TECHNICAL MEMORANDUM
ASTORIA COVE DEVELOPMENT
CEQR No. 13DCP127Q

ULURP Nos. C130384MMQ, C140322ZMQ, C140323ZSQ, C140323(A)ZSQ, C140324ZSQ, C140324(A)ZSQ, N140325ZAQ N140326ZAQ, N140327ZAQ, N140328ZCQ, N140329ZRQ, and N140329(A)ZRQ

July 21, 2014

I. INTRODUCTION

2030 Astoria Developers, LLC (the "Applicant") is seeking a zoning map amendment, City Map amendments, a zoning text amendment, Large-Scale General Development (LSGD) special permits, a waterfront special permit, authorizations to modify waterfront public access area requirements, and a waterfront certification by the NYC City Planning Commission (CPC) Chairperson (collectively, "the Proposed Action"). The Proposed Action would facilitate a mixed-use development containing residential uses (including affordable housing); retail uses (including a supermarket); an elementary school; accessory parking spaces; and publicly accessible open space to be constructed on an approximately 8.7-acre site located along both sides of 26th Avenue between 4th and 9th Streets (Block 907, Lots 1 and 8, Block 906, Lots 1 and 5, Block 908, Lot 12, and Block 909, Lot 35) in the Astoria neighborhood of Queens, Community District 1. A Draft Environmental Impact Statement (DEIS) was prepared to analyze the potential environmental impacts of the Proposed Action and a Notice of Completion for the DEIS was issued on April 18, 2014.

Following discussions with the New York City Department of City Planning (DCP), and in response to the interest expressed by Queens Community Board (CB) 1 and local elected officials, including Queens Borough President Melinda Katz and Council Member Costa Costantinides, regarding expanding opportunities for affordable housing in relation to Astoria Cove, the Applicant has proposed modifications to the Proposed Action. Specifically, the Applicant has proposed modifications to the LSGD special permits (ULURP No. C140323(A)ZSQ), waterfront special permit (ULURP No. C140324(A)ZSQ), and zoning text amendment (ULURP No. N140329(A)ZRQ). The modifications would make the Inclusionary Housing Program (IHP) applicable to the proposed R7A and R6B zoning districts in addition to the R7-3 zoning district, which would increase the allowable residential floor area by approximately 34,103 gross square feet (gsf). In addition, under the modified proposal the market-rate and affordable dwelling units would be redistributed, to provide affordable housing in all of the proposed buildings. The purpose of this technical memorandum is to describe the proposed modifications to the Proposed Action (the "Modified Action") and assess whether the Modified Action would alter the conclusions presented in the DEIS. This memorandum concludes that the Modified Action would not result in any new significant adverse impacts not already identified in the DEIS. The analyses presented herein will be incorporated into the Final Environmental Impact Statement (FEIS).

II. DESCRIPTION OF PROPOSED MODIFIED ACTION

Under the Modified Action, the Inclusionary Housing Program (IHP) zoning regulations would be extended to the proposed R7A and R6B zoning districts in addition to the R7-3 zoning district under the Proposed Action, facilitating the development of an additional 34,103 gross square feet (gsf) of residential floor area

comprised of approximately 34 additional residential units. The Modified Action would incorporate a mandatory inclusionary housing requirement, with the development of residential floor area conditioned on the provision of affordable housing based on the standards set forth in the IHP. By adding the proposed R7A and R6B districts to the proposed inclusionary housing-designated area, the Modified Action would require that a minimum of 20 percent of the proposed project's total residential floor area be permanently affordable. The Modified Action would also apply existing provisions of the IHP that allow the option of providing a share of affordable units for moderate- or middle-income households, if an increased share of floor area is made affordable. While the Applicant intends that the proposed affordable units would be provided without public subsidy, the modified proposed text amendment provides that in the event that public funding is used, the CPC, in consultation with the New York City Department of Housing Preservation and Development (HPD), may determine that a share of the units supported by public funding shall not be used to satisfy the IHP requirement.

Proposed Modified Project

The Modified Action would increase the allowable residential floor area by approximately 34,103 gsf. This would result in a total development of approximately 1,723 dwelling units (34 more than under the Proposed Action), including 345 affordable units (50 more than under the Proposed Action). The 34 additional dwelling units would result in an additional 79 residents[1] for the proposed modified project. In addition, under the modified proposal the market-rate and affordable dwelling units would be redistributed (within Buildings 1, 4, and 5), to provide affordable housing in all of the proposed buildings. As described in greater detail below, the additional allowable residential floor would be located in Building 1 of the Applicant's development project.

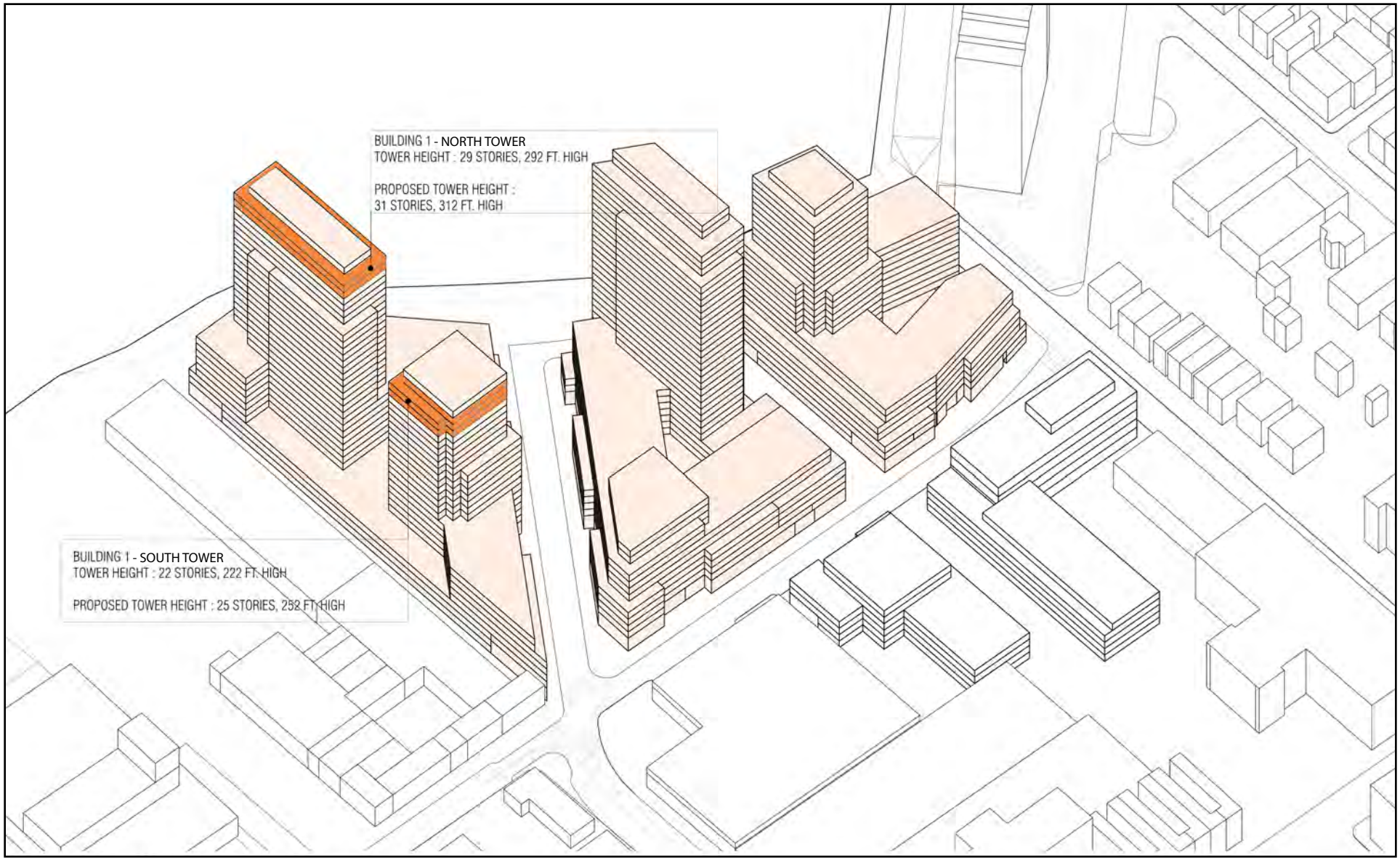
As noted in the DEIS, the development program and building design for the Applicant's proposed development project represents the reasonable worst case development scenario (RWCDS) for the Proposed Action. Similarly, the RWCDS for the Modified Action would be the Applicant's proposed modified project. Table 1, below, compares the proposed project analyzed in the *Astoria Cove DEIS* with the proposed modified project. As indicated in the table, the total commercial, community facility, parking, and open space area would remain the same; an additional 50 affordable dwelling units (DU) would be provided, with sixteen fewer market-rate units.

Table 2, below, compares the number of market-rate and affordable residential units by building under the project analyzed in the *Astoria Cove DEIS* and under the proposed modified project. As indicated in the table, an additional 28 affordable dwelling units would be developed on the upland parcel (along with 28 fewer market-rate DU), and an addition 22 affordable DU and 12 market-rate DU would be developed in Building 1; the Building 2 and 3 programs would not change.

As also indicated in Table 2, the residential floor area of Buildings 2, 3, 4, and 5 would remain as analyzed in the *Astoria Cove DEIS;* Building 1 would increase its residential floor area by 34,103 gsf. The additional Building 1 floor area would result in an increase in Building 1's northern tower by approximately twenty feet (from 292 feet to 312 feet) and an increase in Building 1's southern tower by approximately thirty feet (from 222 feet to 252 feet), as shown in Figure 1. Figure 2 compares the requested special permit waivers for Building 1 under the Proposed Action analyzed in the DEIS and under the Modified Action.

Although the Modified Action would increase the allowable residential floor area by approximately 34,103 gsf, the overall construction phasing and schedule for the Applicant's proposed modified project would remain as defined in the *Astoria Cove DEIS*. The Applicant believes that the increased floor area, which

[1] Based on the 2010 Census average household size for Queens Community District 1 of 2.34.

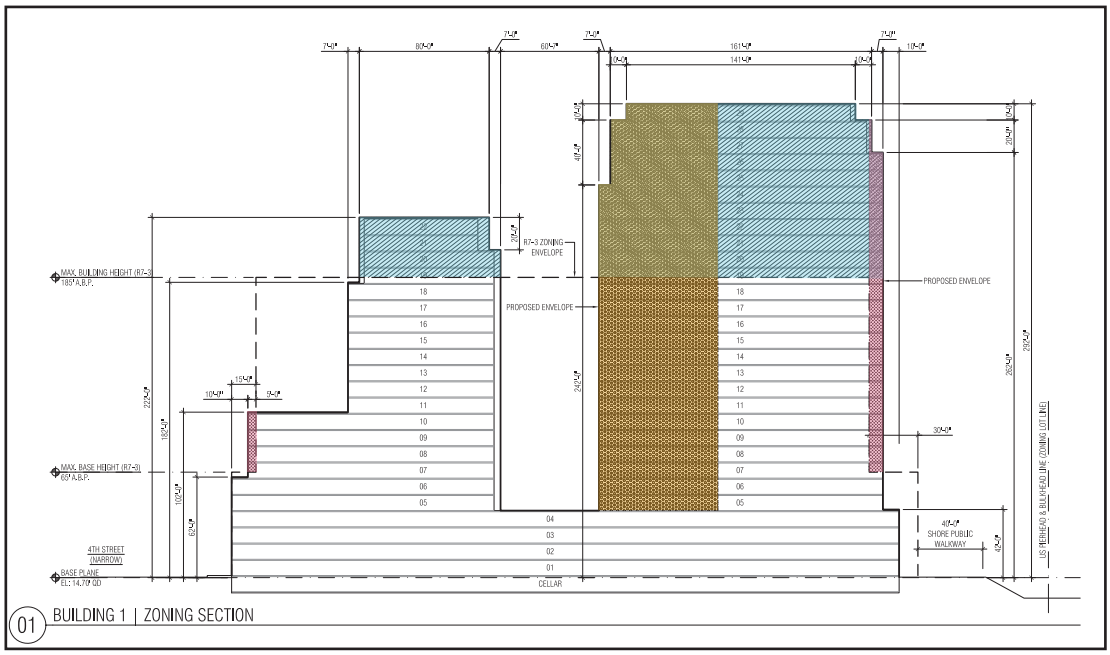


Source: Studio V

Astoria Cove Technical Memorandum **Figure 1**

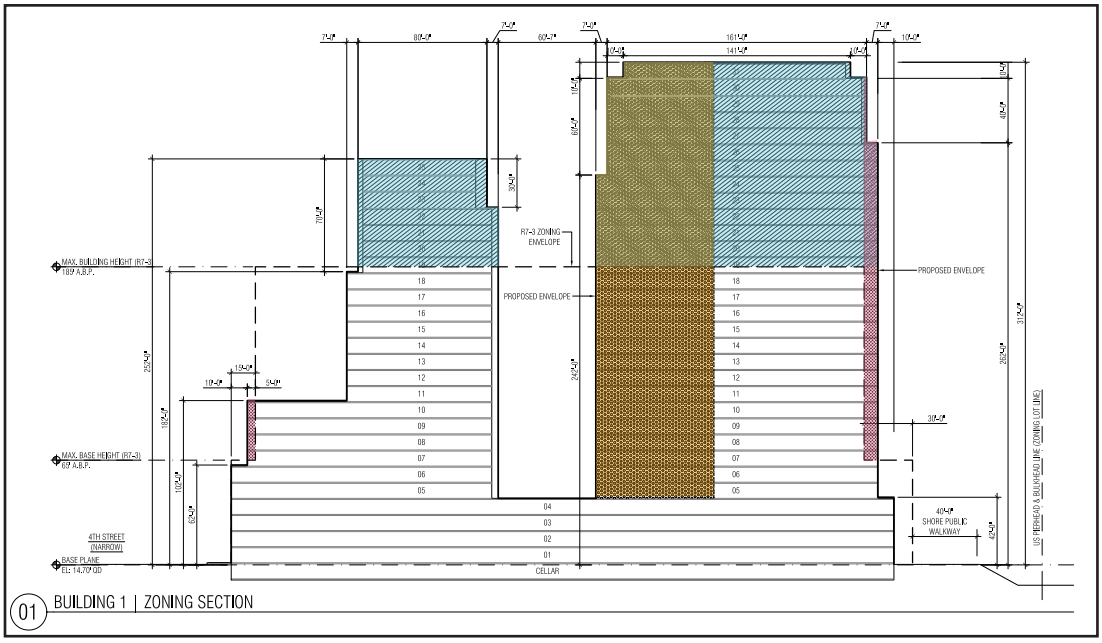
Illustrative Massing - Proposed Modified Project

Building 1 Waivers - Proposed Project vs. Proposed Modified Project



Source: Studio V

Proposed Project



Source: Studio V

Proposed Modified Project

Legend

Waterfront Special Permit Waivers

- Building exceeds maximum building height
- Gross area exceeds maximum residential tower size
- Building exceeds maximum base height without providing a setback
- Length of wall exceeding maximum length of wall facing shoreline

would be constructed during the final construction phase and increase the two towers of Building 1 by approximately two and three stories respectively, would not alter the project's construction period or phasing appreciably.

Table 1
Comparison of the Proposed Project and the Proposed Modified Project

Land Use	Proposed Project	Proposed Modified Project	Increment
Residential - gsf - total DU - market-rate DU - affordable DU	 1,689,416 1,689 1,394 295	 1,723,519 1,723 1,378 345	 + 34,103 + 34 - 16 + 50
Commercial	109,470	109,470	0
Community Facility (school)	62,248	62,248	0
Parking - gsf - spaces	 298,086 900	 298,086 900	 0 0
Open Space	83,846 (1.92 acres)	83,846 (1.92 acres)	0

Table 2
Comparison of Market-Rate and Affordable Residential Units by Building—Proposed Project and Proposed Modified Project

Building	Affordable			Market-Rate			Total Residential		
	Proposed Project	Proposed Modified Project	Increment	Proposed Project	Proposed Modified Project	Increment	Proposed Project	Proposed Modified Project	Increment
Waterfront Parcel									
Building 1	112 DU (112,494 gsf)	134 DU (134,655 gsf)	+ 22 DU (+22,161 gsf)	527 DU (526,674 gsf)	539 DU (538,617 gsf)	+ 12 DU (+11,943 gsf)	639 DU (639,168 gsf)	673 DU (673,271 gsf)	+ 34 DU (+34,103 gsf)
Building 2	114 DU (113,593 gsf)	114 DU (113,593 gsf)	No Change	454 DU (454,370 gsf)	454 DU (454,370 gsf)	No Change	568 DU (567,963 gsf)	568 DU (567,963 gsf)	No Change
Building 3	69 DU (68,756 gsf)	69 DU (68,756 gsf)	No Change	275 DU (275,025 gsf)	275 DU (275,025 gsf)	No Change	344 DU (343,781 gsf)	344 DU (343,781 gsf)	No Change
Upland Parcel									
Buildings 4 and 5	0 DU (0 gsf)	28 DU (27,701 gsf)	+ 28 DU (+27,701 gsf)	138 DU (138,504 gsf)	110 DU (110,803 gsf)	- 28 DU (-27,701 gsf)	138 DU (138,504 gsf)	138 DU (138,504 gsf)	No Change

III. POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROPOSED MODIFIED ACTION

The *Astoria Cove DEIS* evaluated all potential environmental effects of the proposed project and identified significant adverse impacts with respect to community facilities (public elementary schools and child care centers), active open space, pedestrian winds, transportation (traffic and transit), noise, and construction activities related to traffic and noise. The DEIS identified measures and/or potential measures that would fully or partially mitigate most significant adverse impacts; some impacts would remain unmitigated.

As described above, the Modified Action would result in an increase of 34,103 gsf of residential floor area (34 DU). The Modified Action would not change the overall proposed land uses, the building footprints, or the construction schedule analyzed in the DEIS, and, therefore, no changes to the analyses presented in the DEIS are required for historic and cultural resources; natural resources; hazardous materials; or construction. The assessment below focuses on the following environmental analyses that could be affected by the proposed changes to the Astoria Cove project: land use, zoning, and public policy; socioeconomic conditions; community facilities (child care, public schools, and libraries); open space; shadows; urban design and visual resources; water and sewer infrastructure; energy; transportation (traffic, transit, pedestrians, and parking); air quality (mobile source and stationary source); greenhouse gas; noise; public health; and neighborhood character.

Land Use, Zoning, and Public Policy

Neither the Proposed Action nor the Modified Action would result in significant adverse impacts to land use, zoning, and public policy. The Modified Action would result in an additional 34,103 gsf of residential development compared with the Proposed Action, including 50 additional affordable residential units and 16 fewer market-rate units. The Modified Action would not affect the overall land uses within the project site, and the additional development would be consistent with the surrounding area.

The Modified Action′s extension of the IHP to the R7A and R6B portions of the project site would further support the City's goal to increase the supply of housing in the City, including affordable housing, in order to support future population growth, as outlined in PlaNYC and Housing New York (the Mayor's ten-year affordable housing strategy, issued on May 5, 2014). The Modified Action and resultant proposed modified project would be compatible with City-wide public initiatives that aim toward increasing the supply of housing in the City, reclaiming underutilized industrial land, and expanding access to affordable housing. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Socioeconomic Conditions

The *Astoria Cove DEIS* concluded that the Proposed Action would not result in significant adverse socioeconomic conditions impacts. The Modified Action would result in the same direct business displacement as the Proposed Action and would have no significant adverse impacts due to direct business displacement. The Modified Action would facilitate the development of 50 additional affordable housing units and a decrease in the number of market-rate units by 16, as compared to the Proposed Action (for a net increase in residential density of 34 DU). While this would represent a slight net increase of approximately 80 new residents, as compared to the Proposed Action, this increase, together with the increase populations associated with the Proposed Action, would be in keeping with existing trends toward higher density residential development.

Similar to the Proposed Action, the Modified Action would help to further ensure more housing opportunities for low-income residents and maintain a more diverse demographic composition within the

study area. In addition, as described in the *Astoria Cove DEIS*, there is not a substantial population in the study area potentially at risk of indirect residential displacement. Therefore, the Modified Action would not result in any significant adverse impacts due to indirect residential displacement and would not alter the conclusions of the *Astoria Cove DEIS.*

Community Facilities

Child Care Centers

Both the Proposed Action and the Modified Action would result in significant adverse impact to child care centers. As the Modified Action would facilitate the development of a greater number of affordable DU, and therefore would result in greater demand for publicly funded child care, the resultant incremental increase in child care utilization from the No-Action condition would be higher under the Modified Action. As the proposed modified project would change the distribution and phasing of the affordable DU, the impact would occur earlier in the project's development (2019, per the anticipated construction schedule), as compared to the program analyzed in the *Astoria Cove DEIS.*

The *Astoria Cove DEIS* concluded that the proposed project would result in a 16.8 percent increase in child care utilization, for a 152.9 percent With-Action utilization rate. The proposed modified project would generate seven additional children under age six eligible for publicly funded child care. As under the proposed project, the proposed modified project would result in a significant adverse impact to child care centers, increasing the child care utilization rate by 19.7 percent to 155.7 percent. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

As outlined in the *Astoria Cove DEIS*, the child care impact under the Proposed Action would occur upon occupancy of the 90th affordable residential unit (generating approximately thirteen children under age six eligible for publicly funded child care). Therefore the child care impact under the Proposed Action would occur upon completion and occupancy of Building 2 in the third phase of the project's development (in year 2021, per the anticipated construction schedule). As the proposed modified project would change the distribution of the affordable housing units throughout the project site, the timing of the child care impact would change accordingly. Based on the currently contemplated distribution of affordable units (which includes affordable housing on the upland parcel), the significant adverse child care impact would occur upon completion of Building 3 in the second phase of the project's construction (in year 2019, per the anticipated construction schedule). To reduce the increase in utilization to below the five percent increase threshold under the Modified Action, future child care center capacity would need to be increased to 270 slots, 26 slots over existing conditions. In comparison, under the Proposed Action, 21 additional child care slots would need to be provided.

Public Schools

Elementary Schools

While no significant adverse elementary school impacts would occur at the proposed project's full build-out, the *Astoria Cove DEIS* identified a potential temporary significant adverse elementary school impact upon completion and occupancy of the third phase (Building 2) of the proposed project. The proposed modified project would generate ten additional elementary school students, increasing the future With-Action elementary school utilization rate to 122.5 percent, 2.8 percent lower than With-Action conditions (due to construction of a new elementary school in the With-Action condition). As under the proposed project, the proposed modified project would not result in a significant adverse elementary school impact in the 2023 Build Year. As the building programs for Buildings 2, 3, 4, and 5 (the first three phases of the project's development) would not change under the proposed modified program, a potential temporary elementary

school impact could occur upon their completion and occupancy (in year 2021, per the anticipated construction schedule) prior to completion of the Phase 4 elementary school, as under the proposed project. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Intermediate Schools

Neither the proposed project nor the proposed modified project would result in significant adverse intermediate school impacts. The proposed modified project would generate four additional intermediate school students, resulting in a With-Action utilization rate of 95.1 percent. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

High Schools

Neither the proposed project nor the proposed modified project would result in significant adverse high school impacts. The proposed modified project would generate five additional high school students, resulting in a future With-Action condition high school utilization rate of 133.4 percent, a 0.3 percent increase over the No-Action condition. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Libraries

Neither the proposed project nor the proposed modified project would result in significant adverse library impacts. While the proposed modified project would generate an additional 79 residents, the library holdings per resident ratio would be 0.12 under both scenarios, as under No-Action conditions. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Open Space

The Modified Action, like the Proposed Action, would result in a significant adverse active open space impact upon completion and occupancy of Building 2 (in year 2021, per the anticipated construction schedule).

The *Astoria Cove DEIS* concluded that the Proposed Action would not result in significant adverse total or passive open space. As under the Proposed Action, the total and passive open space ratios under the Modified Action (2.67 and 0.96, respectively) would continue to be above the City's optimal planning goals of 2.5 acres and 0.5 acres per 1,000 residents, respectively. Therefore, no significant adverse impact to total or passive open space would result.

Both the proposed project and the proposed modified project would result in decreases of over five percent in the active open space ratio from the No-Action condition, decreasing the future active open space ratio to below the City's optimal planning goal of 2.0 acres of active open space per 1,000 residents. Under the proposed modified project, the active open space ratio would decrease to 1.71 (compared to 1.72 with the proposed project), reflecting a minor deterioration of future active open space conditions, as compared to the Proposed Action. Therefore, as under the Proposed Action, the Modified Action would result in a significant adverse active open space impact.

As outlined in the *Astoria Cove DEIS,* the significant adverse active open space impact would occur upon completion and occupancy of 688 residential units. As the building programs for Buildings 2, 3, 4, and 5 (the first three phases of the project's development) would not change under the proposed modified project; the timing of the active open space impact would similarly be upon completion and occupancy of Building 2 (Phase 3, expected to be completed in 2021, per the anticipated construction schedule). As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Shadows

Neither the proposed project nor the proposed modified project would result in significant adverse shadows impacts. The proposed modified project would only affect the building height of Building 1 on the westernmost portion of the project site: Building 1's northern tower would increase by approximately twenty feet (from 292 feet to 312 feet); and Building 1's southern tower would increase by approximately thirty feet (from 222 feet to 252 feet). As shown in Table 3, below, the proposed modified project would increase shadow coverage and duration at Whitey Ford Field on March 21/September 21, May 6/August 6, and June21 by six minutes, seven minutes, and seven minutes, respectively, and the East River on May 6/August 6 and June 21 by 23 minutes and 15 minutes, respectively (see Figures 3 through 6).

Table 3
Incremental Shadow Durations – Proposed Project vs. Proposed Modified Project

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		
	Proposed	Proposed Modified	Difference	Proposed	Proposed Modified	Difference	Proposed	Proposed Modified	Difference	Proposed	Proposed Modified	Difference
Whitey Ford Field	---	7:36 AM- 7:42 AM (6m)	**6m**	6:27 AM- 6:57 AM (30m)	6:27 AM- 7:04 AM (37m)	**7m**	5:57 AM- 6:41 AM (44m)	5:57 AM- 6:48 AM (51m)	**7m**	---	---	---
Astoria Park	---	---	---	---	---	---	---	---	---	2:33 PM- 2:53 PM (20m)	2:33 PM- 2:53 PM (20m)	**0m**
East River	7:36 AM- 4:29 PM (8h 53m)	7:36 AM- 4:29 PM (8h 53m)	**0m**	6:27 AM- 8:23 AM (1h 56m) 9:00 AM- 5:18 PM (8h 18m)	6:27 AM- 8:31 AM (2h 4m) 8:45 AM- 5:18 PM (8h 33m)	**8m** **15m**	5:57 AM- 6:05 AM (8m) 7:40 AM- 8:12 AM (32m) 12:31 PM- 6:01 PM (5h 20m)	5:57 AM- 6:12 AM (15m) 7:40 AM- 8:22 AM (40m) 12:31 PM-6:01 PM (5h 20m)	**7m** **8m** **0m**	8:51 AM- 2:53 PM (6h 2m)	8:51 AM- 2:53 PM (6h 2m)	**0m**

While the proposed modifications to height would result in increases to shadow coverage and duration, these increases would be minimal and would not substantially reduce direct sunlight on any sunlight-sensitive resource of concern on any analysis day. As shown in the table above, the proposed modified project would also result in a maximum uninterrupted increase of approximately 15 minutes of shadow duration on the East River on the May 6/August 6 analysis day. Similar to the proposed project, the proposed modified project would also not affect the utilization or enjoyment of any sunlight-sensitive resources and all open spaces would continue to receive the minimum of four hours of direct sunlight throughout the growing season. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.



8:00 AM



10:00 AM



2:00 PM



4:00 PM

Project Site

Incremental Shadow – Proposed Project

Additional Incremental Shadow – Proposed Modified Project

Open Space

Astoria Cove Technical Memorandum **Figure 3**

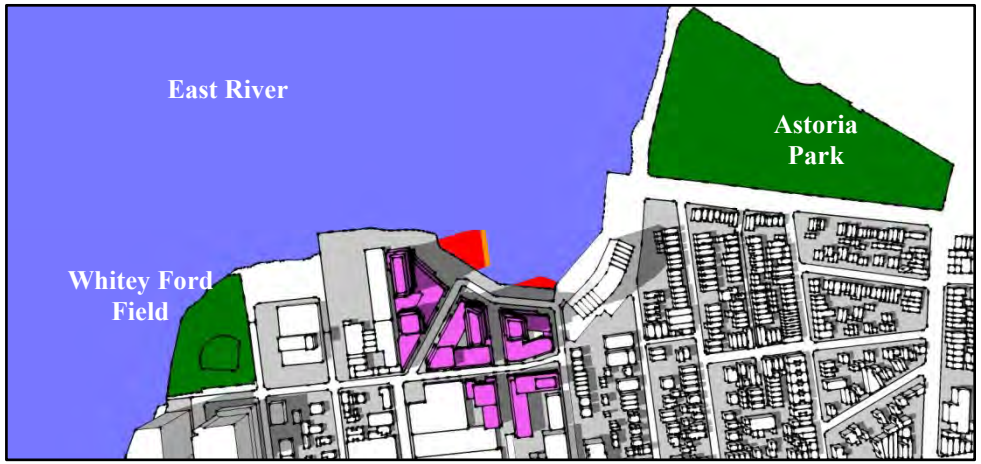
Incremental Shadows on March 21/September 21—Proposed Project vs. Proposed Modified Project



6:45 AM



12:00 PM



3:00 PM



5:00 PM

Project Site

Incremental Shadow – Proposed Project

Additional Incremental Shadow – Proposed Modified Project

Open Space

Astoria Cove Technical Memorandum **Figure 4**

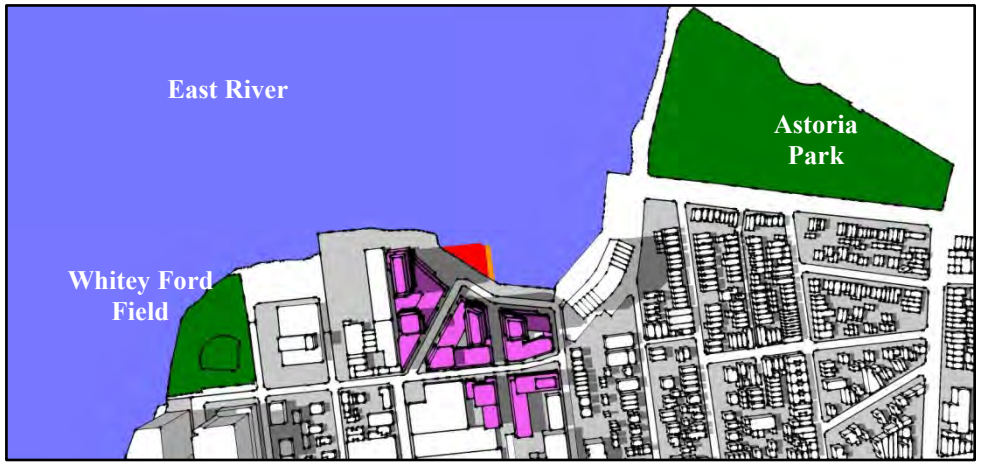
Incremental Shadows on May 6/August 6—Proposed Project vs. Proposed Modified Project



6:15 AM



1:00 PM



3:30 PM



6:00 PM

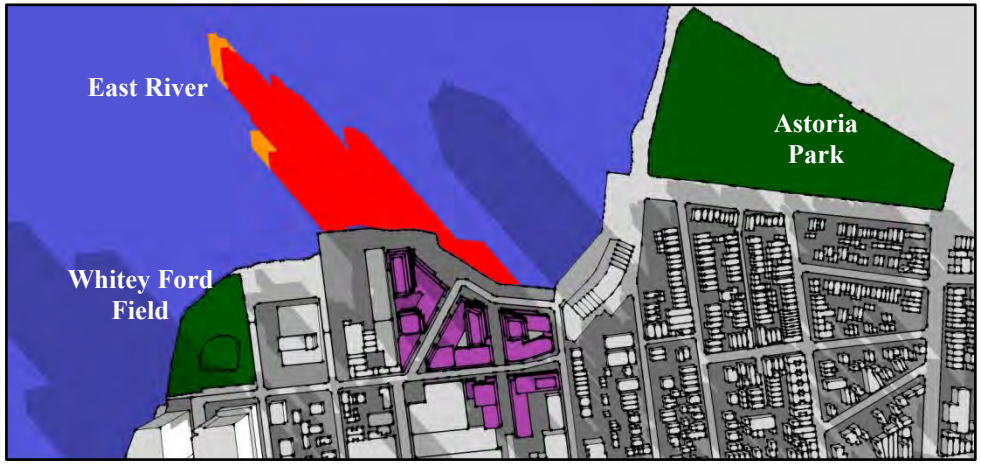
Project Site

Incremental Shadow – Proposed Project

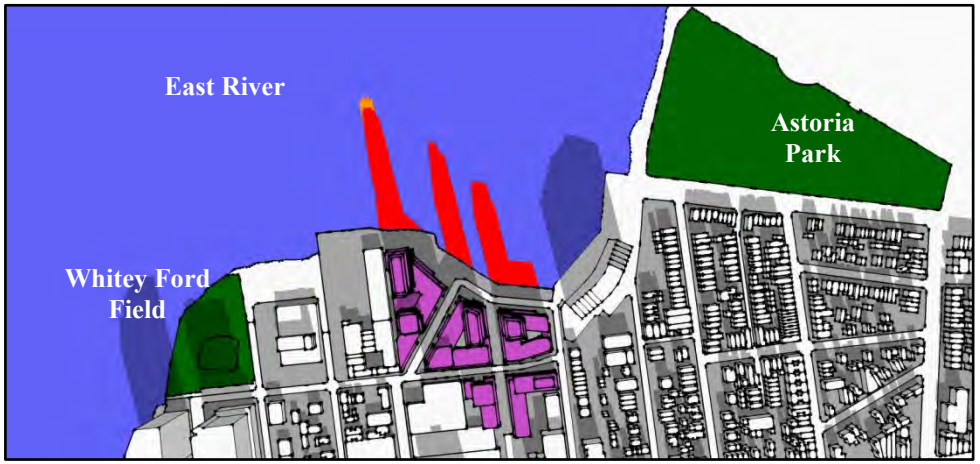
Additional Incremental Shadow – Proposed Modified Project

Open Space

Incremental Shadows on June 21—Proposed Project vs. Proposed Modified Project



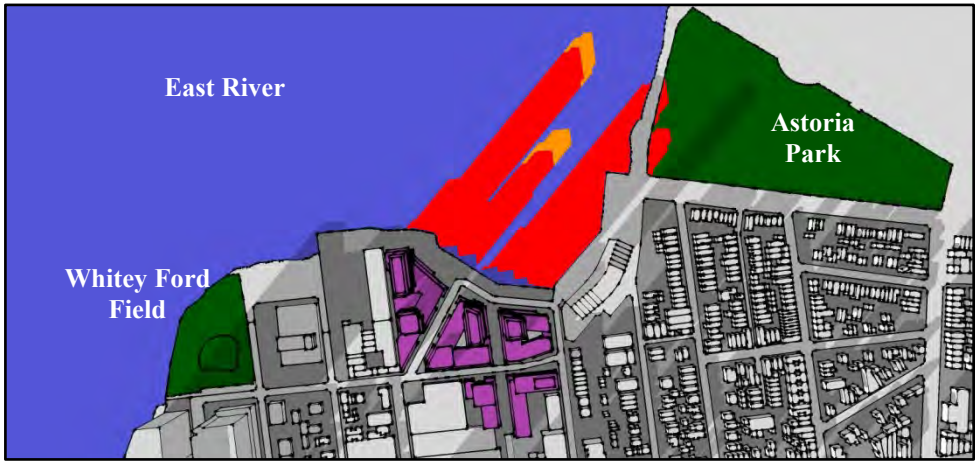
9:00 AM



11:00 AM



1:00 PM



2:45 PM

Project Site

Incremental Shadow – Proposed Project

Additional Incremental Shadow – Proposed Modified Project

Open Space

Astoria Cove

Figure 6

Incremental Shadows on December 21—Proposed Project vs. Proposed Modified Project

Urban Design and Visual Resources

Similar to the Proposed Action, the Modified Action would result in significant changes to the pedestrian realm, including the construction of new mixed-use buildings and roadways, reactivation of the streetscape with ground floor retail, improvements to existing roadways and sidewalks, and the creation of new waterfront open space. However, by applying the IHP on the R7A and R6B portions of the project site, in addition to the proposed R7-3 zoning district, 34,103 gsf of additional residential floor area would be constructed. As discussed above, the incremental floor area increase would only affect Building 1, on the waterfront parcel; Building 1's northern tower would increase by approximately twenty feet (from 292 feet to 312 feet); and Building 1's southern tower would increase by approximately thirty feet (from 222 feet to 252 feet). This increase in the height of Building 1 would not adversely affect the pedestrian experience in the study area. Figure 7 through 10 illustrate the effect of the modified building heights on views from Whitey Ford Field, the base of Astoria Park, the Astoria Park Esplanade, and the East River Esplanade, respectively. As indicated in the figures, the additional stories on the Building 1 towers would not block any visual resources that are visible from the surrounding area under existing conditions. At locations more proximate to the project site, the minimal increase in Building 1's height would be imperceptible. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Water and Sewer Infrastructure

Neither the proposed project nor the proposed modified project would result in a significant adverse water and sewer infrastructure impact. As the amount of impervious surface area on the project site would not change under the proposed modified project, the same amount of stormwater would be generated on the project site, which would be conveyed to the proposed stormwater outfalls. The 34 additional dwelling units would generate an additional 7,956 gallons per day (gpd) of water demand and wastewater generation, which would represent an increase of less than two percent, as compared to the proposed project. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Energy

Neither the proposed project nor the proposed modified project would result in a significant adverse water and sewer infrastructure impact. The additional 34,103 gsf of residential floor area under the proposed modified project would generate an additional 4.3 billion British Thermal Units (BTUs) of energy consumption per year, which would represent an increase of less than two percent, as compared to the proposed project. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

With-Action View from Whitey Ford Field - Proposed Project vs. Proposed Modified Project



Proposed Project

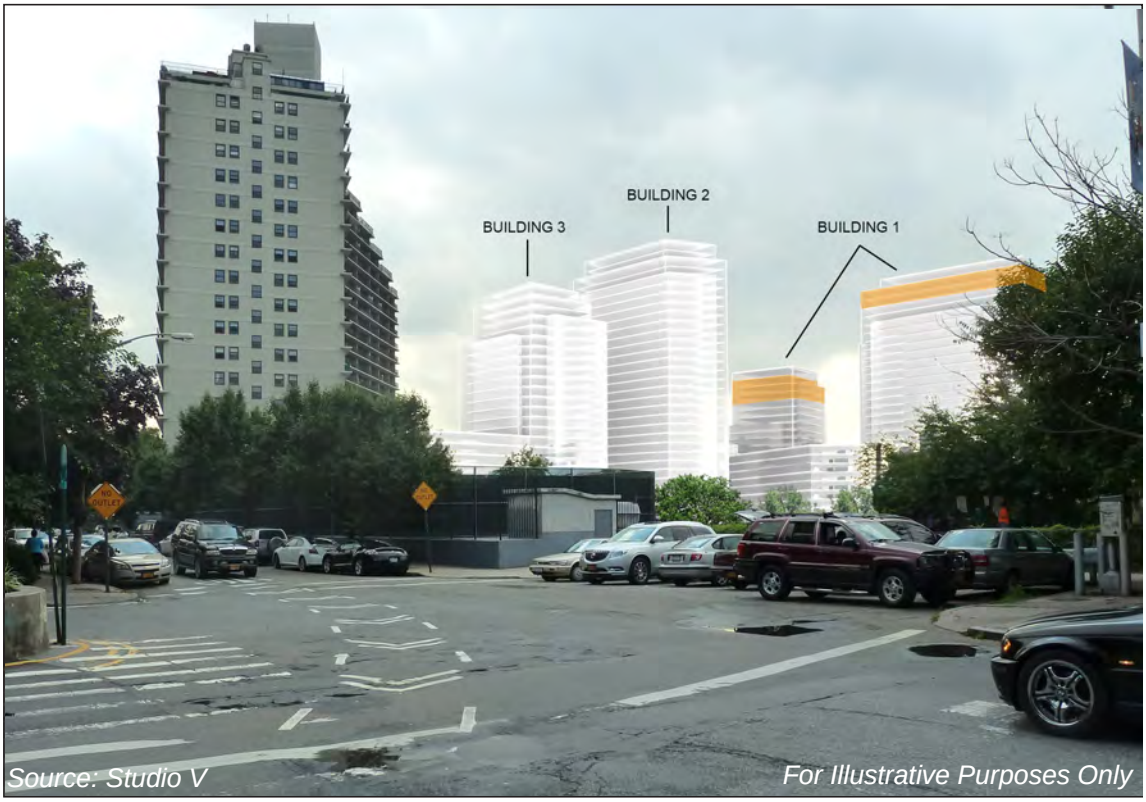


Proposed Modified Project

With-Action View Southwest from Shore Blvd & Astoria Park - Proposed Project vs. Proposed Modified Project



Proposed Project



Proposed Modified Project

With-Action View from Astoria Park Explanade - Proposed Project vs. Proposed Modified Project



Proposed Project

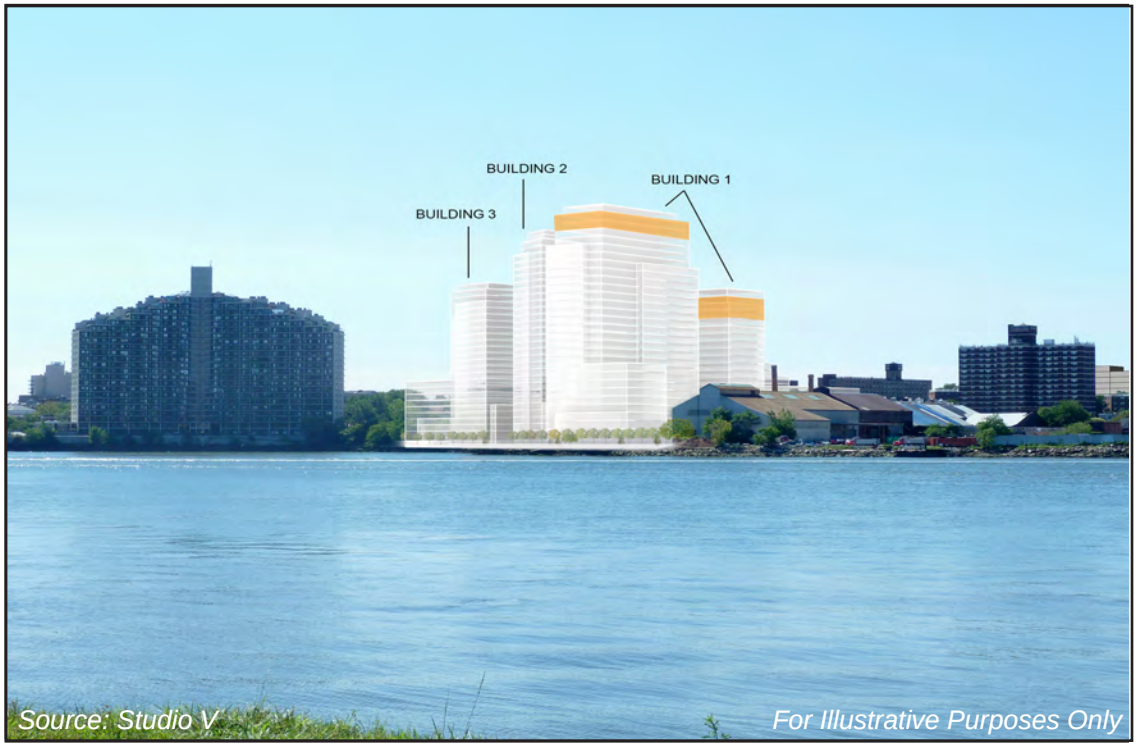


Proposed Modified Project

With-Action View from East River Esplanade at East 102nd Street - Proposed Project vs. Proposed Modified Project



Proposed Project



Proposed Modified Project

Transportation

As previously noted, the Modified Action would result in 34 additional dwelling units. As the result, these residential units with their corresponding 79 additional residents would generate additional person trips. Table 4, below, compares the incremental trips that would be generated by the proposed project (by mode) and the proposed modified project. As indicated in Table 4, the proposed modified project would generate 26, 14, and 30 additional incremental person trips during the weekday AM, midday, and PM peak hours. Table 4 forms the basis of the following discussion.

Table 4
Comparison of Weekday Peak Hour Incremental Person Trips by Mode—Proposed Project vs. Proposed Modified Project

	Auto		Taxi		Subway		Bus		School Bus		Walk/Other		Total		
Scenario	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**Total**
AM															
Proposed Project	181	362	7	11	154	551	29	48	20	0	588	265	979	1,237	2,216
Proposed Modified Project	182	368	7	11	156	563	29	49	20	0	589	268	983	1,259	2,242
Difference	***1***	***6***	***0***	***0***	***2***	***12***	***0***	***1***	***0***	***0***	***1***	***3***	***4***	***22***	***26***
Midday															
Proposed Project	190	190	39	39	242	242	90	90	0	0	1,075	1,075	1,636	1,636	3,272
Proposed Modified Project	192	192	39	39	246	246	90	90	0	0	1,076	1,076	1,643	1,643	3,286
Difference	***2***	***2***	***0***	***0***	***4***	***4***	***0***	***0***	***0***	***0***	***1***	***1***	***7***	***7***	***14***
PM															
Proposed Project	409	293	24	22	519	304	72	63	0	0	663	671	1,687	1,353	3,040
Proposed Modified Project	415	297	24	22	530	309	72	63	0	0	665	673	1,706	1,364	3,070
Difference	***6***	***4***	***0***	***0***	***11***	***5***	***0***	***0***	***0***	***0***	***2***	***2***	***19***	***11***	***30***

Traffic

Both the Proposed Action and the Modified Action would result in significant adverse traffic impacts. While the Modified Action will generate additional vehicle trips (as presented in Table 4, above), no new intersections would experience significant adverse impacts not previously disclosed in the *Astoria Cove DEIS*. Changes to the mitigation measures under the Modified Action would only be warranted at two study area intersections under the RWCDS With-Action condition and at one intersection under the alternate With-Action condition.

As indicated in The *Astoria Cove DEIS*, the proposed project would result in significant adverse traffic impacts at 20 intersections in the weekday AM peak hour, 9 intersections in the weekday midday peak hour, and 16 intersections in the weekday PM peak hour under the RWCDS With-Action condition. Under the Alternate With-Action condition, which assumes that the nearby Halletts Point development would not be completed by the proposed project's 2023 Build Year, the proposed project would result in significant adverse impacts at 19 intersections in the weekday AM peak hour, 18 intersections in the weekday midday

peak hour, and 14 intersections in the weekday PM peak hour. As indicated in Table 5, the proposed modified project would result in eight, four, and ten additional vehicle trips in the weekday AM, midday, and PM peak hours, respectively. This would represent a maximum increase of less than two percent in any peak hour.

Table 5
Comparison of Weekday Peak Hour Incremental Vehicle Trips by Mode—Proposed Project vs. Proposed Modified Project

	Auto		Taxi (Balanced)		Shuttle/ School Bus		Truck		Total		
	In	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**Total**
AM											
Proposed Project	139	333	11	11	14	14	5	7	169	365	534
Proposed Modified Project	140	338	11	11	14	14	6	8	171	371	542
Difference	***1***	***5***	***0***	***0***	***0***	***0***	***1***	***1***	***2***	***6***	***8***
Midday											
Proposed Project	141	137	40	40	0	-1	4	4	185	180	365
Proposed Modified Project	143	139	40	40	0	-1	4	4	187	182	369
Difference	***2***	***2***	***0***	***0***	***0***	***0***	***0***	***0***	***2***	***2***	***4***
PM											
Proposed Project	342	225	24	24	7	10	0	1	373	260	633
Proposed Modified Project	348	229	24	24	7	10	0	1	379	264	643
Difference	***6***	***4***	***0***	***0***	***0***	***0***	***0***	***0***	***6***	***4***	***10***

A trip assignment and preliminary analysis was conducted to determine whether any intersection where no significant adverse impacts were identified for the proposed project (under either the RWCDS With-Action condition or the Alternate With-Action condition) would experience a significant adverse impact not previously identified due to the additional vehicle trips generated by the proposed modified development. Detailed future With-Action LOS condition tables for the study area intersections under the proposed modified project (with changes in v/c ratios, delay, and/or LOS highlighted) are included in the Appendix. As indicated in the tables, while the v/c ratios and delays would slightly worsen at some study area intersections, the less than two percent increase in total project-generated vehicle trips under the proposed modified development would not result in significant adverse impacts at any locations where significant adverse impacts were not identified in the *Astoria Cove DEIS.* As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

The proposed modified project would worsen conditions at some intersections where significant adverse impacts were identified and mitigation was proposed in the *Astoria Cove DEIS*. An LOS analysis was undertaken to determine whether additional mitigation measures would be warranted at locations that were fully or partially mitigated in the *Astoria Cove DEIS*. The results of the analysis are presented in Tables 6 and 7. As shown in the tables, under the RWCDS With-Action condition, changes to the mitigation measures would only be warranted at two study area intersections. At Astoria Boulevard and 21st Street, the midday signal timing modification would change, and lane restriping would be required to fully mitigate the identified impact. At 30th Avenue and 21st Street, the AM signal timing modification would be altered to fully mitigate the identified impact. Under the Alternate With-Acton condition, changes to the proposed signal timing modification at Hoyt Avenue South/Astoria Boulevard & 33rd Street would fully mitigate the identified significant adverse impact. All other mitigation measures outlined in the *Astoria Cove DEIS* would remain unchanged. As the proposed project modifications would only increase the total floor area of Building 1, which would be constructed in the final phase of the project's construction per the ULURP Phasing Plan, the mitigation implementation timing would not change.

Table 6
Comparison of RWCDS With-Action Condition Traffic Impact Mitigation—Proposed Project and Proposed Modified Project

Intersection	Proposed Project Mitigation	Proposed Modified Project Mitigation	Changes to Mitigation
7. Astoria Boulevard & 21st Street	AM: Modify signal timing: Shift 3s of green time from the NB/SB phase to the EB phase [NB/SB phase green shift from 51s to 48s; EB phase green shift from 24s to 27s; WB phase green time remains the same]. MD: Modify signal timing: Shift 1s of green time from the WB phase to the NB/SB phase [WB phase green shift from 34s to 33s; NB/SB phase green shift from 38s to 39s; EB phase green time remains the same]. Partially Mitigated (AM); Fully Mitigated (MD)	Shift the WB approach centerline one foot to the south and restripe the WB approach from one 11-foot wide through-right lane, one 11-foot wide through lane, one 10 foot wide left-turn lane, and one 23.5-feet wide receiving lane to one 11-foot wide through-right lane, one 11-foot wide through lane, one 11-foot wide left-turn lane, and one 22.5-feet wide receiving lane. AM: Modify signal timing: Shift 3s of green from the NB/SB phase to the EB phase [NB/SB phase green shifts from 51s to 48s; EB phase green shifts from 24s to 27s; WB phase green time remains the same]. MD: Modify signal timing: Shift 2s of green from the WB phase to the NB/SB phase [WB phase green shifts from 34s to 32s; NB/SB phase green shifts from 38s to 40s; EB phase green time remains the same]. Partially Mitigated (AM); Fully Mitigated (MD)	Change to MD signal timing modification. Lane restriping required.
21. 30th Avenue & 21st Street	AM: Modify signal timing: Shift 3s of green time from the NB/SB phase to the EB/WB phase [NB/SB phase green time shift from 73s to 70s; EB/WB phase green time shift from 37s to 40s]. Fully Mitigated (AM)	AM: Modify signal timing: Shift 4s of green time from the NB/SB phase to the EB/WB phase [NB/SB phase green time shifts from 73s to 69s; EB/WB phase green time shifts from 37s to 41s]. Fully Mitigated (AM)	Change to AM signal timing modification.

Table 7
Comparison of Alternate With-Action Condition Traffic Impact Mitigation—Proposed Project and Proposed Modified Project

Intersection	Proposed Project Mitigation	Proposed Modified Project Mitigation	Changes to Mitigation
15. Hoyt Avenue South/Astoria Boulevard & 33rd Street	Install "No Standing 7AM-10AM regulations along the EB Astoria Boulevard approach for 250 feet to daylight the approach. AM: Modify signal timing: Shift 3s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shift from 52s to 49s; EB Astoria Boulevard phase green time shift from 31s to 34 s; NB phase green time remains the same]. MD: Modify signal timing: Shift 2s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shift from 31s to 29s; EB Astoria Boulevard phase green time shift from 22s to 24s; NB phase green time remains the same]. PM: Modify signal timing: Shift 3s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shift from 43s to 40s; EB Astoria Boulevard phase green time shift from 31s to 34s; NB phase green time remains the same]. Fully Mitigated (AM, MD, & PM)	Install "No Standing 7AM-10AM regulations along the EB Astoria Boulevard approach for 250 feet to daylight the approach. AM: Modify signal timing: Shift 4s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 52s to 48s; EB Astoria Boulevard phase green time shifts from 31s to 35s; NB phase green time remains the same]. MD: Modify signal timing: Shift 2s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shift from 31s to 29s; EB Astoria Boulevard phase green time shift from 22s to 24s; NB phase green time remains the same]. PM: Modify signal timing: Shift 3s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shift from 43s to 40s; EB Astoria Boulevard phase green time shift from 31s to 34s; NB phase green time remains the same]. Fully Mitigated (AM, MD, & PM)	Change to AM signal timing modification.

Transit

Both the Proposed Action and the Modified Action would result in significant adverse subway station impacts and significant adverse bus line haul impacts. The additional transit trips generated by the Modified Action would not result in any new transit impacts not previously identified in the *Astoria Cove DEIS.*

As indicated in the *Astoria Cove DEIS,* the proposed project would result in significant adverse subway impacts at the 30th Avenue (N and Q line) Station's northwest street stair in the PM peak hour and at the southbound fare array in the AM peak hour. In addition, significant adverse bus line haul impacts on the Q103 bus routes are anticipated in both the weekday AM and PM peak hours. As shown in Table 4, the proposed modified project would generate a maximum of one additional bus-only trip during the weekday peak hours; subway peak hour trips would increase by 8 to 16 trips in any peak hour, as compared to the proposed project, an approximately two percent increase. As indicated in Tables 8 through 10, these additional subway and bus trips would not result in significant adverse impacts to any subway station element or bus line where significant adverse impacts were not previously identified in the *Astoria Cove DEIS.* As under the proposed project, the additional subway riders per car would be less than five, and therefore would not result in a significant adverse subway line haul impact. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Table 8
Comparison of With-Action Bus Line Haul—Proposed Project and Proposed Modified Project

Route	Direction	Project Increment		With-Action Available Capacity		Additional Buses Need to Mitigate Impact	
		Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project
AM Peak Hour							
Q103	NB	40	40	9	9	0	0
	SB	127	130	-118	-121	3	3
PM Peak Hour							
Q103	NB	127	129	-117	-119	3	3
	SB	81	82	-55	-56	2	2

Table 9
Comparison of With-Action Subway Station LOS—Proposed Project and Proposed Modified Project

Subway Station Element	Peak 15-Minute Increment				V/C Ratio		LOS		WIT (in.)	
	Proposed Project		Proposed Modified Project		Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project
	In/Up	Out/ Down	In/Up	Out/Down						
AM Peak Hour										
Stair S3-M3	134	39	137	39	1.13	1.13	D	D	7	7
Stair P1-P2	63	2	65	1	1.22	1.22	D	D	6	6
Stair P5-P6	63	1	65	2	0.94	0.95	C	C	N/A	N/A
NB Fare Array	11	36	11	36	0.21	0.21	A	A		
SB Fare Array	126	3	130	3	1.02	1.02	D	D		
PM Peak Hour										
Stair S3-M3	64	130	66	133	1.42	1.43	E	E	4	4
Stair P3-P4	3	60	3	61	1.07	1.07	D	D	8	8
Stair P7-P8	3	59	3	61	0.92	0.93	C	C	N/A	N/A
NB Fare Array	6	119	6	122	0.59	0.59	B	B		
SB Fare Array	70	11	72	11	0.41	0.41	A	A		

Table 10
Comparison of With-Action Subway Line Haul—Proposed Project and Proposed Modified Project

Route	Passengers per Hour		V/C Ratio		New Riders per Car	
	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project
AM Peak Hour						
F	19,061	19,063	0.87	0.87	0.68	0.69
N	11,224	11,229	0.99	0.99	2.59	2.65
Q	11,128	11,133	1.01	1.01	2.66	2.72
PM Peak Hour						
F	17,957	17,960	0.83	0.83	0.63	0.65
N	7,267	7,271	0.68	0.68	2.58	2.64
Q	6,228	6,232	0.65	0.65	2.89	2.95

Pedestrians

Neither the proposed project nor the proposed modified project would result in significant adverse pedestrian impacts. The proposed modified project would result in an additional two to four walk-only trips in any weekday peak hour, a less than 0.5 percent increase from the proposed project. Total walk trips (including transit-linked walk trips) would increase by 10 to 19 trips (up to one percent), as compared to the proposed project. Based on a preliminary trip assignment and LOS analysis (presented in Table 11), this increase in total walk trip would not result in any significant adverse pedestrian impacts. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Parking

As outlined in the *Astoria Cove DEIS,* the proposed project would not result in any significant adverse parking impacts. The peak parking demand under the proposed project would be 1,001 spaces, 101 spaces more than would be accommodated in the proposed 900 accessory parking spaces. While late evening and overnight parking demand would exceed the capacity of the proposed parking garages, the anticipated overflow could be accommodated by available on-street parking in the surrounding ½-mile parking study area. As under the proposed project, parking demand for the proposed modified project would exceed the proposed parking garage capacity in the late evening and overnight hours. Specifically, the maximum overnight parking demand under the proposed modified project (1,021 spaces) would result in a maximum of 121 vehicles that would need to be accommodated in the surrounding area. Based on the parking inventory conducted for the ½-mile study area, the 3,134 on-street parking spaces are expected to adequately accommodate projected future With-Action overflow demand under the proposed modified project. As such, the conclusions of the *Astoria Cove DEIS* remain unchanged.

Table 11
Comparison of With-Action Pedestrian Element LOS—Proposed Project and Proposed Modified Project

	AM						MD						PM					
	15-Minute Increment		Flow Rate/Average Pedestrian Space		LOS		15-Minute Increment		Flow Rate/Average Pedestrian Space		LOS		15-Minute Increment		Flow Rate/Average Pedestrian Space		LOS	
Element	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project	Proposed Project	Proposed Modified Project
S1	94	95	345.3	344.2	B	B	122	122	270.3	270.3	B	B	95	95	322.2	322.2	B	B
S2	230	234	161.5	158.9	B	B	76	76	479.9	479.9	B	B	231	236	161.7	158.5	B	B
S3	36	37	617.8	606.2	A	A	116	118	252.9	250.8	B	B	64	64	446.3	443.0	A	A
S4	35	36	166.0	164.5	B	B	125	128	58.6	58.1	C	C	63	63	76.7	76.5	C	C
S5	14	15	202.6	201.8	B	B	71	71	95.3	95.3	B	B	38	38	109.8	109.5	B	B
S6	25	25	113.0	113.0	B	B	112	112	47.9	47.9	C	C	68	68	58.4	58.3	C	C
S7	16	17	226.5	226.5	B	B	69	69	140.5	140.5	B	B	44	44	170.8	170.8	B	B
S8	59	60	224.1	224.1	B	B	153	153	93.4	93.4	B	B	109	110	124.7	124.4	B	B
S9	26	26	249.2	249.2	B	B	86	86	179.2	179.2	B	B	49	49	242.3	242.3	B	B
S10	173	176	48.5	48.1	C	C	104	104	77.8	77.8	C	C	171	175	58.4	57.9	C	C
S11	157	160	72.7	72.1	C	C	107	107	92.0	92.0	B	B	160	163	61.8	61.3	C	C
S12	226	232	104.1	101.4	B	B	371	373	63.2	62.8	C	C	282	288	83.8	81.5	C	C
S13	137	140	206.5	202.3	B	B	178	178	158.9	158.9	B	B	174	177	163.0	160.1	B	B
S14	151	152	124.7	123.9	B	B	338	338	55.4	55.4	C	C	257	258	73.1	72.8	C	C
S15	137	140	206.5	202.3	B	B	178	178	158.9	158.9	B	B	174	177	163.0	160.1	B	B
C1			267.8	265.6	A	A			132.7	132.4	A	A			163.6	163.3	A	A
C2			235.9	235.4	A	A			98.6	98.4	A	A			123.7	123.4	A	A
C3			144.7	143.9	A	A			202.2	202.2	A	A			134.7	133.8	A	A
X1	47	47	83.0	83.0	A	A	190	190	27.0	27.0	C	C	119	120	34.4	34.3	C	C

Air Quality

Mobile Source

Neither the Proposed Action nor the Modified Action would result in significant adverse mobile source air quality impacts.

The proposed modified project would generate a maximum of ten additional vehicle trips, which would be distributed throughout the surrounding street network (see Table 5, above). At the intersections of 27th Avenue at 9th Street and 27th Avenue at 4th Street (the two intersections analyzed in the *Astoria Cove DEIS)* the proposed modified project would result in a maximum of nine and six additional incremental vehicle trips.

As outlined in the *Astoria Cove DEIS,* with the projected maximum of 550 and 373 incremental vehicles at the aforementioned intersections over the No-Action condition, the total one-hour CO would be 4.5 and 4.2 ppm and the total eight-hour CO would be 2.3 and 2.1 ppm, significantly less than the NAAQS of 35 ppm for the one-hour period and nine ppm for the eight-hour period. The maximum increment of nine and six additional vehicles at these intersections under the proposed modified project would represent increases of less than two percent, compared to the conditions analyzed in the *Astoria Cove DEIS*. This level of increase would not be substantial enough to increase the one-hour and eight-hour CO emissions above the NAAQS, and, therefore, the CO conclusions of the *Astoria Cove DEIS* would remain unchanged.

With the projected maximum of 550 and 373 incremental vehicles at the intersections of 27th Avenue at 9th Street and 27th Avenue at 4th Street over the No-Action condition, the total 24-hour PM_{10} would be 84.2 and 73.7 $\mu g/m^3$, both significantly less than the NAAQS of 150 $\mu g/m^3$. The maximum of nine and six additional vehicles at these intersections under the proposed modified project would represent increases of less than two percent, compared to the conditions analyzed in the *Astoria Cove DEIS*. This level of increase would not be substantial enough to increase the 24-hour PM_{10} emissions above the NAAQS, and, therefore, the PM_{10} conclusions of the *Astoria Cove DEIS* would remain unchanged.

With the projected maximum of 550 and 373 incremental vehicles at the intersections of 27th Avenue at 9th Street and 27th Avenue at 4th Street over the No-Action condition, the 24-hour $PM_{2.5}$ emissions would increase by 4.7 and 1.5 $\mu g/m^3$, less than the *de minimis* of 5.5 $\mu g/m^3$. The annual $PM_{2.5}$ emissions at the intersection of 27th Avenue and 9th Street would increase by 0.057 $\mu g/m^3$, less than the *de minimis* of 0.1 $\mu g/m^3$. The maximum of nine and six additional vehicles at these intersections under the proposed modified project would represent increases of less than two percent, compared to the conditions analyzed in the *Astoria Cove DEIS*. This level of increase would not be substantial enough to increase the 24-hour and annual $PM_{2.5}$ emissions above the *de minimis* value, and, therefore, the $PM_{2.5}$conclusions of the *Astoria Cove DEIS* would remain unchanged.

Stationary Source

Neither the Proposed Action nor the Modified Action would result in significant adverse stationary source air quality impacts. Due the proposed Building 1 massing changes, the (E) designation language for Building 1's HVAC stack location would need to be updated accordingly.

The proposed modified project would increase the Building 1 towers by approximately twenty to thirty feet, increasing the HVAC stack height from 298 feet to 318 feet. As such, a revised HVAC analysis of Building 1's impacts on Building 2 and the cumulative impact of Buildings 1 and 3 on Building 2 was carried out consistent with the methodology outlined in the *Astoria Cove DEIS*. Because Building 1 is the only building that would be different in comparison to the proposed project, a project-on-project HVAC analysis was

conducted to determine whether changes to the Building 1 stack restrictions as defined in the *Astoria Cove DEIS* were warranted. In addition, as a cumulative assessment of Building 1 and Building 3's HVAC stack emissions on Building 2 was included in the DEIS, a revised analysis was prepared for the proposed modified project to determine whether changes to the Building 3 stack restrictions as defined in the *Astoria Cove DEIS* were warranted, as well.

The following assumptions were utilized in the analysis:

- All buildings would use natural gas with controlled low NOx boilers with flue gas recirculation;
- The stack for Building 1 would be at least 318 feet high, which would be six feet above the highest tier;
- The stack for Building 1 would be on the northwest corner of the highest tier, ten feet from the west and north edges of the rooftop;
- The stack for Building 3 would be at least 282 feet high, which would be 20 feet above the highest tier; and
- The stack for Building 3 would be on the northeast corner of the highest tier, ten feet from the east and north edges of the rooftop.

Based upon the results of the revised air quality analysis, with the stack height and location restrictions noted above, total one-hour and annual nitrogen dioxide concentrations at Building 2 generated by the proposed modified project's Building 1 stack would total 152.0 and 42.2 $\mu g/m^3$, and cumulative nitrogen dioxide emissions from the proposed modified project's Buildings 1 and 3 on Building 2 would total 187.2 and 42.3 $\mu g/m^3$, below the NAAQS standards of 188 and 100 $\mu g/m^3$, respectively. $PM_{2.5}$ concentrations on Building 2 from the proposed modified project's Building 1's HVAC stack would be 2.5 and 0.07 $\mu g/m^3$ for the 24-hour and annual periods, respectively, and cumulative $PM_{2.5}$ emissions from the proposed modified project's Buildings 1 and Building 3 on Building 2 would total 4.1 and 0.09 $\mu g/m^3$, below the NAAQS standards of 5.5 and 0.3 $\mu g/m^3$, respectively. These results are shown below in Tables 12 and 13.

Table 12: Nitrogen Dioxide Concentrations ($\mu g/m^3$)—Proposed Project on Proposed Buildings

Astoria Cove Building ID	Receiving Building	1-Hour Concentrations ($\mu g/m^3$)			Comments
		Average	Background	Total	
1	2	32.0	120.0	152.0	No impact
Cumulative (1 &3)	2	67.2	120.0	187.2	No impact
NO_2 NAAQS ($\mu g/m^3$) Standard				**188**	
Astoria Cove Building ID	**Receiving Building**	**Annual Concentrations ($\mu g/m^3$)**			**Comments**
		Modeled	**Background**	**Total**	
1	2	0.2	42.0	42.2	No impact
Cumulative (1 &3)	2	0.3	42.0	42.3	No impact
NO_2 NAAQS ($\mu g/m^3$) Standard				**100**	

Source: Sandstone Environmental Associates, Inc.

The (E) designation language proposed under the Modified Action would restrict the height and location of the HVAC units on the project site buildings, as well as the type of boilers, to ensure that no significant adverse stationary source air quality impacts result. The language for the (E) designations would be the same as for the Proposed Action except that the stack for Building 1 and 3 would be a minimum of 318 feet and 282 feet, respectively, above ground level. With these (E) designations in place, as under the proposed project, the conclusions of the *Astoria Cove DEIS* would remain unchanged.

Table 13: $PM_{2.5}$ Concentrations ($\mu g/m^3$)—Proposed Project on Proposed Buildings

Astoria Cove Building ID	Receiving Building	24-Hour Concentrations ($\mu g/m^3$)	Comments
1	2	2.5	No impact
Cumulative (1 &3)	2	4.1	No impact
	$PM_{2.5}$ *de minimis*	**5.5**	
Astoria Cove Building ID	**Receiving Building**	**Annual Concentrations ($\mu g/m^3$)**	**Comments**
1	2	0.07	No impact
Cumulative (1 &3)	2	0.09	No impact
	$PM_{2.5}$ *de minimis*	**0.3**	

Source: Sandstone Environmental Associates, Inc.

Greenhouse Gas Emissions

Neither the proposed project nor the proposed modified project would result in significant adverse greenhouse gas emission (GHG) impacts. The proposed modified project would result in minor increases to the projected annual greenhouse gas emissions generated by the project, due to both gas and energy use for the additional residential units, as well as emissions from the minimal increase in the resultant vehicle trips generated. Specifically, GHG emissions from vehicle trips would increase from 7,355 metric tons per year to 7,468 metric tons per year, a 1.5 percent increase. GHG emissions from building emissions would increase from 26,347.5 metric tons per year to 26,804.7 metric tons per year, a 1.7 percent increase. Compared to the citywide GHG emissions, this level of increase would be insignificant, and the conclusions of the *Astoria Cove DEIS* would remain unchanged.

Noise

The additional vehicular traffic generated under the Modified Action (per "Transportation" above) would result in a maximum increase in noise levels of 0.1 dBA as compared to the Proposed Action. This relatively minor increase in noise levels would not substantially alter the conclusions of the *Astoria Cove DEIS* noise analysis and would not result in any new significant adverse noise impacts.

The proposed modified project would result in minimal increases in the projected vehicle trips (a maximum of ten additional trips in an hour, or less than two percent), as compared to the proposed project (see Table 5). At the intersection of 26th Avenue and 4th Street, the proposed modified project would add a maximum of six incremental auto trips, a less than two percent increase over the 373 vehicles projected at this intersection during the PM peak hour. Based on a TNM analysis conducted with the additional vehicles generated by the 34 DU, future With-Action noise levels would be a maximum of 0.1 dBA higher than under the proposed project. Therefore, the Modified Action would not alter the conclusions of the *Astoria Cove DEIS* noise analysis.

Public Health

As outlined above, the Modified Action would not alter the conclusions of the air quality, water quality, hazardous materials, or noise analyses presented in the *Astoria Cove DEIS*. As such, the conclusions of the public health assessment presented in the *Astoria Cove DEIS* would remain unchanged under the Modified Action, and no significant adverse public health impacts would result.

Neighborhood Character

As outlined above, the Modified Action would not alter the conclusions of any of the key technical analysis areas related to neighborhood character (land use, urban design and visual resource, historic resources, socioeconomic conditions, traffic, or noise) presented in the *Astoria Cove DEIS*. As such, the conclusions of the neighborhood character assessment presented in the *Astoria Cove DEIS* would remain unchanged under the Modified Action, and no significant adverse neighborhood character impacts would result.

APPENDIX I
DETAILED LOS TABLES

Table 1
RWCDS With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
1. 26th Avenue & 4th Street	EB-LTR	-	-	-	NA	7.9	A		-	-	-	NA	7.7	A		-	-	-	NA	8.2	A	
(Unsignalized-Two Way Stop)	NB-LR	0.11	9.7	A	NA	9.4	A		0.08	9.4	A	NA	9.1	A		0.09	9.3	A	NA	12.1	B	
A. 26th Avenue & 9th Street	EB-R	0.09	8.9	A	0.38	13.5	B		0.13	8.9	A	0.23	10.6	B		0.10	8.8	A	0.28	11.4	B	
(Unsignalized-Two Way Stop)																						
2. 27th Avenue & 4th Street	EB-LT	0.78	22.4	C	0.78	22.4	C		0.45	14.1	B	0.45	14.1	B		0.56	15.0	B	0.56	15.0	B	
(Existing Unsignalized-All Way Stop)	WB-T	0.44	13.7	B	0.44	13.7	B		0.43	13.1	B	0.43	13.1	B		0.65	15.6	B	0.65	15.6	B	
(No-Action Signalized)	WB-R	0.25	12.2	B	0.69	22.5	C		0.27	12.5	B	0.89	39.5	D		0.29	11.8	B	1.43	225.1	F	*
	SB-LR	0.10	20.4	C	0.10	20.4	C		0.09	20.3	C	0.09	20.3	C		0.08	21.6	C	0.08	21.6	C	
3. 27th Avenue & 8th Street	EB-T	0.53	14.9	B	0.53	14.9	B		0.24	11.9	B	0.24	11.9	B		0.36	13.2	B	0.36	13.2	B	
	EB-R	0.66	21.2	C	0.66	21.2	C		0.61	22.5	C	0.61	22.5	C		0.42	15.9	B	0.42	15.9	B	
	WB-LT	1.32	179.6	F	1.87	421.6	F	*	1.25	151.3	F	1.72	355.3	F	*	1.22	138.6	F	1.92	442.4	F	*
	NB-L	0.52	28.4	C	0.71	35.2	D		0.36	23.3	C	0.45	25.1	C		0.48	25.8	C	0.68	32.1	C	
	NB-R	0.57	34.6	C	0.57	34.6	C		0.73	47.7	D	0.73	47.7	D		0.75	47.4	D	0.75	47.4	D	
4. 27th Avenue & 12th Street	EB-LT	0.64	9.9	A	1.10	74.2	E	*	0.47	11.2	B	0.77	19.5	B		0.54	8.2	A	0.99	42.3	D	
(Existing Unsignalized-Two Way Stop)	WB-TR	0.47	6.2	A	0.60	7.4	A		0.41	10.4	B	0.62	13.9	B		0.66	8.8	A	1.01	36.6	D	
(No-Action Signalized)	NB-LTR	0.57	43.1	D	0.59	44.1	D		0.28	27.3	C	0.30	27.7	C		0.86	65.8	E	0.90	70.6	E	*
5. 27th Avenue & 14th Street	EB-TR	0.61	19.4	B	1.16	99.7	F	*	0.33	11.5	B	0.54	14.2	B		0.45	15.7	B	0.78	21.3	C	
(Existing Unsignalized-All Way Stop)	WB-LT	0.66	22.9	C	1.28	163.0	F	*	0.29	11.0	B	0.47	13.1	B		0.57	16.6	B	1.03	43.9	D	
(No-Action Signalized)	SB-LTR	0.89	41.0	D	0.89	41.0	D		0.52	28.5	C	0.52	28.5	C		0.79	36.0	D	0.79	36.0	D	
6. 27th Avenue & 18th Street	EB-LTR	0.10	9.5	A	0.13	9.7	A		0.06	8.3	A	0.08	9.0	A		0.12	9.1	A	0.19	11.3	B	
(Unsignalized-Two Way Stop)	WB-LTR	0.02	7.8	A	0.02	8.3	A		0.01	7.7	A	0.01	7.8	A		0.01	7.8	A	0.02	8.1	A	
7. Astoria Boulevard & 21st Street	EB-L	1.20	156.4	F	1.22	165.5	F	*	0.33	36.9	D	0.36	37.7	D		0.61	46.8	D	0.67	48.9	D	
	EB-TR	1.70	365.9	F	2.08	539.3	F	*	0.61	41.5	D	0.69	44.1	D		1.13	118.0	F	1.30	188.9	F	*
	WB-L	1.01	69.0	E	1.01	69.0	E		0.86	53.2	D	0.86	53.2	D		0.92	68.3	E	0.91	66.7	E	
	WB-TR	0.82	45.2	D	0.90	48.3	D		0.46	36.4	D	0.56	38.1	D		0.99	73.3	E	1.27	175.9	F	*
	NB-LT	0.71	31.5	C	0.80	35.2	D		0.79	38.2	D	0.95	44.7	D		1.10	80.8	F	1.28	160.1	F	*
	NB-R	0.37	24.7	C	0.37	24.7	C		0.65	36.1	D	0.65	36.1	D		0.44	22.9	C	0.44	22.9	C	
	SB-LT	0.86	30.8	C	0.85	30.7	C		0.76	38.1	D	0.76	38.1	D		0.77	29.6	C	0.77	29.6	C	
	SB-R	0.59	26.9	C	0.67	28.4	C		0.75	39.7	D	0.91	48.2	D	*	0.80	33.1	C	1.02	63.4	E	*
8. Astoria Boulevard & 23rd Street	EB-LT	1.21	127.5	F	1.48	245.3	F	*	0.81	23.1	C	0.90	29.2	C		0.95	35.5	D	1.06	64.9	E	*
	WB-TR	0.91	29.7	C	0.95	34.3	C		0.77	17.4	B	0.84	19.1	B		0.84	22.7	C	1.01	39.3	D	
	NB-LTR	0.50	33.5	C	0.50	33.5	C		0.56	28.5	C	0.56	28.5	C		0.61	37.4	D	0.61	37.4	D	

Table 1 (continued)
RWCDS With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
9. Astoria Boulevard & Crescent Street	EB-TR	1.28	159.6	F	1.54	272.6	F	*	0.83	25.1	C	0.91	32.3	C		1.11	88.2	F	1.23	138.5	F	*
	WB-LT	1.24	139.4	F	1.41	215.4	F	*	1.27	143.1	F	1.36	182.6	F	*	1.53	267.6	F	1.75	364.7	F	*
	SB-LTR	1.11	89.1	F	1.19	126.4	F	*	1.09	73.8	E	1.19	118.7	F	*	1.07	74.4	E	1.34	193.0	F	*
10. Astoria Boulevard & 27th Street	EB-LT	0.96	38.2	D	1.15	101.2	F	*	0.59	16.2	B	0.65	17.5	B		0.79	22.1	C	0.88	27.7	C	
	WB-TR	0.84	23.0	C	0.86	23.8	C		0.71	18.3	B	0.72	18.8	B		0.65	16.8	B	0.69	17.7	B	
	SB-LR	0.83	41.1	D	0.83	41.1	D		0.53	34.9	C	0.53	34.9	C		0.88	42.7	D	0.88	42.7	D	
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.70	68.0	F	0.97	145.3	F		0.42	28.3	D	0.48	34.0	D		0.41	30.1	D	0.50	40.1	E	
12. Astoria Boulevard & 29th Street	EB-T	1.63	328.2	F	1.94	463.9	F	*	0.97	48.8	D	1.06	73.3	E	*	1.30	179.5	F	1.44	240.6	F	*
	WB-T	0.44	27.5	C	0.44	27.5	C		0.23	13.5	B	0.23	13.5	B		0.22	20.3	C	0.22	20.3	C	
	SB-L	0.18	17.0	B	0.18	17.0	B		0.12	18.1	B	0.12	18.1	B		0.16	19.5	B	0.16	19.5	B	
	SB-R	0.75	31.3	C	0.77	32.4	C		0.70	30.5	C	0.72	31.7	C		0.66	30.4	C	0.71	32.9	C	
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.00	12.9	B	0.00	15.0	B		0.10	10.1	B	0.11	10.6	B		0.23	12.6	B	0.26	13.7	B	
14. Astoria Boulevard & 31st Street	EB-LTR	0.83	37.5	D	1.00	53.9	D	*	0.57	22.4	C	0.63	23.2	C		0.75	34.8	C	0.84	37.0	D	
	NB-T	0.52	41.8	D	0.52	41.8	D		0.54	33.7	C	0.54	33.7	C		0.52	41.6	D	0.52	41.6	D	
	NB-R	0.67	16.5	B	0.67	16.5	B		0.53	8.9	A	0.53	8.9	A		0.84	24.2	C	0.84	24.2	C	
	SB-T	1.10	85.7	F	1.10	85.7	F		0.65	19.8	B	0.65	19.8	B		0.69	22.8	C	0.69	22.8	C	
	SB-R	0.30	14.9	B	0.30	14.9	B		0.31	14.3	B	0.31	14.3	B		0.31	15.1	B	0.31	15.1	B	
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.32	192.2	F	1.50	270.4	F	*	1.02	62.4	E	1.09	84.2	F	*	1.17	121.1	F	1.25	155.3	F	*
	NB-TR	1.09	94.2	F	1.09	94.2	F		0.81	38.6	D	0.81	38.6	D		1.09	86.7	F	1.09	86.7	F	
	NB-R	1.08	92.9	F	1.08	92.9	F		0.79	42.6	D	0.79	42.6	D		1.08	86.6	F	1.08	86.6	F	
	Hoyt Ave (EB-LT)	0.63	27.1	C	0.63	27.1	C		0.78	30.4	C	0.78	30.4	C		0.87	41.3	D	0.87	41.3	D	
16. Hoyt Ave N. & 29th Street	WB-L	0.80	14.6	B	0.80	14.6	B		0.57	12.0	B	0.57	12.0	B		0.45	12.7	B	0.45	12.7	B	
	WB-LT	0.82	14.6	B	0.84	15.2	B		0.58	11.7	B	0.61	12.0	B		0.74	17.5	B	0.81	19.3	B	
	SB-R	1.03	98.5	F	1.13	130.5	F	*	0.53	35.5	D	0.56	36.0	D		0.85	54.2	D	0.88	57.3	E	
17. Hoyt Ave N. & 31st Street	WB-L	1.06	101.1	F	1.06	101.1	F		1.05	95.0	F	1.05	95.0	F		0.44	16.3	B	0.44	16.3	B	
	WB-T	1.01	37.4	D	1.02	41.6	D		0.80	19.5	B	0.82	20.2	C		0.85	25.4	C	0.91	28.3	C	
	WB-R	0.34	10.4	B	0.34	10.5	B		0.66	21.5	C	0.68	22.3	C		0.72	26.8	C	0.74	28.0	C	
	NB-DefL	-	-	-	-	-	-		0.54	31.1	C	0.54	31.1	C		-	-	-	-	-	-	
	NB-T	-	-	-	-	-	-		0.23	21.2	C	0.23	21.2	C		-	-	-	-	-	-	
	NB-LT	0.30	35.9	D	0.30	35.9	D			26.0	C		26.0	C		0.29	28.3	C	0.29	28.3	C	
	SB-T	0.28	36.3	D	0.28	36.3	D		0.46	24.4	C	0.46	24.4	C		0.15	26.6	C	0.15	26.6	C	
	SB-R	0.74	57.8	E	0.77	60.1	E		0.26	22.2	C	0.29	22.7	C		0.49	34.6	C	0.52	35.5	D	

Table 1 (continued)
RWCDS With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION			NO-ACTION			WITH-ACTION		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.53	8.9	A	0.53	8.9	A	0.37	7.9	A	0.37	7.9	A	0.32	9.2	A	0.32	9.2	A
	WB(Ramp)-T	1.17	127.2	F	1.19	136.4	F *	1.03	45.5	D	1.06	55.3	E *	1.13	84.7	F	1.20	117.1	F *
	NB-L	0.66	45.3	D	0.67	45.4	D	0.38	29.0	C	0.39	29.1	C	0.57	39.2	D	0.58	39.3	D
	SB-R	0.03	38.0	D	0.03	38.0	D	0.02	25.9	C	0.02	25.9	C	0.02	33.3	C	0.02	33.3	C
19. Astoria Boulevard & 8th Street	EB-L	0.16	24.6	C	0.16	24.6	C	0.09	26.1	C	0.09	26.1	C	0.17	29.0	C	0.17	29.0	C
	EB-R	0.77	44.4	D	0.77	44.4	D	0.27	29.0	C	0.27	29.0	C	0.66	40.6	D	0.66	40.6	D
	WB-L	0.32	26.9	C	0.32	26.9	C	0.36	30.6	C	0.36	30.6	C	0.31	31.0	C	0.31	31.0	C
	WB-TR	0.34	27.3	C	0.34	27.3	C	0.34	30.3	C	0.34	30.3	C	0.50	35.3	D	0.50	35.3	D
	NB-LT	0.52	20.2	C	0.66	23.7	C	0.46	17.2	B	0.53	18.5	B	0.87	27.7	C	1.05	60.3	E *
	SB-TR	0.74	27.0	C	0.85	33.0	C	0.40	16.3	B	0.43	16.9	B	0.39	15.1	B	0.44	15.9	B
20. 30th Avenue & 14th Street	EB-LTR	NA	13.0	B	NA	15.5	C	NA	9.1	A	NA	9.7	A	NA	9.6	A	NA	10.5	B
(Unsignalized-All Way Stop)	WB-LTR	NA	13.4	B	NA	16.3	C	NA	9.1	A	NA	9.8	A	NA	9.5	A	NA	10.7	B
	SB-LTR	NA	28.5	D	NA	61.3	F *	NA	9.5	A	NA	10.9	B	NA	11.4	B	NA	15.4	C
21. 30th Avenue & 21st Street	EB-LTR	0.52	39.0	D	0.78	52.0	D *	0.35	34.5	C	0.48	37.8	D	0.37	35.1	D	0.55	39.9	D
	WB-LTR	0.48	38.0	D	0.55	40.3	D	0.39	35.6	D	0.42	36.5	D	0.50	38.8	D	0.58	41.5	D
	NB-LTR	0.53	15.0	B	0.55	15.3	B	0.53	14.9	B	0.54	15.2	B	0.78	21.7	C	0.81	23.0	C
	SB-LTR	0.75	19.8	B	0.75	19.9	B	0.42	13.0	B	0.42	13.0	B	0.48	13.9	B	0.48	13.9	B
22. Vernon Boulevard & Welling Court/	EB-LT	1.18	116.5	F	1.26	152.3	F *	0.91	45.7	D	0.99	58.7	E *	1.43	229.6	F	1.59	301.4	F *
8th Street	WB-TR	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.06	21.3	C	0.06	21.3	C
	NB-LTR	0.33	36.1	D	0.33	36.1	D	0.17	31.0	C	0.17	31.0	C	0.18	29.5	C	0.18	29.5	C
	SB-R	1.01	68.7	E	1.11	100.7	F *	0.71	35.1	D	0.76	37.8	D	0.72	37.9	D	0.80	42.3	D
23. Astoria Boulevard & 18th Street	EB-T	0.91	39.6	D	0.93	41.5	D	0.41	23.1	C	0.41	23.1	C	0.76	31.5	C	0.77	32.0	C
(Existing Unsignalized-Two Way Stop)	WB-T	0.66	27.1	C	0.66	27.1	C	0.41	22.9	C	0.41	22.9	C	0.44	22.2	C	0.44	22.2	C
(No-Action Signalized)	SB-LR	0.46	25.0	C	0.84	42.4	D	0.32	22.1	C	0.45	24.7	C	0.32	22.0	C	0.51	25.9	C
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D	0.02	40.4	D	0.12	44.0	D	0.12	44.0	D	0.11	43.9	D	0.11	43.9	D
	EB-R	0.37	47.5	D	0.37	47.5	D	0.15	44.5	D	0.15	44.5	D	0.19	45.3	D	0.19	45.3	D
	WB-L	1.07	78.5	E	1.10	90.7	F *	0.81	41.3	D	0.85	43.6	D	0.97	58.9	E	1.06	83.0	F *
	WB-TR	0.25	14.8	B	0.25	14.8	B	0.17	14.2	B	0.17	14.2	B	0.30	16.9	B	0.30	16.9	B
	NB-L	0.31	32.3	C	0.32	33.1	C	0.12	25.4	C	0.12	25.5	C	0.17	24.7	C	0.17	24.8	C
	NB-T	1.20	143.8	F	1.30	184.4	F *	0.81	46.3	D	0.86	51.1	D	1.12	99.0	F	1.17	119.4	F *
	SB-TR	1.04	65.0	E	1.06	73.8	E *	0.60	34.1	C	0.62	34.7	C	0.77	37.9	D	0.80	39.4	D

Table 1 (continued)
RWCDS With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR	0.84	41.9	D	0.93	44.9	D		0.36	32.0	C	0.40	32.6	C		0.58	37.9	D	0.63	39.0	D	
	NB-LT	-	-	-	-	-	-		-	-	-	-	-	-		0.72	16.8	B	0.75	17.7	B	
	NB-R	-	-	-	-	-	-		-	-	-	-	-	-		0.51	13.3	B	0.52	13.4	B	
	NB-LTR	0.60	14.2	B	0.63	14.7	B		0.48	15.0	B	0.49	15.1	B			15.7	B		16.3	B	
	SB-LTR	1.11	75.4	E	1.15	90.7	F	*	0.73	19.8	B	0.76	20.8	C		0.99	38.1	D	1.05	56.6	E	*
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.02	8.5	A	0.01	9.0	A		0.01	8.1	A	0.00	8.7	A		0.01	8.8	A	0.01	10.0	A	
	SB-LR	0.56	29.6	D	2.39	669.9	F	*	0.43	15.9	C	1.02	82.7	F	*	0.60	31.2	D	2.59	769.5	F	*
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.66	38.2	E	0.72	46.1	E	*	0.25	17.7	C	0.28	18.6	C		0.51	29.2	D	0.59	36.0	E	*
	SB-LT	0.02	8.3	A	0.02	8.3	A		0.03	8.1	A	0.03	8.2	A		0.02	8.9	A	0.03	9.0	A	
28. Vernon Boulevard & Broadway/11th Street	EB-LTR	0.01	28.2	C	0.01	28.2	C		0.02	25.4	C	0.02	25.4	C		0.03	33.2	C	0.03	33.2	C	
	WB-LT	0.87	38.9	D	0.87	38.9	D		-	-	-	-	-	-		0.77	47.0	D	0.77	47.0	D	
	WB-R	0.21	29.9	C	0.26	30.3	C		-	-	-	-	-	-		0.24	35.8	D	0.37	37.9	D	
	WB-LTR	0.00	37.7	D		37.6	D		0.96	55.5	E	1.01	67.6	E	*	0.00	45.1	D		44.9	D	
	NB (Vernon Blvd)-LT	0.28	8.2	A	0.29	8.3	A		0.29	9.0	A	0.30	9.1	A		0.52	10.1	B	0.54	10.4	B	
	NB (Vernon Blvd)-R	0.11	6.8	A	0.11	6.8	A		0.21	8.3	A	0.21	8.3	A		0.18	6.7	A	0.18	6.7	A	
	NB (11th Street)-LTR	0.38	41.1	D	0.38	41.1	D		0.22	32.8	C	0.22	32.8	C		0.33	38.2	D	0.33	38.2	D	
	SB-LTR	1.36	195.9	F	1.47	243.5	F	*	0.67	31.5	C	0.72	33.5	C		0.88	45.4	D	1.01	72.2	E	*
29. 31st Avenue & 21st Street	EB-LTR	0.67	45.6	D	0.70	47.3	D		0.34	34.5	C	0.38	35.4	D		0.50	35.0	D	0.54	36.3	D	
	WB-LTR	0.58	41.1	D	0.61	42.0	D		0.42	35.9	D	0.45	36.7	D		0.42	32.4	C	0.45	33.2	C	
	NB-TR	0.50	14.2	B	0.51	14.3	B		0.64	17.0	B	0.65	17.3	B		0.79	24.2	C	0.81	25.2	C	
	SB-TR	0.89	26.8	C	0.91	29.1	C		0.57	15.5	B	0.59	15.8	B		0.66	20.0	B	0.67	20.4	C	

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a significant adverse impact.
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)

Table 2
Alternate With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
1. 26th Avenue & 4th Street	EB-LTR	-	-	-	NA	7.9	A		-	-	-	NA	7.7	A		-	-	-	NA	8.2	A	
(Unsignalized-Two Way Stop)	NB-LR	0.11	9.7	A	NA	9.4	A		0.08	9.4	A	NA	9.1	A		0.09	9.3	A	NA	12.1	B	
A. 26th Avenue & 9th Street	EB-R	0.09	8.9	A	0.38	13.5	B		0.13	8.9	A	0.23	10.6	B		0.10	8.8	A	0.28	11.4	B	
(Unsignalized-Two Way Stop)																						
2. 27th Avenue & 4th Street	EB-LT	NA	9.9	A	NA	10.1	B		NA	9.1	A	NA	9.3	A		NA	9.6	A	NA	10.1	B	
(Unsignalized-All Way Stop)	WB-T	NA	11.0	B	NA	11.0	B		NA	9.9	A	NA	9.9	A		NA	10.2	B	NA	10.3	B	
	WB-R	NA	7.9	A	NA	9.4	A		NA	7.8	A	NA	9.2	A		NA	8.0	A	NA	13.5	B	
	SB-LR	NA	9.3	A	NA	9.6	A		NA	8.4	A	NA	8.7	A		NA	8.8	A	NA	9.4	A	
3. 27th Avenue & 8th Street	EB-TR	0.54	17.2	B	0.54	17.2	B		0.38	14.1	B	0.38	14.1	B		0.39	14.0	B	0.39	14.0	B	
	WB-LT	0.98	57.1	E	1.47	241.4	F	*	0.89	41.5	D	1.34	188.8	F	*	0.59	19.3	B	1.28	159.3	F	*
	NB-L	0.43	24.9	C	0.61	29.5	C		0.31	22.6	C	0.40	24.1	C		0.36	23.4	C	0.56	27.8	C	
	NB-R	0.28	22.3	C	0.28	22.3	C		0.30	22.7	C	0.30	22.7	C		0.33	23.1	C	0.33	23.1	C	
4. 27th Avenue & 12th Street	EB-LT	0.08	8.7	A	0.12	9.4	A		0.06	8.1	A	0.08	8.7	A		0.09	8.5	A	0.14	10.0	B	
(Unsignalized-Two Way Stop)	NB-LTR	0.51	31.3	D	1.16	199.9	F	*	0.26	16.9	C	0.47	32.5	D	*	0.79	52.9	F	2.06	571.1	F	*
5. 27th Avenue & 14th Street	EB-TR	NA	11.9	B	NA	97.2	F	*	NA	9.5	A	NA	14.3	B		NA	10.6	B	NA	31.4	D	*
(Unsignalized-All Way Stop)	WB-LT	NA	13.3	B	NA	36.5	E	*	NA	9.2	A	NA	12.8	B		NA	10.3	B	NA	37.8	E	*
	SB-LTR	NA	20.0	C	NA	52.6	F	*	NA	9.5	A	NA	11.4	B		NA	11.2	B	NA	17.6	C	
6. 27th Avenue & 18th Street	EB-LTR	0.06	9.3	A	0.08	9.4	A		0.04	8.1	A	0.05	8.5	A		0.08	8.1	A	0.12	9.5	A	
(Unsignalized-Two Way Stop)	WB-LTR	0.01	7.5	A	0.02	8.0	A		0.01	7.6	A	0.01	7.7	A		0.01	7.7	A	0.01	7.9	A	
7. Astoria Boulevard & 21st Street	EB-L	1.08	111.5	F	1.11	122.3	F	*	0.29	36.1	D	0.32	36.8	D		0.56	45.3	D	0.62	47.1	D	
	EB-TR	1.03	85.1	F	1.44	251.5	F	*	0.45	37.9	D	0.53	39.7	D		0.87	55.1	E	1.04	86.0	F	*
	WB-L	1.01	69.0	E	1.01	69.0	E		0.86	53.2	D	0.86	53.2	D		0.92	68.3	E	0.91	66.7	E	
	WB-TR	0.77	43.9	D	0.85	46.1	D		0.40	35.6	D	0.50	37.1	D		0.79	52.1	D	1.07	96.9	F	*
	NB-LTR	0.99	56.0	E	1.18	124.1	F	*	1.21	136.0	F	1.55	287.3	F	*	1.23	138.8	F	1.76	375.3	F	*
	SB-LTR	1.13	94.1	F	1.17	112.1	F	*	1.06	72.6	E	1.14	109.0	F	*	1.02	54.1	D	1.17	113.8	F	*
8. Astoria Boulevard & 23rd Street	EB-LT	0.80	25.3	C	1.07	69.1	E	*	0.69	18.5	B	0.78	21.4	C		0.80	24.6	C	0.91	32.1	C	
	WB-TR	0.87	27.2	C	0.91	30.4	C		0.72	16.3	B	0.79	17.7	B		0.72	20.2	C	0.89	25.5	C	
	NB-LTR	0.50	33.5	C	0.50	33.5	C		0.56	28.4	C	0.56	28.4	C		0.60	36.2	D	0.60	36.2	D	

Table 2 (continued)
Alternate With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
9. Astoria Boulevard & Crescent Street	EB-TR	0.88	33.9	C	1.14	101.3	F	*	0.72	19.6	B	0.80	22.9	C		0.93	38.6	D	1.06	68.2	E	*
	WB-LT	1.01	48.0	D	1.05	61.7	E	*	1.11	75.0	E	1.19	110.7	F	*	1.20	119.5	F	1.38	198.6	F	*
	SB-LTR	1.10	88.2	F	1.19	125.4	F	*	1.09	73.8	E	1.19	117.6	F	*	1.07	73.5	E	1.34	190.7	F	*
10. Astoria Boulevard & 27th Street	EB-LT	0.66	17.9	B	0.85	26.0	C		0.50	14.5	B	0.56	15.6	B		0.65	17.5	B	0.74	20.3	C	
	WB-TR	0.81	21.7	C	0.83	22.4	C		0.67	17.4	B	0.69	17.8	B		0.57	15.3	B	0.61	16.0	B	
	SB-LR	0.79	39.7	D	0.79	39.7	D		0.49	34.3	C	0.49	34.3	C		0.76	39.1	D	0.76	39.1	D	
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.43	28.6	D	0.58	47.6	E		0.35	22.4	C	0.40	25.9	D		0.31	21.2	C	0.37	26.5	D	
12. Astoria Boulevard & 29th Street	EB-T	1.17	127.2	F	1.47	256.2	F	*	0.84	30.6	C	0.93	40.8	D		1.10	96.4	F	1.24	151.8	F	*
	WB-T	0.44	27.5	C	0.44	27.5	C		0.23	13.5	B	0.23	13.5	B		0.22	20.3	C	0.22	20.3	C	
	SB-L	0.18	17.0	B	0.18	17.0	B		0.12	18.1	B	0.12	18.1	B		0.16	19.5	B	0.16	19.5	B	
	SB-R	0.71	29.1	C	0.73	30.1	C		0.64	28.1	C	0.66	29.0	C		0.55	26.8	C	0.60	28.6	C	
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.00	10.5	B	0.00	11.9	B		0.09	9.6	A	0.10	9.9	A		0.19	11.2	B	0.22	12.1	B	
14. Astoria Boulevard & 31st Street	EB-LTR	1.11	98.1	F	1.46	248.7	F	*	0.97	43.8	D	1.08	75.5	E	*	1.09	86.5	F	1.24	150.9	F	*
	NB-T	0.52	41.8	D	0.52	41.8	D		0.54	33.7	C	0.54	33.7	C		0.52	41.6	D	0.52	41.6	D	
	NB-R	0.67	16.5	B	0.67	16.5	B		0.53	8.9	A	0.53	8.9	A		0.84	24.2	C	0.84	24.2	C	
	SB-T	1.10	85.7	F	1.10	85.7	F		0.65	19.8	B	0.65	19.8	B		0.69	22.8	C	0.69	22.8	C	
	SB-R	0.30	14.9	B	0.30	14.9	B		0.31	14.3	B	0.31	14.3	B		0.31	15.1	B	0.31	15.1	B	
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.05	77.8	E	1.22	148.7	F	*	1.02	62.1	E	1.09	84.8	F	*	1.16	117.8	F	1.24	155.2	F	*
	NB-TR	1.09	94.2	F	1.09	94.2	F		0.81	38.6	D	0.81	38.6	D		1.09	86.7	F	1.09	86.7	F	
	NB-R	1.08	92.9	F	1.08	92.9	F		0.79	42.6	D	0.79	42.6	D		1.08	86.6	F	1.08	86.6	F	
	Hoyt Ave (EB-LT)	0.59	26.4	C	0.59	26.4	C		0.71	27.5	C	0.71	27.5	C		0.78	36.4	D	0.78	36.4	D	
16. Hoyt Ave N. & 29th Street	WB-L	0.76	12.6	B	0.76	12.6	B		0.56	11.9	B	0.56	11.9	B		0.44	12.6	B	0.44	12.6	B	
	WB-LT	0.76	12.2	B	0.78	12.6	B		0.54	11.2	B	0.57	11.5	B		0.63	15.2	B	0.70	16.5	B	
	SB-R	1.04	104.0	F	1.15	140.3	F	*	0.51	34.9	C	0.53	35.4	D		0.82	51.8	D	0.85	54.3	D	

Table 2 (continued)
Alternate With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
17. Hoyt Ave N. & 31st Street	WB-L	1.06	101.1	F	1.06	101.1	F		1.05	95.0	F	1.05	95.0	F		0.44	16.3	B	0.44	16.3	B	
	WB-T	0.97	28.0	C	0.98	30.7	C		0.76	18.4	B	0.78	18.9	B		0.76	21.9	C	0.81	23.5	C	
	WB-R	0.33	10.4	B	0.34	10.5	B		0.65	21.1	C	0.67	21.8	C		0.71	26.4	C	0.73	27.5	C	
	NB-DefL	-	-	-	-	-	-		0.53	30.8	C	0.53	30.8	C		-	-	-	-	-	-	
	NB-T	-	-	-	-	-	-		0.23	21.2	C	0.23	21.2	C		-	-	-	-	-	-	
	NB-LT	0.30	35.9	D	0.30	35.9	D		-	-	-	-	-	-		0.29	28.3	C	0.29	28.3	C	
	SB-T	0.28	36.3	D	0.28	36.3	D		0.46	24.4	C	0.46	24.4	C		0.15	26.6	C	0.15	26.6	C	
	SB-R	0.73	56.5	E	0.75	58.7	E		0.26	22.1	C	0.29	22.7	C		0.48	34.4	C	0.51	35.3	D	
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.53	8.8	A	0.53	8.8	A		0.37	7.9	A	0.37	7.9	A		0.32	9.2	A	0.32	9.2	A	
	WB(Ramp)-T	1.13	109.3	F	1.15	118.2	F	*	0.98	31.9	C	1.01	39.1	D		0.99	38.1	D	1.07	61.3	E	*
	NB-L	0.61	44.5	D	0.62	44.6	D		0.36	28.8	C	0.37	28.9	C		0.55	39.0	D	0.56	39.1	D	
	SB-R	0.03	38.0	D	0.03	38.0	D		0.02	25.9	C	0.02	25.9	C		0.02	33.3	C	0.02	33.3	C	
19. Astoria Boulevard & 8th Street	EB-LR	0.26	28.8	C	0.26	28.8	C		0.13	26.5	C	0.13	26.5	C		0.28	29.0	C	0.28	29.0	C	
	WB-L	0.35	30.2	C	0.35	30.2	C		0.35	30.6	C	0.35	30.6	C		0.29	29.3	C	0.29	29.3	C	
	WB-TR	0.20	27.8	C	0.20	27.8	C		0.16	27.0	C	0.16	27.0	C		0.15	27.0	C	0.15	27.0	C	
	NB-LT	0.37	15.5	B	0.47	17.1	B		0.33	15.1	B	0.40	16.1	B		0.43	16.0	B	0.56	18.1	B	
	SB-TR	0.53	18.5	B	0.63	20.8	C		0.33	15.3	B	0.36	15.8	B		0.31	15.0	B	0.36	15.7	B	
20. 30th Avenue & 14th Street	EB-LTR	NA	12.1	B	NA	14.1	B		NA	8.9	A	NA	9.4	A		NA	9.3	A	NA	10.1	B	
(Unsignalized-All Way Stop)	WB-LTR	NA	12.9	B	NA	15.4	C		NA	8.8	A	NA	9.4	A		NA	9.1	A	NA	10.1	B	
	SB-LTR	NA	26.5	D	NA	54.8	F	*	NA	9.4	A	NA	10.7	B		NA	11.0	B	NA	14.6	B	
21. 30th Avenue & 21st Street	EB-LTR	0.45	37.2	D	0.71	47.6	D	*	0.32	33.9	C	0.45	37.0	D		0.34	34.3	C	0.51	38.7	D	
	WB-LTR	0.45	37.2	D	0.52	39.1	D		0.34	34.5	C	0.38	35.4	D		0.42	36.6	D	0.51	38.9	D	
	NB-LTR	0.53	15.0	B	0.55	15.3	B		0.53	14.9	B	0.54	15.2	B		0.78	21.7	C	0.81	23.0	C	
	SB-LTR	0.75	19.8	B	0.75	19.9	B		0.42	13.0	B	0.42	13.0	B		0.48	13.9	B	0.48	13.9	B	
22. Vernon Boulevard & Welling Court	EB-LT	1.21	132.9	F	1.30	171.8	F	*	0.90	45.7	D	0.98	59.5	E	*	1.22	136.0	F	1.38	206.8	F	*
/8th Street	WB-TR	0.04	21.1	C	0.04	21.1	C		0.04	21.1	C	0.04	21.1	C		0.06	21.3	C	0.06	21.3	C	
	NB-LTR	0.28	32.0	C	0.28	32.0	C		0.15	29.1	C	0.15	29.1	C		0.18	29.5	C	0.18	29.5	C	
	SB-R	0.85	44.3	D	0.96	60.2	E	*	0.65	34.6	C	0.71	36.9	D		0.59	32.6	C	0.66	35.0	C	
23. Astoria Boulevard & 18th Street	SB-LR	0.51	32.5	D	1.44	258.4	F	*	0.24	13.9	B	0.39	15.9	C		0.29	17.2	C	0.60	27.5	D	
(Unsignalized-Two Way Stop)																						

Table 2 (continued)
Alternate With-Action LOS under the Proposed Modified Project

Intersection	Lane Group	AM PEAK HOUR							MIDDAY PEAK HOUR							PM PEAK HOUR						
		NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION				NO-ACTION			WITH-ACTION			
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D	0.02	40.4	D		0.11	42.0	D	0.11	42.0	D		0.09	41.8	D	0.09	41.8	D	
	EB-R	0.37	47.5	D	0.37	47.5	D		0.13	42.4	D	0.13	42.4	D		0.17	43.1	D	0.17	43.1	D	
	WB-L	0.98	52.8	D	1.01	59.8	E	*	0.75	40.3	D	0.79	42.0	D		0.71	39.6	D	0.81	43.0	D	
	WB-TR	0.25	14.8	B	0.25	14.8	B		0.17	14.2	B	0.17	14.2	B		0.29	15.7	B	0.29	15.7	B	
	NB-L	0.31	32.2	C	0.32	32.8	C		0.11	25.3	C	0.12	25.4	C		0.18	26.1	C	0.18	26.3	C	
	NB-T	1.08	98.0	F	1.17	133.9	F	*	0.78	43.5	D	0.83	47.3	D		1.12	101.6	F	1.17	123.0	F	*
	SB-TR	1.03	61.9	E	1.06	71.0	E	*	0.58	33.6	C	0.60	34.2	C		0.78	39.9	D	0.81	41.6	D	
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR	0.61	36.3	D	0.69	37.6	D		0.33	32.8	C	0.37	33.4	C		0.47	34.6	C	0.52	35.5	D	
	NB-LTR	0.61	15.8	B	0.63	16.4	B		0.45	13.6	B	0.46	13.8	B		1.01	42.5	D	1.07	62.7	E	*
	SB-LTR	1.10	72.7	E	1.14	88.9	F	*	0.64	16.6	B	0.67	17.3	B		0.99	42.6	D	1.07	66.7	E	*
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.2	A	0.01	8.6	A		0.00	7.8	A	0.00	8.2	A		0.01	7.9	A	0.01	8.9	A	
	SB-LR	0.34	15.3	C	1.45	242.7	F	*	0.33	12.1	B	0.74	28.1	D		0.33	14.2	B	1.39	221.6	F	*
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.58	29.7	D	0.64	34.6	D		0.23	16.4	C	0.26	17.2	C		0.44	23.4	C	0.51	27.9	D	
	SB-LT	0.02	8.2	A	0.02	8.2	A		0.03	8.0	A	0.03	8.1	A		0.02	8.6	A	0.02	8.8	A	
28. Vernon Boulevard & Broadway/ 11th Street	EB-LTR	0.01	28.2	C	0.01	28.2	C		0.02	26.1	C	0.02	26.1	C		0.03	33.2	C	0.03	33.2	C	
	WB-LTR	1.13	99.5	F	1.17	115.9	F	*	0.96	55.7	E	1.01	68.8	E	*	0.97	69.3	E	1.08	99.5	F	*
	NB (Vernon Blvd)-LT	0.26	8.0	A	0.27	8.1	A		0.27	8.4	A	0.28	8.5	A		0.48	9.5	A	0.49	9.7	A	
	NB (Vernon Blvd)-R	0.11	6.8	A	0.11	6.8	A		0.20	7.8	A	0.20	7.8	A		0.18	6.7	A	0.18	6.7	A	
	NB (11th Street)-LTR	0.38	41.1	D	0.38	41.1	D		0.22	32.8	C	0.22	32.8	C		0.33	38.2	D	0.33	38.2	D	
	SB-LTR	1.08	80.8	F	1.22	136.4	F	*	0.58	27.9	C	0.62	29.2	C		0.66	30.7	C	0.75	34.7	C	
29. 31st Avenue & 21st Street	EB-LTR	0.67	45.6	D	0.70	47.3	D		0.34	34.5	C	0.38	35.4	D		0.50	35.0	D	0.54	36.3	D	
	WB-LTR	0.58	41.1	D	0.61	42.0	D		0.42	35.9	D	0.45	36.7	D		0.42	32.4	C	0.45	33.2	C	
	NB-TR	0.49	14.0	B	0.50	14.2	B		0.63	16.7	B	0.64	17.0	B		0.77	23.2	C	0.79	24.1	C	
	SB-TR	0.85	24.1	C	0.87	25.8	C		0.55	15.2	B	0.57	15.6	B		0.64	19.5	B	0.65	19.8	B	

Notes:
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec/veh - Seconds per Vehicle
LOS - Level of Service
* - Denotes a significant adverse impact.
Analysis is based on the 2010 *Highway Capacity Manual* methodology (HCS+, version 5.5)