)			(1)			(1,5)	(1,5)	(2)	(6)	
	0.35	0.06		0.32			0.32			0.19	0.19	0.00	14.00	
	0.04	0.02		0.01			0.01			0.04	0.04			
	per 1,000 sf	per DU		per 1,000 sf			per 1,000 sf			per 1,000 sf	per 1,000 sf		students/bus	
	(1)	(1)		(1)			(1)			(1)	(1)	(1)	(1)	(1)
AM	8.0%	12.0%		10.0%			10.0%			8.0%	8.0%	0.0%	0.0%	0.0%
MD	11.0%	9.0%		11.0%			11.0%			11.0%	11.0%	0.0%	0.0%	0.0%
PM	2.0%	2.0%		2.0%			2.0%			2.0%	2.0%	0.0%	0.0%	0.0%
SAT MD	11.0%	9.0%		11.0%			11.0%			11.0%	11.0%	0.0%	0.0%	0.0%
	In Out	In Out		In Out			In Out			In Out	In Out	In Out	In Out	In Out	In Out
AM/MD/PM	50.0% 50.0%	50.0% 50.0%		50.0% 50.0%			50.0% 50.0%			50.0% 50.0%	50.0% 50.0%	0.0% 0.0%	0.0% 0.0%	0.0% 0.0%

Notes :

(1) *2012 CEQR technical Manual*.

(2) *Domino Sugar Rezoning FEIS* (2010)

(3) American Community Survey (ACS) 2010 Journey-to-work data. Saturday midday modal split data based on the 2010 FEIS's weekday to Saturday modal ratio.

(4) PHA Dumbo & Williamburg employee surveys, Nov. & Dec. 2012. Based on PHA survey the 27% walk mode consists of 20% walk, 5% bicycle and 2% ferry.

(5) *Atlantic Avenue and Court Street EAS,* May 2002.

(6) *PS 229 Addition, Brooklyn EAS* (2007)

Not-for-Profit Sports and Fitness Center & Commercial Health Club

Approximately 44,558 gsf of the Proposed Modified Development's community facility floor area would be comprised of a not-for-profit sports and fitness center and approximately 42,231 gsf of the commercial

floor area would be comprised of a commercial health club. The forecast of the travel demand for these two uses was based on trip rate and temporal distribution data cited in the 2012 *CEQR Technical Manual.* The modal splits, directional distributions, and vehicle occupancies were based on the 2002 *Atlantic Avenue and Court Street EAS.* In addition, it is assumed that 85 percent of all subway trips would include a shuttle component.

Open Space

The Proposed Modified Development's 4.8 acres of waterfront public access areas and additional public access areas would include approximately 3.86 acres of passive open space and approximately 0.97 acres programmed for active uses. Passive open spaces will include lawns, seating, and the proposed Artifact Walk displaying historic elements from the historic Domino Sugar factory buildings, and active open space is expected to elements such as a dog run, playground, and bocce court. The proposed open space would be owned and maintained by the Applicant. While the hours of the park have yet to be finalized and will be negotiated between the Applicant, New York City Department of City Planning (DCP), and the New York City Department of Parks and Recreation (DPR), it is anticipated that the hours would be similar to those required of Privately Owned Public Spaces (between the hours of 7:00 a.m. and 10:00 p.m. from April 15 to October 31 and from 7:00 a.m. to 8:00 p.m. from November 1 to April 14). The forecast of the open space travel demand was based on trip generation and temporal distribution data cited in the 2012 *CEQR Technical Manual*, and is consistent with the anticipated open space hours of operation, described above. The modal splits, directional distribution, and vehicle occupancies were derived from the 2010 *Domino Sugar Rezoning FEIS*, and it is assumed that 85 percent of all open space subway trips would include a shuttle component (see Table 2)

Office and Not-for-Profit/Artist Studio Space—Employees

One of the most clearly outdated data sets used for the FEIS analyses of the 2010 Project is the Department of City Planning's 2000 Reverse Journey-to-Work data. While new Journey-to-Work data has subsequently been released (as referenced above), no updates to the Reverse Journey-to-Work dataset have been released to reflect the significant changes in demographics in the Williamsburg area since 2000. To address this issue, Philip Habib and Associates conducted extensive surveys and analyses to determine actual current mode choice. The results of these analyses are discussed in detail below.

Survey Sample

In order to determine the likely modal split for office and not-for-profit/artist studio workers at the future Domino Sugar development, PHA surveyed over 1,000 workers in DUMBO and Williamsburg office buildings in October and November 2012. Four survey sites with office workers were selected as representative of the future Domino Sugar development, based on both location relative to transit and user populations.[1] As the survey locations included startup technology and creative offices as well as artist studios the survey respondents would be representative of both the office and not-for-profit/artist studio employee population of the Proposed Modified Development. Surveys were conducted between 8:00 AM and 10:30 AM at three of the four locations; an online survey at the fourth survey location (located in Williamsburg) supplemented the in-person surveys. A breakdown of the number of employee survey respondents at each location is included in Table 3, below.

[1] Surveys were also conducted at 118 North 11th Street and 109 South 5th Street in Williamsburg. However, due to the small employee sample size (6 and 29, respectively) and the predominant types of businesses located in these buildings (moving and storage companies, dance and yoga studios), the results of these surveys were excluded from the analysis.

Table 3: Survey Site Sample Size

Survey Site	Employee Sample Size
20 Jay Street (DUMBO)	351
45 Main Street (DUMBO)	273
99 North 10th Street (Williamsburg)	94
55 Washington Street (DUMBO)	339

For all employees who traveled to work by subway, the weighted average distance survey respondents walked between place of work (the survey site) and the nearby subway entrances was calculated (assuming that all employees walked the most direct route).[2] The weighted average distances ranged from 0.27 miles (at 20 Jay Street) to 0.38 miles (at 55 Washington Street). A list of the survey locations and their respective weighted average distances to the subway is included in Table 4.

Table 4: Survey Site Location Subway Proximity

Survey Site	Weighted Average Distance to Subway (miles)
20 Jay Street (DUMBO)	0.27
45 Main Street (DUMBO)	0.34
99 North 10th Street (Williamsburg)	0.35
55 Washington Street (DUMBO)	0.38

As previously stated, the 2010 Domino Sugar FEIS transportation analyses used 2000 Reverse Journey-to-Work data for trips generated by the commercial/office portion of the previous project. Table 5 presents the results of the DUMBO and Williamsburg modal split survey results, compared to the 2000 Reverse Journey-to-Work data. As shown in the table, the 2012 survey responses reflect a significantly lower auto share compared to the 2000 data. Also of note are the higher shares of bike and walk trips.

Table 5: Modal Split Comparison—2012 Survey Results v. 2000 Reverse Journey-to-Work data

	DUMBO		Williamsburg	
Mode	2012 Surveys	2000 Reverse Journey-to-Work[1]	2012 Surveys	2000 Reverse Journey-to-Work[2]
Auto	10.1%	29.9%	9.6%	45.5%
Taxi	1.0%	0.3%	4.3%	0.5%
Subway	69.5%	50.5%	38.3%	28.7%
Rail	0.0%	4.2%	0.0%	1.6%
Bus	0.9%	10.1%	1.1%	7.2%
Bike	6.9%	0.3%	14.9%	0.2%
Ferry	1.9%	0.7%	1.1%	0.0%
Walk	9.8%	4.0%	29.8%	16.3%
Total	100.0%	100.0%	100.0%	100.0%

Sources: DCP Reverse Journey-to-Work data (2000)
Notes:
[1] 2000 Census tract 21
[2] 2000 Census tracts 549 and 557

[2] As an example, if 6 of the survey site's subway riders traveled by a subway line located 0.4 miles away, and 10 traveled by a subway line located 0.2 miles away, the weighted average distance between the survey site and the subway would be (6*0.4 + 10*0.2)/(16), or 0.275 miles.

Auto Share

Methodology

As stated above, the average weighted distance between survey locations and subway entrances ranged from 0.27 miles to 0.38 miles. In contrast, subway entrances nearest the project site (the Marcy Avenue (J/M/Z) subway station and the Bedford Avenue (L) station) are each located approximately 0.6 miles from the nearest subway entrances. To account for this difference and the absence of comparable offices and not-for-profit/artist studio spaces to survey at present (in terms of office type and location relative to transit), the exponential relationship between the survey results for auto share and the respective sites' weighted average distances to the subway was used to determine the expected future auto share for employees at the project site.

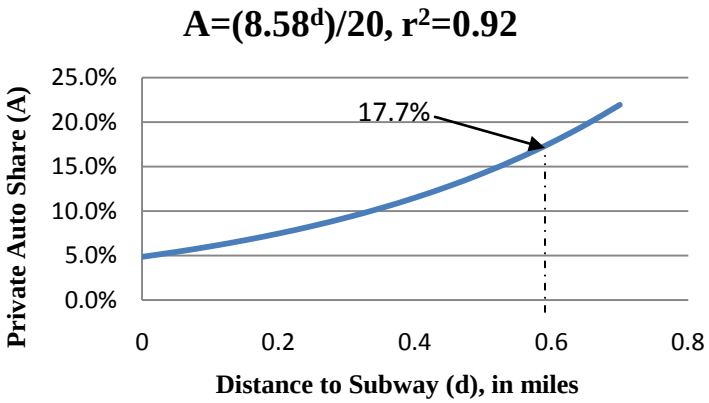
Results

As shown in Table 6 and Figure 1, comparing the survey results for auto share to the respective survey sites' weighted average distances to the subway, a general positive relationship between the two variables is evident.

Table 6: Relationship between Distance to Subway Station and Auto Mode Share

Weighted Average Distance to Subway (miles)	Auto Mode Share (%)
0.27	7.7
0.34	11.7
0.35	9.6
0.38	11.2

Figure 1: Relationship between Distance to Subway and Auto Mode Share



Using distance to subway as the main independent variable and auto mode share as the dependent variable, and assuming that auto mode share in this area of Brooklyn would never drop below 5 percent[3] (even if the distance to the subway was 0.0 miles), the exponential relation was determined, and is shown below. The resultant equation is $A = (8.58^d)/20$, where A is percentage auto share, and d is distance in

[3] Looking at the 2000 Reverse Journey-to-Work data, only four Brooklyn Census Tracts (each with 55 or less employee respondents) had auto mode shares of less than 7.7 percent, irrespective of distance to subway. Given the outdated nature of this data and the discrepancy of approximately 33 percent between the 2012 PHA transit mode choice survey responses and 2000 Reverse Journey-to-Work data, 5 percent was conservatively set as a minimum auto mode share.

miles from the site to the nearest subway station entrance. Based on this exponential relationship, the estimated auto mode share for the Proposed Modified Development's anticipated office and not-for-profit/artist studio workers is approximately 17.7 percent.

As a comparison, the 2009 American Community Survey 5-Year Estimates Journey-to-Work data shows a residential auto share of 11.3 percent for the surrounding area.[4] Given the mixed-use nature of the Proposed Modified Development, it is anticipated that actual employee auto share will be more comparable to residential auto share. In addition, the above analysis does not account for the effect of the proposed shuttles between the project site and the Marcy Avenue J/M/Z and Bedford Avenue L subway stations. It is anticipated that, by decreasing the time needed to travel to the subway station, the proposed shuttle would result in a lower auto mode share based on the above analysis. However, for conservative analysis purposes, 17.7 percent (the result of the above analysis) is assumed for the Proposed Modified Development's office and not-for-profit/artist studio employees.

The average vehicle occupancy rate of all survey respondents, 1.26, is applied to all auto trips.

Walk Share

As stated previously, survey sites in Brooklyn were selected based on a set of location and user population criteria. The four selected survey sites are located in neighborhoods with similar commercial office tenants. However, the two neighborhoods differ slightly in their mix of residential and commercial office uses. While both are mixed-use communities, Brooklyn Community District (CD) 2 (which includes DUMBO) has a lower ratio of residential square footage to office square footage (approximately 2.3:1), whereas CD1, within which Williamsburg is located has approximately 16.4 sf of residential uses for every one sf of office space.[5] This explains the difference in walk shares between the two survey neighborhoods. While the four survey sites had a combined average walk share of 11.5 percent overall, the walk share was greater in Williamsburg (approximately 30 percent) than the average walk share in DUMBO (approximately 9.8 percent) as the high number of dwelling units in Williamsburg contributes to the high number of walk trips to work.

Given these results, while comparable characteristics are anticipated for the Proposed Modified Development, which would include approximately 553,160 sf of office and not-for-profit/artist studio space, it is anticipated that a larger number of employees would live either on the project site (in the Proposed Modified Development's approximately 2,282 residential units) or in the surrounding predominantly residential neighborhoods. As such, a walk share more comparable to the Williamsburg survey sample (approximately 30 percent) is likely. However, for conservative analysis purposes a substantially lower walk share (20.0 percent) is assumed for analysis. This 20 percent walk share includes all on-site trips between the proposed 2,282 residential units and approximately 553,160 sf of office and not-for-profit/artist studio space.

Bike Share

At the four survey sites, the bike share ranged from 3 to 15 percent, with a combined average bike share of 7.6 percent. For conservative analysis purposes, the bike share applied to the Proposed Modified Development was reduced to 5.0 percent, 2.5 percent less than the combined average bike share at the four survey sites.

[4] Brooklyn Census Tracts 551 and 577
[5] DCP, PLUTO (2012).

Taxi Share

Taxi share were relatively low for all of the survey sites, representing an average of 1.2 percent of employee mode choice overall. This same percentage (1.2 percent) was assumed for the future Proposed Modified Development's office and not-for-profit/artist studio employees. Pursuant to 2012 CEQR methodology, no taxi overlap is assumed. In addition, a vehicle occupancy rate of 1.26 persons (the average of the survey respondents) was assumed for all taxi trips.

Public Transit Share

The estimated public transit share for the Proposed Modified Development's employees was assumed to represent the remainder of the employee mode choice, or 56.1 percent. This percentage would be distributed between the subway, bus, and ferry. Given the project site's comparable waterfront location to the survey sites, ferry ridership is anticipated to be similar to the survey findings for the four sites. However, as discussed in the above auto mode share discussion, given the project site's location in relation to subway stations as compared to the four survey sites, it is expected that fewer future office and not-for-profit/artist studio employees of the Proposed Modified Development would travel to work by subway.

Ferry

Looking at all four survey sites, approximately 1.8 percent of employee respondents traveled to work by ferry. Given the project site's waterfront location proximate to two East River Ferry landings (North 6th Street/North Williamsburg and Schaefer Landing/South Williamsburg), it is assumed that a comparable percentage (approximately 2.0 percent) of the Proposed Modified Development's office and not-for-profit/artist studio employees would travel to work by ferry.[6]

Subway

66.4 percent of surveyed employees traveled to work by subway, however this percentage was significantly higher at the DUMBO survey locations (66.3 percent, 73.5 percent, and 67.0 percent at 45 Main, 20 Jay, and 55 Washington Streets, respectively), than at the Williamsburg survey location (38.3 percent).

While all of the survey locations were comparably proximate to subway stations (refer to the auto mode choice discussion, above), the neighborhoods of DUMBO and Williamsburg differ in the number of subway lines they are served by. DUMBO survey respondents traveled by over seven different subway lines,[7] whereas 85.7 percent of the Williamsburg survey respondents traveled by the L train (with remainder distributed between the G and J lines). As such, it is expected that subway usage would be less prevalent in areas with less subway line options.

Similar to the Williamsburg survey location, the project site has limited subway options: only the L and J/M/Z lines are within a reasonable walking distance (approximately 0.6 miles). Based on this logic, it is anticipated that the Proposed Modified Development's office employee subway ridership would more closely resemble the results from the Williamsburg survey site. While the distance between the nearest subway stations and the project site is significantly greater than the distance between the Williamsburg survey location and the nearest subway station, the former's subway modal split is conservatively assumed to be greater than the latter's, 49.1 percent compared to 38.3 percent, respectively. This higher subway modal split is intended to account for the anticipated increased ridership resulting from the shuttle to both stations that would be included as part of the Proposed Modified Development and would run

[6] To be consistent with the transportation analysis provided in the 2010 FEIS, ferry share is included in the "walk/other" category.
[7] Excluding transfers

between the Marcy Avenue station, the Bedford Avenue station, and the project site. As noted above, the subway trip generation is further broken down with approximately 85 percent of subway trips including a shuttle component (see Table 2).

Bus

While an average of 0.9 percent of survey site employees traveled to work by bus, all four survey sites were located in areas well-served by the faster public transit option (subway), leading to fewer employees choosing to travel by bus. As discussed previously, the project site is located approximately 0.6 miles from the closest subway station (compared to the highest weighted subway distance of 0.38 for all four survey locations). Given the project site's location further from subway stations as well as the presence of several existing and planned bus routes both adjacent to the project site and within a reasonable walking distance (the B24, B39, B44, B46, B60, B62, Q54 and Q59, as well as a planned route which will connect the Marcy Avenue Station and Queens via Kent Avenue), it is expected that a greater percentage of the Proposed Modified Development's office and not-for-profit/artist studio employees would choose to travel to work by bus.

Based on the above factors, the transportation analysis assumes that 5 percent of the Proposed Modified Development's office and not-for-profit/artist studio employees would travel by bus. Given that 12.2 percent of Brooklyn residents travel to work by bus, 5 percent is a reasonable assumption between the survey findings and the 2000 Reverse Journey-to-Work Data.

Office and Not-for-Profit/Artist Studio Space—Visitors

In addition to the employees surveyed in DUMBO and Williamsburg, respondents to the on-site surveys conducted in DUMBO included an additional 52 visitors to the office and not-for-profit/artist studio uses, representing 5.1 percent of the total peak hour trips to the DUMBO survey sites.[8] The Technical Memorandum for the Proposed Modified Development similarly assumes that approximately 5.1 percent of trips generated by the proposed 504,308 gsf of office and 35,753 gsf of not-for-profit/artist studio uses would be made by visitors.

To determine the modal split of visitors to the Proposed Modified Development's office and not-for-profit/artist studio uses, the DUMBO employee:visitor mode share proportions were applied to the above-discussed Proposed Modified Development's employee mode shares. Table 7 presents the DUMBO employee and visitor mode shares, the DUMBO employee:visitor mode share proportions, the Proposed Modified Development's employee mode shares, and the normalized Proposed Modified Development's visitor mode shares based on the DUMBO employee:visitor mode share proportions.

Table 7: Employee and Visitor Travel Mode Shares—DUMBO and Proposed Modified Development

Mode	DUMBO Employees	DUMBO Visitors	DUMBO Employee:Visitor Mode Share Proportions	Proposed Modified Development Employees	Proposed Modified Development Visitors
Private Auto	10.07%	17.30%	58.22%	17.70%	25.21%
Subway	69.16%	46.20%	149.69%	49.10%	27.20%
Bus	0.93%	1.90%	49.19%	5.00%	8.43%
Taxi	0.93%	15.40%	6.07%	1.20%	16.40%
Walk/Other	18.90%	19.20%	98.43%	27.00%	22.75%
Total	*100.00%*	*100.00%*	*100.00%*	*100.00%*	*100.00%*

[8] A total of 1,015 DUMBO survey respondents identified as either "employee" or "visitor."

As presented in Table 7, compared to the Proposed Modified Development's office and not-for-profit/artist studio employee travel mode shares, a greater percentage of visitors to these uses would travel by private auto (25.21 percent, compared to 17,70 percent), bus (8.43 percent, compared to 5.00 percent), and taxi (16.40 percent, compared to 1.20 percent), while a smaller proportion of visitors would travel by subway (27.20 percent compared to 49.10 percent) and walk/other (22.75 percent, compared to 22.75 percent).

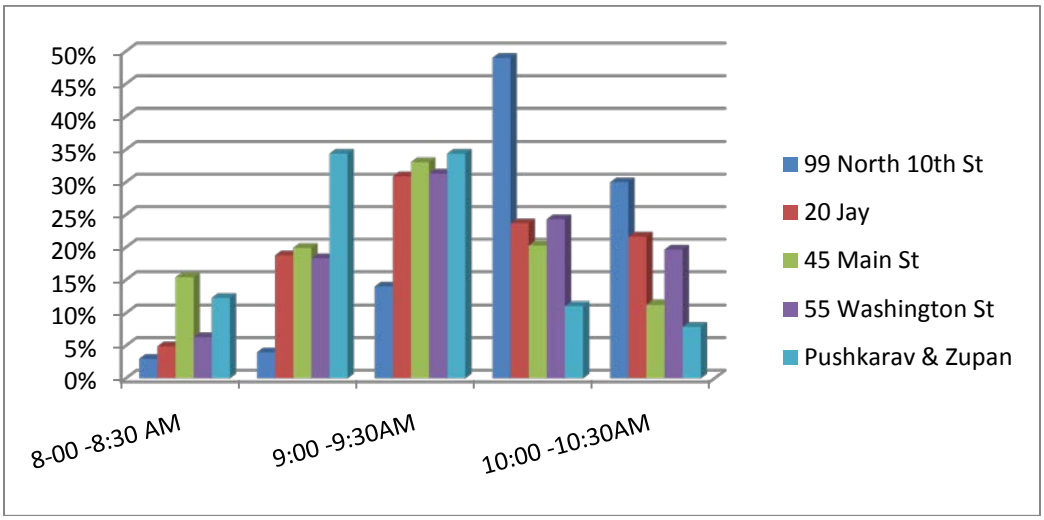
In addition, the vehicle occupancy rate of surveyed DUMBO visitors (1.60) is applied to both private auto and taxi trips.

Peak Hours and Trip Generation Rates

As shown in Figure 2, the survey results showed lower proportion of employees arriving to work during the typical AM peak hour defined by the 2012 *CEQR Technical Manual* (between 8AM and 9AM), for conservative analysis purposes it is assumed that peak in-bound office-generated trips would occur during the *CEQR*-defined 8AM to 9AM peak hour. Additional surveys conducted in October 2013 indicated that the 12-hour distribution of in/out trips at the three DUMBO survey sites was more steady, with less sharp peaks during the weekday AM, midday, and PM peak hours than typically assumed in the *CEQR Technical Manual* (see Figures 3a and 3b).[9] However, for conservative analysis purposes, the higher *CEQR Technical Manual* weekday midday and PM peak hour percentages are assumed.

In addition, the October 2013 in/out trip counts at the three DUMBO survey locations indicate lower trip generation rates than typically applied to office uses pursuant to CEQR. Table 8 presents the trip generation rates for each DUMBO survey site, compared to the standard CEQR rate of 18 trips per 1,000 gsf of office.

Figure 2: Comparison of Employee Arrival Times – Survey Sites vs. Standard Temporal Distribution Rates



Source: October and November 2013 DUMBO and Williamsburg Surveys; 12-hour "office, sharp peak" distribution included in Table 2.7 of Pushkarave & Zupan, *Urban Space for Pedestrians* (1975).

[9] Supplemental trip generation and temporal distribution data for the DUMBO survey sites was collected for the 7:30am to 7:30pm 12-hour day on October 17, 2013 and October 22, 2013. Data for 45 Main Street and 55 Washington Street were collected using video surveillance footage, and data for 20 Jay Street were collected on site. These data are compared to the 12-hour "office, sharp peak" distribution included in Table 2.7 of Pushkarav & Zupan's *Urban Space for Pedestrians* (1975).

Figure 3a: AM Office Trip Distribution – DUMBO Survey Sites

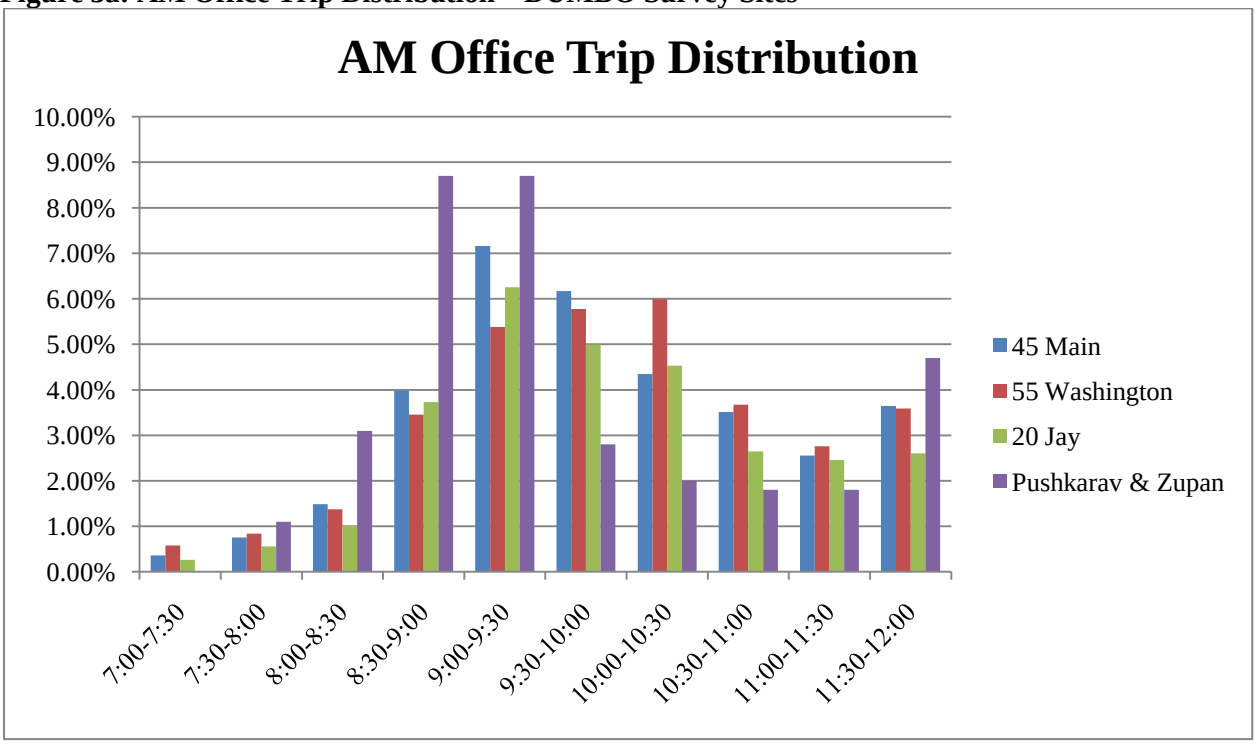


Figure 3b: PM Office Trip Distribution – DUMBO Survey Sites

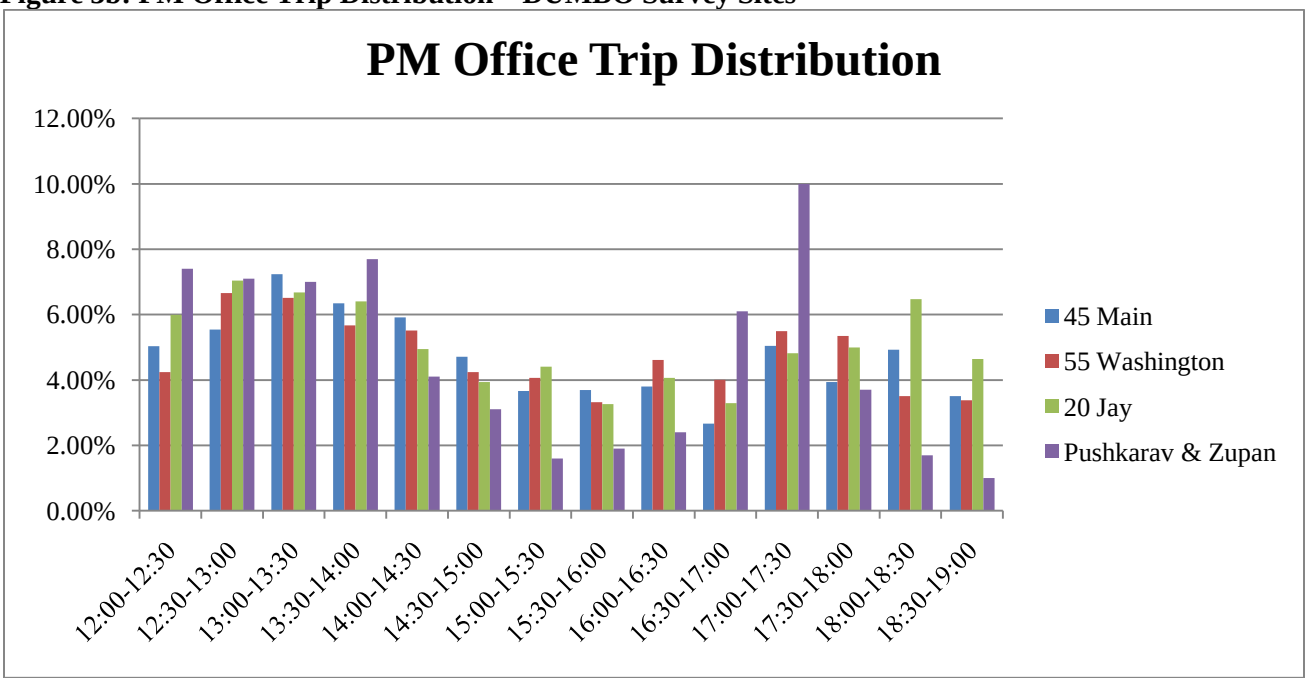


Table 8: Trip Generation Rates – DUMBO Survey Sites

	45 Main	55 Washington	20 Jay	Combined	CEQR
Total Trips	6546	5364	5017	16927	
Total Floor Area*	392,150	378,300	385,300	1,155,750	
Trip Generation Rate (Trips per 1,000 sf)	16.69	14.18	13.02	14.65	18

Notes:
* 45 Main Street gsf excludes 48,850 gsf of retail floor area and 35,000 gsf of garage floor area (2012 PLUTO data); 55 Washington Street excludes 40,000 gsf of retail floor area and 30,000 gsf of garage floor area (2012 PLUTO data); and 20 Jay Street excludes 34,467 gsf of retail floor area and 40,000 gsf of garage floor area (Two Trees Management, LLC).
Source: 12-hour trip generation data collected on October 17 , 2013 and October 22, 2013.

Linked Trips

As stated in the 2012 *CEQR Technical Manual*, the determination of a proposed project's generation of person trips may need to recognize that a percentage of its trip generation may be considered "linked trips." Person linked trips are trips that have multiple destinations, either within the proposed development site or between the development site and existing adjacent sites. This phenomenon may be reflected in the analyses by either a higher "walk" modal split percentage for the proposed project or by dividing the project's overall trip generation into "linked" and "non-linked" components and assigning them separately to the study area network. Given the mixed-use nature of the Proposed Modified Development, it is anticipated that a portion of the generated trips would be linked between the various proposed components of the project. To account for this phenomenon, the latter methodology (dividing the project's overall trip generation) is used for the transportation analyses.

School/Residential Linkages

Based on CEQR rates, the Proposed Modified Development is expected to generate approximately 696 elementary students, in addition to 288 intermediate and 336 high school students. To serve this anticipated future elementary school demand, in addition to the anticipated growth in school aged children in the encompassing school Sub-district, the Proposed Modified Development would include a 375-seat public elementary school. The proposed school would be located on the project site and would serve both the Proposed Modified Development's households and the surrounding community (Sub-district 3 of Community School District 14). While it is anticipated that a significant number of the project-generated elementary students would attend the proposed elementary school, it is conservatively assumed that only 25 percent of the school's trips would be linked to the Proposed Modified Development's residents; or, that less than 25 percent of the school's capacity (approximately 94 seats) would be filled by elementary students living in the Proposed Modified Development.

Retail Linkages

Pursuant to CEQR methodology, 25 percent of retail trips are considered linked trips, in effect reducing the number of retail generated trips by 25 percent.

Shuttle Trips

Like the 2010 Project, the Proposed Modified Development would include a shuttle bus with a 44-person capacity that would connect the project site to the Marcy Avenue J/M/Z subway station; an additional shuttle route for the Proposed Modified Development would also be implemented to serve the Bedford Avenue station. Given the distances to these stations and the service provided by the free shuttle, it is expected that 85 percent of subway demand would use the new shuttles. As such, the modal subway split

for each of the Proposed Modified Development's land uses is broken down into 15 percent not taking the shuttle and 85 percent taking the shuttle to the subway (refer to Table 2).

III. TRIP GENERATION

Table 9 summarizes the results of the travel demand forecast for the Proposed Modified Development. Table 10 provides a comparison of the total net travel demand compared to the 2010 FEIS travel demand for the 2010 Project.

As shown in Table 10, based on the above described transportation planning factors, the Proposed Modified Development would result in a net reduction in vehicle trips during all analysis peak hours as compared to the analyses done in the 2010 FEIS, and is therefore not expected to result in any new or substantially different significant adverse traffic impacts. However, the Proposed Modified Development would result in a different site plan that the 2010 Project and would relocate the parking spaced compared to where they were originally analyzed in the 2010 FEIS. As such, a total trip assignment for all peak hours was conducted. In addition, as the Proposed Modified Development would result in a net increase of 623, 254, 648, and 438 subway trips during the weekday AM, midday, and PM peak periods and Saturday midday peak period, as well as an additional 372 and 1,235 walk only/other trips during the weekday AM and midday peak periods, trip assignments for these two transportation areas of analysis are provided as well. A more detailed pedestrian trip assignment is not warranted for the weekday PM and Saturday midday peak periods, as pedestrian trips generated by the Proposed Modified Development would generate fewer pedestrian trips than the 2010 Project during these two analysis periods.

As the net increments in bus transit resulting from the Proposed Modified Development (a net increase of 28 bus trips in the weekday midday peak hour and a net decrease of 63, 85, and 47 bus trips in the weekday AM and PM and Saturday midday peak periods, respectively) fall well below the CEQR threshold for analysis (an increase of 50 or more bus trips being assigned to a single bus line in one direction), further trip assignment and analysis is unwarranted.

IV. TRIP ASSIGNMENT

Traffic

As previously stated, the Proposed Modified Development would result in a net reduction in vehicle trips in all analysis periods, and is therefore not expected to result in any additional significant adverse impacts not previously disclosed in the 2010 FEIS. However, as the Proposed Modified Development would result in a modified site plan with a different street network than that associated with the 2010 Project, a trip assignment for the project site and immediately surrounding area was conducted to assess the associated new traffic patterns. While the 2010 FEIS analyzed 55 intersections, given the net reduction in vehicle trips, the vehicle trip assignment for the Proposed Modified Development focuses on the project site and the area immediately surrounding the project site.

Table 9: Proposed Modified Development—Trip Forecast Summary

Land Use:		Local Retail		Residential		Office				Non-profit Art Studio				Not-for-profit Sports & Fitness Center		Health club		Open Space		PS school		Staff		TOTAL ALL USES	
Size/Units:		72,408	sf	2,282	DU	504,308	sf			35,753	sf			44,558	sf	42,231	sf	4.8	acres	375	seats	29	staff		
Peak Hour Trips:						Employee		Visitors		Employee		Visitors													
	AM	334		1,843		1,037		56		73		4		80		76		20		281		29		3,833	
	MD	2,115		921		1,294		69		92		5		179		170		34		0		0		4,879	
	PM	1,113		2,027		1,208		65		86		5		100		94		40		28		29		4,795	
	SAT MD	1,303		1,753		317		19		23		1		105		99		57		0		0		3,677	
Person Trips:																									
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto	8	8	35	201	172	11	13	1	12	1	1	0	3	5	3	4	1	1	0	0	10	0	258	232
	Taxi	8	8	2	14	12	1	9	1	1	0	1	0	0	0	0	0	1	1	28	0	0	0	62	25
	Subway	1	1	25	139	72	5	2	0	5	0	0	0	2	3	2	3	1	1	0	0	2	0	112	152
	Shuttle-Subway	8	7	139	787	404	26	12	1	29	2	1	0	12	16	11	15	0	0	0	0	12	0	628	854
	Bus	8	8	18	100	49	3	4	0	3	0	0	0	2	2	2	2	1	1	3	0	1	0	91	116
	School bus															0	0	0	0	37	0	0	0	37	0
	Walk/Other	134	135	58	325	263	15	12	1	19	1	1	0	14	21	14	20	6	6	213	0	4	0	738	524
	Total	167	167	277	1,566	972	61	52	4	69	4	4	0	33	47	32	44	10	10	281	0	29	0	1,926	1,903
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto	50	56	59	59	10	16	8	11	1	1	0	1	10	8	9	8	1	1	0	0	0	0	148	161
	Taxi	50	56	4	4	5	8	4	7	0	1	0	1	1	1	1	1	1	1	0	0	0	0	66	80
	Subway	7	10	41	41	5	8	1	2	1	1	0	0	5	5	6	5	1	1	0	0	0	0	67	73
	Shuttle-Subway	42	46	231	232	31	47	5	10	2	2	0	1	32	28	31	27					0	0	374	393
	Bus	50	56	29	29	36	56	3	4	2	4	0	0	5	4	5	4	1	1	0	0	0	0	131	158
	School bus																			0	0	0	0	0	0
	Walk/Other	795	897	96	96	421	653	6	8	31	46	0	2	43	37	38	34	13	13	0	0	0	0	1,443	1,786
	Total	994	1121	460	461	508	788	27	42	37	55	0	5	96	83	90	79	17	17	0	0	0	0	2,229	2,651
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto	24	31	182	78	11	203	1	15	1	14	0	1	8	3	7	2	1	1	0	0	5	5	240	353
	Taxi	24	31	13	5	1	14	1	10	0	1	0	1	1	0	1	0	1	1	0	3	0	0	42	66
	Subway	4	5	126	54	4	85	0	3	0	6	0	0	5	2	4	1	1	1	0	0	1	1	145	158
	Shuttle-Subway	21	26	713	305	25	478	1	14	2	33	0	1	25	9	24	8	0	0	0	0	6	6	817	880
	Bus	24	31	91	39	3	57	0	5	0	4	0	1	4	1	4	1	1	1	0	0	0	0	127	140
	Schoolbus																			0	4	0	0	0	4
	Walk/Other	392	499	295	126	16	307	1	14	0	23	0	2	32	10	31	10	16	16	0	21	2	3	785	1,031
	Total	489	623	1420	607	60	1144	4	61	3	81	0	6	75	25	71	22	20	20	0	28	14	15	2,156	2,632
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
SAT MD	Auto	36	29	167	167	34	23	3	1	2	3	0	0	6	5	5	5	1	1	0	0	0	0	254	234
	Taxi	36	29	9	9	2	2	2	1	0	0	0	0	1	0	1	0	1	1	0	0	0	0	52	42
	Subway	5	4	50	50	14	9	0	0	1	1	0	0	3	3	3	3	1	1	0	0	0	0	77	71
	Shuttle-Subway	30	25	283	283	79	53	3	2	6	4	0	0	19	16	18	15	0	0	0	0	0	0	438	398
	Bus	35	30	61	61	10	6	1	1	1	0	0	0	3	2	3	2	1	1	0	0	0	0	115	103
	Schoolbus																			0	0	0	0	0	0
	Walk/Other	574	470	306	307	50	35	3	2	3	2	1	1	26	21	25	20	24	25	0	0	0	0	1,012	883
	Total	716	587	876	877	189	128	12	7	13	10	1	1	58	47	55	45	28	29	0	0	0	0	1,948	1,731
Vehicle Trips :																									
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	Auto (Total)	4	4	27	157	137	9	8	1	10	1	1	0	2	3	2	2	1	1	0	0	9	0	201	178
	Taxi	4	4	1	9	10	1	6	1	0	0	0	0	0	0	0	0	1	1	25	0	0	0	47	16
	Taxi/dropoff (Balanced)																							63	63
	Schoolbus/Shuttle																			3	3	0	0	27	27
	Truck	1	1	8	8	8	8	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	18	18
	Total	9	9	36	174	155	18	14	2	11	2	1	0	2	3	2	2	2	2	25	0	9	0	309	286
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	Auto (Total)	23	25	46	46	8	12	4	7	1	1	0	0	5	4	5	4	1	1	0	0	0	0	93	100
	Taxi	23	25	3	3	4	6	3	4	0	0	0	0	1	1	1	1	1	1	0	0	0	0	36	41
	Taxi/dropoff (Balanced)																							77	77
	Schoolbus																			0	0	0	0	11	11
	Truck	1	1	6	6	9	9	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	17	17
	Total	47	51	55	55	21	27	7	11	2	2	0	0	6	5	6	5	2	2	0	0	0	0	198	205
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PM	Auto (Total)	11	14	142	61	8	162	1	9	1	11	0	1	4	2	4	1	1	1	0	0	5	5	177	267
	Taxi	11	14	9	3	1	11	1	6	0	1	0	1	1	0	1	0	1	1	0	3	0	0	25	40
	Taxi/dropoff (Balanced)																							65	65
	Schoolbus/Shuttle																			0	0	0	0	24	24
	Truck	0	0	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	Total	22	28	152	65	11	175	2	15	1	12	0	2	5	2	5	1	2	2	0	3	5	5	269	359
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
SAT MD	Auto (Total)	17	14	130	130	27	17	2	1	2	2	0	0	3	3	3	3	1	1	0	0	0	0	185	171
	Taxi	17	14	6	6	2	2	1	1	0	0	0	0	1	0	1	0	1	1	0	0	0	0	29	24
	Taxi/dropoff (Balanced)																							53	53
	Schoolbus/Shuttle																			0	0	0	0	14	14
	Truck	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	Total	34	28	138	138	29	19	3	2	2	2	0	0	4	3	4	3	2	2	0	0	0	0	254	240

Notes:

25% linked trips is applied to school trips.

25% linked trips is applied to local retail.

Table 10: Peak Hour Volumes due to the Proposed Modifications—2010 FEIS vs. Proposed Modified Development

	Proposed Modified Development			2010 FEIS			Proposed Modified Development v. 2010 FEIS
VEHICLE TRIPS							
Total Vehicles	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Difference < 50**
AM	309	286	595	384	328	712	- 117
MD	198	205	403	263	267	530	- 127
PM	269	359	628	421	513	934	- 306
SAT MD	254	240	494	362	344	706	- 212
SUBWAY TRIPS							
Subway	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	740	1,006	1,746	308	815	1,123	623
MD	441	466	907	321	332	653	254
PM	962	1,038	2,000	821	531	1,352	648
SAT MD	515	469	984	281	265	546	438
BUS TRIPS							
Bus	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	91	116	207	99	171	270	- 63
MD	131	158	289	126	135	261	28
PM	127	140	267	194	158	352	- 85
SAT MD	115	103	218	137	128	265	- 47
WALK ONLY/OTHER TRIPS							
Walk	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**Increment**
AM	738	524	1,262	374	516	890	372
MD	1,443	1,786	3,229	922	1,072	1,994	1,235
PM	785	1,031	1,816	849	877	1,726	90
SAT MD	1,012	883	1,895	969	840	1,809	86

The project site is located between the East River and Kent and Wythe Avenues, north of the Williamsburg Bridge. The area is characterized by higher-than-average commercial traffic since Kent Avenue, a one-way northbound DOT-designated truck route, serves as a major north-south connection for the manufacturing and industrial uses along the Brooklyn waterfront. Kent Avenue is also characterized by a major two-way north-south bicycle route (located along the western side of the thoroughfare), separated from the vehicle moving lane by a four-foot-wide buffer and an eight-foot "Floating" parking lane. Traffic lights are spaced considerably apart along this corridor, making Kent Avenue a quick connection between downtown Brooklyn and the Williamsburg/Greenpoint area. Other key roadways within the study area include Wythe Avenue, a one-way southbound street running parallel to Kent Avenue. An exclusive southbound bicycle lane is located on Wythe Avenue and most of this corridor's intersections are unsignalized. Metropolitan Avenue and Grand Street (to the north of the project site) are two-way east-west streets. Metropolitan Avenue provides direct access to the BQE and carries heavy vehicular and truck traffic, and Grand Street provides an east-west connection between Maspeth, Queens and Williamsburg.

Given the fact that no significant changes to the street network adjacent to the project site have occurred since the 2010 FEIS was issued, to accurately compare the effects of traffic generated by the projects the same trip assignment patterns assumed in the 2010 FEIS were applied to the Proposed Modified Development, with adjustments made to project-generated vehicular circulation within and immediately adjacent to the project site to reflect the modified site plan. As stated in the 2010 FEIS, project-generated vehicle trips were assigned to the study area intersections based on the most likely routes to and from the project site, the configuration of the street network, prevailing travel patterns, and the location of the project site's proposed access and egress points; whereas the 2010 Project's vehicle trips were routed to

the driveways along South 1st, South 3rd, and South 4th Streets, where access to the 2010 Project's parking garages would have been provided, the Proposed Modified Development's vehicle trips were routed to the two proposed parking garages in Buildings E and B, which would have access/egress points on South 4th and South 3rd Streets between Kent and Wythe Avenues, and on the proposed South 1st and South 2nd Street extensions between Kent Avenue and the proposed River Street extension. As with the 2010 Project, all delivery vehicles were assigned to the traffic network via DOT's designated truck routes.

In addition, the same No-Action project site development assumed in the 2010 FEIS was applied for the Proposed Modified Development, thereby allowing for an accurate comparison of the net increment of vehicle trips generated by the two projects. Specifically, in the No-Action condition, the 2010 FEIS assumed that the project site would be development with approximately 106,300 sf of industrial distribution space, approximately 60,000 sf of storage space, 40,000 sf of catering hall/restaurant space, and 61,000 sf of land used for building materials storage (as well as 5,000 sf of office space used for this use). As stated in the 2010 FEIS, No-Action development on the project site would have generated approximately 98, 212, 335, and 395 vehicle trips during the weekday AM, midday, and PM, and Saturday midday peak hours. The No-Action background growth for the Proposed Modified Development was adjusted to reflect the later build year (2023) by conservatively applying the same 1 percent annual background growth as was assumed in the 2010 FEIS.

Subway

As previously stated, the project site is located equidistant (approximately 0.6 miles) from both the Bedford Avenue L station and the Marcy Avenue J/M/Z stations. Both stations are also the most proximate stations to Manhattan on their respective lines, providing direct access to the Manhattan CBD as well as eastern Brooklyn. The lines serve comparable residential populations commuting to the Manhattan transit hub during the morning peak hours; 17,985 people entered the hub on the L train during the 8-9 AM weekday peak hour in 2011 compared to 12,515 via the J/M/Z.[10] This amounts to a 59 percent / 41 percent split between the L and the J/M/Z. As such, and as recommended by NYCT, the office generated demand to/from the project site has conservatively been assigned 60 percent to the L and 40 percent to the J/M/Z.

For non-office trips, approximately 60 percent of project-generated trips are assigned to the J/M/Z lines at the Marcy Avenue station, and the remaining 40 percent are assigned to the L train at the Bedford Avenue station. This assumption is consistent with the transit analysis of the 2010 FEIS and subsequent Technical Memoranda. This has also been reviewed and accepted by NYCT.

In terms of distribution of subway trips based on destinations, approximately 90 percent of the outbound trips during the AM peak period were assigned to Manhattan-bound J/M/Z and L lines at the Marcy Avenue and Bedford Avenue stations, respectively, and the remaining 10 percent were assigned to the Brooklyn- and Queens-bound lines at the same stations.

During the PM peak period, to better reflect the proposed increase in commercial office space, the findings of the DUMBO and Williamsburg surveys were used; approximately 80 percent of the inbound trips were assumed to use the Brooklyn- and Queens bound J/M/Z and L lines at the Marcy Avenue and Bedford Avenue stations, respectively, and the remaining 20 percent were assumed to use the Manhattan-bound lines at the same stations.

The distribution of subway users between the Bedford Avenue entrances has been modified to reflect the proposed shuttle route that would drop-off/pick-up riders at Driggs Avenue. The following entrance distribution was assumed:

[10] Table 14a, "Where, When, and How People Entered the Hub on a Fall Business Day in 2011: 8-9 AM," in *HUB Bound Travel Data 2011*, New York City Metropolitan Transportation Council, February 2013.

- Eighty-five percent of all the project-generated patrons would use the proposed shuttle to travel to the project site and were assigned to the S1 (SE corner) and S2 (NE corner) stairways at the Driggs Avenue and North 7th Street intersection;
- The ten percent of the project-generated subway patrons who walk to/from the project site from the Bedford Avenue station were distributed to the S3 (SW corner) stairway at the Bedford Avenue and North 7th Street intersection;
- The five percent of project-generated subway patrons who would use local buses to travel to/from the project site were assigned in the outbound direction to the S4 (NW corner) stairway at the Bedford Avenue and North 7th Street intersection, and to the S2 (NE corner) stairway at Driggs Avenue in the inbound direction (to the project site).

As previously stated, as part of the Proposed Modified Development, a free shuttle bus service would be provided from the project site to the Driggs Avenue entrance of the Bedford Avenue station and to the Broadway entrance of the Marcy Avenue J/M/Z subway station during the peak morning and evening commuting periods, providing a more direct connection for the project-generated transit users between the project site and both the Marcy Avenue and Bedford Avenue stations. Given the distances to these stations and the service provided by the free shuttle, it is expected that 85 percent of subway demand would use the shuttle. Ten percent of the remaining subway trips to Bedford Avenue are assumed to walk to/from the station, and the remaining 5 percent are assumed to use the local bus.

Pedestrians

As the Proposed Modified Development would include a free shuttle to the Marcy Avenue Station as well as Bedford Avenue station, Table 11 shows that, accounting for the resulting reduction in pedestrian volumes to the two subway stations, the Proposed Modified Development is expected to generate a total of approximately 1,733, 3,658, 2,383, and 2,263 pedestrian trips (i.e., walk/other, subway and bus trips combined) during the weekday AM, midday, and PM and Saturday midday peak hours, respectively. Compared to the total pedestrian trips estimated in the 2010 FEIS, the Proposed Modified Development would result in a net decrease of 550, 1,047, and 357 pedestrian trips in the weekday AM and PM and Saturday midday peak hours, respectively. The total weekday midday pedestrian trips would increase by 750.

Table 12, below, provides a breakdown, by use, of the net 750 pedestrian trips generated by the Proposed Modified Development during the weekday midday peak hour. As shown in the table, as a result of the Proposed Modified Development's net increase in commercial/office spaces compared to the 2010 Project, the majority of the net additional weekday midday pedestrian trips would result from the project site's commercial/office uses; commercial/office uses would generate approximately 1,042 net pedestrian trips, 954 of which would be walk/other trips. The remainder of the net weekday midday pedestrian trips, compared to the 2010 Project, would be generated by the project site's local retail uses; a net total of 376 pedestrian trips would result from local retail uses (a combined net increase of 419 walk/other trips and a net decrease of 43 bus- and subway-related pedestrian trips). The number of pedestrian trips generated by the project site's other uses and public open space would be less, compared to the 2010 Project.

Table 11: Comparison of With-Action Pedestrian Volumes—2010 FEIS v. Proposed Modified Development

Analyzed Conditions	Pedestrian by Mode	AM	MD	PM	SAT MD
2010 FEIS Pedestrian Volumes	Subway	1,123	653	1,352	546
	Bus	270	261	352	265
	Walk	890	1,994	1,726	1,809
	Total	2,283	2,908	3,430	2,620
Proposed Modified Development Pedestrian Volumes	Subway	1,746	907	2,000	984
	Bus	207	289	267	218
	Walk	1,262	3,229	1,816	1,896
	Total	3,215	4,425	4,083	3,098
	Net between FEIS & Proposed Modified Development	932	1,517	653	478
Proposed Modified Development Pedestrian Volumes With Shuttle Service to Subway Stations	Subway	264	140	300	149
	Bus	207	289	267	218
	Walk	1,262	3,229	1,816	1,896
	Total	1,733	3,658	2,383	2,263
	Net between FEIS & Proposed Modified Development	-550	750	-1,047	-357

While the trip assignment only assumed that 25 percent of the local retail trips would be linked, following the above CEQR methodology, the majority of the remaining pedestrian trips would be internal trips, made between the Proposed Modified Development's approximately 504,308 gsf of office and 35,753 gsf of not-for-profit/artist studio uses and 72,407 gsf of local retail, with office and not-for-profit/artist studio workers frequenting the ground floor restaurants located throughout the project site, utilizing the proposed sidewalks located throughout. It is anticipated that project-generated internal pedestrian trips would be distributed throughout this newly expanded street network.

Based on the above-described pedestrian trip generators, the pedestrian trip assignment assumes the following: pedestrian-only trips (which would primarily have their origins at the project site's office uses) would be distributed evenly in all directions from their respective origins; pedestrian trips associated with the Proposed Modified Development's bus trips were assigned to the most proximate bus stop from their respective building of origin; and pedestrian trips associated with the Proposed Modified Development's subway trips were assigned the most direct route to their subway station destination from their respective origins.

Table 12: Weekday Midday Pedestrian Trip Origins—2010 FEIS v. Proposed Modified Development

Land Use:		Local Retail		Residential		Office and Not-for-Profit/Artist Studio Space		Health club		Open Space		PS school		Staff		TOTAL ALL USES	
2010 FEIS Pedestrian Trips:		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	**Subway**	36	40	241	241	7	11	33	33	4	7					321	332
	Bus	42	46	46	46	7	11	29	30	2	2					126	135
	Walk/Other	600	673	87	87	83	131	111	131	41	50					922	1,072
																1,369	1,539
Proposed Modified Development Pedestrian Trips:																	
Pedestrian Trips with Shuttle services to subway stations																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	**Subway**	7	8	41	41	7	12	10	11	1	1	0	0	0	0	66	73
	Bus	50	56	29	29	41	64	10	8	1	1	0	0	0	0	131	158
	Walk/Other	795	897	96	96	457	711	82	69	13	13	0	0	0	0	1,443	1,786
		852	961	166	166	505	787	102	88	15	15	0	0	0	0	1,640	2,017
Net Pedestrian Trips:																	
		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
MD	**Subway**	-29	-32	-200	-200	0	1	-23	-22	-3	-6	0	0	0	0	-255	-259
	Bus	8	10	-17	-17	34	53	-19	-22	-1	-1	0	0	0	0	5	23
	Walk/Other	195	224	9	9	374	580	-29	-62	-28	-37	0	0	0	0	521	714
		174	202	-208	-208	408	634	-71	-106	-32	-44	0	0	0	0	271	478

APPENDIX 7

STATIONARY SOURCE AIR QUALITY REPORT

DOMINO SUGAR REDEVELOPMNT TECHNICAL MEMORANDUM

STATIONARY SOURCE AIR QUALITY REPORT

October 2013

Philip Habib & Associates

I. INTRODUCTION

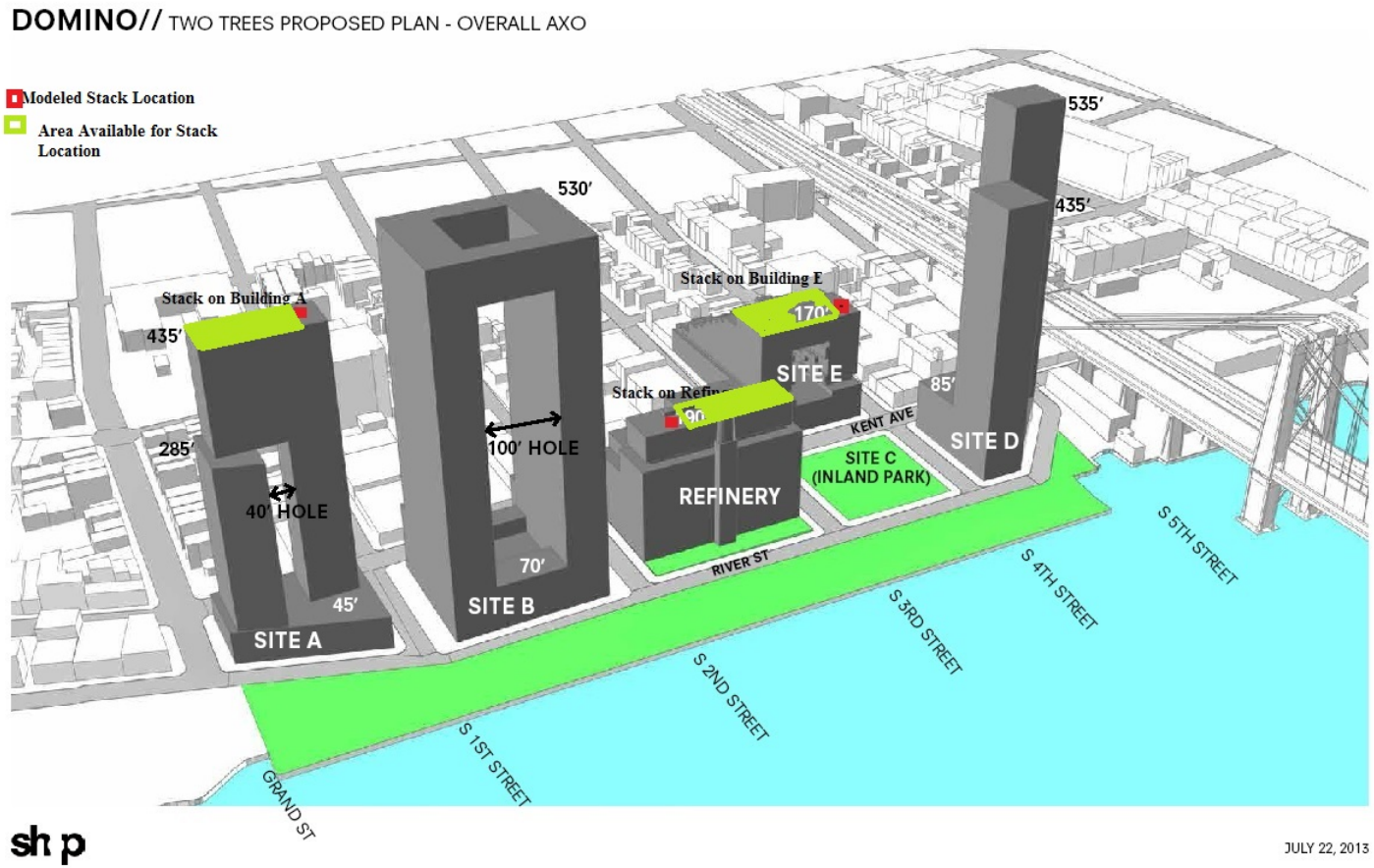
The proposed redevelopment of the former Domino Sugar site along the East River waterfront in Williamsburg, Brooklyn (see Figure 1) would comprise two parcels: a waterfront parcel (Block 2414, Lot 1) and an upland parcel (Block 2428, Lot 1). The proposed project would include an integrated mix of residential, retail/commercial, and community facility uses. The buildings included in the proposed development are shown in Figure 1. Each of these buildings will have its own heating, ventilation, and air conditioning (HVAC) system that will use natural gas.

Air quality, which is a general term used to describe pollutant levels in the atmosphere, will be affected by these changes. The potential air quality impacts of the proposed project were estimated following the procedures and methodologies prescribed in the *New York City Environmental Quality Review (CEQR) Technical Manual*. The key issues that are addressed in this Report are:

- The potential of the HVAC emissions of the proposed development sites to significantly impact other proposed development sites (project-on-project impacts);
- The potential of the HVAC emissions of the proposed development sites – individually and cumulatively -to significantly impact existing land uses (project-on-existing impacts);
- The potential of the combined HVAC emissions of all development buildings combined to significantly impact neighborhood pollutant levels;
- The potential of the HVAC emissions of existing commercial, institutional, or residential developments located within 400 feet of the proposed developments (where the stacks of these existing facilities would be lower or similar to the height of the proposed buildings) to significantly impact the proposed development sites;
- The potential of existing large combustion source emissions (that the *CEQR Technical Manual* identifies as a power plant, cogeneration facility, etc., located within 1,000 feet of development sites) to significantly impact the proposed development sites, and
- The potential of the toxic air emissions generated by nearby existing industrial sources to significantly impact the proposed development sites.

Figure 1

Massing Diagram for Domino Redevelopment



II. POLLUTANTS OF CONCERN

Relevant Air Pollutants for Analysis of HVAC Emissions

The United States Environmental Protection Agency (EPA) has identified several pollutants, which are known as criteria pollutants, as being of concern nationwide. As the proposed development would use natural gas in their HVAC systems, the two criteria pollutants associated with natural gas combustion – nitrogen dioxide (NO_2) and particulate matter smaller than 2.5 microns ($PM_{2.5}$) -- were considered for the HVAC analysis.

Applicable Air Quality Standards and Significant Threshold Values

As required by the Clean Air Act, National Ambient Air Quality Standards (NAAQS) have been established for the criteria pollutants by EPA. The NAAQS are concentrations set for each of the criteria pollutants in order to protect public health and the nation's welfare. In addition to the NAAQS, the *CEQR Technical Manual* requires that projects subject to CEQR apply a $PM_{2.5}$ criteria (based on concentration increments) developed by the New York City Department of Environmental Protection (NYCDEP) to determine whether potential adverse $PM_{2.5}$ impacts would be significant. If the estimated impacts of a proposed project are less than these increments, the impacts are not considered to be significant.

This analysis addresses compliance of the potential impacts of the proposed project with the 1-hour and annual NO_2 NAAQS and the 24-hour and annual $PM_{2.5}$ significant threshold values (STVs) specified in the *CEQR Technical Manual*. The current standards that were applied to this analysis, together with their health-related averaging periods, are presented in Table 1. New York has adopted the NAAQS as the State ambient air quality standards.

TABLE 1
APPLICABLE NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Period	National and State Standards
NO_2	1 Hour	0.10 ppm (188 µg/m^3)
	Annual	.053 ppm (100 µg/m^3)
$PM_{2.5}$	24 Hour	35 µg/m^3
	Annual	12 µg/m^3

Source: US Environmental Protection Agency, "National Primary and Secondary Ambient Air Quality Standards." (49 CFR 50) (www.epa.gov/air/criteria.html) and New York State Department of Environmental Conservation (http://www.dec.ny.gov/chemical/8542.html.

Notes: ppm = parts per million
µg/m^3 = micrograms per cubic meter

NO_2 NAAQS

Nitrogen oxide (NOx) emissions from gas combustion consist predominantly of nitric oxide (NO) at the source. The NOx in these emissions are then gradually converted to NO_2, which is the pollutant of concern, in the atmosphere (in the presence of ozone and sunlight as these emissions travel downwind of a source).

The recently promulgated 1-hour NO_2 NAAQS standard of 0.100 ppm (188 ug/m^3) is the 3-year average of the 98th percentile of daily maximum 1-hour average concentrations in a year. For determining compliance with this standard, the EPA has developed a modeling approach for estimating 1-hour NO_2 concentrations that is comprised of 3 tiers: Tier 1, the most conservative approach, assumes a full (100%) conversion of NOx to NO_2; Tier 2 applies a conservative ambient NOx/NO_2 ratio of 80% to the NOx estimated concentrations; and Tier 3, which is the most precise approach, employs AERMOD's Plume

Volume Molar Ratio Method (PVMRM) module. The PVMRM accounts for the chemical transformation of NO emitted from the stack to NO_2 within the source plume using hourly ozone background concentrations. When Tier 3 is utilized, AERMOD generates 8th highest daily maximum 1-hour NO_2 concentrations or total 1-hour NO_2 concentrations if hourly NO_2 background concentrations are added within the model.

With background concentrations included, the model internally adds up the 8th highest daily maximum NO_2 concentrations and the hourly NO_2 background concentrations, and averages these values over the numbers of the years modeled. Total estimated concentrations are then generated in the statistical form of the 1-hour NO_2 NAAQS format and can be directly compared with the 1-hour NO_2 NAAQS standard. This approach was applied in this analysis.

EPA has retained annual NO_2 standard of 0.053 ppm (100 ug/m3). For conservatively estimating annual NO_2 impacts at nearby receptor locations, a NO_2 to NOx ratio of 0.75 percent, which is recommended by the NYCDEP for an annual NO_2 analysis, was applied.

$PM_{2.5}$ Significant Threshold Values

CEQR guidance has been recently revised by NYCDEP to include the following criteria for evaluating potential 24-hour $PM_{2.5}$ impacts:

> *The 24-hour STV for $PM_{2.5}$ is now defined as the half of the difference between the 24-hour $PM_{2.5}$ NAAQS of 35 ug/m^3 and the 3-year average of applicable $PM_{2.5}$ background concentrations, and should be based on the maximum value estimated for any year of the five analysis years.*

The 24-hour $PM_{2.5}$ background concentration applicable for this study area was developed using NYSDEC monitoring data for 2010 through 2012 from the Brooklyn JHS126 monitoring station (Table 2).

TABLE 2
24-HOUR $PM_{2.5}$ BACKGROUND CONCENTRATIONS (ug/m^3)

Year	First Max	Second Max	Third Max	98th Percentile
2010	37.5	27.1	24.8	24.8
2011	25.7	24.4	24.3	24.3
2012	27.5	22.2	22.1	22.1
3-years average 98%-percentile				24

Source: http://www.dec.ny.gov/docs/air_pdf/2012airqualrpt.pdf

As the applicable background value is 24 ug/m^3, half of the difference between the NAAQS and this background value is 5. 5 ug/m^3. As such, a STV of 5.5 ug/m^3 was used for determining whether potential 24-hour $PM_{2.5}$ impacts of the proposed project are considered to be significant.

For annual average $PM_{2.5}$ concentration increments, according to CEQR guidance:

> *Discrete Receptor. An annual concentration increment that is predicted to be greater than 0.3 ug/m^3 at a discrete receptor location (elevated or ground level) is considered to be significant.*
>
> *Neighborhood Receptor. An annual average concentration increment that is predicted to be greater than of 0.1 ug/m^3 at ground level on a neighborhood scale (i.e., the annual increase in concentration representing the average over an area of one square kilometer, centered on the location where the maximum ground-level impact is predicted to occur for stationary sources).*

The above 24-hour and annual STVs were used to evaluate the significance of the predicted $PM_{2.5}$ impacts of the Proposed Action.

Toxic Pollutants

In addition to criteria pollutants, small quantities of a wide range of the non-criteria air pollutants, known as toxic air pollutants, which are emitted from nearby industrial and commercial facilities, are also of concern for this project. These pollutants can be grouped into two categories: carcinogenic air pollutants, and non-carcinogenic air pollutants. These include hundreds of pollutants, ranging from high to low toxicity. While no federal standards have been promulgated for toxic air pollutants, the EPA and NYSDEC have issued guidelines that establish acceptable ambient levels for these pollutants based on human exposure criteria. The procedures to estimate inhalation exposure concentration, hazard index, and cancer risk of toxic pollutants are outlined in the EPA Human Health Risk Assessment Protocol (HHRAP) (EPA 520-R-05-006) and described in the toxic analysis section of this Chapter.

III. Building-on-Building Analysis

Dispersion Analysis

A dispersion modeling analysis was conducted to estimate impacts from stack emissions using the latest version of EPA's AERMOD dispersion model 7.7 (EPA version 12345). The AERMOD Building Profile Input Parameters (BPIP) algorithm was employed in this analysis to estimate building profile input parameters for downwash effect calculation, such as maximum Good Engineering Practice (GEP) stack heights, the maximum Height of Wake Effect (HWE) values, and the BPIPs for all combinations of single-tiers, tier-groups, stacks, and wind directions. BPIP data associated with each stack for 36 wind directions was used to compute the plume downwash by the PRIME Plume Rise and Building Downwash Model. In accordance with CEQR guidance, this analysis was conducted assuming stack tip downwash, urban dispersion surface roughness length, and the elimination of calms, and the building downwash algorithm was utilized to account downwash effects on plume dispersion.

Following EPA modeling guidance for conducting a 1-hour NO_2 analysis, AERMOD's pollutant ID was set to NO_2 to enable the consideration of NOx to NO_2 conversion using AERMOD's Plume Volume Molar Ratio Method (PVMRM) module. The non-default AERMOD option was used for the 1-hour NO_2 analysis (i.e., the PVMRM algorithm was implemented as a non-default option). Regulatory default options of the AERMOD model were used for the 24-hour and annual $PM_{2.5}$ as well as for annual NO_2 analysis.

Emission Rates

24-hour $PM_{2.5}$ and 1-hour NO_2 emission rates for the building-on-building analysis for the Proposed Modified Project were developed using natural gas fuel usage factors from the CEQR Air Quality Technical Appendix, fuel consumption rates for each building size, and $PM_{2.5}$ and NO_2 emission factors from EPA's "Compilation of Air Pollutant Emission Factors" (AP-42,), as follows:

- The natural gas fuel usage factor: 58.5 cubic foot of natural gas per square foot per year (CEQR Air Quality Technical Appendix, Table C25, Natural Gas Consumption and Conditional Energy Intensity by Census Region for Non-Mall Buildings, 2006), used to estimate the annual amount of natural gas needed for each building, based on building floor square footage;
- The $PM_{2.5}$ emission factor from natural gas combustion: 7.6 pounds per million standard cubic feet of fuel (0.0076 MMBtu per hour of heat input) which includes filterable (1.9 pounds per million standard cubic feet) and condensable (5.7 pounds per million standard cubic feet) particles (AP-42, Table 1.4-2);
- The NOx emission factor for natural gas combustion: developed assuming use of low NOx burners in the HVAC systems, which will be required for this project by (E) designations, that

should provide a maximum 30 ppm NOx concentration in exhaust gases: 36.34 pounds per million standard cubic feet (0.036 pounds per million Btus);

- 24-hour $PM_{2.5}$ and 1-hour NO_2 emission rates: estimated based on assumption that all fuel will be consumed in a 100 days (3 coldest months of the year or 2,400 hours) of winter heating season, with no emissions for the rest of the year. As such, seasonal variable emission factors were used; and
- Annual $PM_{2.5}$ and NO_2 emission rates: estimated by adjusting short-term average emission rates to account for seasonal variation in heat and hot water demand.

Stack Parameters and Locations

Each of the five project buildings will have its own heating system. The New York City Building Code requires that a rooftop stack be at least 10 feet away from a taller building (highest obstacle). However, as all of these buildings are not adjacent to each other (as all are separated by the streets and by more than 30 feet), distances between the project buildings are all greater than 10 feet (Figure 2). As such, this New York City Building Code distance requirement is not applicable to the project buildings, and stack locations for each building was determined on a case-by-case basis depending on building roof size and the proximity of taller nearby buildings. Boiler stack exhaust heights were assumed to be 3 feet above the building height, as per CEQR recommendations.

Building A has both a commercial and residential base, with a residential tower sitting atop of these bases. For the purpose of this analysis, it was conservatively assumed that all emissions from the residential, commercial, and community facility components would be emitted from single stack located on the roof of Building A.

Boiler sizes, which are based on natural gas energy outputs, were estimated based on a fuel consumption rate of 1,020 Btu/cubic feet and the assumption that all fuel would be consumed during the 100 day (or 2,400 hour) heating season. Stack diameters and exit velocities were estimated based on values obtained from NYCDEP "CA Permit" database for the corresponding boiler size (i.e., rated heat input or million Btus per hour). All stack exit temperatures were assumed to be 300^oF (423° K).

Stack parameters, boiler capacities, and estimated pollutant emission rates for each building are presented in Table 3.

Meteorological Data

All analyses were conducted using the latest five consecutive years of meteorological data (2008-2012). Surface data were obtained from La Guardia Airport and upper air data were obtained from Brookhaven station, New York. Data were processed using the current EPA AERMET version 12345 and the EPA procedure. These meteorological data provide hour-by-hour wind speeds and directions, stability states, and temperature inversion elevations over the 5-year period.

Meteorological data were combined together to develop a 5-year set of meteorological conditions, which was used for all AERMOD modeling runs.

Figure 2


DOMINO// OVERALL SITE PLAN - PROPOSED FOOTPRINT
Modeled Stack Location
Building D
Refinery
Building B
Building A
302'
75'
75'
110 feet
70 feet
Building E
sh p
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TABLE 3

STACK PARAMETERS AND POLLUTANT EMISSION RATES USED IN THE BUILDING-ON-BUILDING ANALYSIS

Building ID	Total Floor Area	Building Height	Estimated Boiler Capacity	$PM_{2.5}$ Emission Rates		NO_2 Emission Rates		Stack Parameters		
				24-hour	Annual	1-hour	Annual	Height	Diameter	Velocity
	sq. feet	feet	MMBtu/h	g/sec	g/sec	g/sec	g/sec	feet	feet	ft/sec
Building A	404,410	435	10.1	9.44E-03	2.59E-03	4.60E-02	1.26E-02	438	2.0	19.4
Building B	1,107,502	530	27.5	2.58E-02	7.08E-03	1.26E-01	3.45E-02	533	3.0	21.0
Building D	661,130	535	16.4	1.54E-02	4.23E-03	7.52E-02	2.06E-02	538	3.0	21.0
Building E	413,683	170	10.3	9.65E-03	2.64E-03	4.70E-02	1.29E-02	173	2.0	19.4
Refinery	464,820	190	11.6	1.08E-02	2.97E-03	5.29E-02	1.45E-02	193	2.0	19.4
Commercial Building	107,968	285	2.7	2.52E-03	6.90E-04	1.23E-02	3.36E-03	288	1.0	25.6

* Emission rates for Building A, B, D, and E are total emissions rates from the residential, commercial, and community facility building components combined.

Background Concentrations

Hourly NO_2 and hourly ozone background concentrations for 2008-2012 were developed from monitoring data collected by the NYSDEC at Queens College monitoring station, and were compiled into AERMOD's required hourly emission (NO_2) and concentration (ozone) data format, and were used for all of the AERMOD modeling runs. The 3-year average of 24-hour $PM_{2.5}$ background concentrations was used to determine the STV for this analysis. The annual NO_2 background concentration of 20.6 ppb (or 38.7 ug/m^3), which is the latest 3-year average of annual values, was used for the annual NO_2 analysis.

Receptor Locations

The following receptor sites were considered in the building-on-building analysis:

- As Building A (435 feet tall) is shorter than nearby Building B (530 feet), Building A's HVAC emissions can potentially impact Building B's sensitive receptors. As such, receptors were placed around the perimeter of Building B in 10 foot increments, on all floor levels that are likely to experience the highest impacts from Building A's HVAC emissions.
- The Refinery building (190 feet tall), which will be converted to a commercial building, is shorter than nearby Building B (530 feet tall). As such, HVAC emissions from this building can potentially impact Building B's sensitive receptors. Receptors were therefore placed around the perimeter of Building B in 10 foot increments, on all floor levels that are likely to experience the highest impacts, in 10 foot increments.
- As Building E (170 feet tall) is shorter than Refinery Building (190 feet tall), Building E's HVAC system emissions can potentially impact Refinery Building receptors. Receptors were therefore placed around the perimeter of the Refinery Building in 10 foot increments, on all floor levels that are likely to experience the highest impacts, in 10 foot increment.
- As Building E (170 feet tall) is shorter than nearby Building D (535 feet tall), Building E's HVAC system emissions can potentially impact Building D receptors. Receptors were therefore placed around the perimeter of Building D in 10 foot increments, on all floor levels that are likely to experience the highest impacts, in 10 foot increment.

Approximately 2,000 to 3,000 receptors were placed on each building to assure that maximum impacts are estimated.

Project-on-Project Impacts

The results of the project-on-project analyses are greatly influenced by the location of each building relative to each taller building and the prevailing wind direction. Higher impacts occur under the prevailing northerly wind direction (i.e., winds from the north to the south), with the lower impacts estimated under the other wind directions. Higher impacts were therefore predicted for Building A on Building B, Refinery Building D, and Building E on Building D; lower impacts were predicted for Refinery on Building B, and Building E on Refinery. The results of the dispersion analysis for comparison with the 24-hour/annual $PM_{2.5}$ STVs and the 1-hour/annual NO_2 NAAQS are discussed below.

$PM_{2.5}$ Analysis Results

Building A on Building B

Results of Building A on Building B analysis are presented in Table 4. The stack for this analysis (see Figures 1 and 2) is located on the roof of the residential part of the Building A, which will sit on top of the commercial tower, approximately 35 feet from South 1st Street (95 feet from the lot line facing Building B), to avoid any potential significant air quality impact.

This restriction is the minimum distance that the stack should be from Building B. Any location on the roof that is further from Building B would result in lower impacts and therefore be acceptable for a stack location.

The modeled stack location is shown on Figures 1 and 2. The maximum estimated 24-hour $PM_{2.5}$ impact of the Building A's HVAC emissions on Building B is estimated to be 1.37 ug/m^3 and the annual average impact is estimated to be 0.049 ug/m^3. The result of this analysis is that both the 24-hour and annual $PM_{2.5}$ impacts are less than the STVs of 5.5 ug/m^3 and 0.3 ug/m^3, respectively. Therefore, Building A HVAC emissions would not cause a significant air quality impact on Building B.

Table 4

Building A HVAC $PM_{2.5}$ Emissions Impact on Building B

Analysis Year	Maximum 24-hour Impact, ug/m^3	Maximum Annual Impact, ug/m3
2008	0.95	0,047
2009	0.86	0.048
2010	1.01	**0.049***
2011	**1.37***	0.042
2012	1.36	0.042

- Maximum estimated value

Refinery on Building B

The results of the analysis of Refinery emissions impact on Building B, with stack located approximately 70 feet from South 2nd Street (145 feet from lot line facing Building B), are presented in Table 5. The modeled stack location is shown on Figures 1 and 2.

This restriction is the minimum distance that the stack should be from Building B. Any location on the roof that is further from Building B would result in lower impacts and therefore be acceptable for a stack location.

The maximum 24-hour $PM_{2.5}$ impact of the HVAC emissions is estimated to be 0.57 ug/m^3 and the annual average impact is estimated to be 0.0.036 ug/m^3. Both 24-hour and annual $PM_{2.5}$ impacts are less than the STVs of 5.5 ug/m^3 and 0.3 ug/m^3, respectively. Therefore, Refinery $PM_{2.5}$ emissions would not cause significant air quality impacts on Building B.

Table 5

Refinery HVAC $PM_{2.5}$ Emissions Impact on Building B

Analysis Year	Maximum 24-hour Impact, ug/m^3	Maximum Annual Impact, ug/m3
2008	0.22	0.029
2009	0.24	0.029
2010	0.18	0.028
2011	**0.57***	0.033
2012	0.25	**0.036***

- Maximum estimated value

Refinery on Building D

The results of the analysis of Refinery emissions impact, with the stack located at the same location as was used for the Refinery on Building B analysis, on Building D are presented in Table 6. The maximum 24-hour $PM_{2.5}$ impact of the HVAC emissions is estimated to be 0.15 ug/m^3 and the annual average $PM_{2.5}$

impact is estimated to be 00.004ug/m^3. Both 24-hour and annual $PM_{2.5}$ impacts are less than STVs of 5.5 ug/m^3 and 0.3 ug/m^3, respectively. Therefore, the Refinery HVAC $PM_{2.5}$ emissions would not cause significant air quality impact on Building D.

Table 6
Refinery HVAC $PM_{2.5}$ Emissions Impact on Building D

Analysis Year	Maximum 24-hour Impact, ug/m^3	Maximum Annual Impact, ug/m3
2008	0.08	0.003
2009	0.12	0.003
2010	0.07	0.003
2011	**0.15***	0.004
2012	0.13	**0.004***

- Maximum estimated value

Building E on Building D

The results of the analysis of Building E emissions impact on Building D are presented in Table 7. Stack for this analysis was located approximately 100 feet from Kent Avenue and 50 feet from South 4th Street, on the highest tier of Building E. The modeled stack location is shown on Figures 1 and 2.

This restriction is the minimum distance that the stack should be from Building B. Any location on the roof that is further from Building D would result in lower impacts and therefore be acceptable for a stack location.

The maximum 24-hour $PM_{2.5}$ impact of the HVAC emissions is estimated to be 0.58 ug/m3 and the annual average impact is estimated to be 0.017 ug/m^3. Both 24-hour and annual $PM_{2.5}$ impacts are less than the STVs of 5.5 ug/m^3 and 0.3 ug/m^3, respectively. Therefore, the Building E $PM_{2.5}$ emissions would not cause significant air quality impact on Building D.

Table 7
Building E HVAC $PM_{2.5}$ Emissions Impact on Building D

Analysis Year	Maximum 24-hour Impact, ug/m^3	Maximum Annual Impact, ug/m3
2008	0.24	0.017
2009	0.24	0.018
2010	0.20	0.015
2011	**0.58***	0.016
2012	0.25	**0.017***

- Maximum estimated value

Building E on Refinery

The results of Building E HVAC emission impact on the Refinery, with the stack located at the same location as was used in Building E on Building D analysis, are presented in Table 8. The maximum 24-hour $PM_{2.5}$ impact of the HVAC emissions is estimated to be 1.41 ug/m^3 and the annual average $PM_{2.5}$ impact is estimated to be 0.065 ug/m^3. Both 24-hour and annual $PM_{2.5}$ impacts are less than the STVs of 5.5 ug/m^3 and 0.3 ug/m^3, respectively. Therefore, the Building E HVAC $PM_{2.5}$ emissions would not cause significant air quality impacts on Refinery.

Table 8
Building E HVAC $PM_{2.5}$ Emissions Impact on Refinery

Analysis Year	Maximum 24-hour Impact, ug/m^3	Maximum Annual Impact, ug/m^3
2008	1.35	0.051
2009	1.34	0.052
2010	0.80	0.049
2011	**1.41***	**0.065***
2012	1.26	0.052

- Maximum estimated value

$PM_{2.5}$ Neighborhood Analysis

In addition to evaluation 24-hour and annual $PM_{2.5}$ impacts at discrete receptors, a neighborhood $PM_{2.5}$ analysis was also conducted to estimate potential $PM_{2.5}$ impacts from the HVAC emissions of all development buildings combined. Ground level receptors were placed around each building perimeter and Grand Ferry Park, and the maximum annual $PM_{2.5}$ impacts from all stacks combined were estimated. Using the point of maximum impact as the center, a receptor grid was developed that extended 0.5 km in all directions, in 25 meter increments. Estimated concentrations at each of receptor points were averaged over this grid and compared to the neighborhood $PM_{2.5}$ STV of 0.1 ug/m^3.

The result of the neighborhood analysis, which is presented in Table 9, is that the maximum estimated average value over the 1-by-1 km grid is 0.006 ug/m^3, which is approximately 6 percent of the neighborhood concentration threshold of 0.1 ug/m^3. As such, no significant neighborhood scale $PM_{2.5}$ impact from the combined HVAC emissions is predicted.

Table 9
Neighborhood $PM_{2.5}$ Analysis Results

Analysis Year	Estimated $PM_{2.5}$ concentration over 1 by 1 km Receptor Grid, ug/m^3	CEQR Neighborhood Threshold, ug/m^3
2008	0.004	**0.1**
2009	0.006	
2010	0.006	
2011	0.006	
2012	0.006	
Maximum Value	**0.006**	

NO_2 Analysis Results

The stack locations for the NO_2 analysis are the same as those used in the $PM_{2.5}$ analysis (see Figures 1 and 2).

Building A on Building B

The result of Building A's HVAC NO_2 emissions analysis on Building B is that the maximum 1-hour NO_2 8th highest daily 1-hour concentration averaged over 5 years is 119.4 ug/m^3 (Table 10) and the total maximum annual average NO_2 concentration for Building A (i.e., with an impact of 0.178 ug/m^3 using a NOx to NO_2 conversion factor of 0.75 plus a background value of 38.7 ug/m^3) is 38.9 ug/m^3. Both the 1-hour and annual NO_2 concentrations are less than the 1-hour and annual NO_2 NAAQS of 188 ug/m^{3}and 100 ug/m^3, respectively. Therefore, Building A's HVAC NO_2 emissions would not significantly impact Building B.

Table 10
Building A HVAC NO_2 Emissions Impact on Building B

Analysis Year	Total 1-hour NO_2 Concentration, ug/m^3	Annual NO_2 Impact ug/m3*	Total Annual NO_2 Concentration, ug/m3*
2008	120.4	0.170	38.9
2009	120.4	0.177	38.9
2010	120.4	**0.178***	**38.9***
2011	124.9	0.152	38.8
2012	111.0	0.154	38.8
5 Year Average	**119.4**		

- Maximum estimated value

Refinery on Building B

The result of the Refinery's HVAC emissions analysis on Building B at the same stack location that was used in the $PM_{2.5}$ analysis is that the maximum 1-hour NO_2 8th highest daily 1-hour concentration averaged over 5 years is 117.1 ug/m^3 (Table 11) and the total annual average NO_2 concentration (i.e., with an impact of 0.107 ug/m^3 using a NOx to NO_2 conversion factor of 0.75 plus a background value of 38.7 ug/m^3) is 38.8 ug/m^3. Both the 1-hour and annual NO_2 concentrations are less than the 1-hour and annual NO_2 NAAQS of 188 ug/m^3 and 100 ug/m^3, respectively. Therefore, at this stack location, the Refinery's HVAC NO_2 emissions would not cause a significant air quality impact on Building B.

Table 11
Refinery HVAC NO_2 Emissions Impact on Building B

Analysis Year	Total 1-hour NO_2 Concentration, ug/m^3	Annual NO_2 Impact, ug/m3*	Total Annual NO_2 Concentration, ug/m3*
2008	120.4	0.093	38.8
2009	120.4	0.094	38.8
2010	120.4	0.091	38.8
2011	117.9	**0.106***	**38.8***
2012	106.4	0.099	38.8
5 Year Average	**117.1**		

* Maximum estimated value

Refinery on Building D

The result of the Refinery's HVAC emission analysis on Building D is that the maximum 1-hour NO_2 8th highest daily 1-hour concentration averaged over 5 years is 117.0 ug/m^3 (Table 12) and the maximum annual average NO_2 concentration (i.e., with an impact of 0.014 ug/m^3 using a conversion factor of 0.75 plus a background value of 38.7 ug/m^3) is 38.7 ug/m^3. Both the 1-hour and annual NO_2 concentrations are less than the 1-hour and annual NO_2 NAAQS of 188 ug/m^3 and 100 ug/m^3, respectively. Therefore, the Refinery's NO_2 emissions would not cause a significant air quality impact on Building D.

Table 12
Refinery HVAC NO_2 Emissions Impact on Building D

Analysis Year	Total 1-hour NO_2 Concentration, ug/m^3	Annual NO_2 Impact, ug/m3*	Total Annual NO_2 Concentration, ug/m3*
2008	120.4	0.010	38.7
2009	120.4	0.012	38.7
2010	120.4	0.011	38.7
2011	117.3	0.013	38.7
2012	106.4	**0.014***	**38.7***
5 Year Average	**117.0**		

* Maximum estimated value

Building E on Refinery

The result of Building E's emissions analysis on the Refinery is that the maximum 1-hour NO_2 8th highest daily 1-hour NO_2 concentration averaged over 5 years is 117.7 ug/m^3 (Table 13) and the maximum annual average NO_2 concentration (i.e., with an impact of 0.24 ug/m^3 plus background value of 38.7 ug/m^3) is estimated to be 38.9 ug/m^3. Both the 1-hour and annual NO_2 concentrations are less than the 1-hour and annual NO_2 NAAQS of 188 ug/m^3 and 100 ug/m3, respectively. Therefore, the Building E's NO_2 emissions would not cause a significant air quality impact on the Refinery.

Table 13
Building E HVAC NO_2 Emissions Impact on Refinery

Analysis Year	Total 1-hour NO_2 Concentration, ug/m^3	Annual NO_2 Impact, ug/m3*	Total Annual NO_2 Concentration,
2008	120.4	0.186	38.9
2009	120.4	0.190	38.9
2010	120.4	0.180	38.9
2011	118.9	**0.239***	**38.9***
2012	108.5	0.193	38.9
5 Year Average	**117.7**		

* Maximum estimated value

Building E on Building D

The result of Building E HVAC emissions impact on Building D is that the maximum 1-hour NO_2 concentration averaged over 5 years is 117.5 ug/m^3 (Table 14) and the maximum annual NO_2 concentration (impact of 0.065 ug/m^3 using a conversion factor of 0.75 plus a background value of 38.7 ug/m^3) is 38.8 ug/m^3. Both the 1-hour and annual NO_2 concentrations are less than the 1-hour and annual NO_2 NAAQS of 188 ug/m^3 and 100 ug/m3, respectively. Therefore, Building E NO_2 emissions would not cause a significant air quality impact on Building D.

Table 14
Building E HVAC NO_2 Emissions Impact on Building D

Analysis Year	Total 1-hour NO_2 Concentration, ug/m^3	Annual NO_2 Impact, ug/m3*	Total Annual NO_2 Concentration, ug/m3*
2008	120.4	0.063	38.8
2009	120.4	**0.065***	**38.8***
2010	120.4	0.055	38.8
2011	119.9	0.058	38.8
2012	106.4	0.061	38.8
5 Year Average	**117.5**		

* Maximum estimated value

Conclusion

No significant building-on-building HVAC $PM_{2.5}$ emission impacts or exceedances of the NO_2 NAAQS are predicted. As such, building-on-building impacts of the proposed development would not be significant.

IV. Project-on-Existing Analysis

As all of the project buildings are taller than nearby (i.e., within 400 feet) existing buildings, no significant impacts on existing buildings are anticipated, and a quantitative analysis of the potential impacts on existing buildings is not warranted. However, based on NYCDCP guidance, a cumulative analysis (see Section VIII) was conducted to estimate the potential impacts of the HVAC emissions of all of the project buildings combined on existing land uses.

V. Cluster Analysis

As all five proposed buildings vary greatly in height (from 170 to 530 feet) and will be separated by city streets, these buildings do not meet the CEQR definition of an emission cluster, and a cluster analysis is not warranted.

VI. Potential Impacts from Large Existing Combustion Emission Sources

A survey of existing land uses within 1000 feet of the proposed development site was conducted using the New York City OASIS mapping network system to identify existing emission sources such as residential, commercial and institutional buildings with heat input 20 or more MMBtu/hour or large combustion emission sources (e.g., power plants, cogenerating facilities, etc.) where the stacks of these existing facilities would be lower or similar to the height of the proposed buildings.

NYCDEP boiler records of existing buildings in the vicinity of each of development site were reviewed to determine whether an existing boiler permit is active and whether the facility can be qualified as emissions source with a heat input 20 or more million Btus per hour. Although the survey that did not identify any emission sources with such parameters, it found that New York Power Authority's (NYPA) 1st Street Facility, which has a current air pollution control (Title V) permit issued by NYSDEC, is located within 400 feet of the proposed development sites. On Figure 1, which shows the proposed development buildings, the NYPA stack is located across Grand Street -- to the left of Building A.

In particular, as the exhaust stack of the NYPA facility is located approximately 215-220 feet from Building A of the proposed development and is shorter than Building A (and several of the other

proposed buildings), the emissions from this facility has the potential to significantly impact the sensitive receptors (i.e., operable windows) of the residential units that will be located on the upper floors of Building A (as well as the other proposed buildings). No other large emission sources, except this NYPA facility, were identified. An air quality dispersion modeling analysis was therefore conducted to estimate whether the potential impacts of the NYPA stack emissions on the residential receptors of Buildings A and B (i.e., those buildings closest to the NYPA plant) would be significant. An additional analysis was conducted to determine where air intake ducts for the commercial base of Building A would be acceptable.

Pollutants and Impact Thresholds

The pollutants of concern and STVs used in this analysis are the same as those evaluated in the HVAC building-on-building analysis. The focus of this analysis, therefore, is compliance with the recently revised CEQR 24-hour $PM_{2.5}$ STVs and the 1-hour NO_2 NAAQS.

Dispersion Analysis

A modeling analysis was conducted using EPA's AERMOD dispersion model and same procedures that were used in the HVAC building-on-building analysis.

NYPA Stack Parameters

The NYPA facility has a current Title V Permit (Permit ID 2-6101-01077/00003, which is dated 01/10/2011) issued by NYSDEC. The following stack parameters listed in the permit were used in this analysis: height = 106.49 feet (32.46 meters), diameter = 12 feet (3.657 meters), temperature 718° F (654° K), and exit velocity = 77 feet/second (23.47 meters/second).

Receptor Sites

Receptors were placed on the residential sections of Building A (which would be 435 feet tall) and Building B (which would be 530 feet tall); in locations most likely to experience the greatest impacts from the NYPA stack emissions. Building A has a commercial base tower facing the NYPA plant, a residential base tower further from the NYPA stack, and an elevated residential section sitting atop both the commercial and residential towers. The commercial base and elevated residential section will be set back approximately 15 feet from Kent and Grand Streets. Building B consists of two residential towers and an elevated residential section sitting atop both the towers.

The residential section of Building A starts above the commercial base at an elevation of 285 feet elevation and extends up to 435 feet. The following sets of sensitive receptors for Building A were considered:

- Receptors for the residential tower of Building A starting at 300 feet above the commercial base and extending up to 430 feet along the facade in 10-foot increments; and
- Receptors for residential units of the southern base tower of Building A starting above the lobby (retail) at 50 feet and extending up to 430 feet along the facade in 10-foot increments.
- Receptors for Building B were placed on each floor starting from the ground floor and extending to 520 feet in 10 foot increments.

Potential impacts above 400 feet from the 106 foot-tall NYPA stack were not evaluated as these impacts will be much lower that the impacts estimated at the receptors considered. More than 1,600 receptors were considered for Building A, and more than 3400 receptors were considered for Building B, including ground-level receptors at Ground Ferry Park.

Meteorological Data

The analysis was conducted using the same meteorological data set that was used in the HVAC building-on-building analysis.

Background Concentrations

Background hourly NO_2 and ozone concentrations and data compilation procedures are the same as those used in the HVAC building-on-building analysis.

$PM_{2.5}$ Analysis

$PM_{2.5}$ emission rates for the NYPA plant were estimated using raw hourly heat input (load) data from EPA's Market Data website for the NYPA facility for the 5-year analysis period (2008 to 2012). These hourly heat loads (in million Btus per hour) were then multiplied by a $PM_{2.5}$ emission factor (pounds per million Btu), and the estimated hourly emission rates (in grams/second) for each analysis year were compiled into the format required by the AERMOD model. The 24-hour $PM_{2.5}$ emission factor that was used to calculate 24-hour $PM_{2.5}$ emission rates was 0.00355 pounds per million Btu -- the same factor that was used in the certified FEIS and wind tunnel study for the previously proposed development for this site.

Following NYCDEP guidance, it was conservatively assumed that the worst operational day (24-hour) heat load of the NYPA plant for each month of the 5-year analysis period would occur every day of that month. To estimate maximum 24-hour emission rates, these worst-case monthly emissions were used as the monthly emission rates for the 12 consecutive months of each year. Emission data were combined with hour-by-hour wind speeds and directions, stability states, and temperature inversion elevations for the same hours of each year from the meteorological data file. NO_2 Analysis

NO_2 emission rates were estimated using actual hourly heat input (load) data from EPA's Market Data website for the NYPA facility emissions for the 5-year (2008 to 2012) analysis period. These hourly heat loads (in million Btus per hour) were multiplied by a NO_2 emission factor of 0.0364 pounds per million Btus, which was obtained from the facility's air quality permit, and the estimated NO_2 hourly emission rates for each analysis year were combined together for the full 5-year analysis period and compiled into the format corresponding to hourly emission input data format of the AERMOD model. Corresponding hourly ozone and hourly NO_2 background concentrations over this period were also compiled into the format required by the AERMOD model and both were used in this analysis.

$PM_{2.5}$ Analysis Results

The results of the $PM_{2.5}$ dispersion analysis of the NYPA plant emissions for the residential towers of Building A and all of Building B are summarized in Tables 15.

Building A (Residential Towers)

The maximum estimated 24-hour average $PM_{2.5}$ impact at Building A's residential receptors (i.e., operable windows) for each analysis year is provided in Table 15 and on Figure 3. The maximum impact of any year is 4.63 ug/m^3, which is less than the STV of 5.5 ug/m^3. Based on the results of this analysis, no significant adverse $PM_{2.5}$ impact would occur at Building A residential receptors as a result of NYPA emissions.

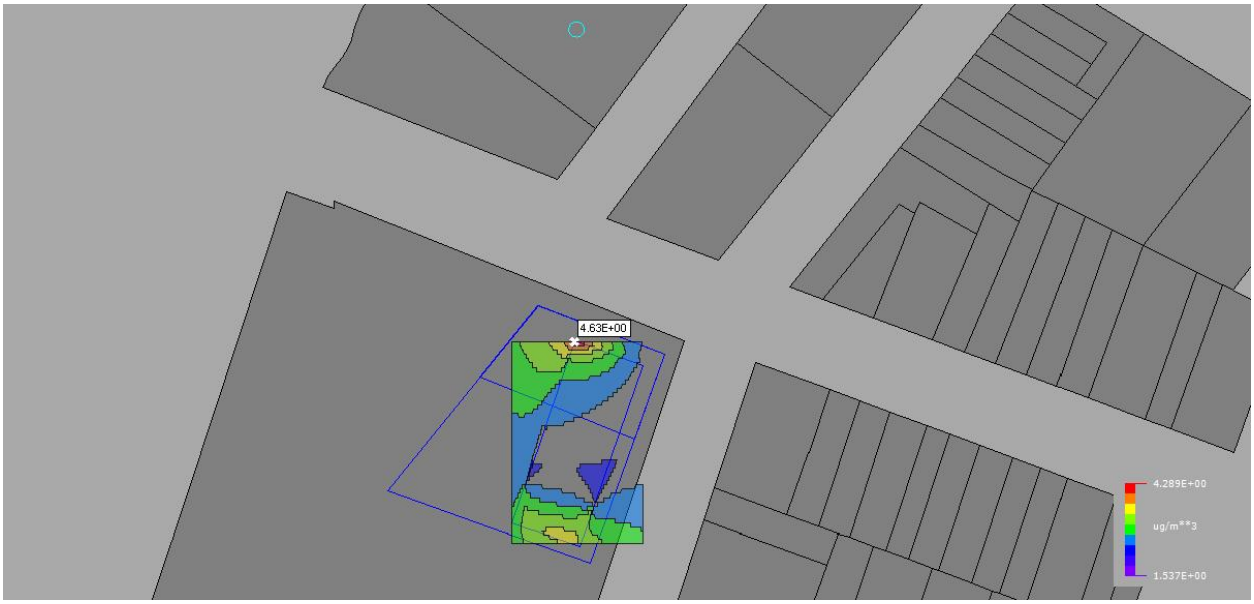
Table 15
NYPA $PM_{2.5}$ Emissions Impact at the Residential Receptors of Buildings A and B

	Estimated Maximum 24-hour $PM_{2.5}$ Impact, ug/m^3	
Analysis Year	**Building A (Residential)**	**Building B**
2008	**4.63***	1.34
2009	4.46	1.45
2010	3.27	**1.57***
2011	3.75	0.99
2012	3.90	1.37

- Maximum estimated value

Figure 3

NYPA Emission Impact on Building A $PM_{2.5}$ Contour Map



Building B

The maximum estimated 24-hour average $PM_{2.5}$ impact at Building B, which is all residential, is estimated to be 1.57 ug/m^3, which is less the STV of 5.5 ug/m^3 (see Table 15). Based on the results of this analysis, no significant adverse $PM_{2.5}$ impact would occur at Building B receptors as a result of NYPA emissions.

In addition, based on results of analyses for Building A and Building B, which would be the second-most impacted building, no exceedances of the STV of 5.5 ug/m^3 are anticipated at any of the other proposed project buildings.

Building A (Commercial Base)

The air intake system for the commercial base of Building A has not yet been designed, and any air intake ducts and/or any operable windows for this commercial space would have to be located so as not to result in a significant impact from the NYPA facility emissions. As such, a separate analysis was conducted to determine acceptable locations on the commercial base of Building A for these air intake ducts and/or operable windows. The applicable 24-hour STV of 5.5 $\mu g/m^3$ was used for this analysis.

Receptors were placed at the floor level of each façade of the Building A commercial base in 10-foot increments starting from 50 feet and extending up to the top of the commercial base at a height of 285 feet. Any locations where the estimated maximum $PM_{2.5}$ impact from the NYPA plant's emissions is greater than the significant impact threshold (5.5 $\mu g/m^3$) would not be an acceptable location for either an air intake duct or an operable window. The results of this analysis show that air intake ducts and operable windows should not be allowed on the northern façade of the commercial tower at elevations from 160 to 260 feet (approximately from the 16th to the 26th floor) (Figure 4). Maximum estimated impacts on the northern façade of the commercial tower below 160 feet and above 260 feet, as well as at any location on the east, west, and south facades of the tower, would be less than the applicable CEQR STV (Figure 5), and would therefore be acceptable locations for air intake ducts and/or operable windows.

NO_2 Analysis Results

The total 8th highest maximum daily NO_2 concentrations were determined by adding within the model predicted impacts with the corresponding hourly ambient NO_2 concentrations for each hour of the year, and total concentration was averaged over the 5-year modeling period at each receptor site. Results of the 1-hour NO_2 analysis are summarized in Table 16.

Table 16
NYPA NO_2 Emissions Impact on Buildings A and B Receptors

	Building A	**Building B**	**1-hour NO_2 NAAQS**
Analysis Year	**Total Estimated 8th-Highest Maximum Daily 1-hour NO_2 Concentration Averaged Over 5 years, ug/m3**		
2008	162.4	120.7	188
2009	120.4	120.4	
2010	120.4	120.4	
2011	151.7	124.6	
2012	113.0	108.5	
5 Year Average	**133.6**	**118.9**	

Building A (Residential Towers)

For Building A, the maximum estimated 8th highest daily 1-hour NO_2 concentration, averaged over 5 years, is 133.6 ug/m^3, which is less than the 1-hour NO_2 NAAQS of 188 ug/m^3.

Building B

For Building B, the maximum estimated 8th highest daily 1-hour NO_2 concentration, averaged over 5-years is 118.9 ug/m^3, which is less than the 1-hour NO_2 NAAQS of 188 ug/m^3.

Based on modeling results, no exceedances of the 1-hour NO_2 NAAQS at Building A and B receptors as a result of NYPA emissions are predicted.

Figure 4

Potential NYPA $PM_{2.5}$ Impact on Commercial Base of Building A



Figure 5

NYPA $PM_{2.5}$ Impact on Commercial Base of Building A with Closed Windows on Northern Façade



VII. Cumulative Analysis of the HVAC Emission Impacts on Existing Land Uses

A cumulative analysis was conducted to estimate whether the combined emissions of all buildings' HVAC systems would cause an exceedance of a critical $PM_{2.5}$ STV or NO_2 NAAQS. The receptors for cumulative impact analysis included ground-level receptors placed around the base on each project building and Grand Ferry Park, and receptors on existing buildings and publicly accessible ground-level locations.

The results of cumulative analysis are presented in Table 17 and Figures 6 and 7. As shown, all predicted 24-hour $PM_{2.5}$ impacts and total 1-hour NO_2 concentrations are less than $PM_{2.5}$ significant threshold value and 1-hour NO_2 NAAQS, respectively. The annual average $PM_{2.5}$ impact is estimated to be 0.06 ug/m^3 and the total average annual NO_2 concentrations is estimated to 38.9 ug/m^3, which are also less than $PM_{2.5}$ annual threshold of 0.3 ug/m^3 and annual NO_2 NAAQS of 100 ug/m^3. As such, no significant impacts from $PM_{2.5}$ or NO_2 emissions are predicted from combined HVAC emissions of the development buildings on existing land uses.

Table 17
Cumulative Impact Analysis Results

Estimated Pollutant Impact and Total Concentrations		
Analysis Year	**24-hour $PM_{2.5}$ Impact, ug/m^3**	**Total 1-hour NO_2 Concentration, ug/m^3**
2008	0.68	120.4
2009	0.65	120.4
2010	0.67	120.4
2011	**0.91***	119.9
2012	**0.83**	106.4
5-year 1-hour NO_2 Average		117.5

Figure 6
24-hour $PM_{2.5}$ Cumulative Impact Map with Concentration Contour

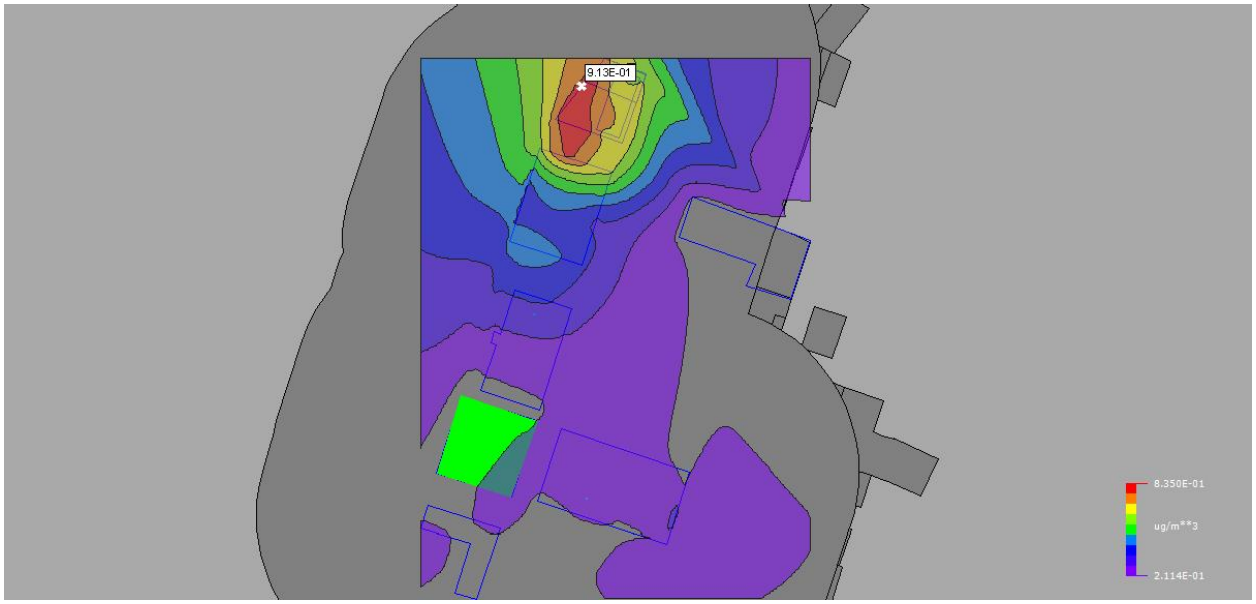
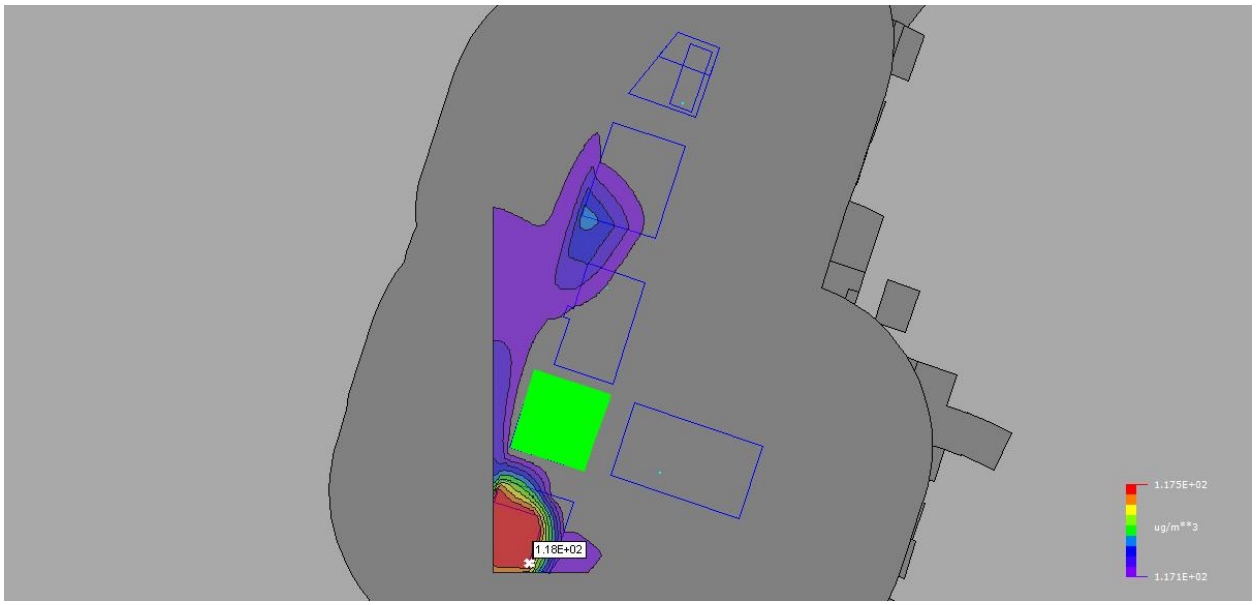


Figure 7
1-Hour NO_2 Cumulative Impact Map with Concentration Contour



VIII. Analysis of Toxic Air Emissions from Existing Industrial Sources

Emissions of toxic pollutants from the operation of nearby existing industrial emission sources could affect sensitive land uses with the proposed development. An analysis was therefore conducted to determine whether the potential impacts of these emissions would be significant.

Data necessary to perform this analysis, which include facility types, source identification and location, pollutant emission rates, and exhaust stack parameters, were obtained from regulatory agencies (e.g., from existing air permits) and/or developed using information for prototypical facilities. Emissions from existing industrial facilities located within 400 feet of the development sites that are permitted to exhaust toxic pollutants were considered in this analysis.

Data Sources

Information regarding emissions of toxic air pollutants from existing industrial sources was developed using the following procedure:

- A study area was developed that includes all air toxic emission sources located within 400 feet of all of the affected development sites;
- A search was performed to identify NYSDEC Title V permits and permits listed in the EPA Envirofacts database in this study area;
- The OASIS mapping and data analysis application was used to identify industrial uses within the study area and develop buildings parameters for the existing emission sources;
- Air permits for active permitted industrial facilities within 400 feet of the proposed development that are included in the NYCDEP Clean Air Tracking System database or permit applications were acquired and reviewed to obtain the information necessary to conduct the toxic air analysis. The data on these permits or permit applications, which include facility source type and locations, stack

parameters, pollutant type and its emission rates, etc., are considered the most current and served as the primary basis of data for this analysis; and

- Field observations were conducted to identify and validate the existence of the permitted facilities and determine if there are any non-permitted facilities currently operating within the study area.

Health Risk Assessment Methodology

Toxic air pollutants can be grouped into two categories: carcinogenic air pollutants, and non-carcinogenic air pollutants. The EPA and NYSDEC developed cancer risk inhalation guideline values based on compound-specific inhalation unit risk factors *(*URFs*)* for carcinogenic pollutants and chronic non-cancer (annual) and short-term acute (1-hour) inhalation guideline values for toxic pollutants that are defined as *RfCs* (reference dose concentrations by EPA), *AGCs* (annual guideline concentrations by NYSDEC) and AIECs (acute inhalation exposure concentrations by EPA), and *SGCs* (short-term guideline concentrations by NYSDEC. These are allowable guideline concentrations that are considered acceptable -- concentrations below which there should be no adverse effects on the health of the public. These data are contained in the EPA IRIS (Integrated Risk Information System) database, EPA Prioritized Chronic Dose-Response Values and Acute Dose-Response Values for Screening Risk Assessment, and Toxic Tables from NYSDEC Control of Toxic Ambient Air Contaminants (DAR-1). . In the NYSDEC AGCs for the carcinogenic pollutants is based on cancer risk threshold of one per million. This value could be increased to ten-in-one million, as per NYSDEC "Control of Toxic Ambient Air Contaminants (DAR-1)", if the emissions from the facility or facilities causing this increase are controlled using Best Available Control Technology (BACT).

Once the risk of each carcinogenic compound is estimated, they are summed together. If the total incremental cancer risk is estimated to be less than or equal to one in one million (1.0 E-06), the risk due to all carcinogenic pollutant releases is considered to be insignificant. Once the chronic non-cancer hazard index of each compound is established, they are summed together to arrive at the total hazard index. Hazard indexes are also estimated for the carcinogenic pollutants where they have an appropriate guideline values *RfC's*). If the total hazard index is less than or equal to one, then the non-carcinogenic risk is considered to be insignificant. Similar to this, once the acute hazard index of each compound is established, they are summed together to arrive at the total acute hazard index. If the total acute hazard index is less than or equal to one, then the acute non-carcinogenic risk is considered to be insignificant.

The procedures to estimate cancer risk and chronic non-cancer and acute hazard index of toxic pollutants are outlined in the EPA Human Health Risk Assessment Protocol (HHRAP) and NYSDEC "Control of Toxic Ambient Air Contaminants (DAR-1)". These guidance's can be used to perform health risk assessment for individual and multiple compounds with known health effects to determine the level of health risk posed by an increased ambient concentration of that compound at a potentially sensitive receptor.

Carcinogens

Individual lifetime cancer risk through direct inhalation of carcinogen is estimated using the following equation (HHRAP, Table B-5-1 and C-2-1):

Cancer Risk = EC x URF and EC = C_a x EF x ED/AT x 365 days/year

Where:

EC = annual exposure concentrations of compound, $\mu g/m^3$

C_a = annual ambient air concentration of specific pollutant (estimated by the dispersion model), $\mu g/m^3$

URF = compound-specific inhalation unit risk factor in $(\mu g/m^3)^{-1}$

EF = exposure frequency, days/year (EPA recommends to use 350)

ED = exposure duration, year (EPA recommends value of 30 for adult resident)
AT = averaging time, year (EPA assumes 70 years of lifetime exposure)

Once the individual cancer risk of each compound is established, these values are summed together to estimate the total cancer risk of all carcinogens. If the total risk of all carcinogenic pollutants combined is less than or equal to one in one million (1.0 E-06), the carcinogenic risk is not considered to be significant.

Non-Carcinogens

Chronic non-cancer hazard index (HQ) is estimated using the following equation (HHRAP, Table B-5-1 and C-2-2):

$HQ = EC \times 0.001/RfC$ and $EC = C_a \times EF \times ED/AT \times 365$ days/year

Where:

EC = exposure concentrations of compound, $\mu g/m^3$
C_a = total ambient air concentration of specific pollutant (estimated by the dispersion model), $\mu g/m^3$
RfC or AGC = reference dose concentration, established by the EPA (mg/m^3), or NYSDEC (ug/m^3)
EF = exposure frequency, days/year (EPA recommends to use 350)
ED = exposure duration, year (EPA recommends value of 30 for adult resident)
AT = averaging time, year (EPA recommends value of 30 for non-carcinogens)
0.001 = units conversion factor, mg/µg

Acute hazard index (AHI) is estimated using the following equation (HHRAP, Table C-2-3):

$AHI = C_{acute} \times 0.001/AIEC$ or $AHI = C_{1\text{-hour}}/SGC$

Where:

C_{acute} = 1-hour air concentration, (estimated by the dispersion model), $\mu g/m^3$
AIEC or SGC = 1-hour acute inhalation exposure guideline value (mg/m^3) or short-term guideline concentration, (ug/m^3)
0.001 = units conversion factor, mg/µg

Once the chronic non-cancer or acute hazard indexes of each compound are established, they are summed together to arrive at the total chronic non-cancer or acute hazard index If the total chronic non-cancer or acute hazard indexes are less than or equal to one, then the non-cancer or acute risk is not considered to be significant.

Dispersion Analyses

A dispersion modeling analysis of toxic pollutants that may affect the proposed developments was conducted using the same version of the AERMOD model and the same procedures as those used for the detailed HVAC analysis. The exposure concentrations produced from the AERMOD model were used to estimate cancer risk thru inhalation and chronic non-cancer and acute hazard indexes for each pollutant utilizing guideline values.

Input data for AERMOD (stack parameters, pollutant emission rates, source location and elevation) were those that are contained in the NYCDEP permits or permit applications. Emission sources for the dispersion analysis were located using geographical information system (GIS) shape files with the Universal Transverse Mercator coordinate projected system information (Datum NAD83, UTM Zone 18).

A receptor grid that includes both elevated and ground level receptors was developed where ground level elevated receptors were placed on the affected development sites at multiple elevations depending on the location and height of the emission sources. Preliminary tests were conducted for each source-receptor configuration, with receptors placed at multiple elevations on the faces of the nearby proposed buildings, to evaluate the locations and elevations where the highest impacts would occur.

Highest AERMOD-predicted concentrations found at any receptors were used in the health risk assessment. Five consecutive years of meteorological data from the LaGuardia Airport (2008-2012) were used.

Emission Data and Stack Parameters

Emission data and stack parameters for the facilities included in the analysis were obtained and/or developed as follows:

- Directly from the permit for each facility; or
- When emission data were not included in a permit listed in the NYCDEP database, the necessary data were obtained from the permit application for this facility that is on file at NYCDEP.

Industrial Facilities and Air Toxic Emissions Evaluated

Seventeen (17) permits were identified from the NYCDEP Clean Air Tracking System database as being from facilities located within 400 feet of the proposed developments. Based on a review of these permits:

- Four permits (PA066294, PA066394, PA000495, and PA041193) were for facilities that no longer exist or ceased their operations, and were therefore eliminated from further consideration; and
- Five (5) permits (three [PA017272, PA017772, and PA054394] for the Tasr Co. and two [PA042170 and PA004270] for Domino Sugar Corp) were for the facilities that are currently located on lots that would be occupied in the future by the proposed development, and were therefore eliminated from further consideration.

No non-permitted industrial sources of toxic pollutants were found during the field visit for this area.

As such, the potential impacts of the emissions from the currently operating facilities that have these permits were evaluated.

Pollutants and Emission Rates

The six identified operating facilities include an auto body shop (with spray booth operations), a metal fabrication facility, a woodworking facility, and two feather processing facilities. Eleven pollutants are released from the operation of these facilities, two of which are carcinogens – trichloroethylene and ethyl benzene from the metal fabrication process. Pollutants and emission rates for this analysis were either obtained from the permits or estimated as follows:

Spray Booth Operations

Pollutants and emission rates for the auto body shop were conservatively estimated using data averaged from prototypical spray booth at auto body repair facilities listed in the NYCDEC DAR-1 database. Several pollutants typically associated with spray booth operations (i.e., acetone, butyl and ethyl acetates, isobutyl acetate, toluene, xylene, methyl ethyl ketone, and particulate matter) were selected for the analysis.

Metal Fabrication Process

In the two permits for metal fabrication, air toxic contaminants are identified as compound groups (e.g., total hydrocarbons). Because no guideline concentrations were developed for compound groups, it was necessary to use a substitute contaminant that was representative of the compound group so that a comparison to the guidelines concentrations could be made for this analysis. In these instances, the type

of source operation and typical pollutants associated with it were considered in making these assumptions. As such, the most widely used solvents in metal fabrication process – trichloroethylene and ethyl benzene were selected for analysis.

A detailed dispersion modeling analysis was conducted to estimate the potential impact of the toxic pollutants released from these facilities on the proposed developments.

Results of the Cancer Risk and Hazard Index Evaluation

Tables 18 provides permit information for the existing permitted industrial sources considered in the analysis, including type and location of each facility, permit number, emission point(s), contaminant name, CAS registry number, and hourly and annual emission rates for each pollutant.

Table 19 provides estimated annual (long-term) exposure concentrations, cancer risks for each pollutant and total incremental cancer risk, and chronic non-cancer hazard index. Chronic non-cancer index are also estimated for the carcinogenic pollutants where they have an appropriate guideline values (e.g., *RfC*). The pollutant concentrations shown in the table are the maximum values estimated at any of receptor locations.

As shown on Table 19, the total individual cancer risk and the total cancer risk caused by the identified facilities (0.03 in-a-million) are below the conservative one-in-a-million threshold established by EPA. Therefore, the cancer risk increase under the Proposed Action is not considered to be significant.

As also shown in Table 19, the total chronic non-cancer hazard index caused by both the carcinogenic and non-carcinogenic pollutants emitted from all of sources combined is estimated to be 0.01. This value is below the level (of 1) that is considered by the EPA to be significant.

Table 20 provides estimated 1-hour (short-term) exposure concentrations and acute hazard index for each pollutant and the total acute hazard index. As shown in this table, the total acute (1-hour) hazard index caused by all the pollutants emitted from all of sources combined is estimated to be 0.19. This value is below the level (of 1) that is considered by the EPA to be significant.

Summary of Air Toxics Results

The result of this analysis is that no exceedances of EPA/NYSDEC/NYCDEP guideline thresholds values for both carcinogenic and non-carcinogenic toxic pollutants are predicted under the Proposed Action.

Table 18
Existing Active Industrial Source Permit Information

Facility Name	Facility Location			Permit Information					
	Block	Lot	Address	Permit #	Facility Type	Pollutant	CAS No.	Hourly Rate	Annual Rate
								g/sec	g/sec
King Collision	2378	1	237 Kent Avenue	PA046496 Source SRC1	Auto Body Shop Impact Nearby Site A	Particulate	NY075-00-0	0.00101	0.00009
						Acetone	00067-64-1	0.00756	0.00108
						Methyl Ethyl Ketone	00078-93-3	0.00756	0.00108
						Toluene	00108-88-3	0.01059	0.0015
						Isobutyl Acetate	00110-19-0	0.00252	0.00011
						Butyl Acetate	00123-86-4	0.05669	0.00809
						Ethyl Acetate	00141-78-6	0.00756	0.00107
						Xylene	01330-20-7	0.00113	0.00016
NYC Dept. of Transportation	2453	1	352 Kent Avenue	PB038101 Source SRC2	Woodworking Impact Nearby Site D	Particulate	NY075-00-0	0.00013	0.00001
Michael's Display Service	2441	21	47 South 5 Street	PA076990 Source SRC3	Printing Impact Nearby Site E	Particulate	NY075-00-0	0.01739	0.00158
Williamsburg Feathers Co.	2441	12	34 South 4 Street	PB014603 Source SRC4	Feather Processing Impact Nearby Site E	Acetone	00067-64-1	0.05669	0.01036
Triboro Shelving Corp.	2378	21	296 Wythe Avenue	PA050499 Source SRC5	Furnaces Impact Nearby Site A	Particulate	NY075-00-0	0.00025	0.00001
Triboro Shelving Corp.				PA005186 Source SRC6	Metal Fabrication Impact Nearby Site A	Trichloroethylene	00079-01-6	0.00088	0.00016
						Ethyl Benzene	00100-41-4	0.00789	0.00144
Triboro Shelving Corp.				PA005086 Source SRC7	Metal Fabrication	Nitric Acid	07697-37-2	0.00013	0.00003
						Ethyl Benzene	00100-41-4	0.00787	0.00144
Williamsburg Feathers Co.	2441	12	34 South 4 Street	PB013603 Source SRC8	Feather Processing Impact Nearby Site E	Particulate	NY075-00-0	0.00013	0.00001

TABLE 19
Cancer Risk and Chronic Non-Cancer Hazard Index of the Toxic Pollutants

Chemical Name	CAS No,	Max Estimated Concentration ($\mu g/m^3$)	URF $(\mu g/m^3)^{-1}$ (1)	Estimated Cancer Risk per million	RfC/AGC (2)	Source	Hazard Index
Ethyl Benzene	100-41-4	2.38E-02	2.50E-06	2.45E-08	1	DAR-1(5)	2.28E-05
Toluene	108-88-3	6.25E-02			0.5	EPA(3,4)	1.20E-04
Isobutyl Acetate	110-19-0	3.58E-05			17	DAR-1(5)	2.02E-09
Butyl Acetate	123-86-4	2.68E-03			17	DAR-1(5)	1.51E-07
Xylenes	1330-20-7	6.54E-03			0.1	EPA(3,4)	6.27E-05
Ethyl Acetate	141-78-6	3.58E-04			3.4	DAR-1(5)	1.01E-07
Acetone	67-64-1	3.58E+00			30	DAR-1(5)	1.14E-04
Particulate	75-00-0	5.30E-01			0.045	DAR-1(5)	1.13E-02
Nitric Acid	7697-37-2	2.06E-04			0.012	DAR-1(5)	1.65E-05
Methyl Ethyl Ketone	78-93-3	4.47E-02			5	DAR-1(5)	8.57E-06
Trichloroethylene	79-01-6	1.23E-03	2.00E-06	1.01E-09	0.6	EPA(3,4)	1.96E-06
Total Estimated Cancer Risk (per million)				**0.03**			
Cancer Risk Threshold (per million)				**1.0**			
Total Estimated Non-Cancer Hazard Index							**0.01**
Non-Cancer Hazard Index Threshold							**1**

Notes:

1. URF = compound specific inhalation unit risk factor in $(\mu g/m^3)^{-1}$
2. RfC/AGC = reference dose concentration (mg/m^3) or annual guideline concentrations (ug/m^3), established by the EPA/ NYSDEC
3. EPA IRIS = Integrated Risk Information System
4. EPA = EPA Prioritized Chronic Dose-Response Values
5. DAR-1 = NYSDEC Policy DAR-1 “Guidelines for the Control of Toxic Ambient Air Contaminants”

TABLE 20
Total Acute (1-hour) Hazard Indexes of the Toxic Pollutants

Chemical Name	CAS No.	Max Estimated Concentration ($\mu g/m^3$)	AIEC/SGC	Source	Acute Hazard Index
Ethyl Benzene	100-41-4	3.11E+00	54	DAR-1[3]	5.76E-05
Toluene	108-88-3	6.62E+00	37	EPA[2]	1.79E-04
Butyl Acetate	123-86-4	2.84E-01	95	DAR-1[3]	2.99E-06
Xylenes	1330-20-7	7.09E-01	22	EPA[2]	3.22E-05
Acetone	67-64-1	2.28E+02	180	DAR-1[3]	1.27E-03
Particulate	75-00-0	7.12E+01	0.38	DAR-1[3]	1.87E-01
Nitric Acid	7697-37-2	3.18E-02	86	DAR-1[3]	3.69E-07
Methyl Ethyl Ketone	78-93-3	4.73E+00	13	DAR-1[3]	3.64E-04
Trichloroethylene	79-01-6	1.26E-01	700	EPA[2]	1.80E-07
Total Estimated Acute (1-hour) Hazard Index					**0.19**
Total Acute Hazard Index Threshold					**1**

Notes:
1. AIEC/SGC = Acute Inhalation Exposure Concentrations (mg/m^3) or short-term guideline concentration (ug/m^3)
2. EPA = Acute Dose-Response Values for Screening Risk Assessment
3. DAR-1 = NYSDEC Policy DAR-1 "Guidelines for the Control of Toxic Ambient Air Contaminants"

APPENDIX 8

DETAILED CONSTRUCTION SCHEDULE

Domino Sugar - NO ACTION
Daily Trucks During Construction

	Construction Phase	2012												2013												2014											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Trucks arriving on site	10	19	24	25	21	17	9	10	10	10	13	16	16	17	19	19	19	19	11	11	11	5	5													
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Trucks arriving at site	5	5	5	5	12	12	13	13	13	13	11	15	15	11	9	9	9	9	9	9	12	13	17	16	16	15	13	13	13	13	13	13	11	6	4	
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Trucks arriving on site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Trucks arriving on site																								16	16	16	16	16	16	18	16	15	22	18	20	
Wharf Reconstruction	Trucks arricing at site													9	9	9	9	9	9	10	10						9	9	9	9	12	12	12	11			
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of trucks per day	15	24	29	30	33	29	22	23	23	23	24	31	31	28	28	37	37	37	29	29	32	28	32	32	32	31	29	38	38	38	40	41	38	45	35	
	Average daily trucks per quarter				23			31			23		26			29			37			30			31			31			38			40			

	Construction Phase	2015												2016												2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Trucks arriving at site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Trucks arriving on site	10	19	19	10	9	10	8	9	17	16	16	16	17	15	15	14	16	16	14	13	13	11	9	9	9	7	7	7								
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Trucks arriving on site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Trucks arriving on site	19	19	19	19	19	19	19	19	19	18	18	18	16	13	13	13	13	13	13	5	5															
Wharf Reconstruction	Trucks arricing at site	9	9	9	9	9	9	9	12	12	10																										
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of trucks per day	36	38	38	29	37	38	36	40	48	45	35	34	35	33	31	27	29	29	27	31	31	21	19	14	20	18	18	18	11	11	11	10	10	19	19	17
	Average daily trucks per quarter				35			37			44			35			30			28			28			18			18			11			13		

	Construction Phase	2018												2019												2020											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Trucks arriving at site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Trucks arriving on site													5	5	5	5	5	11	11	11	11	11	10	10	19	19	17	10	9	7	9	7	11	11	12	18
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Trucks arriving on site	18	18	18	11	11	11	10	10	19	19	17	10	9	7	9	7	11	11	12	18	21	25	36	33	29	27	24	24	26	19	17	16	24	17	19	19
Wharf Reconstruction	Trucks arricing at site																																				
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of trucks per day	9	7	9	7	11	11	12	18	21	25	21	18	16	17	16	15	15	15	9	7	6	6														
	Average daily trucks per quarter		8.3			9.7			17			31			27			25			17			20			18			13			8.7			2	

Domino Sugar - PROPOSED ACTION
Daily Trucks During Construction

	Construction Phase	2014												2015												2016											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site E	Trucks arriving on site						12	21	16	16	10			10	10	10	16	16	20	22	18	18	18	16	12	10	8	8	8	8	8	4	4	4			
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site A	Trucks arriving on site																						8	10	8	8	8	8	10	10	10	15	18	12	12	12	11
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site B	Trucks arriving on site																						8	8	10	8	4	4	12	12	12	12	12	14	14	18	20
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Trucks arriving on site																																				
	Superstructure (Interior)																																				
	Exterior Façade Work																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site D	Trucks arriving at site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Wharf Reconstruction	Trucks arricing at site													9	9	9	9	9	9	10	10	10	11	11	12	12	14	14	16	16	12	9	9	9	9	9	9
	Piling																																				
	Caps and Deck																																				
	Total number of trucks per day	0	0	0	0	0	0	12	21	16	16	10	10	10	16	16	20	22	18	18	35	29	27	25	26	28	28	29	30	28	26	26	27	24	20	17	17
	Average daily trucks per quarter			0			0			18			14			10			17			19			33			26			28			31			26

	Construction Phase	2017												2018												2019											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site E	Trucks arriving on site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site A	Trucks arriving on site	8	8	8	8	4	4	4	4	4																											
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site B	Trucks arriving on site	20	20	20	20	20	20	20	20	15	15	12	12	11	11	10	10	8	8	4	4	4															
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Trucks arriving on site																									10	10	12	12	16	16	15	15	16	16	12	10
	Superstructure (Interior)																																				
	Exterior Façade Work																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site D	Trucks arriving at site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Wharf Reconstruction	Trucks arricing at site																																				
	Piling																																				
	Caps and Deck																																				
	Total number of trucks per day	28	28	28	28	24	24	24	24	19	15	12	12	11	11	10	10	8	8	4	4	4	0	0	0	10	10	12	12	16	16	15	15	16	16	12	10
	Average daily trucks per quarter			28			24			17			12			10			8			4			0			12			16			15			16

	Construction Phase	2020												2021												2022												2023											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site E	Trucks arriving on site																																															
	Excavation and Foundations																																															
	Superstructure																																															
	Exterior Fit-out																																															
	Interior Fit-out																																															
	Landscaping and Finishing																																															
Site A	Trucks arriving on site																																															
	Excavation and Foundations																																															
	Superstructure																																															
	Exterior Fit-out																																															
	Interior Fit-out																																															
	Landscaping and Finishing																																															
Site B	Trucks arriving on site																																															
	Excavation and Foundations																																															
	Superstructure																																															
	Exterior Fit-out																																															
	Interior Fit-out																																															
	Landscaping and Finishing																																															
Refinery	Trucks arriving on site	8	8	8	8	8	8	8	5	5	5	5	5																																			
	Superstructure (Interior)																																															
	Exterior Façade Work																																															
	Interior Fit-out																																															
	Landscaping and Finishing																																															
Site D	Trucks arriving at site													8	10	15	10	12	12	12	14	14	14	14	14	12	20	20	20	20	20	20	20	18	18	16	16	14	14	12	12	10	8	6				
	Excavation and Foundations																																															
	Superstructure																																															
	Exterior Fit-out																																															
	Interior Fit-out																																															
	Landscaping and Finishing																																															
Wharf Reconstruction	Trucks arricing at site																																															
	Piling																																															
	Caps and Deck																																															
	Total number of trucks per day	8	8	8	8	8	8	8	5	5	5	5	5	8	10	15	10	12	12	12	14	14	14	14	14	12	20	20	20	20	20	20	20	18	18	16	16	14	14	12	12	10	8	6	6	0	0	0
	Average daily trucks per quarter			8			8			5			5			17			16			13			14			17			20			20			17			15			11			6.7			0

Building Activity Legend
- Abatemetnt and Demolition
- Excavation and Fo

Domino Sugar - NO ACTION
Workers During Construction

	Construction Phase	2012												2013												2014											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Workers On Site	15	40	50	50	50	50	90	130	175	175	131	96	120	132	148	118	112	95	95	75	60	40	15													
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Workers On Site	8	8	8	8	15	30	30	30	30	30	30	40	50	50	45	45	45	60	60	75	155	200	220	240	240	255	275	190	220	200	190	105	85	55	35	10
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Workers On Site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Workers On Site																							50	60	70	70	70	80	80	80	125	125	165	180	180	180
Wharf Reconstruction	Workers On Site															25	30	30	30	30	30	30	25					25	30	30	30	30	30	30	25		
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of workers per day	23	48	58	58	65	80	120	160	205	205	161	136	170	182	193	188	187	185	185	180	245	270	260	290	300	325	345	285	330	310	300	260	240	250	240	220
	Average daily workers per quarter			43			68			162			167			182			187			203			273			323			308			267			237

	Construction Phase	2015												2016												2017											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Workers On Site	240	225	250	250	275	275	285	285	330	340	375	385	360	360	330	320	310	250	185	100																
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Workers On Site	30	40	50	50	50	125	180	220	210	250	260	280	230	250	230	210	220	250	250	240	180	110	60	60	40	30										
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Workers On Site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Workers On Site																																				
Wharf Reconstruction	Workers On Site																																				
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of workers per day	210	220	275	300	330	405	485	525	525	535	590	620	605	635	590	570	550	570	568	498	373	218	118	75	90	70	60	30	30	30	40	40	40	50	50	50
	Average daily workers per quarter			235			345			512			582			610			563			480			137			73			30			37			47

	Construction Phase	2018												2019												2020											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Workers On Site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Workers On Site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Workers On Site																							40	40	40	50	50	50	180	180	180	220	235	280	280	280	280
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Workers On Site																																				
Wharf Reconstruction	Workers On Site																																				
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of workers per day	200	190	190	190	120	120	160	220	210	235	215	230	230	270	220	170	140	65	25	25	20	20	40	60	160	160	160	210	200	250	250	250	225	225	225	200
	Average daily workers per quarter			193			143			197			227			243			177			38			22			87			177			233			242			217

	Construction Phase	2021												2022												2023											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 1A (aka Site E)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 1B (aka Site D)	Workers On Site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 2 (aka Site C)	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 3 (aka Site B)	Workers On Site																																				
	Abatement and Demo																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Phase 4 (aka Site A)	Workers On Site	280	280	280	270	230	180	180	160	160	0	0	259																								
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Workers On Site																																				
Wharf Reconstruction	Workers On Site																																				
	Phases 1B & 2																																				
	Piling																																				
	Caps and Deck																																				
	Phases 3 & 4																																				
	Piling																																				
	Caps and Deck																																				
	Total number of workers per day	280	280	280	270	230	180	160	160	0	0																										
	Average daily workers per quarter			347			353			387			347			258			280			260			173			53.3									

Domino Sugar - PROPOSED ACTION
Daily Workers During Construction

	Construction Phase	2014												2015												2016											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site E	Workers On Site						15	35	50	100	150	150		150	150	200	200	200	250	180	160	120	110	85	85	55	55	45	30	20	20	15	15	15			
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site A	Workers On Site											40	50	85	125	150	200	225	275	300	250	180	120	110	110	110	40	40	40	20	20	20	15	15	15		
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site B	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Workers On Site																																				
	Superstructure (Interior)																																				
	Exterior Façade Work																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site D	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Wharf Reconstruction	Trucks arriving at site											20	20	20	20	20	20	20	20	20	20	30	30	40	50	50	30	30	20	20	20	20	20	20	20	20	20
	Piling																																				
	Caps and Deck																																				
	Total number of workers per day	0	0	0	0	0	0	15	35	50	100	150	150	150	150	200	200	200	250	180	160	120	170	155	190	200	225	265	275	315	350	295	235	175	160	140	70
	Average daily workers per quarter			0			0			33			133			167			217			153			172			230			313			235			153

	Construction Phase	2017												2018												2019											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Site E	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site A	Workers On Site	40	40	20	20	20	15	15	15																												
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site B	Workers On Site	20	20	50	50	130	130	190	225	225	275	275	325	375	380	380	380	300	275	200	190	190	190	120	120	110	110	100	85	65	40	40	20	20	20	20	
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Refinery	Workers On Site																									50	110	110	150	150	190	190	190	250	200	150	120	65	25
	Superstructure (Interior)																									50	110	110	150	150	190	190	190	250	200	150	120		
	Exterior Façade Work																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Site D	Workers On Site																																				
	Excavation and Foundations																																				
	Superstructure																																				
	Exterior Fit-out																																				
	Interior Fit-out																																				
	Landscaping and Finishing																																				
Wharf Reconstruction	Trucks arriving at site	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
	Piling																																				
	Caps and Deck																																				
	Total number of workers per day	200	190	190	190	120	120	160	220	210	235	215	230	230	270	220	170	140	65	25	25	20	20	40	60	160	160	160	210	200	250	250	250	225	225	225	200
	Average daily workers per quarter			193			143			197			227			243			177			38			22			87			177			233			242			217

	Construction Phase	2020												2021												2022											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	O

APPENDIX 9

DETAILED ANALYSIS OF POTENTIAL AIR QUALITY IMPACTS ASSOCIATED WITH CONSTRUCTION OF BUILDING B

Introduction

An analysis was conducted to estimate potential air quality impacts of the emissions generated during the construction activities associated with Building B. As construction of Building B would occur concurrently with the construction of the southernmost portion of the waterfront platform, emissions generated by waterfront platform construction activities were included in the analysis for Building B.

The pollutant of concern for this analysis is particulate matter smaller than 2.5 microns ($PM_{2.5}$). Analyses were conducted to determine the potential for construction impacts to cause exceedances of the PM2.5 significant threshold values (STVs) provided in the 2012 *CEQR Technical Manual* at nearby sensitive land uses. If the STVs are not exceeded, the potential construction-phase impacts would not be considered to be significant. Dispersion modeling was conducted to estimate potential 24-hour $PM_{2.5}$ impacts on elevated, ground-level, and sidewalk receptors (for comparison with 24-hour STV of 5.5 $\mu g/m^3$), annual impacts on discrete elevated and ground level receptors (for comparison with the annual STV of 0.3 $\mu g/m^3$), and annual impacts on neighborhood receptors (for comparison with the neighborhood STV of 0.1 $\mu g/m^3$).

Analyses were conducted assuming that there would be a solid 16-foot fence around the construction. This fence is being incorporated into the construction program as a noise barrier for the surrounding neighborhood.

Emissions

Various types of construction equipment would be used at different locations throughout the construction site. Some of the equipment is mobile and would operate throughout the site, while some would remain stationary at distinct locations during short-term (i.e., daily and hourly) periods. Emission sources were grouped into three categories: large point sources, small point sources, and area sources. Large sources included cranes, excavators, pile rigs, etc.; small sources included compressors, table saw, generators, etc.; and the rest of emission sources (i.e., from on-site trucks and fugitive sources) were considered as area sources.

Starting October 2017, construction activities of Building B would occur concurrently with the construction of the southern end of the waterfront platform. As such, construction emissions associated with this section of the waterfront platform were estimated together with Building B construction emissions. Short-term $PM_{2.5}$ emission rates were estimated for each type of construction equipment (in grams per second) with total emissions of approximately 209 grams/day for Building B and 430 grams per day for the waterfront platform. Annual $PM_{2.5}$ emission rates were developed by adjusting short-term emission rates using the total annual emission rate for Building B, which is 325 grams per day.

The large and small pieces of equipment were considered as point sources that were placed at fixed locations for the modeling analyses. One emission point, which is located 20 feet from the fence along both Kent Avenue and South 1st Street, was assumed for all of the large point source emissions. However, as the number of small pieces of equipment operated on-site would exceed 50, the total emissions from all of these small point sources combined were assumed to be equally released from ten emission points that are located 10 feet from the Kent Avenue fence. Emissions generated from the project-related construction trucks and worker vehicles traveling on site, together with dust emissions generated by soil excavation and other construction activities, were simulated as area sources in the modeling analysis, and the emissions generated with Building B construction were distributed evenly across the Building B construction site and the waterfront platform construction emissions were distributed over the waterfront platform construction site.

As the waterfront platform construction site is located a few hundred feet from Building B and as there are no sensitive land uses near the waterfront platform during the construction period, potential impacts from waterfront platform construction emissions are minimal.

Receptor Locations

Receptor "groups" included residential locations, locations within Grand Ferry Park, and the sidewalks surrounding the construction site along Kent Avenue and South 1st Street. Ground-level receptors were placed at a height of 1.8 meters; sidewalk receptors were placed behind the construction fence approximately 5 feet into the street and spaced 10 feet apart; and the elevated receptors on Building A were placed at a height of 50 feet, which is the first floor with operable windows of the southern residential tower closest to the Building B construction site.

Dispersion Model

The AERMOD dispersion model was used for all analyses. Regulatory default options were used for the point sources. Downwash effects were included and the urban dispersion coefficient was used for a 2,000,000 population. The parameters assigned for the emission sources (both point and area sources) were similar to those used in the 2010 FEIS.

Results

The result of this analysis shows that the highest 24-hour $PM_{2.5}$ and annual impacts occur at nearby sidewalk receptors, with the impacts at the elevated receptors substantially less. Tables 1 through 5 and Figures 1 through 4 show the maximum estimated 24-hour $PM_{2.5}$ impact at the elevated and sidewalk receptors for each of the five analysis years considered (Table 1); the maximum estimated annual $PM_{2.5}$ impacts at discrete elevated or ground-level receptors (Table 2); and the maximum estimated concentrations averaged over the neighborhood (Table 3). Figure 5 also shows the neighborhood receptor grid used in the analysis.

As shown, the maximum predicted 24-hour average $PM_{2.5}$ incremental concentration, which occurred at a sidewalk receptor along the Kent Avenue is 4.3 $\mu g/m^3$. This is less than the 24-hour $PM_{2.5}$ STV of 5.5 $\mu g/m^3$. Similarly, the maximum estimated annual $PM_{2.5}$ impact is below the STV of 0.3 $\mu g/m^3$ (Table 2) and the annual PM2.5 neighborhood concentration is below STV of 0.1 $\mu g/m^3$ (Table 3).

The result of this analysis is that the construction activities associated with Building B would not cause any significant air quality impacts at any of ground-level, elevated, or neighborhood receptors.

Table 1
Maximum Estimated 24-Hour $PM_{2.5}$ Impact (ug/m^3)

Analysis Year	Max Estimated 24-hour $PM_{2.5}$ Impact	$PM_{2.5}$ Threshold Value (STV)
2008	**4.38***	5.5
2009	3.68	
2010	3.85	
2011	3.75	
2012	3.60	

*** Maximum value**

Figure 1: Max 24-hour $PM_{2.5}$ Impact Contoured Map



Figure 2: 24-hour $PM_{2.5}$ Impacts Estimated at All of the Sidewalk Receptors

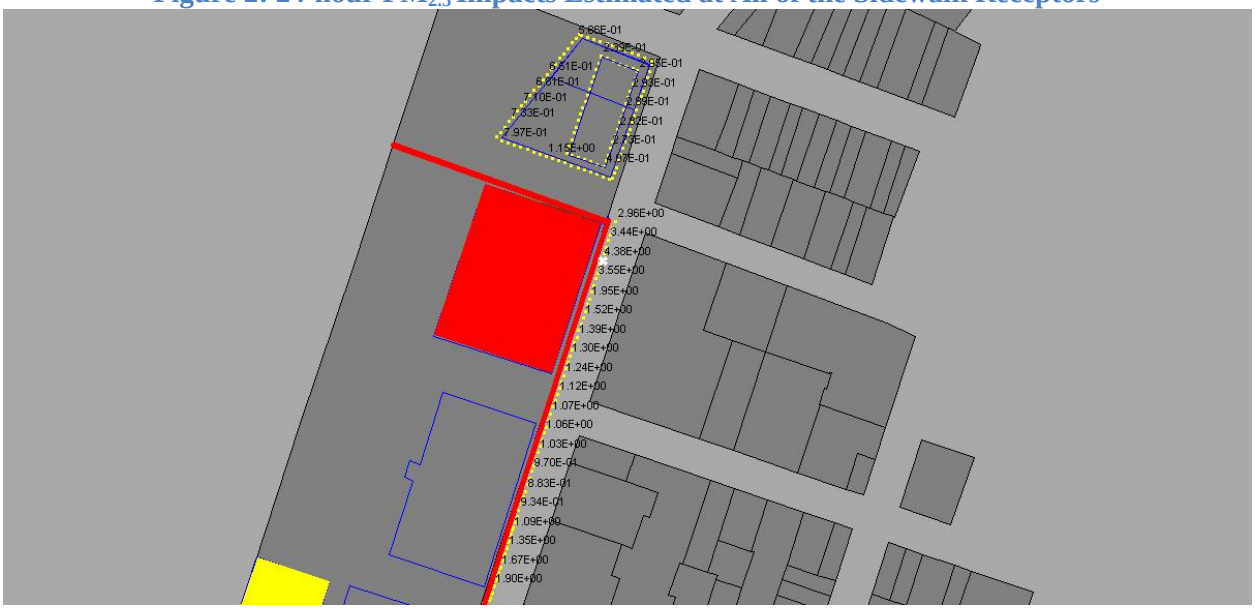


Figure 3: The Max Estimated 24-hour $PM_{2.5}$ Impact at 50 feet Windows Receptors



Table 2
Maximum Annual $PM_{2.5}$ Impact (ug/m^3)

Analysis Year	Max Estimated Annual PM2.5 Impact	Annual $PM_{2.5}$ Threshold Value (STV)
2008	0.149	0.3
2009	0.146	
2010	**0.179***	
2011	0.162	
2012	0.148	

*** Maximum value**

Table 3
Estimated Annual Neighborhood $PM_{2.5}$ Concentrations (ug/m^3)

Analysis Year	Estimated Annual Neighborhood $PM_{2.5}$ concentration	Neighborhood $PM_{2.5}$ Threshold Value (STV)
2008	6.78E-06	0.1
2009	6.83E-06	
2010	6,8E-06	
2011	**7.38E-06***	
2012	7.0E-06	

*** Maximum value**

Figure 4: Max Annual $PM_{2.5}$ Impact Contoured Map

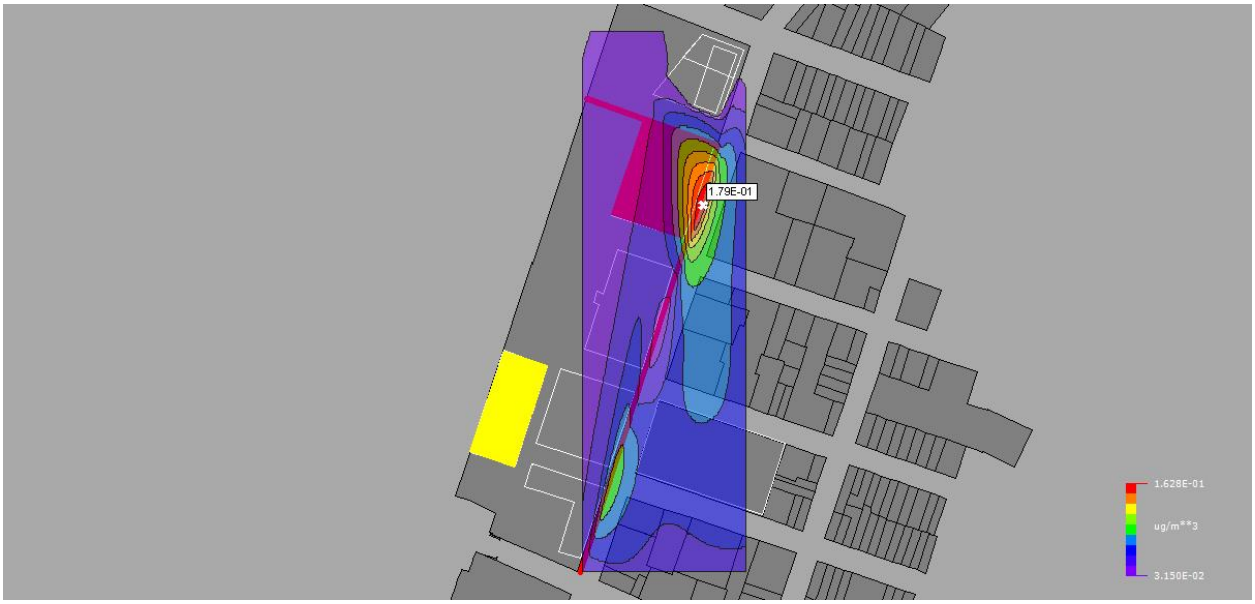
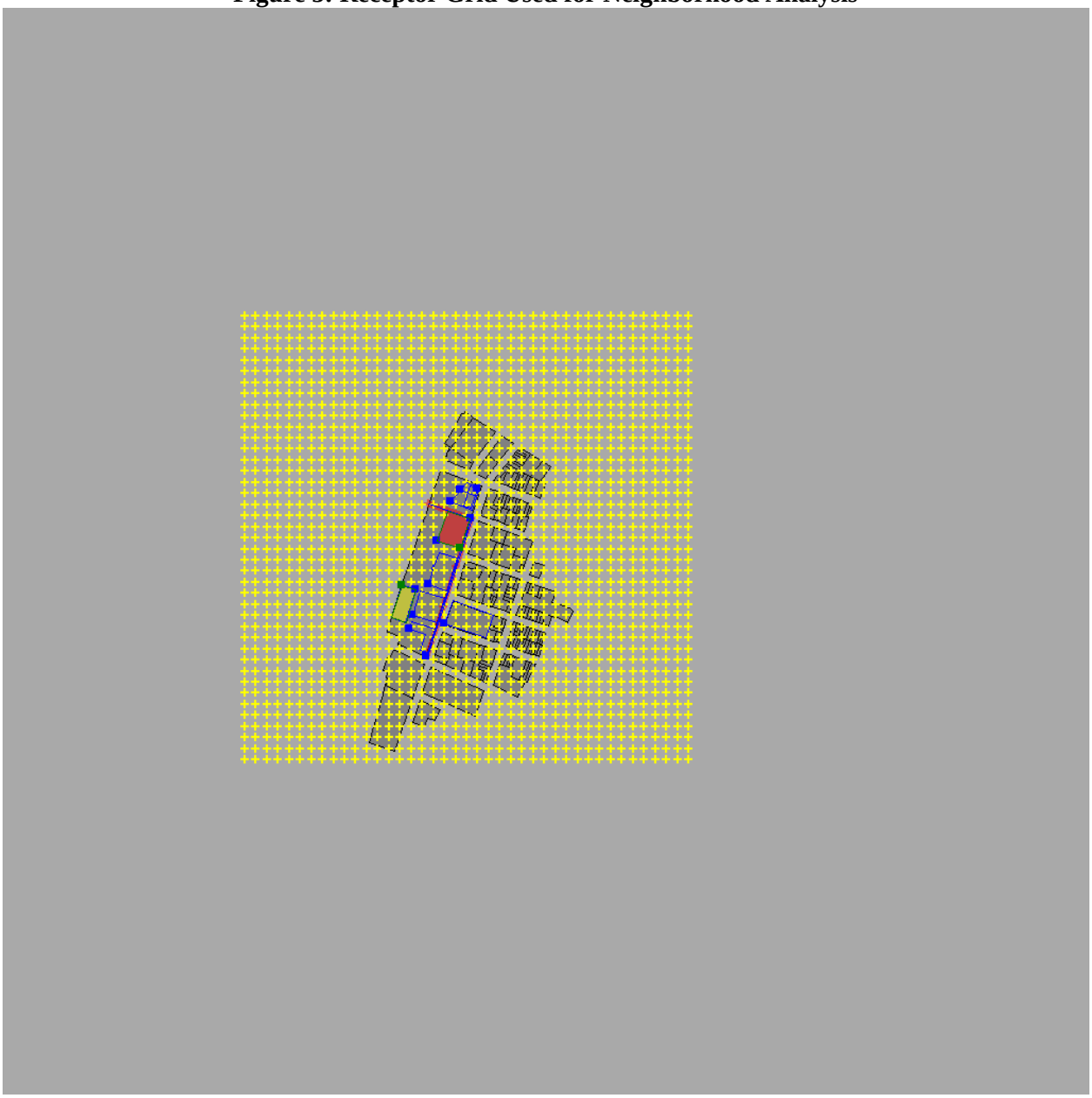


Figure 5: Receptor Grid Used for Neighborhood Analysis



APPENDIX 10

CONSTRUCTION NOISE ANALYSIS – SENSITIVE RECEPTORS

No.	Location	Associated Land Use	Block	Lot	Group
1	250 Berry Street(Jose de Diego School)	School	2391		G-11
2	100 South 1st Street	Residential	2404	24	1_5
3	94 South 1st Street	Residential	2404	123	1_5
4	90 South 1st Street	Residential	2404	NF	
5	88 South 1st Street	Residential	2404	NF	
6	86 South 1st Street	Residential	2404	19	1_4
7	84 South 1st Street	Residential	2404	18	1_4
8	49 South 1st Street	Residential	2390	36	1_1
9	70 Grand Street	Residential	2390	24	G-10
10	74 Grand Street	Residential-Rectory?	2391		G-11
11	72 Grand Street	Residential	2390	25	G-10
12	68 Grand Street	Residential	2390	23	G-10
13	62 Grand Street	Residential	2390	20	G-9
14	52 Grand Street	Residential	2390	16	G-8
15	57 Grand Street	Residential	2378	33	G-6
16	58 Grand Street	Residential	2390	18	G-9
17	50 Grand Street	Residential	2390	15	G-8
18	48 Grand Street	Residential	2390	14	G-8
19	38 Grand Street	Residential	2390	10	G-7
20	49 Grand Street	Residential	2378	36	G-5
21	47 Grand Street	Residential	2378	37	G-5
22	46 Grand Street	Residential	2390	13	G-8
23	45 Grand Street	Residential	2390	38	G-5
24	43 Grand Street	Residential	2390	39	G-5
25	245 Kent Avenue	Residential	2378	44	G-3
26	254 Kent Avenue	Residential	2377	2	G-2
27	252 Kent Avenue	Residential	2377	2	G-2
28	235 Kent Avenue	Residential	2378	2	G-4
29	233 Kent Avenue	Residential	2378	3	G-4
30	231 Kent Avenue	Residential	2378	103	G-4
31	229 Kent Avenue	Residential	2378	5	G-4
32	337 Kent Avenue	Residential	2414	107	K-1
33	49 South 2nd Street	Residential	2403		2_1
34	56 South 2nd Street	Residential	2415	19	2_7
35	54 South 2nd Street	Residential	2415	19	2_7
36	46 South 2nd Street	Residential	2415	19	2_7
37	29 South 3rd Street	Residential		NF	
38	37 South 3rd Street	Residential	2415		3_1
39	62 South 3rd Street	Residential	2428	25	3_8
40	56 South 3rd Street	Residential	2428	24	3_7
41	36-46 South 4th Street	Residential	2441		4_4

42	41-45 South 5th Street	Residential	2441	38	5_1
43	47 South 5th Street	Residential	2441	21	4_5
44	55 South 5th Street	Residential	2441	33	5_2
45	57 South 5th Street	Residential	2441	32	5_2
46	373 Wythe Avenue	Residential	2442	1	5_3
47	398 Wythe Avenue	Residential	2441	30	4_6
48	355 Wythe Avenue	Residential	2442	7	4_7
49	390 Wythe Avenue	Residential	2441	24	4_6
50	60 South 4th Street	Residential	2442	7	4_7
51	61 South 4th Street	Residential	2429	36	4_1
52	62 South 4th Street	Residential	2442	8	4_7
53	63 South 4th Street	Residential	2429	35	4_1
54	64 South 4th Street	Residential	2442	9	4_7
55	65 South 4th Street	Residential	2429	134	4_1
56	66 South 4th Street	Residential	2442	10	4_7
57	67 South 4th Street	Residential	2429	133	4_2
58	69 South 4th Street	Residential	2429	132	4_2
59	71 South 4th Street	Residential	2429	131	4_2
60	73 South 4th Street	Residential	2429	30	4_2
61	74 South 4th Street	Residential	2442		4_8
62	75 South 4th Street	Residential	2429	129	4_2
63	76 South 4th Street	Residential	2442	15	4_8
64	77 South 4th Street	Residential	2429	128	4_2
65	78 South 4th Street	Residential	2442	16	4_8
66	79 South 4th Street	Residential	2429	126	4_2
67	80 South 4th Street	Residential	2442	17	4_8
68	81 South 4th Street	Residential	2429	125	4_2
69	82 South 4th Street	Residential	2442	18	4_9
70	83 South 4th Street	Residential	2429	124	4_3
71	85 South 4th Street	Residential	2429	23	4_3
72	86 South 4th Street	Residential	2442	20	4_9
73	87 South 4th Street	Residential	2429	22	4_3
74	88 South 4th Street	Residential	2442	21	4_9
75	89 South 4th Street	Residential	2429	121	4_3
76	378 Wythe Avenue	Residential	2428	27	3_9
77	376 Wythe Avenue	Residential	2428	26	3_9
78	55 South 3rd Street	Residential	2416	43	3_2
79	57 South 3rd Street	Residential	2416	42	3_2
80	59 South 3rd Street	Residential	2416	41	3_2
81	63 South 3rd Street	Residential	2416	39	3_3
82	64 South 3rd Street	Residential	2429	1	3_10
83	65 South 3rd Street	Residential	2416	38	3_3
84	66 South 3rd Street	Residential	2429	5	3_10

85	67 South 3rd Street	Residential	2416	37	3_3
86	68 South 3rd Street	Residential	2429	101	3_10
87	69 South 3rd Street	Residential	2416	36	3_3
88	71 South 3rd Street (St. Peter and Paul RC Church)	House of Worship	2416	34	3_4
89	72 South 3rd Street	Residential	2429	103	3_11
90	74 South 3rd Street	Residential	2429	105	3_11
91	75 South 3rd Street	Residential	2416	33	3_5
92	76 South 3rd Street	Residential	2429	10	3_11
93	77 South 3rd Street	Residential	2416	31	3_5
94	78 South 3rd Street	Residential	2429	111	3_11
95	80 South 3rd Street	Residential	2429	112	3_11
96	82 South 3rd Street	Residential	2429	113	3_11
97	84 South 3rd Street	Residential	2429	114	3_11
98	86 South 3rd Street	Residential	2429	115	3_12
99	88 South 3rd Street	Residential	2429	116	3_12
100	90 South 3rd Street	Residential	2429	117	3_12
101	92 South 3rd Street	Residential	2429	118	3_12
102	93 South 3rd Street	Residential	2417	43	3_6
103	94 South 3rd Street	Residential	2429	119	3_12
104	346 Wythe Avenue	Residential	2403	33	2_2
105	348 Wythe Avenue	Residential	2415	26	2_8
106	74 South 2nd Street	Residential	2416	8	2_9
107	75 South 2nd Street	Residential	2404	45	2_3
108	77 South 2nd Street	Residential	2404	44	2_3
109	78 South 2nd Street	Residential	2416	10	2_9
110	79 South 2nd Street	Residential	2404	43	2_3
111	81 South 2nd Street	Residential	2404	42	2_3
112	83 South 2nd Street	Residential	2404	41	2_3
113	85 South 2nd Street	Residential	2404	40	2_3
114	87 South 2nd Street	Residential	2404	39	2_4
115	88 South 2nd Street	Residential	2416	15	2_10
116	91 South 2nd Street	Residential	2404	38	2_4
117	93 South 2nd Street	Residential	2404	36	2_4
118	94 South 2nd Street	Residential	2416	18	2_11
119	95 South 2nd Street	Residential	2404	35	2_4
120	96 South 2nd Street	Residential	2416	19	2_11
121	97 South 2nd Street	Residential	2404	34	2_5
122	98 South 2nd Street	Residential	2416	20	2_11
123	99 South 2nd Street	Residential	2404	33	2_5
124	100 South 2nd Street	Residential	2416	21	2_11
125	342 Wythe Avenue	Residential	2403	31	2_2
126	330 Wythe Avenue	Residential	2403	7501	1_2
127	297 Wythe Avenue	Residential	2404	7	1_3

128	295 Wythe Avenue	Residential	2404	8	1_3
129	293 Wythe Avenue	Residential	2404	9	1_3
130	291 Wythe Avenue	Residential	2404	10	1_3
131	260 Berry Street	Residential	2404	24	1_5
132	262 Berry Street	Residential	2404	25	1_5
133	264 Berry Street	Residential	2404	26	1_5
134	266 Berry Street	Residential	2404	27	1_5
135	268 Berry Street	Residential	2404	28	1_5
136	270 Berry Street	Residential	2404	29	2_5
137	272 Berry Street	Residential	2404	30	2_5
138	288 Berry Street (Sts. Peter and Paul School)	School	2416		2_13
139	326 Berry Street	Residential	2442	121	4_9
140	328 Berry Street	Residential	2442	22	4_9
141	330 Berry Street	Residential	2442	23	4_9
142	332 Berry Street	Residential	2442	24	4_9
143	Grand Ferry Park	Park	2376	5	G-1
144	Soft site 9 60 North 1st Street	New Residential	2378	14	G-13
145	Soft site 2 66 North 1st Street	New Residential	2378	17	G-14
146	Soft site 3 257 Berry Street	New Residential	2392	7 & 8	G-12
147	Soft site 4 112 S. 2nd Street	New Residential	2417	10	2_12
148	Soft site 6 337 Berry Street	New Residential	2443	6	5_4
149	Soft site 3 50 S. 2nd Street	New Residential	2415	110	2_6