A. INTRODUCTION

This chapter assesses the potential impacts of the Proposed Project on open space resources. Open space is defined in the *City Environmental Quality Review* (CEQR) *Technical Manual* as publicly accessible, publicly or privately owned land that is available for leisure, play, or sport or serves to protect or enhance the natural environment. The *CEQR Technical Manual* guidelines indicate that an open space analysis should be conducted if an action would result in a direct effect, such as the physical loss or alteration of public open space, or an indirect effect, such as when a substantial new population could place added demand on an area's open spaces.

As discussed in **Chapter 1, "Project Description,"** under the reasonable worst-case development scenario (RWCDS), compared to No-Action conditions, the Proposed Actions would facilitate the redevelopment of underutilized sites in the Astoria neighborhood of Queens by introducing housing, local retail community facility uses, and open space. For conservative analysis purposes, the RWCDS is anticipated to result in an incremental increase of 1,665 dwelling units over the 2031 No-Action condition. Based on an assumption of 2.33 residents per residential unit, this would result in an increase of 3,880 residents, which exceeds the *CEQR Technical Manual* threshold for a detailed open space analysis[1]. The Proposed Actions would also add a total of 41,363 sf (0.95 acres) of publicly accessible open space. A quantitative assessment was conducted to determine whether the Proposed Actions would significantly reduce the amount of open space available for the area's residential population.

The Proposed Actions would result in a net decrease of 90 employees over the No-Action condition and would therefore be below the *CEQR Technical Manual* threshold for analysis based on employee numbers. Therefore, the analysis of open space will focus exclusively on the open space needs of the area residential population.

B. PRINCIPAL CONCLUSIONS

According to the *CEQR Technical Manual,* a proposed action may result in a significant adverse impact on open space resources if (a) there would be direct displacement/alteration of existing open space within the study area that would have a significant adverse effect on existing users; or (b) it would reduce the open space ratio and consequently result in the overburdening of existing facilities or further exacerbating a deficiency in open space. The *CEQR Technical Manual* also indicates that a decrease in the open space ratio of five percent or more is generally considered significant. For areas that are extremely lacking in open space, a decrease of as little as one percent may be considered significant. In addition to a qualitative analysis, an open space impact assessment also considers qualitative factors.

As the Proposed Actions are expected to introduce 3,880 residents under the RWCDS, a detailed open space analysis for a residential (½-mile) study area was conducted, pursuant to the *CEQR Technical*

[1] Assumes 2.33 persons/household in Queens Community District 1 based on 2014-2018 American Community Survey (ACS) data

Manual. Under existing, No-Action, and With-Action conditions, the residential study area meets the *CEQR Technical Manual* guideline goals for total (2.5 acres per 1,000 residents) and passive (0.5 acres per 1,000 residents) open space per resident, but does not meet the City's guideline for active open space (2.0 acres per 1,000 residents).

Although the Proposed Actions would not have a direct impact on open space resources in the study area nor would they result in the physical loss of existing public open space resources or significant adverse shadow, air, noise, or other environmental impacts that would affect the usefulness of any study area open space, the detailed analysis determined that the Proposed Actions would result in a decrease in the active open space ratio of over five percent. Therefore, the Proposed Actions would result in significant adverse impacts to open space.

C. METHODOLOGY

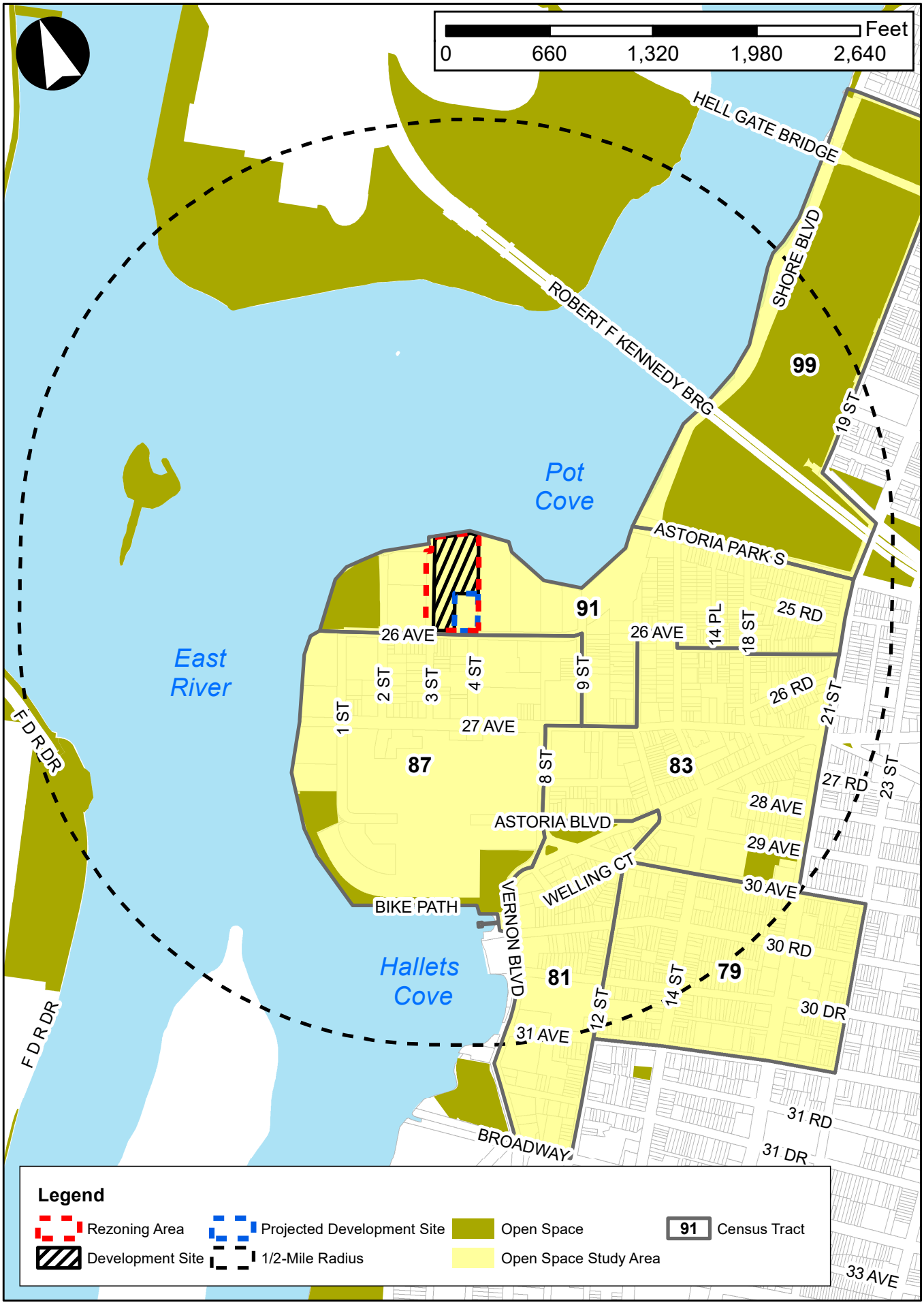
The analysis of open space resources has been conducted in accordance with the methodology set forth in the *CEQR Technical Manual*. Using this methodology, the adequacy of open space in the study area is assessed quantitatively using a ratio of usable open space acreage to the study area population, referred to as the open space ratio. This quantitative measure is then used to assess the changes in the adequacy of open space resources in the future, both without and with the Proposed Actions. In addition, qualitative factors such as utilization and condition are considered in making an assessment of the Proposed Actions' effects on open space resources.

Study Area

The first step in assessing potential open space impacts is to establish the appropriate study areas for the new population(s) to be added as a result of the Proposed Actions. According to *CEQR Technical Manual* methodologies, the open space study areas are based on the distance a person is assumed to walk to reach a neighborhood open space, which differs by user. Workers typically use passive open spaces within a short walking distance of their workplaces. Residents are more likely to travel farther to reach parks and recreational facilities, and they use both passive and active open spaces. While they may also visit certain regional parks (like Central Park), such open spaces were not included in the study area's quantitative analysis but are described qualitatively. Workers are assumed to walk up to about ¼-mile distance to reach neighborhood open spaces, and residents are assumed to walk up to about ½-mile distance.

As the worker population resulting from the Proposed Actions would not exceed the CEQR threshold for analysis, a non-residential (worker) analysis was not warranted. However, as indicated above, the new residential population resulting from the Proposed Actions would require a residential analysis. The *CEQR Technical Manual* recommends that the residential open space study area be comprised of all census tracts that have at least 50 percent of their area located within a ½-mile of the Project Area. Given the size of the census tracts located within the Project Area's study area, strict adherence to this guideline would result in demographics that are not representative of the geographical areas that typically define a reasonable walking distance that residents would travel to reach open space and recreational areas. Specifically, while some portions of Wards Island Park are located within the half-mile radius of the Project Area, Wards Island Park was not included in the study area as it is located across the East River and none of its census tract areas were located at least 50 percent within the half-mile radius. The defined residential study area is shown in **Figure 5-1**.

Figure 5-1
Open Space Study Area



Analysis Framework

Direct Effect Analysis

According to the *CEQR Technical Manual*, a proposed action would directly affect open space conditions if it causes the loss of public open space, changes the use of an open space so that it no longer serves the same user population, limits public access to an open space, or results in increased noise or air pollutant emissions, odor, or shadows that would temporarily or permanently affect the usefulness of a public open space. As no open space resources would be physically displaced as a result of the Proposed Actions, this chapter uses information from **Chapter 2 "Land Use, Zoning, and Public Policy" and Chapter 6, "Shadows"** to determine whether the Proposed Actions would directly affect any open spaces within, or in close proximity to, the Project Area.

Indirect Effect Analysis

As described in the *CEQR Technical Manual*, open space can be indirectly affected by a proposed action if the project would add enough population, either residential or non-residential, to noticeably diminish the capacity of open space in the area to serve the future population. Typically, an assessment of indirect effects is conducted when a project would introduce more than 200 residents or 500 workers to an area; however, the thresholds for assessment are slightly different for areas of the City that have been identified as either underserved or well-served by open space. For areas underserved by open space, the threshold for assessment is more than 50 residents or 125 workers, and for areas well-served by open space, the threshold for assessment is more than 350 residents or 750 workers. **Figure 5-1** shows the open space study area. The Project Area is located within an area that has been identified as neither underserved nor well-served by open space.

Per *CEQR Technical Manual* guidelines, the open space analysis and impact assessment is based on the anticipated development from the Proposed Actions. As discussed in **Chapter 1, "Project Description,"** the RWCDS assumes that the Proposed Actions would result in the development of up to 1,665 residential units, which would introduce an estimated 3,880 residents to the Project Area, compared to the No-Action condition. In addition, the Proposed Actions would result in a net decrease of 106 workers as compared to the No-Action condition. As such, an open space assessment is only warranted for the residential population generated by the Proposed Actions.

With an inventory of available open space resources and potential users, the adequacy of open space in the study areas can be assessed both quantitatively and qualitatively. The quantitative approach computes the ratio of open space acreage to the population in the study area and compares this ratio with certain guidelines. The qualitative assessment examines other factors that may affect conclusions about adequacy, including proximity to additional resources beyond the study area, the availability of private recreational facilities, and the demographic characteristics of the area's population. Specifically, the analysis in this chapter includes:

- Characteristics of the two open space user groups: residents and non-residents. To determine the number of residents in the study areas, 2014-2018 estimates from the American Community Survey (ACS) Census data have been compiled for census tracts comprising the nonresidential and residential open space study areas. An inventory of all publicly accessible passive and active recreational facilities in the non-residential and residential open space study areas.

- An assessment of the quantitative ratio of open space in the residential study area by computing the ratio of open space acreage to the population in the study area and comparing this open space ratio with certain guidelines. For the residential population, there are generally two guidelines that are used to evaluate residential open space ratios. The *CEQR Technical Manual* generally recommends a comparison to the median ratio for community districts in New York City, which is 1.5 acres of open space per 1,000 residents. However, the *CEQR Technical Manual* planning goal is 2.5 acres of open space per 1,000 residents, including 2.0 acres of active open space and 0.5 acres of passive open space. Because this ratio changes depending on the proportion of residents in the study area, the tables summarizing the open space ratios outline the amount of open space needed in each condition in the study area, and calculate the open space acres per 1,000 residents.
- An evaluation of qualitative factors affecting open space use.
- A final determination of the adequacy of open space in the residential open space study area.
- An assessment of expected changes in future levels of open space supply and demand in the 2031 analysis year, based on other planned development projects and anticipated background growth rates within the open space study areas. To estimate the population expected in the study areas in the future without the Proposed Actions, an average household size of 2.33 persons is applied to the number of new housing units expected in portions of the study area located within Queens CD 1. Any new open space or recreational facilities that are anticipated to be operational by the analysis year are also accounted for. Open space ratios are calculated for future No-Action conditions and compared with existing ratios to determine changes in future levels of adequacy.

Impact Assessment

Impacts are based in part on how a project would change the open space ratios in the study area. According to the *CEQR Technical Manual*, an open space ratio decrease is generally considered to be a significant adverse impact, warranting a detailed analysis, if it would approach or exceed five percent. If a study area exhibits a low open space ratio (e.g., below 1.5 acres per 1,000 residents or 0.15 acres of passive space per 1,000 non-residential users), indicating a shortfall of open space, smaller decreases in that ratio as a result of the action may constitute significant adverse impacts. In addition to the quantitative factors cited above, the *CEQR Technical Manual* also recommends consideration of qualitative factors in assessing the potential for open space impacts. These include the availability of nearby destination resources, the beneficial effects of new open space resources provided by a project, and the comparison of projected open space ratios with established City guidelines. It is recognized that the open space ratios of the City guidelines described above are not feasible for many areas of the City, and they are not considered impact thresholds on their own. Rather, these are benchmarks that indicate how well an area is served by open space.

D. EXISTING CONDITIONS

Study Area Population

Residential (½-Mile) Study Area

RESIDENTIAL POPULATION

As also shown in **Table 5-1**, 2014-2018 Census ACS 5-year data indicate that the residential ½-mile study area has a residential population of approximately 13,844 persons, the majority of which (approximately 65 percent) are people between the ages of 20 and 64. Children and teenagers (0 to 19 years old) account

for approximately 23.4 percent of the residential study area population, and persons 65 years and over account for approximately 11.3 percent of the residential study area population.

TABLE 5-1
Study Area Residential Population Age Breakdown

Census Tract[1]	Residential Population													
	Total Population	Age Distribution												Median Age
		Under 5		5 - 9		10 - 14		15 - 19		20 - 64		65+		
		#	%	#	%	#	%	#	%	#	%	#	%	
79	2,886	200	6.9	59	2.0	144	5.0	237	8.2	1,785	61.9	461	16.0	35.2
81	1,393	54	3.9	39	2.8	86	6.2	86	6.2	1,068	76.7	60	4.3	33.5
83	2,594	102	3.9	76	2.9	211	8.1	90	3.5	1,936	74.6	179	6.9	31.9
87	4,470	517	11.6	325	7.3	305	6.8	413	9.2	2,516	56.3	394	8.8	27.3
91	2,501	100	4.0	36	1.4	64	2.6	91	3.6	1,745	69.8	465	18.6	41.6
99	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0
TOTAL	**13,844**	**973**	**7.0**	**535**	**3.9**	**810**	**5.9**	**917**	**6.6**	**9,050**	**65.4**	**1,559**	**11.3**	**28.3**

Source: Residential population: U.S. Census Bureau, ACS 2014-20118 Five-Year Estimates Census

The higher percentage of children and teenagers in the study area is also evident when comparing the median age of the residential study area population to that of Queens and New York City as a whole. As shown in **Table 5-1**, the residential study area's average median age of 28.3, compared to 38.7 and 36.5 in Queens and New York City as a whole, respectively. The residential study area median ages by census tract range from a high of 41.6 years to a low of 27.3 years.

Within a given area, the age distribution of a population affects the way open spaces are used and the need for various types of recreational facilities. Typically, children four years old or younger use traditional playgrounds that have play equipment for toddlers and preschool children. Children ages five through nine typically use traditional playgrounds, as well as grassy and hard-surfaced open spaces, which are important for activities such as ball playing, running, and skipping rope. Children ages ten through 14 use playground equipment, court spaces, Little League fields, and ball fields. Teenagers' and young adults' needs tend toward court game facilities such as basketball and field sports. Adults between the ages of 20 and 64 continue to use court game facilities and fields for sports, as well as more individualized recreation such as rollerblading, biking, and jogging, requiring bike paths, promenades, and roadways. Adults also gather with families for picnicking, ad hoc active sports, and recreational activities in which all ages can participate. Senior citizens engage in active recreation such as tennis, gardening, and swimming, as well as recreational activities that require passive facilities.

Inventory of Publicly-Accessible Open Space

According to the *CEQR Technical Manual*, open space may be public or private and may be used for active or passive recreational purposes. Pursuant to the *CEQR Technical Manual*, publicly accessible open space is defined as facilities open to the public at designated hours on a regular basis and is assessed for impacts using both a quantitative and a qualitative analysis, whereas private open space is not accessible to the general public on a regular basis and is considered qualitatively. Field surveys and secondary sources were used to determine the number, availability, and condition of publicly accessible open space resources in the non-residential and residential study areas.

An open space is determined to be active or passive by the uses that the design of the space allows. Active open space is the part of a facility used for active play such as sports or exercise and may include

playground equipment, playing fields and courts, swimming pools, skating rinks, golf courses, lawns and paved areas for active recreation. Passive open space is used for sitting, strolling, and relaxation, and typically contains benches, walkways and picnicking areas. However, some passive spaces can be used for both passive and active recreation; such as a green lawn or riverfront walkway, which can also be used for ball playing, jogging or rollerblading.

All of the publicly accessible open space and recreational resources within the study area are listed in **Table 5-2** below and numbered one through nine in **Figure 5-2**.

In addition to the open space resources included in the quantitative analysis pursuant to CEQR methodology, one resource (identified by the letter A in **Table 5-3** and **Figure 5-2**) fall within the study area but are excluded from the quantitative analysis due to limited hours and/or accessibility. Seven open space resources (letters B through H in **Table 5-3** and **Figure 5-2**) were also not included in the quantitative analysis as they fall outside of the open space study area, yet are significant open space resources for the general area surrounding the Project Area, and are therefore discussed in the qualitative analysis below.

Residential (½-Mile) Study Area

The residential study area includes nine open space resources within the ½-mile radius (refer to **Table 5-2** and **Figure 5-2**) that may be used by a segment of the study area population. As shown in **Table 5-2**, the residential study area contains a total of approximately 73.57 acres of publicly accessible open space. Of this total, approximately 47.58 acres (64.7 percent) are passive space and 25.99 acres (35.3 percent) are active space (see **Table 5-2**).

Astoria Park is the largest open space in the study area. This 59.96-acre community park extends from south of the Robert F. Kennedy Bridge to north of the Hell Gate Bridge, accounting for approximately 80 percent of the total open space acreage in the study area. Astoria Park is widely known for its approximately 330-foot long swimming pool, one of the largest and most popular swimming facilities in the City. Astoria Park also contains tennis and bocce courts, multiple trails for running and biking, a skate park, tennis courts, running tracks, spray showers, fitness equipment, playgrounds, multipurpose open spaces for both active and passive uses, and a designated off-leash area for dogs. The park also has a panoramic view of Manhattan due to its location along the East River.

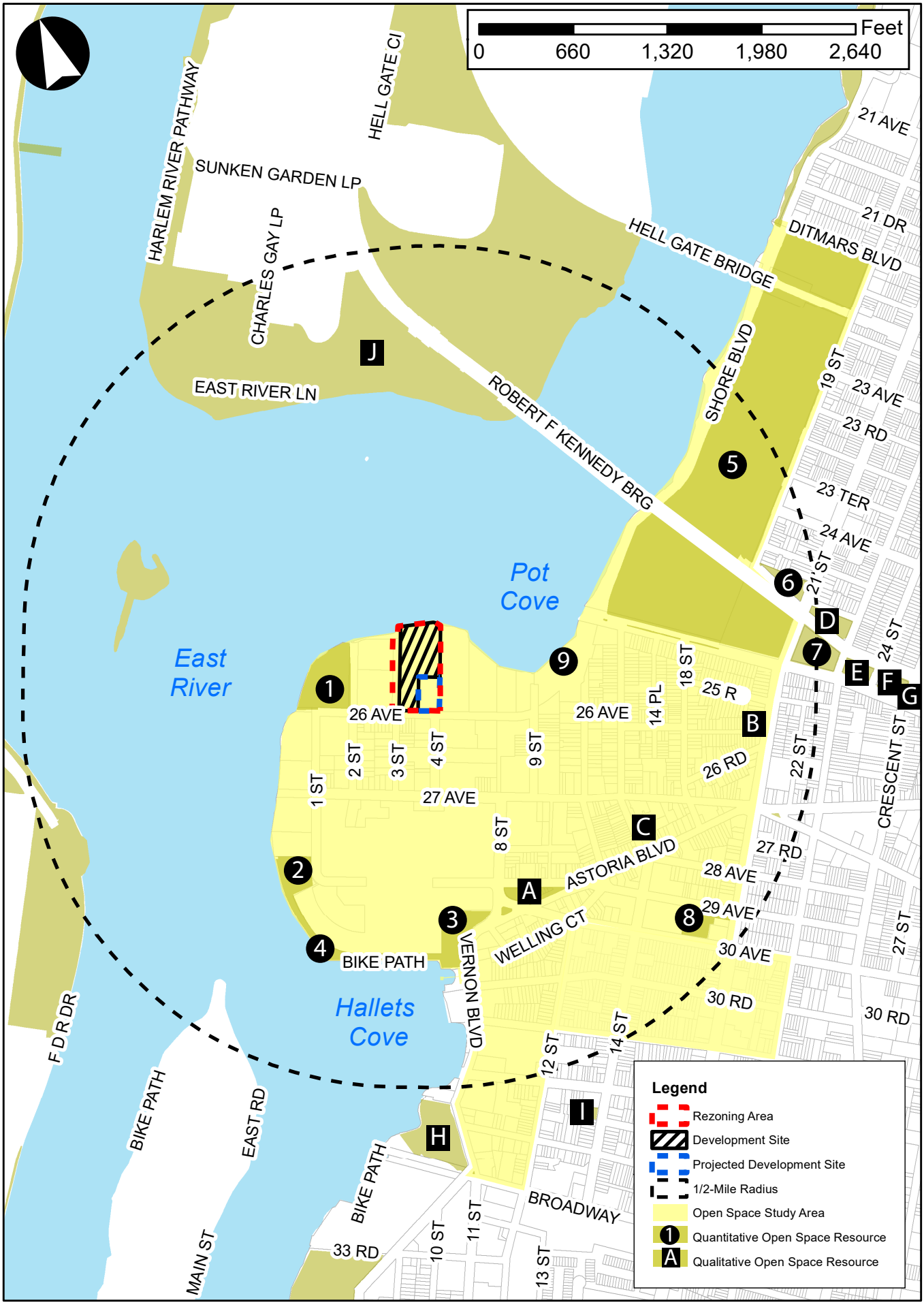
The majority of the remaining open space resources in the study area are programmed primarily for active uses. Halletts Point Playground, Hallett's Cove Playground, and Hallett's Cove Esplanade are the next largest open spaces in the study area with a combined 5.7 acres. The combined neighborhood park is bounded by the East River, 1st Street, Halletts Cove, and Vernon Boulevard and contains ball courts, handball courts, comfort stations, play equipment and playgrounds, benches, and a kayak/canoe launch site. The esplanade provides views of the East River, Lighthouse Park at Roosevelt Island, and the Manhattan skyline.

The 3.62-acre Whitey Ford Field contains a baseball diamond, bleachers, benches, and fitness equipment. The park is located along the waterfront and contains panoramic views of Manhattan and Randall's Island. Triborough Bridge Park Sitting Area and Triborough Bridge Playground B are located along Hoyt Avenue between 21st and 24th Streets and include benches, playgrounds and fitness equipment. Van Alst Playground is a 1.03-acre playground at PS 171; it includes basketball and handball courts, play equipment, and benches with checkers/chess boards.

Three additional open spaces resources are located within the ½-mile study area, but are excluded from the quantitative analysis due to limited hours and/or accessibility, pursuant to CEQR. Bounded by Main Avenue, Astoria Boulevard, and 8th Street, the 0.79-acre Two Coves Community Garden occupies a

Figure 5-2

Quantitative and Qualitative Open Space Resources



triangular piece of land containing planting beds, paths, benches, and picnic tables. This garden has limited hours (Saturdays and Sundays from 9 AM to 12 PM and from 3 PM to 5 PM) and is therefore excluded from the quantitative analysis. Two cemeteries are also located in the open space study area (resources B and C) are excluded from the quantitative analysis as they do not include seating and are fenced and gated.

A number of public parks and open spaces are located within a ½-mile of the Project Area but outside of the open space study area. The 1.23-acre Peter Chappetto Memorial Square, Triborough Bridge Playgrounds C, D, and E (0.46 acres each), the 0.21-acre Astoria Health Playground, the 4.5-acre Socrates Sculpture Park, and 53.2 acres of Wards Island Park are located within a ½-mile of the Project Area in census tracts 95, 77, 37, and 240, respectively. However, as these census tracts contain less than 50 percent of their area within the ½-mile radius, these nearby open space resources have been excluded from the quantitative analysis. While these facilities are conservatively excluded from the quantitative analysis, it is likely that they would be used by people who live and work in the study area, who would be drawn to the active and passive recreational resources. Socrates Sculpture Park is located along the waterfront between Broadway and 31st Road. This unique passive open space functions as an outdoor art gallery and cultural and performance space.

The southernmost portion of Wards Island Park that falls within a ½-mile of the Project Area is accessible from the Project Area via a pedestrian/bike path along the Robert F. Kennedy Bridge located at Hoyt Avenue North and 27th Street. The southernmost portion of the park includes playgrounds and baseball and soccer fields. While the park is located outside of the area typically considered a reasonable walking distance for a range of users due to the location of the pedestrian bridge entrance to the east of the Project Area, due to the multiple recreation opportunities provided at Wards Island Park, it is a popular resource for organized events and recreation leagues in the surrounding area. In addition, while only 53.2 acres of Wards Island Park are within a ½-mile of the Project Area, the entire park constitutes 170.7 acres of recreational open space. The portion of this park outside the ½-mile perimeter includes outdoor tennis courts, a running track, barbeque areas, football fields, and more playgrounds and baseball and soccer fields.

In addition, there are 2.5 acres of primarily active open space not included in the quantitative analysis located on the New York City Housing Authority (NYCHA) Astoria Houses campus and available to its residents. While this open space is not considered publicly accessible, it is significant open space for the general area. The open space contains playgrounds, basketball courts with benches, and fenced-off landscaping that contributes to the sense of open space.

TABLE 5-2

Open Space Resources within the ½-Mile Open Space Study Area

Map ID[1]	Name	Address	Owner/ Agency[2]	Amenities	User Groups	Hours of Access	Total Acres	Active		Passive		Condition & Utilization
								%	Acres	%	Acres	
1	Whitey Ford Field	2nd St., 26th Ave., & East River	DPR	Baseball diamond, bleachers, benches, fitness equipment	Children, Teenagers, Adults	6am-10pm	3.62	90	3.26	10	0.36	Fair, Moderate
2	Halletts Point Playground	1st St. & East River	DPR	Play equipment, ball courts, benches	Children, Teenagers,	6am-9pm	1.25	90	1.13	10	0.12	Fair, Moderate
3	Hallets Cove Playground	Vernon Blvd. & Halletts Cove	DPR	Play equipment, handball court, comfort station, benches	Children, Teenagers,	6am-9pm	2.25	90	2.03	10	0.22	Excellent, Moderate
4	Hallets Cove Esplanade	Halletts Cove	DPR	Esplanade, benches	All Ages	All hours	2.20	50	1.10	50	1.10	Poor, Light
5	Astoria Park	Shore Blvd., Astoria Park S., & 21st St.	DPR	Paths, multipurpose lawns, esplanade, running track, tennis courts, swimming pool, playgrounds, skate park	All Ages	6am-10pm	59.96	27	16.37	73	43.59	Good, Heavy
6	Triborough Bridge Park Sitting Area	Hoyt Ave. btwn. 19th &21st Sts.	DPR/TBTA	Tree plantings, paved plaza area	All Ages	Sunrise-9pm	1.16	0	0	100	1.16	Fair, Light
7	Triborough Bridge Playground B	Hoyt Ave. btwn. 21st & 23rd Sts.	DPR/TBTA	Playgrounds, fitness equipment	Children, Teenagers, Adults	6am-9pm	1.30	90	1.17	10	0.13	Fair, Moderate
8	Van Alst Playground	29th – 30th Aves., 14th – 21st Sts. (adjoined to PS171)	DPR/DOE	Play equipment, handball & basketball courts, benches with checkers/chess tables	All Ages	6am-9pm	1.03	90	0.93	10	0.10	Good, Heavy
9	Shore Towers[3]	9th St. & East River	Shore Towers Condominiums	Pedestrian and bicycle pathway, trees, lighting, seating	All Ages	All hours	0.80	0	0	100	0.80	Fair, Light
						Total Open Space in Quantitative Analysis:	***73.57***	***35.3%***	***25.99***	***64.7%***	***47.58***	

Sources: DoITT, DCP Queens Community District 1 Profile, New York City Department of Parks and Recreation (NYC Parks) website, 2020 PLUTO data

Notes:

[1] Refer to **Figure 5-2**

[2] DPR = New York City Department of Parks and Recreation; DOE = New York City Department of Education; DOT = New York City Department of Transportation

[3] While Shore Towers was built pre-waterfront zoning, it includes a Publicly Accessible Walkway pursuant to a restrictive declaration.

Table 5-3
Open Space Resources not included within the Quantitative Analysis

Map ID[1]	Name	Address	Owner/ Agency[2]	Amenities	User Groups	Hours of Access	Total Acres	Active		Passive		Condition & Utilization
								%	Acres	%	Acres	
Open Space Resources Located Within the Study Area Not Included in the Quantitative Analysis												
A	Two Coves Community Garden[3]	Main Ave., Astoria Blvd., & 8th St.	DPR	Planting beds, paths, benches, picnic tables	All Ages	20 hours/ week	0.79	0	0	100	0.79	Good, Light
Open Space Resources Located Outside of the Study Area Not Included in the Quantitative Analysis												
B	Peter Chappetto Memorial Square	Hoyt Ave btwn. 21st & 23rd Sts.	DPR/TBTA	Hockey rink, Ecuavoley courts, drinking fountains, paths, greenery	Adults, Senior Citizens	6am-9pm	1.23	75	0.92	25	0.31	Excellent, Moderate
C	Triborough Bridge Playground C	Hoyt Ave btwn. 23rd & 24th Sts.	DPR/TBTA	Basketball court, dog run	Children, Teenagers, Adults	6am-9pm	0.46	70	0.32	30	0.14	Good, Light
D	Triborough Bridge Playground D[4]	Hoyt Ave. btwn. 24th & Crescent Sts.	DPR/TBTA	Ball courts, playground	Children, Teenagers	6am-9pm	0.46	90	0.41	10	0.05	Fair, Light
E	Triborough Bridge Playground E[4]	Hoyt Ave., Crescent St., 26th St.	DPR/TBTA	Playgrounds	Children, Teenagers	6am-9pm	0.46	90	0.41	10	0.05	Fair, Light
F	Socrates Sculpture Park	Vernon Blvd., Broadway, & 31st Rd.	DPR	Greenery, benches	All Ages	9am-Sunset	4.89	0	0	100	4.89	Good, Moderate
G	Astoria Health Playground	Astoria Health Playground	DPR	Playground	Children	6am-9pm	0.21	90	0.19	10	0.02	Good, Moderate
H	Wards Island Park	Wards Island	DPR	Playground, BBQ areas, baseball, football, soccer, and tennis fields, running track	Children, Teenagers, Adults	6am-1am	53.2[6]	90	47.88	10	5.32	Good, Moderate

Notes:
[1] Refer to **Figure 5-2.**
[2] DPR = New York City Department of Parks and Recreation; DOE = New York City Department of Education; DOT = New York City Department of Transportation
[3] Given Two Coves Community Garden's limited public hours (Saturday-Sunday 9-12 and 3-5) it is excluded from the quantitative analysis.
[4] Triborough Bridge Playgrounds D and E are currently closed for the long term and unusable by the public and therefore are excluded from the quantitative analysis.

[6]Wards Island includes a total of 170.7. Only the area included within the ½-mile study area is included in the table.

Assessment of Open Space Adequacy

Residential (½-Mile) Study Area

The following analysis of the adequacy of open space resources within the residential study area takes into consideration the ratios of active, passive, and total open space resources per 1,000 residents.

QUANTITATIVE ASSESSMENT

With a total of 73.57 acres of open space, of which approximately 47.58 acres are for passive use and approximately 25.99 acres are for active use, and a total residential population of 13,844, the residential study area has an overall open space ratio of 5.314 acres per 1,000 residents, respectively (see **Table 5-4**). This is greater than the City's planning goal of 2.5 acres of combined active and passive open space per 1,000 residents. The study area's residential passive and active open space ratios are 3.437 acres and 1.877 acres per 1,000 residents, respectively. While the active open space ratio is below the applicable City open space guidelines, both the passive open space ratio and the total open space ratio are above these guidelines. As shown in **Table 5-4**, the passive open space ratio of 3.437 is above the applicable City open space goal for passive open space (0.50 acres of passive open space per 1,000 people). Additionally, the active open space ratio of 1.877 acres per 1,000 people is below the *CEQR Technical Manual* goal of 2.0 acres of active open space per 1,000 residents. As such, there is an existing shortfall of active open space in the residential study area.

TABLE 5-4
Existing Conditions: Adequacy of Open Space Resources

	Total Population	Open Space Acreage			Open Space Ratios Per 1,000 People			NYCDCP Open Space Guidelines		
		Total	Passive	Active	Total	Passive	Active	Total	Passive	Active
Residential Study Area										
Residents	13,844	73.57	47.58	25.99	5.314	3.437	1.877	2.50	0.50	2.00
Combined Residents and Workers	18,444				N.A.	2.580	N.A.	N.A.	0.413*	N.A.

* Based on a target open space ratio established by creating a weighted average of the amount of open space necessary to meet the City guideline of 0.50 acres of passive open space per 1,000 residents and 0.15 acres of passive open space per 1,000 workers is considered in this analysis. Workers typically use passive spaces; therefore, for the nonresidential study area, only passive open space ratios are calculated. For the residential study area, active, passive, and total park space ratios are calculated.

QUALITATIVE ASSESSMENT

As noted above, the residential study area contains a mixture of recreational facilities, with approximately 35 percent dedicated to active uses and 65 percent dedicated to passive use. Additionally, the total open space ratio per 1,000 residents is above the guideline goal of 2.5 acres per 1,000 residents and the citywide median of 1.5 acres per 1,000 residents – although the active open space ratio is below the City's guideline of 2.0 acres per 1,000 residents.

As shown in **Table 5-2**, the residential study area open spaces include a wide variety of actively programmed open spaces appropriate for the residential user groups. Additionally, as detailed in **Table 5-1** above, the study area includes a higher percentage of children and teenagers (23.4 percent) as to the

borough of the Queens and the New York City as a whole (15.9 percent and 16.5 percent, respectively). Of these cohorts, the percentage of teenagers and young children is particularly marked, with 15 to 19 year olds and children under 5 years comprising 6.6 percent and 7.0 percent of the study area population, respectively. As indicated in the *CEQR Technical Manual,* teenagers and young adults tend to use court facilities, such as basketball courts, and sports facilities, such as football or soccer fields. Five of the residential study area's nine open spaces include such facilities (refer to **Table 5-2**). Young children and toddlers on the other hand generally tend to use playgrounds and play equipment, which are featured at five of the nine study area open spaces. Furthermore, teenagers and young adults typically use open space resources in the hours after school, while utilization by young children under 5 years of age generally occurs during school hours. In addition, and as noted in **Tables 5-2** and **5-3**, most are in good or fair condition with moderate utilization rates. While active open space resources are generally more utilized in the weekend hours than during the weekday, only three of the nine open space resources located within the residential study area are highly utilized on weekends.

In addition to the open space resources listed in **Tables 5-3**, and described above, seven notable open space resources are located just outside of the open space study area. These include the 170.7-acre Wards Island Park, the 1.23-acre Peter Chappetto Memorial Square, Triborough Bridge Playgrounds C, D, and E (0.46 acres each), as well as the Astoria Health Playground and the Socrates Sculpture Park – 0.21 acres and 4.89 acres, respectively (see **Table 5-3**). It is possible that some residents in the open space study area would elect to utilize these open space resources if it is more convenient or attractive to them than open space resources that are located within the open space study area. While for conservative analysis purposes these open space resources are not included in the quantitative open space assessment, it should also be noted that Wards Island and Socrates Sculpture Park represent significant destination open spaces and provides additional active and passive open space resources. In particular, the sizable Wards Island Park features over 20 baseball, soccer and football fields, among other facilities. Although it is located in the middle of the East River, and therefore not immediately accessible from the neighborhood, as Wards Island Park is considered a "destination park," it is possible that some residents would travel farther than the ½-mile extent of the residential study area (either by vehicle, transit, or bike) to enjoy its open space and recreational amenities.

Moreover, as noted above, the quantitative analysis is conservative as it assumes that residents and daytime users are separate populations, whereas it is possible that some of the residents live near their workplace, resulting in some double-counting of the daily user population in the study area.

E. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO-ACTION CONDITION)

Study Area Population

In the future without the Proposed Actions, new development is anticipated at several sites within a ½-mile of the Project Area (see **Table 5-5**). In total, these No-Action developments are expected to introduce approximately 11,331 residents to the ½-mile study area (based on an average household size of 2.33 persons per dwelling unit (DU) for Queens CD 1). As shown in **Table 5-6**, this would increase the ½-mile study area population to 25,175 residents.

TABLE 5-5
No-Action Developments Planned for Completion by 2031 within a ½-Mile Radius

Map Number	Project Name/Address	Number of Residential Units	Retail Space (gsf)	Community Facility Space (gsf)	Estimated Residents	Estimated Workers
1	Astoria Cove/4-55 26th Avenue	1,689	109,740	62,248	3,935	646
2	Halletts Point/3-24 27th Avenue	2,239	38,563	-	5,217	205
3	26-35 3rd Street	58	14,780	14,681	135	105
4	26-30 4th Street	99	-	-	231	4
5	26-02 4th Street	46	-	9,184	107	39
6	12-16 30th Avenue	15	-	-	35	1
7	30-77 Vernon Boulevard	569	1,183	-	1,326	26
8	11-35 31st Drive	40	-	-	93	2
9	30-07 Vernon Boulevard	67	6,009	-	156	21
10	9-24 Main Avenue	31	-	-	72	1
11	30-18 14th Street	10	-	-	23	-
				Total	***11,331***	***1,050***

Number of residents estimated based on 2014-2018 Census average household size of 2.33 for Queens CD 1. Number of workers estimated based on standard ratio of 3 workers/1,000 sf of retail, 4 workers/1,000 sf of community facility space, and 1 worker per 25 residential units.

TABLE 5-6
No-Action Open Space Study Area Population

	Existing Population	Additional Population as a Result of No-Action Developments[1]	Future No-Action Population
Residents	13,844	11,331	25,175
Combined Resident and Worker Population	18,444	12,381	30,825

Open Space Resources

NYC Parks has plans to repair and/or reconstruct a number of open space resources within the study area. Construction at Whitey Ford Field – which contains a baseball diamond, bleachers, and fitness equipment – as well as two construction projects at the Charybdis Playground within the greater Astoria Park are expected to be completed in 2021. Repairs to the Hallets Cove Esplanade sea wall are also expected to be completed in 2021. Outside of these planned projects, no other changes to the study area open spaces area anticipated by the analysis year.

In addition to the existing study area open space resources, two additional open spaces are anticipated to be developed within the study area by the 2031 analysis year without the Proposed Actions. The 2013 Halletts Point Rezoning, as approved, will facilitate the development of 2.43 acres of publicly accessible open space by 2022, which will be 30 percent (0.7 acres) active and 70 percent (1.73 acres) passive. The approved Halletts Point development, located approximately 700 feet from the Project Site, will include a waterfront esplanade that will run along the entire length of the Halletts Point site's waterfront, providing five upland connections to 1st Street. The waterfront esplanade would include landscaping, seating, a public plaza, and a playground.

The second anticipated open space resource will be developed as part of the 2014 Astoria Cove Development located adjacent and directly east of the Project Site. The Astoria Cove project includes a

1.92-acre waterfront open space that will be 12.5 percent active (0.24 acres) and 87.5 percent passive (1.68 acres) and will connect the Project Site through the adjacent Shore Towers pedestrian and bicycle pathway to the Astoria Park bicycle and running paths, esplanade, and large multipurpose open space areas. This waterfront open space would provide opportunities for active uses such as running and cycling and would include play equipment and a splash pad which provide additional open space for active uses.

Assessment of Open Space Adequacy

Residential (½-Mile) Study Area

In the future No-Action condition, the additional population introduced to the ½-mile study area would increase the demand on the area's open spaces. With the anticipated No-Action development, the residential study area will continue to be adequately served by passive open spaces and underserved by active open spaces in comparison to the City's guidelines. As indicated in **Table 5-7**, the No-Action total, passive, and active open space ratios per 1,000 residents are expected to decrease to 3.095, 2.026, and 1.070, respectively, from 5.314, 3.437, and 1.877, respectively, under existing conditions. The No-Action residential open space ratio for active open space would be less than the City's guideline ratio of 2.0 acres of active open space per 1,000 residents.

TABLE 5-7
Adequacy of Open Space Resources: No-Action Condition

	Total Population	Open Space Acreage			Open Space Ratios Per 1,000 People			NYCDCP Open Space Guidelines		
		Total	Passive	Active	Total	Passive	Active	Total	Passive	Active
Residential Study Area										
Residents	25,175	77.92	51.01	26.93	3.095	2.026	1.070	2.50	0.50	2.00
Combined Residents and Workers	30,825				N.A.	1.655	N.A.	N.A.	0.436*	N.A.

* Based on a target open space ratio established by creating a weighted average of the amount of open space necessary to meet the City guideline of 0.50 acres of passive open space per 1,000 residents and 0.15 acres of passive open space per 1,000 workers is considered in this analysis. Workers typically use passive spaces; therefore, for the nonresidential study area, only passive open space ratios are calculated. For the residential study area, active, passive, and total park space ratios are calculated.

The active open space ratio within the residential study area would remain below the City's guidelines in the future without the Proposed Actions. As under existing conditions, Socrates Sculpture Park, Astoria Health Playground and Wards Island Park are located just beyond the open space study area boundaries. While these open space resources are not included in the quantitative analysis, they represent a considerable amount of accessible active and passive open space for the residential population.

F. THE FUTURE WITH THE PROPOSED ACTIONS (WITH-ACTION CONDITION)

As described in **Chapter 1, "Project Description,"** in the future with the Proposed Actions it is anticipated that incremental development would comprise up to 1,665 dwelling units (DUs) (of which 416 would be affordable), approximately 16,887 gsf of local retail, and approximately 22,638 gsf of community facility use. Based on the average household size assumption used in the No-Action analysis above, the With-

Action development would introduce an estimated 3,880 new residents compared to No-Action conditions. The Proposed Actions would also include approximately 0.95 acres (41,363 sf) of publicly accessible open space as part of Projected Development Site 1. The new open space would be bounded by the Projected Development Site 1 to the south and would be accessed from the 3rd Street extension, north of 26th Avenue, as well as from the previously approved Astoria Cove Esplanade to the east.

Direct Effects

No publicly-accessible open space is currently located within the Project Area. Therefore, the Proposed Actions would not result in the physical loss of publicly-accessible open space. In addition, as discussed in other chapters of this EIS, the Proposed Actions would not cause increased shadows, noise, or air pollutant emissions that would affect the usefulness of any study area open space, whether on a permanent or temporary basis. Furthermore, the Proposed Actions would not change the use of a publicly-accessible open space so that it no longer serves the same user population, nor would it limit public access to any open spaces. Therefore, no significant adverse direct effects on open space would occur as a result of the Proposed Actions.

Indirect Effects

Study Area Population

As described in **Chapter 1, "Project Description,"** in the future with the Proposed Actions, it is estimated that an additional 1,665 DUs would be introduced in the Project Area, which are expected to introduce an additional 3,880 residents to the study area. The Proposed Actions would also result in a reduction of 90 workers in the study area, compared to No-Action conditions. Based on this incremental population growth, the study area's population would increase to a total of 29,055 residents in the 2031 With-Action condition, and the combined residential and worker population would increase to 34,615.

TABLE 5-8
With-Action Open Space Study Area Population

	No-Action Population	Additional Population as a Result of the Proposed Actions	Future With-Action Population
Residents	25,175	3,880	29,055
Combined Resident and Worker Population	30,825	3,790	34,615

Open Space Resources

As detailed in **Chapter 1, "Project Description**," the Proposed Actions are intended to facilitate the construction of new affordable and market-rate housing, local retail, and community facility uses. Additionally, an approximately 0.95 acre (41,363 sf) public open space composed of passive and active features such as terraced lawns with seating, landscaping and plantings, precast concrete seating, and adult exercise stations would be constructed on-site. In addition, opportunities for active uses such as cycling and jogging would be created along the Queens waterfront as the Proposed Project's esplanade would connect to the Astoria Park running and cycling path through the aforementioned planned Astoria Cove esplanade and the existing Shore Towers path. Construction of the Proposed Project, including open space amenities, is expected to be complete and fully operational by 2031. Aside from the Proposed

Project, no changes to study area open spaces are currently proposed. As such, the ½-mile study area would be served by approximately 78.87 acres of open space (including approximately 51.95 acres of passive open space and 26.94 acres of active open space) in the future With-Action condition.

Assessment of Open Space Adequacy

RESIDENTIAL (½-MILE) STUDY AREA

QUANTITATIVE ASSESSMENT

Under With-Action conditions, total open space ratios in the residential (½-mile) study area would decrease, from 3.095 in the No-Action condition to 2.714 acres per 1,000 residents in the With-Action (see **Tables 5-8** and **5-9**). The active open space ratio would decrease compared to No-Action conditions, from 1.070 to 0.927 acres per 1,000 residents, which would continue to be below the City's guidance ratio of 2.0 acres per 1,000 residents. The passive open space ratio per 1,000 residents would decrease compared to No-Action conditions, from 2.026 to 1.788 acres per 1,000 residents, but would remain above the City's guideline ratio of 0.50.

TABLE 5-9
Adequacy of Open Space Resources: With-Action Condition

	Total Population	Open Space Acreage			Open Space Ratios Per 1,000 People			NYCDCP Open Space Guidelines		
		Total	Passive	Active	Total	Passive	Active	Total	Passive	Active
Residential Study Area										
Residents	29,055	78.87	51.95	26.94	2.714	1.788	0.927	2.50	0.50	2.00
Combined Residents and Workers	34,615				N.A.	1.501	N.A.	N.A.	0.444*	N.A.

* Based on a target open space ratio established by creating a weighted average of the amount of open space necessary to meet the City guideline of 0.50 acres of passive open space per 1,000 residents and 0.15 acres of passive open space per 1,000 workers is considered in this analysis. Workers typically use passive spaces; therefore, for the nonresidential study area, only passive open space ratios are calculated. For the residential study area, active, passive, and total park space ratios are calculated.

QUALITATIVE ASSESSMENT

In the future with the Proposed Actions, ratios of open space would continue to be higher than the measure of open space adequacy and the CEQR planning guidelines for total and passive open spaces, while the active open space ratio would be lower. The population to be generated by the Proposed Actions is not expected to have any special characteristics, such as a disproportionately younger or older population, that would place heavy demand on facilities that cater to specific groups.

It should also be noted that, while the amount of active open space resources in the residential study area are, and would continue to be, deficient in comparison to City guidelines, the residential study area open spaces tend to have moderate utilization levels, and most are in good condition (refer to **Table 5-2**).

In addition, the availability of high quality open space resources located in close proximity to the study area, including the 4.89 acre Socrates Sculpture Park and Wards Island Park, a 170.7-acre major regional park, could help to partially offset this quantitative deficit. However, it should be noted that Wards Island

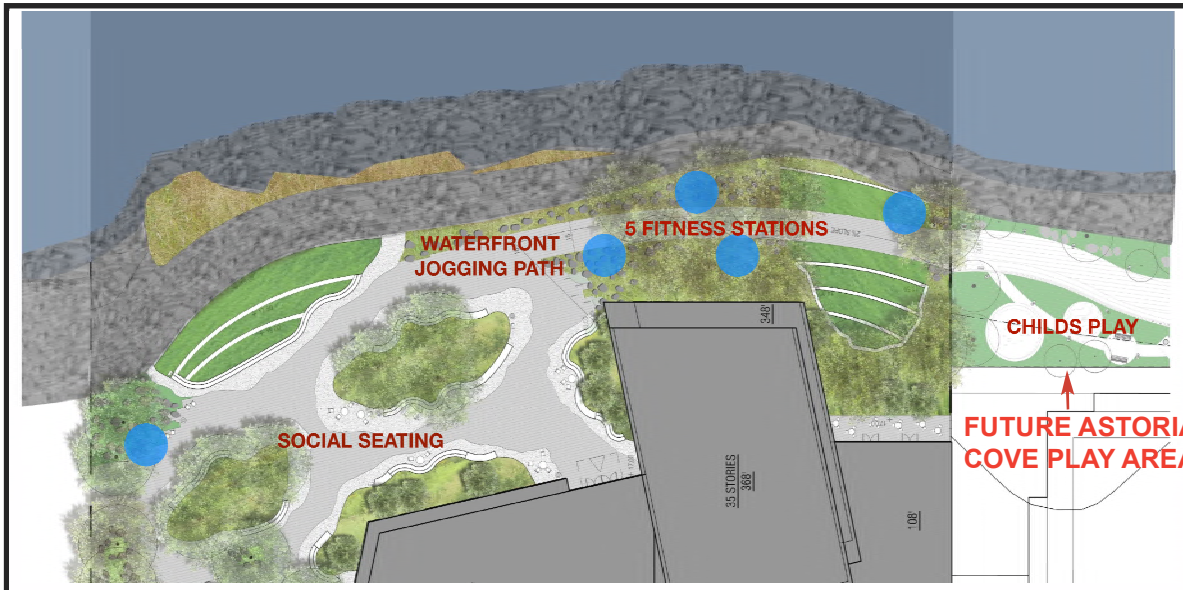
Park is separated from the study area by the East River, and this open space resource would not be readily accessible for much of the study area population.

Further, as discussed above, by adding a new, high-quality waterfront open space, the Proposed Project would provide connections to other future esplanades and would provide opportunities for active uses such as running and biking along the Queens waterfront. These new connections would be in keeping with the city's waterfront revitalization program goal of creating continuous public waterfront access. In addition to the exercise stations provided within the proposed waterfront open space, the open paved or grass areas within the waterfront open space could be used for active uses such as tai chi and jump roping would also be provided (see **Figure 5-3**). In addition, the Proposed Project would improve the community's access to the waterfront by creating a new upland connection to the waterfront. The waterfront open space would also provide new unobstructed views of the East River and Manhattan skyline. The Proposed Project's waterfront open space would represent a major new open space resource for the Astoria neighborhood. The proposed open space would serve the existing community as well as residents of the Proposed Project.

Moreover, the Proposed Project would include indoor and outdoor amenity space and recreational facilities for future building residents. The Proposed Project would include 16,131 sf of rooftop outdoor amenity space including a pool. The Proposed Project would also include 31,115 sf of interior amenity space including a basketball court, exercise facility, and recreation/lounge areas. Although these facilities would not be publicly accessible, they would offset the open space demand generated by building residents, particularly demand for active open space, and would help to alleviate a potential shortfall of active open space.

Determining Impact Significance

A significant adverse open space impact may occur if a proposed action would reduce the open space ratio by more than five percent in areas that are currently below the City's median community district open space ratio of 1.5 acres per 1,000 residents. In areas that are extremely lacking in open space, a reduction as little as one percent may be considered significant, depending on the area of the City. These reductions may result in overburdening existing facilities or further exacerbating a deficiency in open space. **Table 5-10** expresses the percentage change from No-Action to With-Action conditions for the residential study area.











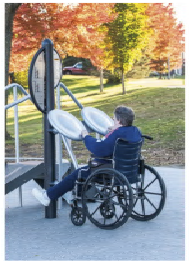
HEALTH AND WELLNESS ACTIVE RECREATION

The Step-Up station allows kids to build lower-body strength and coordination. A fun way to bring exercise to the playground.



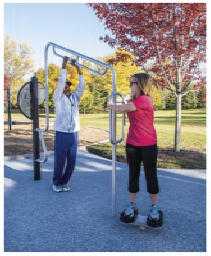
STEP-UP STATION, AGES 5-12

The HealthBeat® Tai Chi Wheels promote flexibility and enhance relaxation and meditation. Evenly tones muscles without strain.



TAI CHI WHEELS, AGES 13+

The HealthBeat® Stretch allows for stretching of upper body muscles as well as the often difficult to target core muscles. Maintains flexibility and range of motion.



STRETCH, AGES 13+

The HealthBeat® Pull-Up/Dip provides multiple highly effective strength-building exercises for the upper body.



PULL UP DIP, AGES 13+

The HealthBeat® Cardio Stepper provides a cardiovascular/step aerobic workout. Change the level of resistance by turning the knob on the base.



CARDIO STEPPER, AGES 13+

TABLE 5-10
Open Space Ratios Summary (Residential ½-Mile Study Area)

RATIO	DCP Open Space Guideline	Open Space Ratios Per 1,000			Percent Change
		Existing	No-Action	With-Action	Future No-Action to Future With Action
Residential Study Area					
Total - Residents	2.5	5.314	3.095	2.714	-12.31%
Passive - Residents	0.5	3.437	2.026	1.788	-11.75%
Active - Residents	2.0	1.877	1.070	0.927	-13.36%
Combined		2.580	1.655	1.501	-9.31%

* Based on a target open space ratio established by creating a weighted average of the amount of open space necessary to meet the City guideline of 0.50 acres of passive open space per 1,000 residents and 0.15 acres of passive open space per 1,000 Workers is considered in this analysis. Workers typically use passive spaces; therefore, for the nonresidential study area, only passive open space ratios are calculated. For the residential study area, active, passive, and total park space ratios are calculated.

RESIDENTIAL (½-MILE) STUDY AREA

With respect to the reductions in open space within the residential study area, the total and passive open space ratios would remain above the City's guideline ratios of 2.5 acres and 0.5 acres per 1,000 residents, respectively, in the future with the Proposed Actions, while the active open space ratio of 0.927 would be below the City's target of 2.0. The total residential study area open space ratio would decline by 12.31 percent to 2.714 acres per 1,000 residents; the active residential study area open space ratio would decline by 13.36 percent to 0.927 acres per 1,000 residents; and the passive residential study area open space ratio would decrease by 11.75 percent to 1.788 acres per 1,000 residents.

Although the Proposed Actions would result in a decrease of over five percent in the open space ratios, as described in the *CEQR Technical Manual*, this impact threshold only applies to areas that are currently below the City's median community district open space ratio of 1.5 acres per 1,000 residents. As the open space study area currently has 5.314 acres of total open space per 1,000 residents, well above the citywide community district median open space ratio, this threshold does not in and of itself apply and other considerations need to be evaluated.

As described in the *CEQR Technical Manual*, when assessing the quantitative impacts of a change in the open space ratio, consideration must be given to the balance of passive and active open space resources appropriate to support the affected population. Pursuant to CEQR¸ a larger percentage of active space is usually preferred, because the physical space requirements for active open space uses are significantly greater. For large-scale projects (and planning purposes), the City sets an optimal benchmark of 2.5 acres of open space per 1,000 residents, of which 80 percent (2.0 acres) comprises active open space and 20 percent (0.5 acres) comprises passive open space. As outlined in **Table 5-10**, in the future with the Proposed Actions, the study area would include 2.714 acres of open space per 1,000 residents, of which 1.788 acres would be passive and 0.927 acres would be active. Therefore, as the study area would continue to be well-served by total open space and passive open space under With-Action conditions, the Proposed Actions would not result in a significant adverse impact to total open space or passive open space per the CEQR-defined quantitative impact methodology. In addition, open space resources within the study area are not scarce and several additional regional and local open space resources are located

just outside the study area, which add considerable active and passive open space for the residential population.

While the residential study area would include almost 27 acres of quality active open space in the future with the Proposed Actions, including uses such as a swimming pool, tennis courts, a running track, several ball fields and basketball courts, as well as several playgrounds and multipurpose open spaces, under existing, No-Action, and With-Action conditions, the residential study area active open space ratio would be less than the City's optimal planning goal of 2.0 acres per 1,000 residents. As such, the anticipated 13.36 percent decrease in the active open space ratio under With-Action condition would contribute to the existing deficiency in active open space in the residential study area. However, as previously stated, it is recognized that the City's planning goals are not feasible for many areas of the City, and they are not considered impact thresholds on their own. Rather, these are benchmarks indicating how well an area is served by open space. Therefore, a qualitative active open space assessment is warranted.

As previously stated, the Proposed Actions includes a 0.95-acre waterfront open space that would connect the Project Area to the adjacent Astoria Cove development's planned 1.92 acres of public waterfront open space, the existing Shore Towers pedestrian and bicycle pathway, and the nearly 60 acres of open space within Astoria Park. In addition, the quantitative active open space analysis does not include the significant regional parks located within a ½-mile of the Project Area, but just beyond the open space study area boundaries. These open spaces, such as Wards Island Park, include active open space resources that would likely be utilized by residents of the proposed developments and the surrounding area. Taking into consideration the active open space on the portion of Wards Island Park that is located within a ½-mile of the Project Area, the With-Action active open space ratio would increase to 2.379 acres per 1,000 residents, well above the City's optimal planning goal of 2.0 acres of active open space per 1,000 residents. Moreover, the population to be generated by the Proposed Actions are not expected to have any special characteristics, such as a disproportionately younger or older population, that would place heavy demand on facilities that cater to specific user groups.

The Proposed Project would include open space benefits and recreational amenities. As described above under "Qualitative Assessment," by adding a new, high-quality waterfront open space, the Proposed Project would result in an improvement to the area's open space. As noted above, the Proposed Project's waterfront open space would represent a major new open space resource for the Astoria neighborhood. The proposed open space would serve the existing community as well as residents of the Proposed Project. Further, the Proposed Project would include over 47,000 sf of outdoor and indoor amenity space for use by the proposed 3,262 residents. Although these facilities would not be publicly accessible, they would offset the open space demand generated by building residents, particularly demand for active open space, and would help to alleviate a potential shortfall of active open space.

However, pursuant to CEQR methodology, as the additional residents would exacerbate existing deficiencies in active open space in the study area, a significant adverse active open space impact would result. Potential measures to mitigate the active open space impact are described in **Chapter 18, "Mitigation."**