

3.5 SHADOWS

INTRODUCTION

Following the guidelines of the *CEQR Technical Manual*, a shadow assessment is appropriate when a project site is adjacent to a park, historic resource, or important natural feature, and when a proposed action would result in a building 50 feet in height or greater. The East 125th Street Development site is near several publicly accessible open spaces, and the project itself would result in the creation of new publicly accessible open space on the project site.

The *CEQR Technical Manual* identifies the following as situations when a significant shadow impact may occur as a result of a proposed action:

- Substantial reduction in sunlight where a sensitive use is already subject to substandard sunlight (e.g., less than the minimum time necessary for survival of a plant or animal species);
- Reduction in sunlight available to a plant or animal species from more to less than the minimum time necessary for its survival;
- Substantial reduction in sunlight to a sun-sensitive use or feature; and,
- Substantial reduction in the usability of an open space.

METHODOLOGY

In identifying potential impacts, CEQR focuses on: uses and users of the open space, landscaping and vegetation, historic resources with significant sunlight-dependent features, and important natural resources. Based on the methods outlined in the *CEQR Technical Manual*, the analysis of shadows considers shadows on four representative days of the year, including:

- March 21, the vernal equinox (equivalent to September 21, the autumnal equinox);
- May 6, the midpoint between the equinox and summer solstice (equivalent to August 6);
- June 21, the summer solstice and the day on which shadows are shortest;
- December 21, the winter solstice and the day on which shadows are longest.

The CEQR methodology for analysis of shadows does not consider shadows within an hour and a half of sunrise or sunset. Therefore, the analysis period is between an hour and a half after sunrise and an hour and a half before sunset.

The proposed East 125th Street Development would allow permissible building heights of up to 210 feet. A building of this height would cast a maximum shadow length outside of the period within an hour and a half of sunrise or sunset of approximately 900 feet. Therefore, the 900 foot boundary of the proposed East 125th Street Development is identified as the Shadows Study Area and only shadow sensitive resources within this boundary of the proposed project are analyzed. Also, the proposed project would not cast shadows on certain areas to the south of the project site. Therefore, these areas to the south are not analyzed with regard to shadow impacts. The 900-foot study area boundary is shown on Figure 3.5-1.

3.5.1 EXISTING CONDITIONS

The existing built environment within 900 feet of the project site is generally low scale, and is comprised of mostly three-to-five-story buildings. Major exceptions to this include the Taino Towers housing complex to the south of the site, which -- at approximately 325 feet in height -- contains the tallest buildings in the area, and the Wagner Houses public housing complex, to the south and east of the project site, which includes 13-story buildings, each being approximately 140 feet tall and surrounded by open space.

Figure 3.5-1 shows existing conditions for the shadow study area in three dimensions. These 3D models are based on New York City Department of City Planning's (DCP) 3D model of 125th Street, updated in June 2007¹ through information gathered during field work, and from the New York City NYCMAP basemap.

¹ Field survey by Environmental Simulation Center, June 2007.



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
7. Harry's Playground
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

Legend

-  Project Site
-  Existing Buildings
-  900-foot Study Area Boundary

Figure 3.5-1
Project Site and Surrounding Existing Conditions

East 125th Street Development EIS
 NYC Economic Development Corporation

Resources of Concern for Shadow Analysis

There are a number of resources of concern within 900 feet of the project site that could potentially be subject to new shadows created by the project. The identified resources are described in this section and are mapped in the following shadow diagrams.

Public Open Spaces

Existing public open spaces near the project site as described in Chapter 3.4 are identified in a dappled green color with a keyed reference on Figure 3.5-2. There are 14 public open spaces within 900 feet of the project site that require shadow analysis. These open spaces include Harlem River Park, Alice Kornegay Triangle, Jackie Robinson Houses Playground, P.S. 30 Playgrounds, Dream Street Park, Harry's Playground, Carver Community Garden, McNair Playground, Wagner Houses Pool, Othmar Ammann Playground, Louis Cuvillier Park, Triborough Plaza, the Crack Is Wack Playground, and the Harlem River. Descriptions of these resources can be found in Chapter 3.4, Open Space.

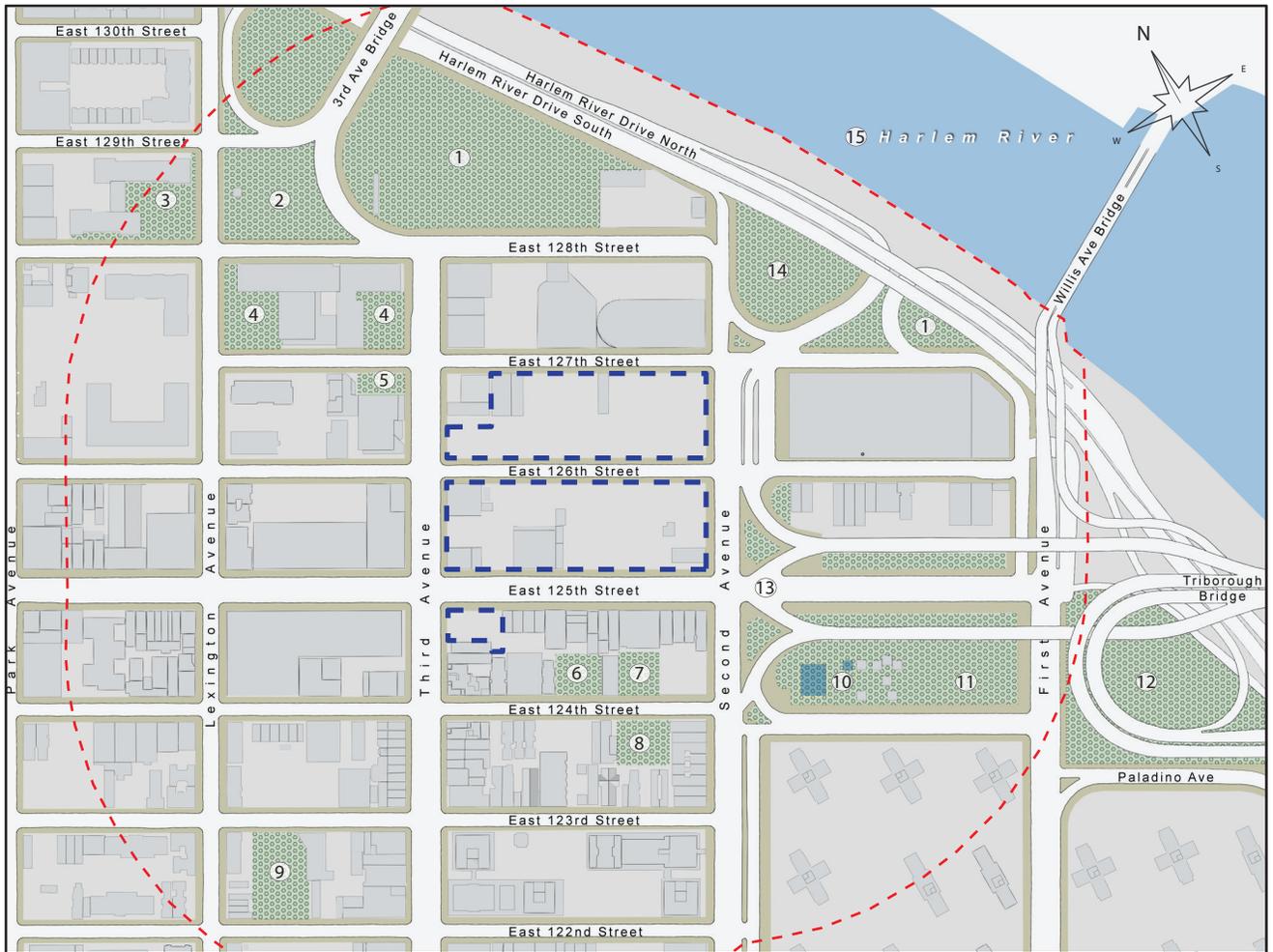
The Tot Lot shown in all diagrams in this chapter is not a shadow sensitive resource according to the criteria in the CEQR Technical Manual, as it is not open to the public. The preparers of this document did not become aware of its limited access until after the technical analysis had been performed. Consequently, it is shown on all graphics, but shadow impacts on the Tot Lot are not addressed in this document.

Natural Features

The Harlem River is the only identified shadow-sensitive natural resource within 900 feet of the project site.

Historic Resources Features

There are historic resources within 900 feet of the proposed development, though no sun-sensitive features have been identified on the sites of those historic resources. Thus, no individual resource assessment is warranted.



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
7. Harry's Playground
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

0 200 500 FEET

Legend

-  Project Site Boundary
-  Open Space
-  900-foot Study Area Boundary

Figure 3.5-2
Existing Shadow Sensitive Resources

East 125th Street Development EIS
 NYC Economic Development Corporation

Existing Shadow Conditions

As the sun rises in the east it casts shadows toward the west. Later in the morning the sun rises higher in the sky and the shadows cast are shorter, and extend to the northwest. At noon (standard time) the sun is at its highest point in the sky and casts the shortest shadows of the day, directly north. In the afternoon, as the sun sets, shadows are cast to the northeast and east, and get longer as the day progresses.

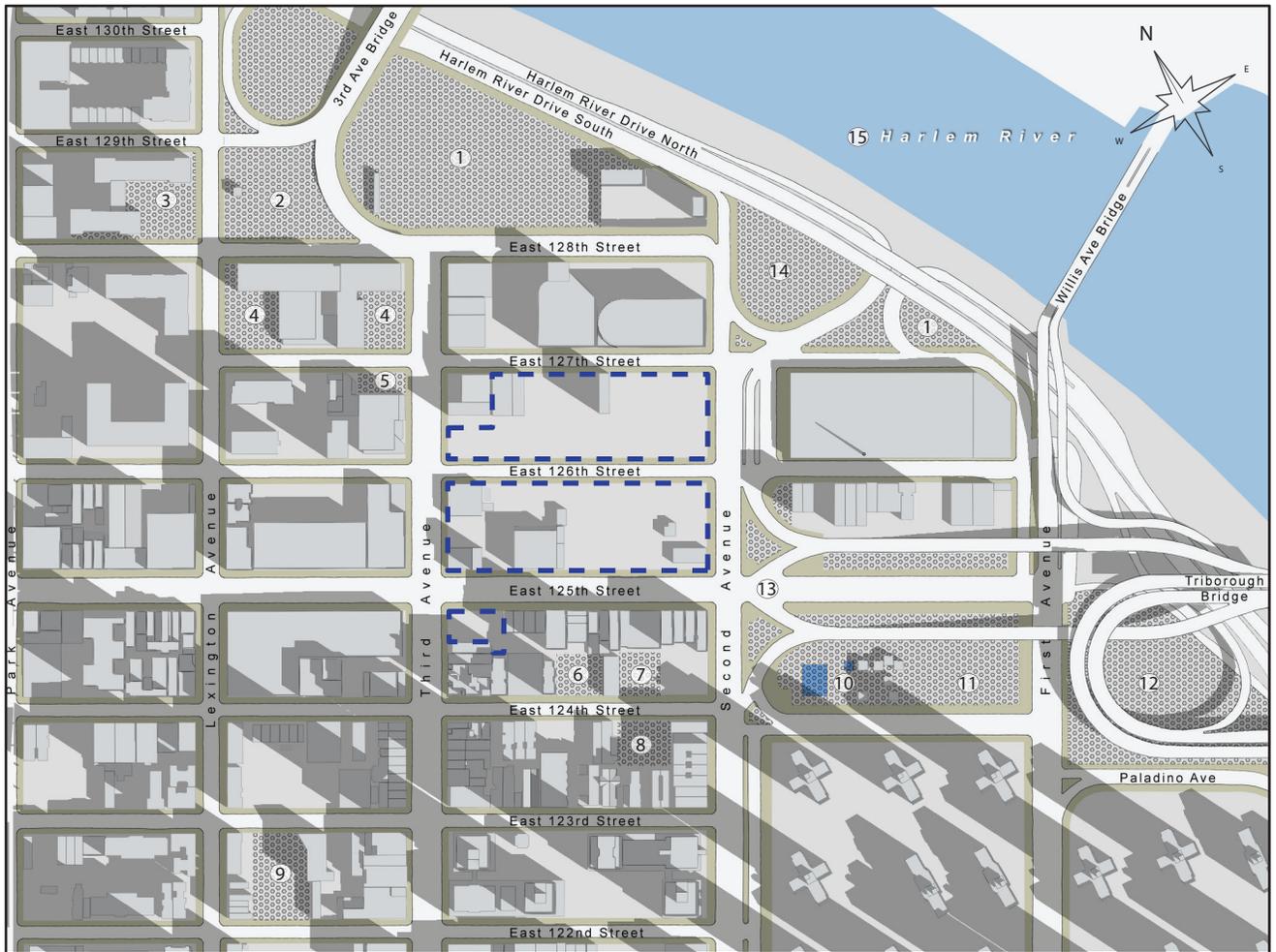
The location of the sun in the sky varies by season. In the winter, the sun travels in a low arc in the south sky. Because the sun is low in the sky, shadows cast in the winter are longest. In the summer, the sun travels in a high arc, rising to almost directly overhead at noon. Because the sun is high in the sky, shadows cast in the summer are the shortest. During spring and autumn, shadows are of moderate length, extending for lengths that are between the long shadows cast during the winter and the short shadows cast during the summer.

Most of the existing open spaces, as well as the Harlem River, can be characterized as sunny and bright during much of the year due to the generally low scale of buildings north of 124th Street and their typically southern orientation.

The larger open spaces to the north of the project site, just south of the FDR Drive, are in full or nearly full sun at all times of day every season of the year as they are on full blocks, across from open spaces or low buildings. The PS 30 and Jackie Robinson Playgrounds, with their southern orientation, are generally sunny except during early morning and late afternoon hours. Triborough Plaza and Louis Cuvillier Park are in sun nearly all day, every day, except when they are in shadows cast by the Triborough Bridge ramps. The Wagner Pool and the Othmar Ammann Playground experience shadows from the Wagner Houses to the south, but this shadowing is seasonal with virtually no shadowing in the summer months when these spaces are most heavily used.

Mid-block open spaces (Dream Street Park, Harry's Playground, McNair Park, and Culver Community Garden) tend to be in shadow in the early morning and late afternoon from adjacent buildings, and periodically, during months with moderate to long shadows, from tall buildings to the south. The small, north-facing tot lot on the southwest corner of East 127th Street and Third Avenue is the open space most in shadow in existing conditions, but even this space has full sun in the morning hours.

Figures 3.5-3 through 3.5-6 show four existing shadow renderings demonstrating representative existing shadow conditions.



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
- 2. Alice Kornegay Triangle
- 3. Jackie Robinson Houses Playground
- 4. PS 30 Playground
- 5. Tot Lot *
- 6. Dream Street Park
- 7. Harry's Playground
- 8. Carver Community Garden
- 9. McNair Playground
- 10. Wagner Houses Pool
- 11. Othmar Ammann Playground
- 12. Louis Cuvillier Park
- 13. Triborough Plaza
- 14. Crack is Wack Playground
- 15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

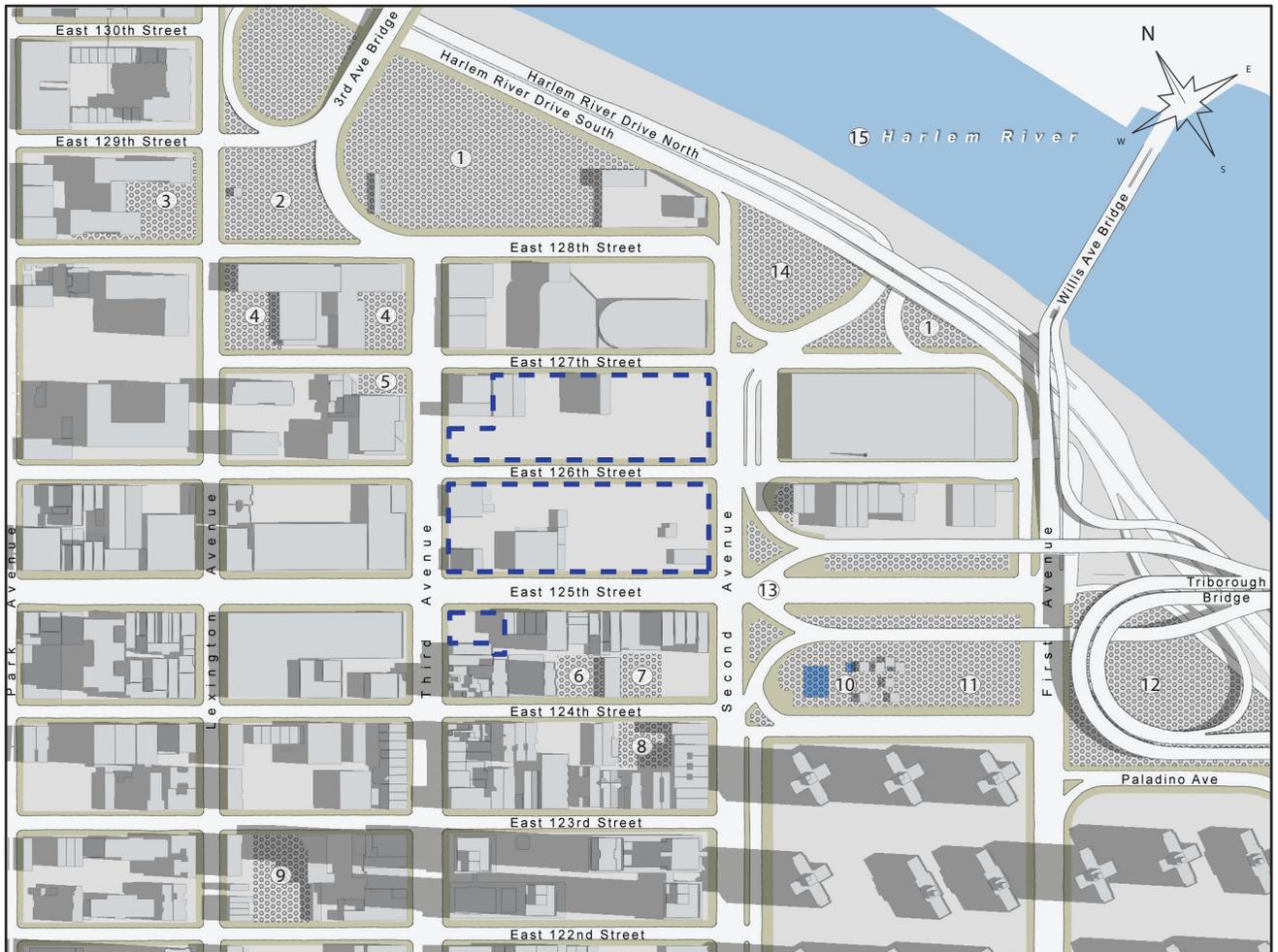


Legend

- Project Site Boundary
- Shadows
- Open Space

Figure 3.5-3
Existing Shadows 10:00am December 21st

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
7. Harry's Playground
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

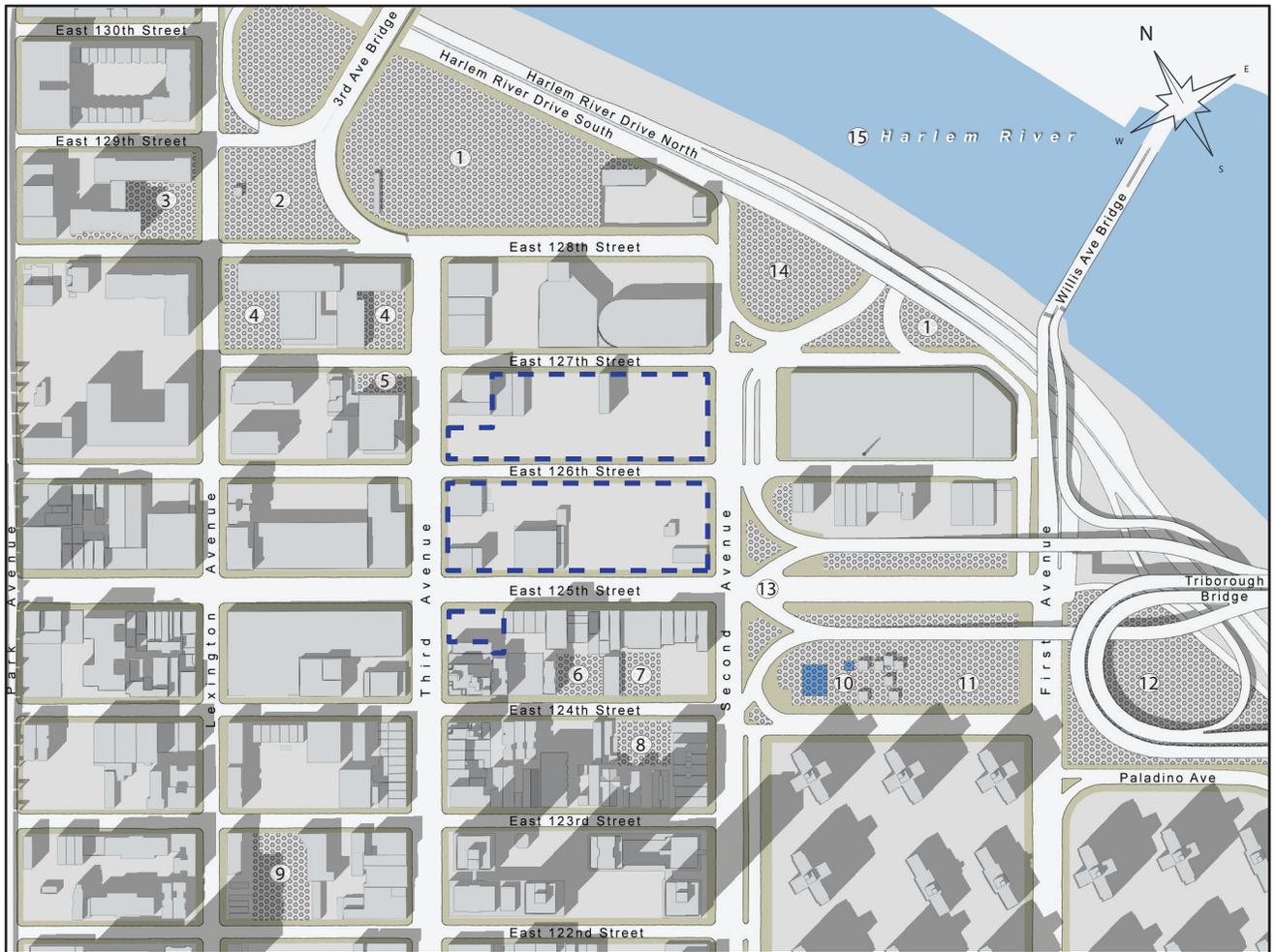
* Not publicly accessible; not a shadow sensitive resource

Legend

- Project Site Boundary
- Shadows
- Open Space

Figure 3.5-4
Existing Shadows 10:00am March 21st

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
- 2. Alice Kornegay Triangle
- 3. Jackie Robinson Houses Playground
- 4. PS 30 Playground
- 5. Tot Lot *
- 6. Dream Street Park
- 7. Harry's Playground
- 8. Carver Community Garden
- 9. McNair Playground
- 10. Wagner Houses Pool
- 11. Othmar Ammann Playground
- 12. Louis Cuvillier Park
- 13. Triborough Plaza
- 14. Crack is Wack Playground
- 15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

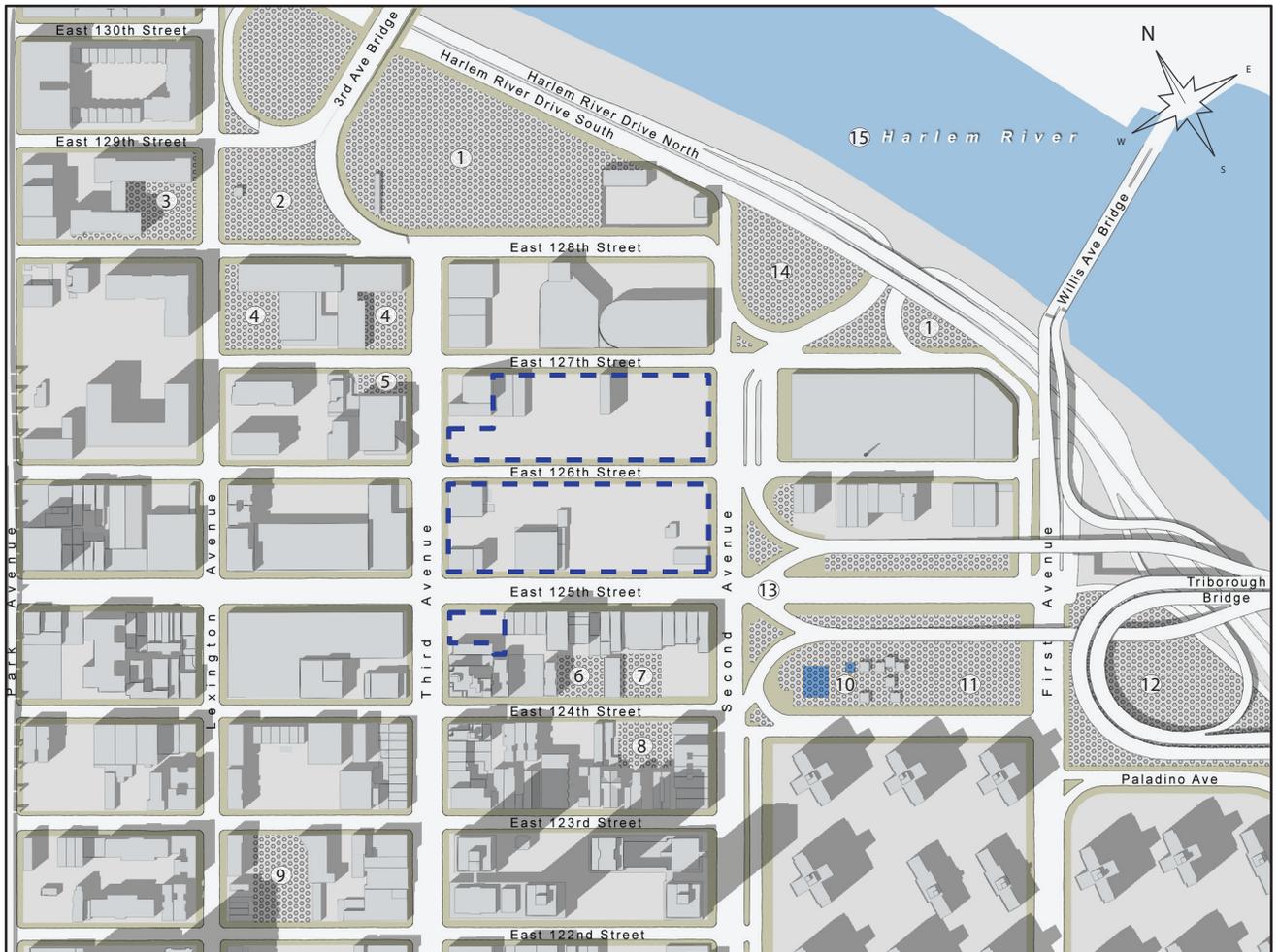
* Not publicly accessible; not a shadow sensitive resource

Legend

- Project Site Boundary
- Shadows
- Open Space

Figure 3.5-5
Existing Shadows 4:00pm May 6th

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
7. Harry's Playground
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

0 200 500 FEET

Legend

-  Project Site Boundary
-  Shadows
-  Open Space

Figure 3.5-6
Existing Shadows 4:00pm June 21st

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 NYC Economic Development Corporation

3.5.2 FUTURE WITHOUT THE PROPOSED ACTION

Under future conditions without the proposed action, no new construction would be expected to take place on the project site. Shadows extending from uses on the project site would be the same as under existing conditions. However, as described in Chapter 3.1, a considerable amount of new development is expected to occur in the vicinity of the project site by 2012, some of which would be facilitated by DCP's 125th Street Rezoning and Related Actions project.

Five projects expected to be built by 2012 irrespective of the East 125th Street Development have been identified in the shadow study area. Two of these developments are located on East 125th Street to the west of Lexington Avenue. The three others are located on Block 1789, directly south of the project site. Figure 3.5-7 shows future conditions without the proposed action with these five projected developments highlighted.



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

Legend

-  Project Site
-  Other Development Anticipated by 2012
-  Existing Buildings
-  900-foot Study Area Boundary

Figure 3.5-7
Future without the Action Condition

East 125th Street Development EIS
 NYC Economic Development Corporation

Future Without the Action Shadow Conditions

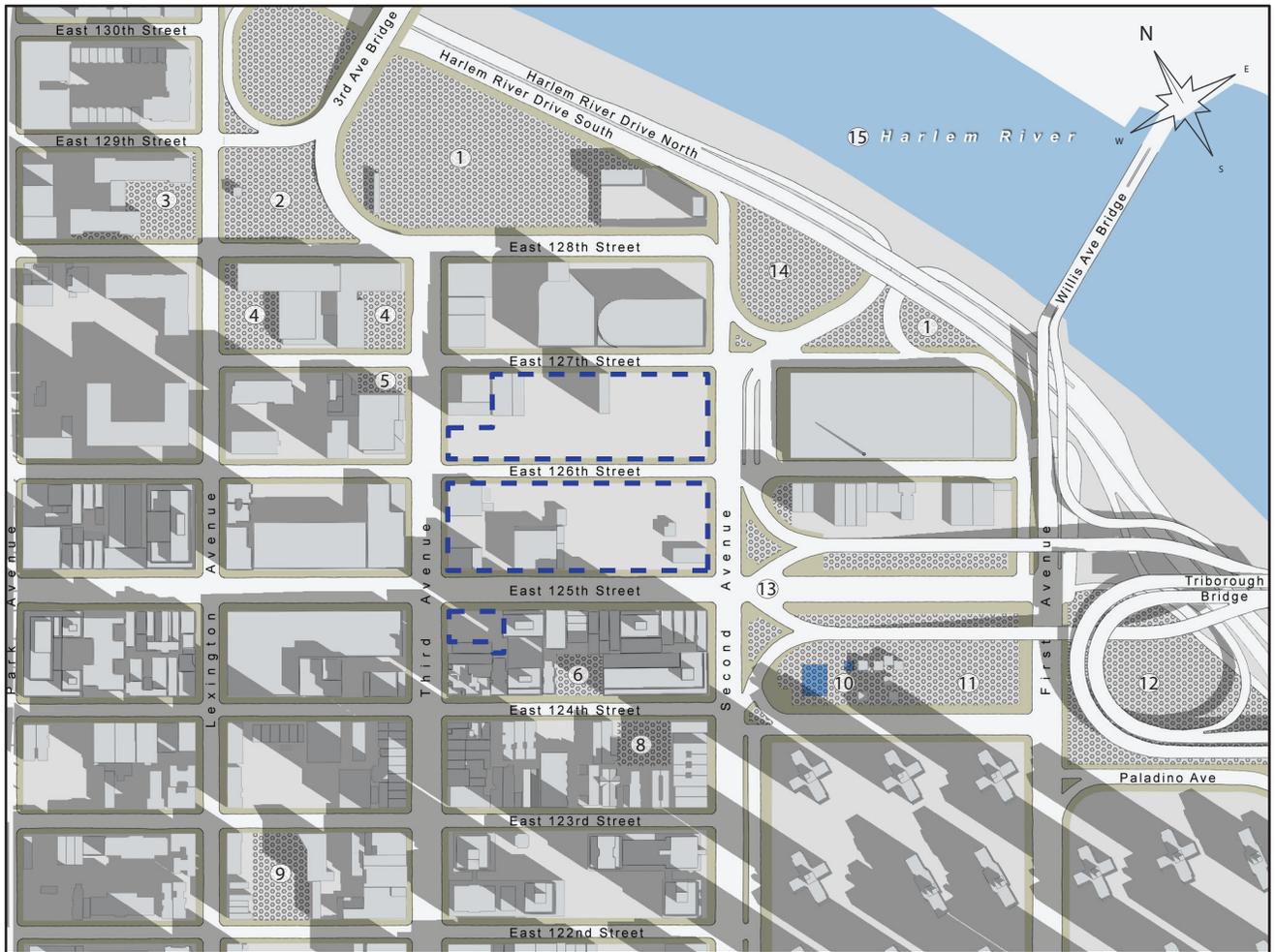
The two projects expected to be built by 2012 irrespective of the proposed action are located west of Lexington Avenue, and would have no impact on existing shadow sensitive resources. The expected HPD project on East 124th Street and Second Avenue uses one existing open space, Harry's Playground, as a part of its site. It would also cast a shadow on Dream Street Park during the morning hours. These shadows on Dream Street Park would extend into the early afternoon for all seasons, since it abuts this resource directly to the east. In the summer and spring, this project would cast a shadow on Carver Community Gardens in the very early morning. It would also cast a shadow on Triborough Plaza late in the afternoon during these seasons only.

The 125th Street Rezoning and Related Actions projected development on the through lot on the west side of Block 1789 would also cast shadow on Dream Street Park in the late afternoon in the spring and summer, but would have no impact on Dream Street Park in winter months. This project would not affect any other shadow sensitive resource.

The project on the interior lot facing East 125th Street on Block 1789 would also affect Dream Street Park in the early morning in late spring and summer with the shadow increment ending at about 9:00 AM. In the late afternoon in the spring and summer, the shadow from this building would reach into a small portion of Triborough Plaza.

In summary, with new development expected on three sides, in the Future Without the Action condition the Dream Street Park would lose sun in all seasons, especially earlier in the morning and later in the evening. Triborough Plaza would experience a small incremental shadow impact only very late in the afternoon in the spring and summer. The shadow conditions of all other identified shadow-sensitive resources would be unchanged under future conditions without the proposed action.

Figures 3.5-8 through 3.5-11 show four shadow renderings for future conditions without the proposed action, illustrating representative shadow conditions for each season.



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
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9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

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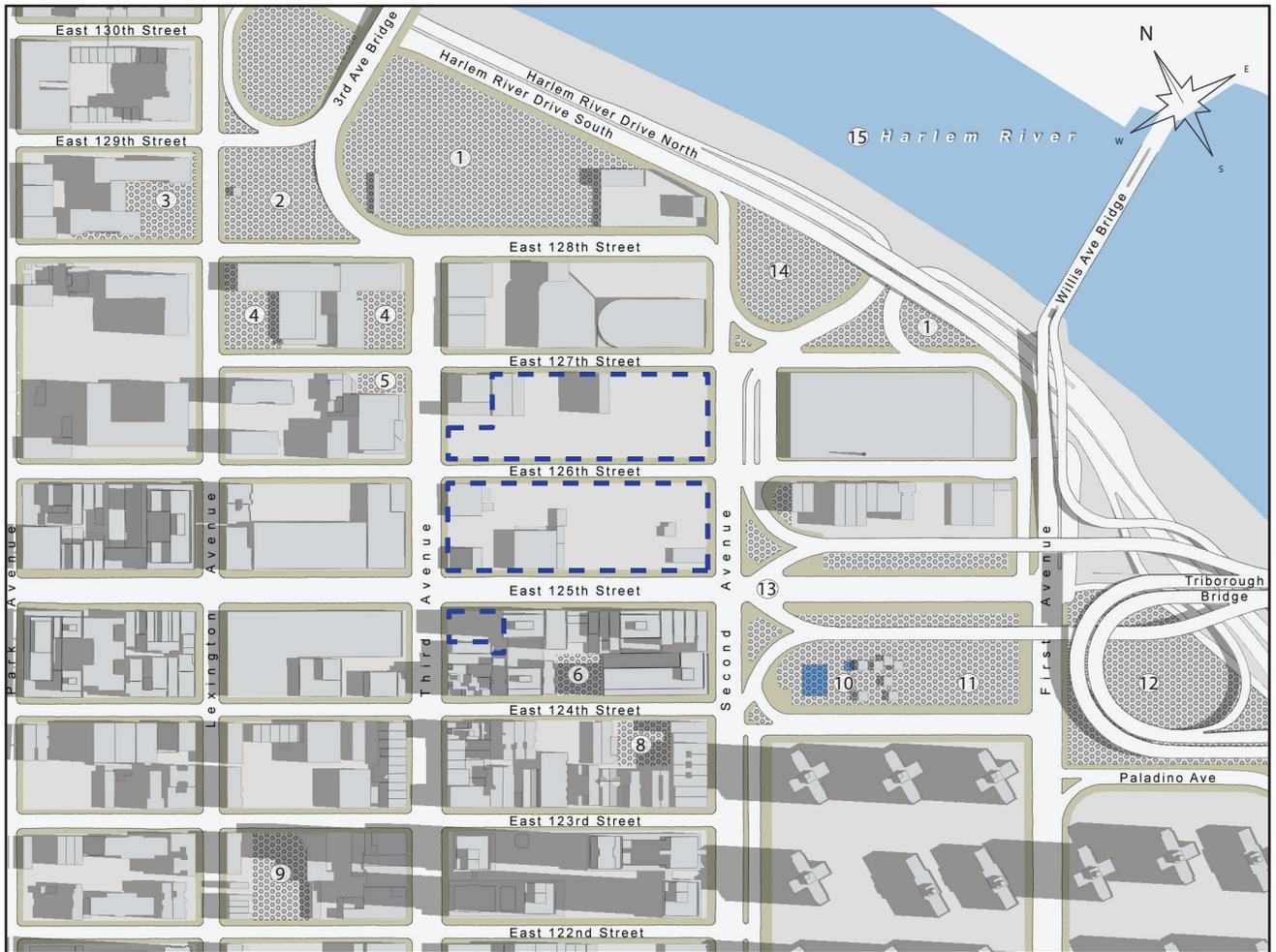
Legend

-  Project Site Boundary
-  Shadows
-  Open Space

Future Without the Action Shadows 10:00am December 21st

Figure 3.5-8

*East 125th Street Development EIS
 NYC Economic Development Corporation*



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
- 2. Alice Kornegay Triangle
- 3. Jackie Robinson Houses Playground
- 4. PS 30 Playground
- 5. Tot Lot *
- 6. Dream Street Park
- 8. Carver Community Garden
- 9. McNair Playground
- 10. Wagner Houses Pool
- 11. Othmar Ammann Playground
- 12. Louis Cuvillier Park
- 13. Triborough Plaza
- 14. Crack is Wack Playground
- 15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

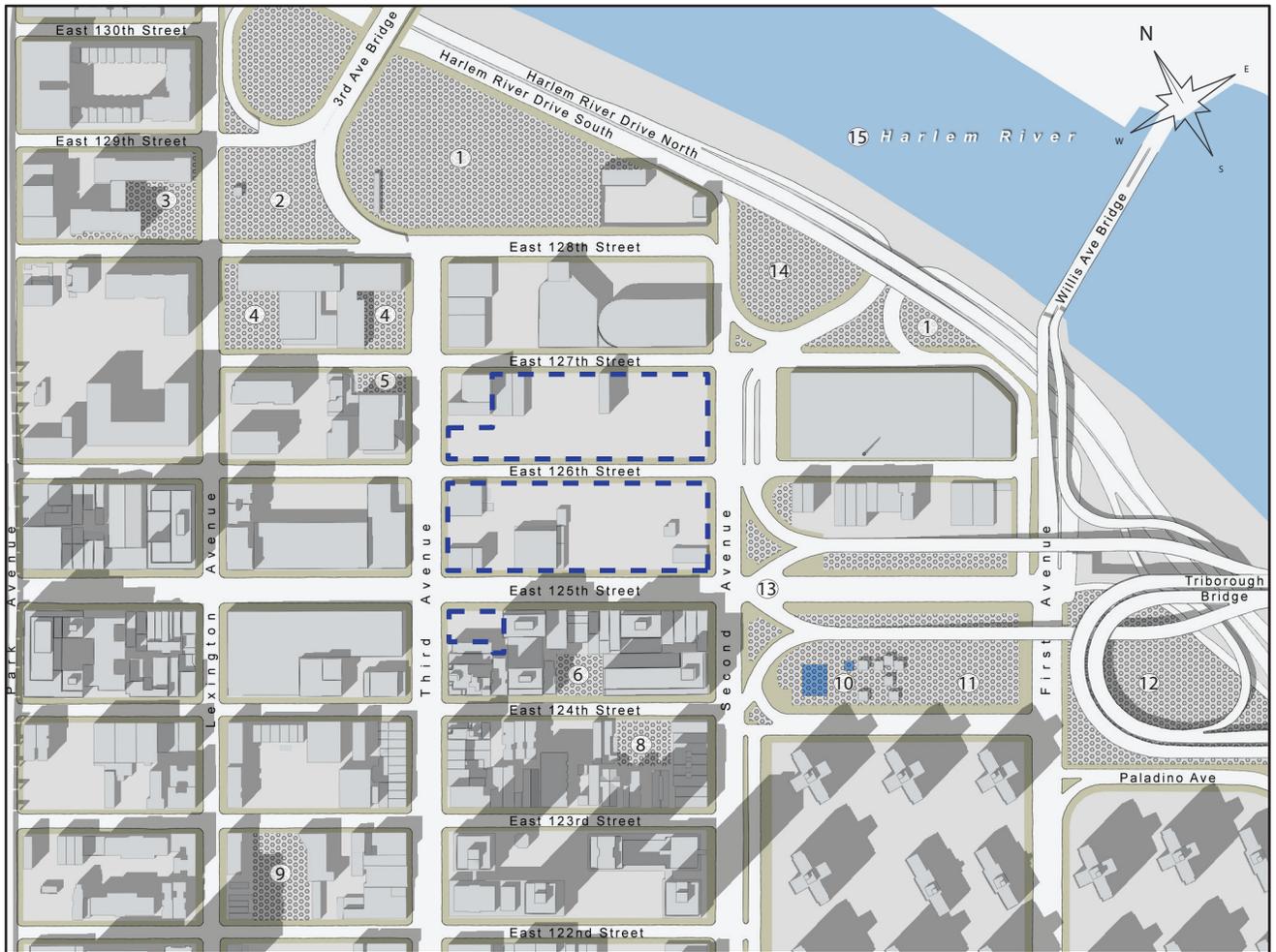
* Not publicly accessible; not a shadow sensitive resource

Legend

- Project Site Boundary
- Shadows
- Open Space

Future Without the Action Shadows 10:00am March 21st

Figure 3.5-9



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

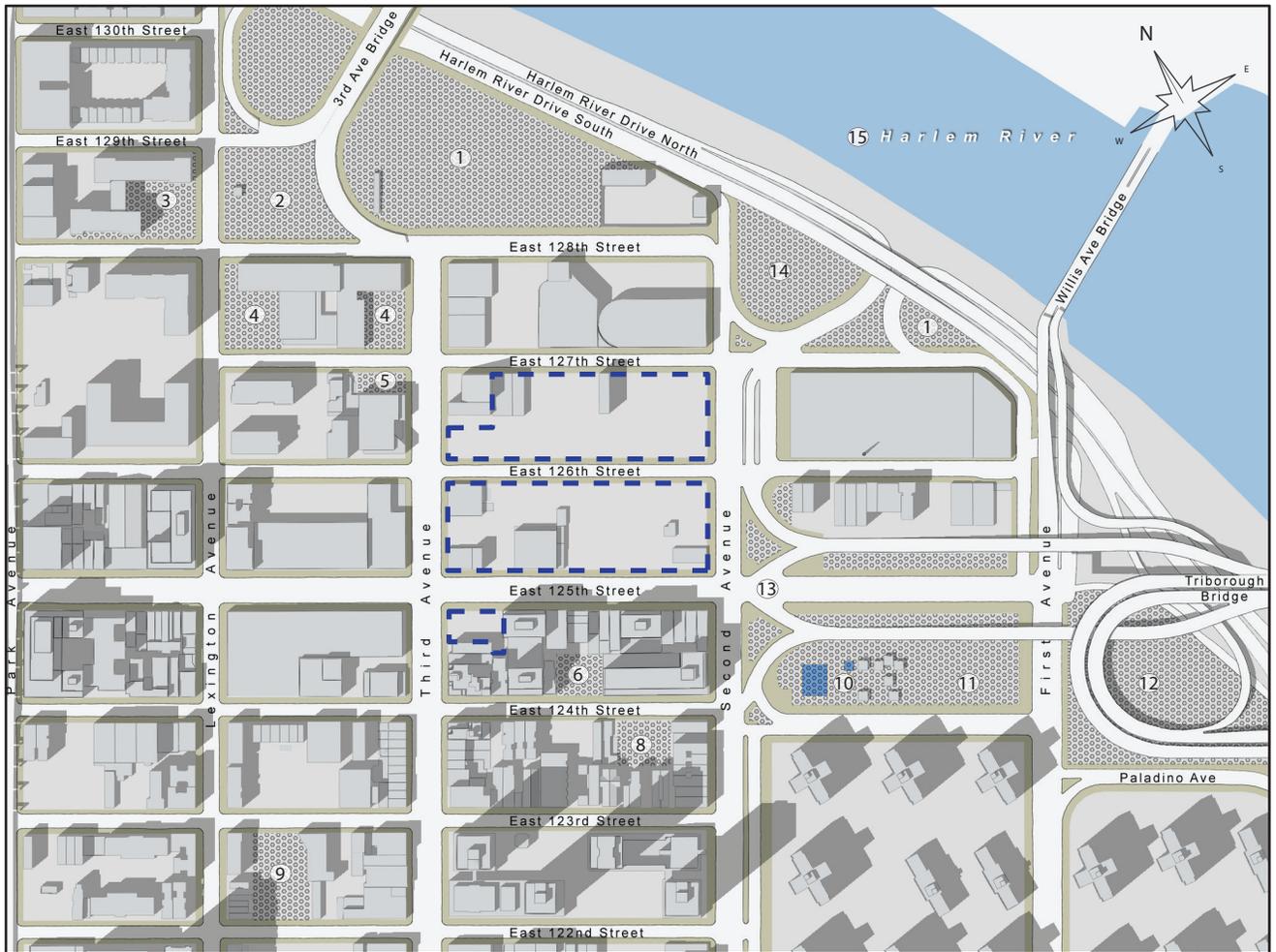
* Not publicly accessible; not a shadow sensitive resource

Legend

-  Project Site Boundary
-  Shadows
-  Open Space

Figure 3.5-10
Future Without the Action Shadows 4:00pm May 6th

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
- 2. Alice Kornegay Triangle
- 3. Jackie Robinson Houses Playground
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- 5. Tot Lot *
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- 9. McNair Playground
- 10. Wagner Houses Pool
- 11. Othmar Ammann Playground
- 12. Louis Cuvillier Park
- 13. Triborough Plaza
- 14. Crack is Wack Playground
- 15. Harlem River

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

Legend

- Project Site Boundary
- Shadows
- Open Space

Figure 3.5-11
Future Without the Action Shadows 4:00pm June 21st

East 125th Street Development EIS
 NYC Economic Development Corporation

3.5.3 FUTURE WITH THE ACTION

In the future with the action, an additional shadow sensitive resource would be added to the analysis with the addition of the proposed passive open space proposed as part of the East 125th Street Development. Shadow sensitive resources analyzed in the Future with the Action are shown in Figure 3.5-12.

Shadow Impact of the Proposed Action

The proposed development would result in incremental shadows with durations of more than 30 minutes on five of the existing open space resources identified in the study area, and the Harlem River. The proposed development would also shadow the on-site, mid-block open spaces created by the action. Dream Street Park would be shadowed by the proposed development, but for less than 30 minutes on June 21st, which because of the short duration would not be considered to be a significant adverse impact.

Shadow durations are shown in Table 3.5-1. This table details the shadow entry and exit times for each analysis period and for each shadow sensitive resource, corresponding to the shadow diagrams for the Future With the Action condition illustrated on the following pages. If there is no entry time indicated in Table 3.5-1 for a resource, it indicates that there is no incremental shadow impact on that resource due to the proposed action. If there are two entries in the table, this means that shadows enter and leave the resources more than once in a day.

It should be noted that the shadow diagrams were prepared using a version of the Concept Plan that somewhat differs from the revised Concept Plan shown in Chapter 2.0 and Chapter 3.7. The shadows illustrated and evaluated in this chapter, in total, represent a slightly greater level of shadow impact on sensitive resources in comparison to what would otherwise result from buildings represented by the Concept Plans shown in Chapter 2.0 and Chapter 3.7 and, therefore, represent a reasonable worse case for the purposes of this analysis. However, it is expected that the shadow impact of the proposed action on the proposed open space will be somewhat larger, though generally of the same magnitude, than what is shown in this chapter.

Selected shadow diagrams that highlight the incremental shadow impact of the proposed project are included as Figures 3.5-13 through 3.5-21. Additional shadow diagrams for each analysis day, shown in hourly increments, can be found in Appendix G.

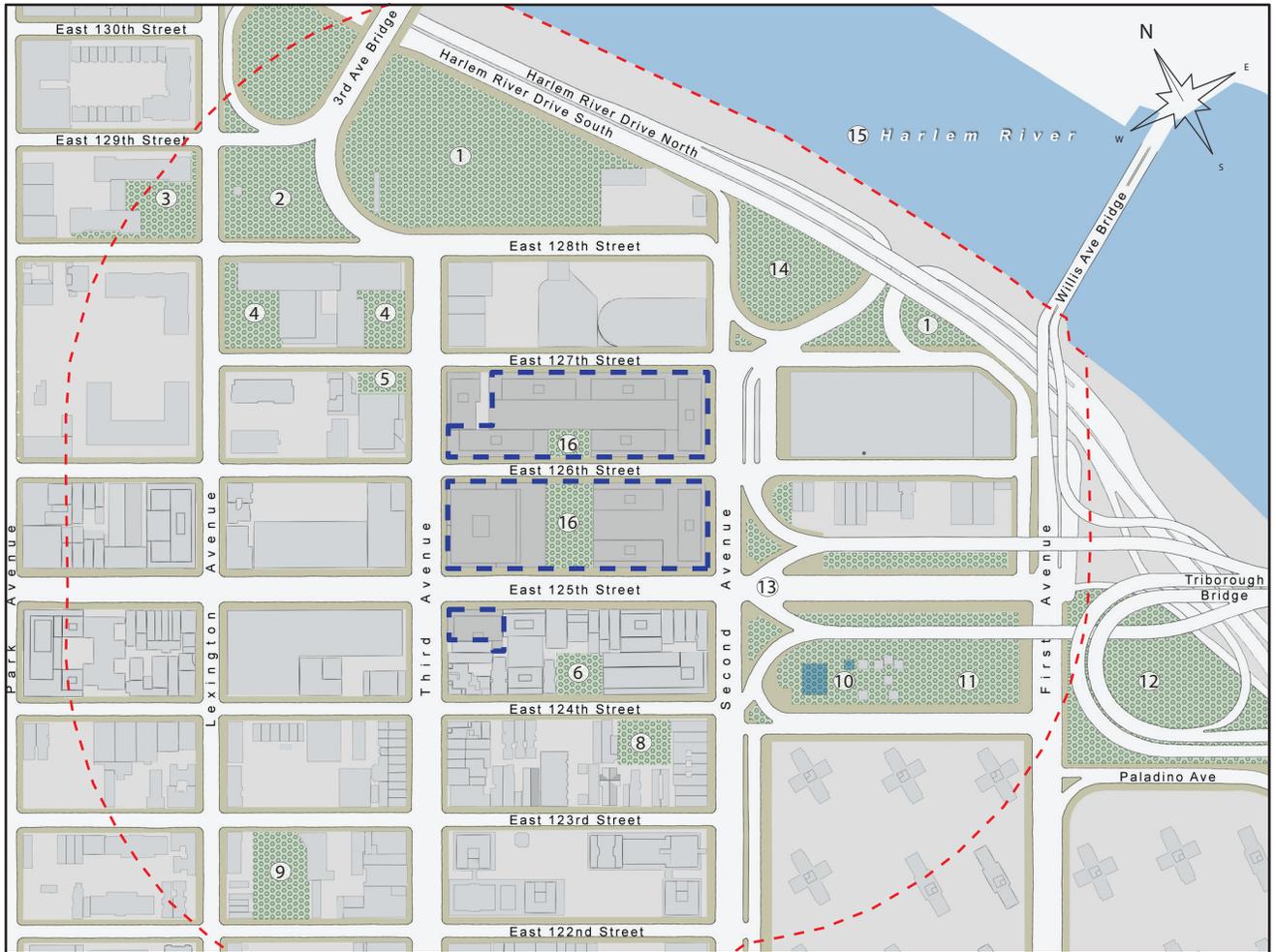
Table 3.5-1: Future With the Action Condition Shadow Durations

Open Space / Natural Resource	March 21/ September 21	May 6/ August 6	June 21	December 21
	8:29 AM-5:41 PM DST	7:19 AM-6:26 PM DST	6:54 AM-7:00 PM DST	8:46 AM-3:00 PM EST
Harlem River Park	3:24 PM - 5:41 PM	3:05 PM - 6:26 PM	3:06 PM - 7:00 PM	11:13 AM - 12:09 PM 1:02 PM – 3:00 PM
Alice Kornegay Triangle	-	-	-	-
Jackie Robinson Houses Playground	-	-	-	-
PS 30 Playground East	11:44 AM - 12:02 PM	-	-	8:46 AM - 12:58 PM
PS 30 Playground West	-	-	-	8:46 AM - 9:32 AM
Tot Lot *	8:29 AM - 12:02 PM	8:27 AM - 10:47 AM	-	8:46 AM - 12:56 PM
Dream Street Park	-	-	6:54 AM - 7:10 AM	-
Harry's Playground	-	-	-	-
Carver Community Garden	-	-	-	-
McNair Playground	-	-	-	-
Wagner Houses Pool	-	-	-	-
Othmar Ammann Playground	-	-	-	-
Louis Cuvillier Park	-	-	-	-
Triborough Plaza	5:35 PM - 5:41 PM	4:45 PM - 6:26 PM	4:00 PM - 7:00 PM	-
Crack is Wack Playground	3:25 PM - 5:41 PM	3:38 PM - 6:26 PM	4:45 PM – 5:05 PM	2:32 PM - 3:00 PM
Harlem River	5:14 PM - 5:41 PM	6:18 PM – 6:26 PM	6:58 PM – 7:00 PM	2:04 PM - 3:00 PM
Proposed Open Space-N	8:29 AM - 2:21 PM 2:23 PM - 5:41 PM	7:19 AM - 1:44 PM 1:47 PM - 6:26 PM	6:54 AM - 1:37 PM 1:39 PM - 7:00 PM	8:46 AM - 1:52 PM 1:55 PM – 2:28 PM
Proposed Open Space-S	8:29 AM - 2:22 PM 2:24 PM - 5:41 PM	7:19 AM - 1:45 PM 1:47 PM - 6:26 PM	6:54 AM - 1:37 PM 1:39 PM - 7:00 PM	8:46 AM - 1:53 PM

Note: EST - Eastern Standard Time; DST - Daylight Saving Time

Source: Environmental Simulation Center, December 2007.

* According to the *CEQR Technical Manual*, this Tot Lot is not defined as a shadow sensitive resource, as it is not open to the public. Consequently, it is shown on this table and in the shadow diagrams, but shadow impacts on this Tot Lot are not addressed in the text and are not considered to be a significant adverse impact according to *CEQR Technical Manual* guidance.



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River
16. New/Proposed Open Spaces

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

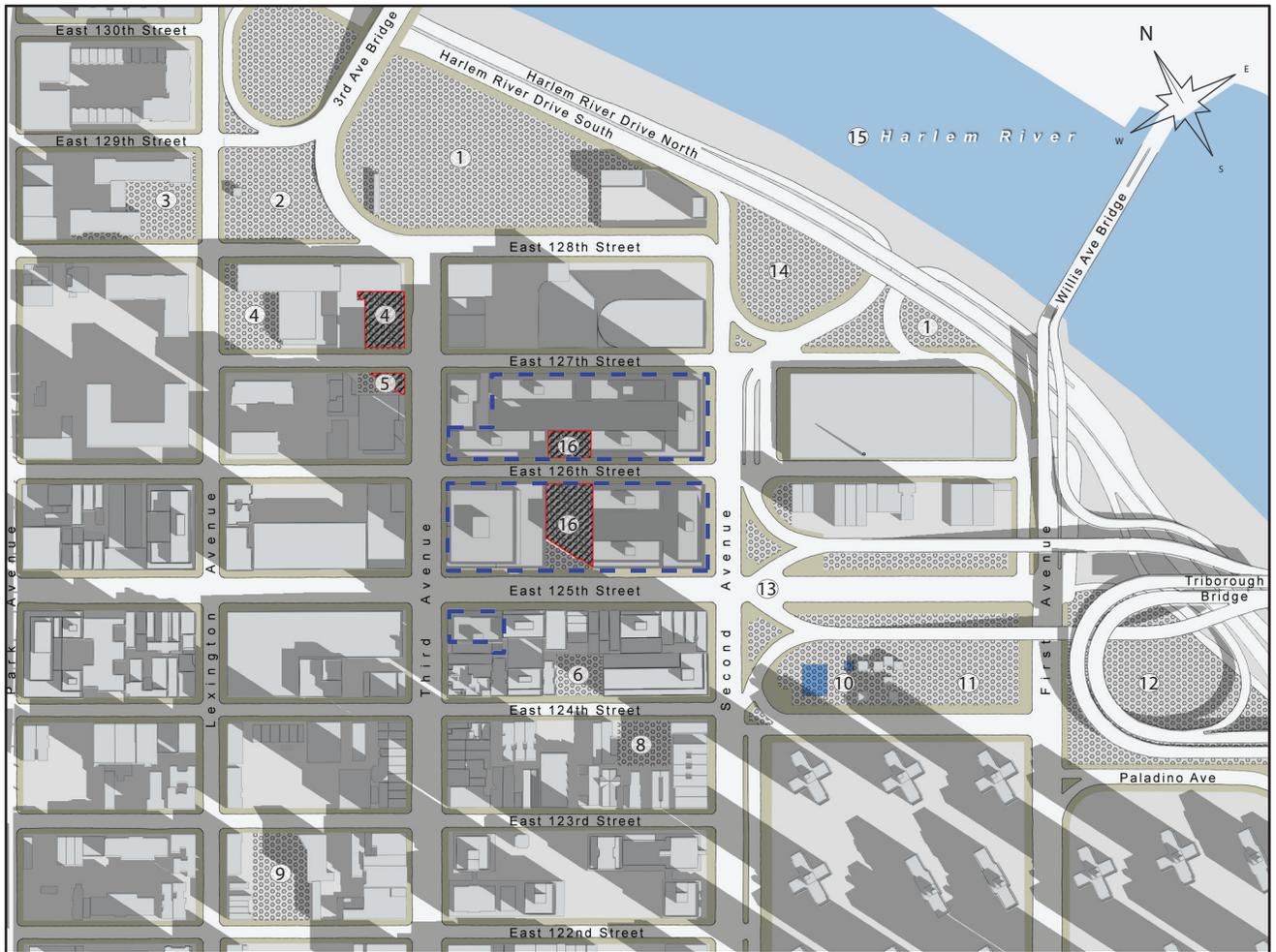
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Legend

-  Project Site Boundary
-  Open Space
-  900-foot Study Area Boundary

Figure 3.5-12
Existing & Proposed Shadow Sensitive Resources

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
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- 16. New/Proposed Open Spaces

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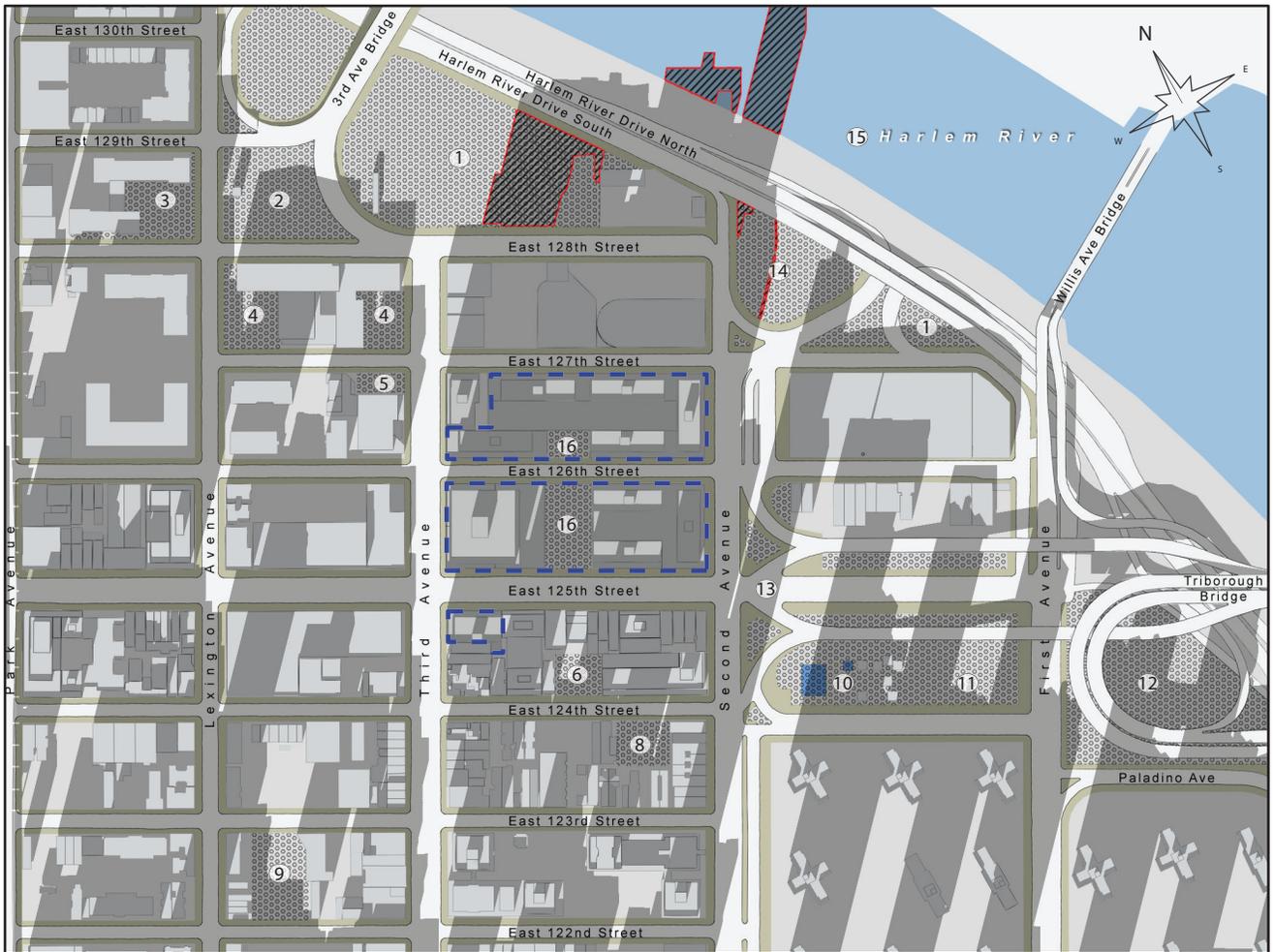
Legend

- Project Site Boundary
- Shadows
- Open Space
- Incremental Shadow on Shadow-Sensitive Resources

Future with the Action Shadows 10:00am December 21st

*East 125th Street Development EIS
 NYC Economic Development Corporation*

Figure 3.5-13



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
- 2. Alice Kornegay Triangle
- 3. Jackie Robinson Houses Playground
- 4. PS 30 Playground
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- 8. Carver Community Garden
- 9. McNair Playground
- 10. Wagner Houses Pool
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- 12. Louis Cuvillier Park
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- 14. Crack is Wack Playground
- 15. Harlem River
- 16. New/Proposed Open Spaces

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 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

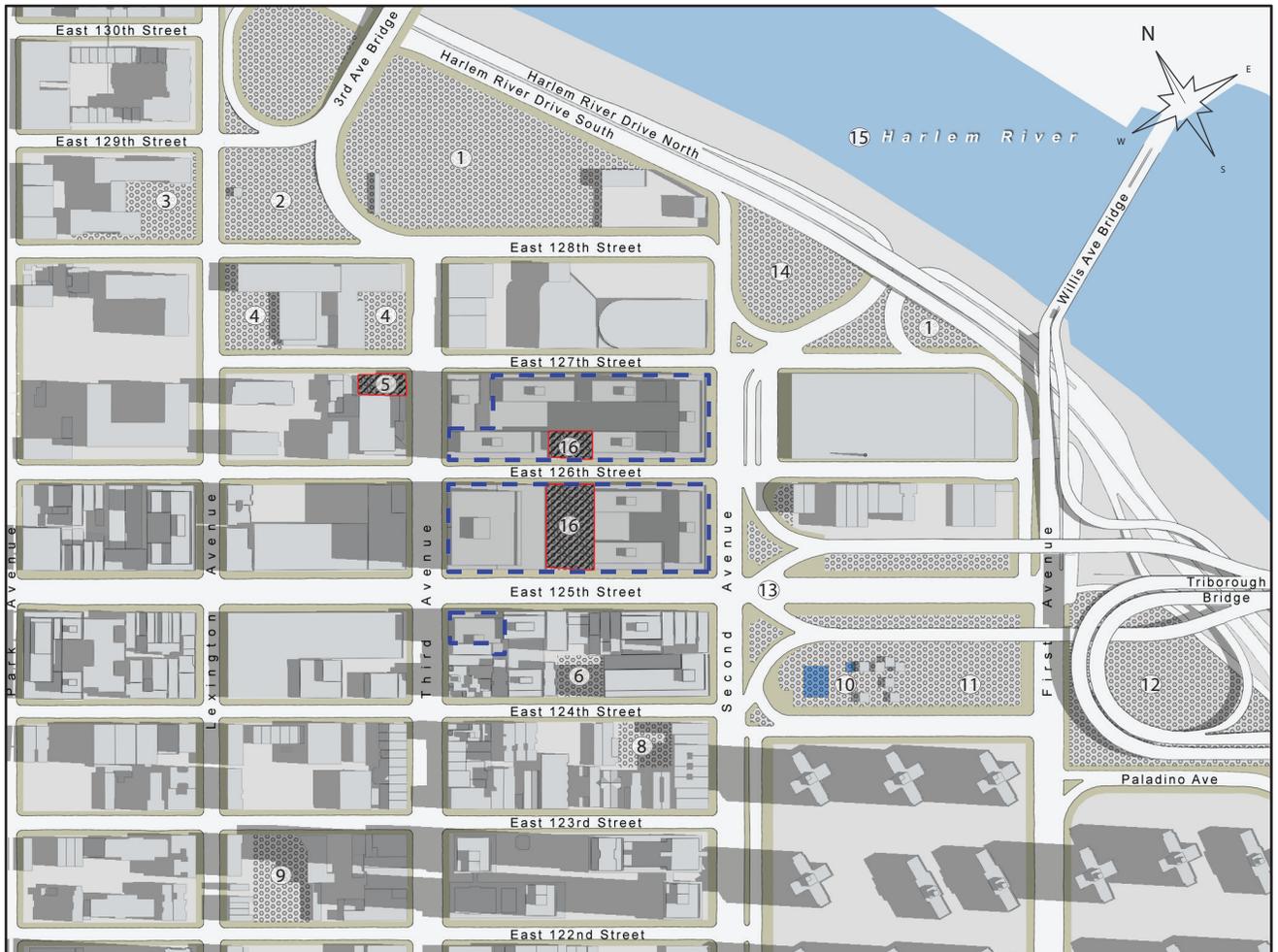


Legend

- Project Site Boundary
- Shadows
- Open Space
- Incremental Shadow on Shadow-Sensitive Resources

Figure 3.5-14
Future with the Action Shadows 3:00pm December 21st

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River
16. New/Proposed Open Spaces

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

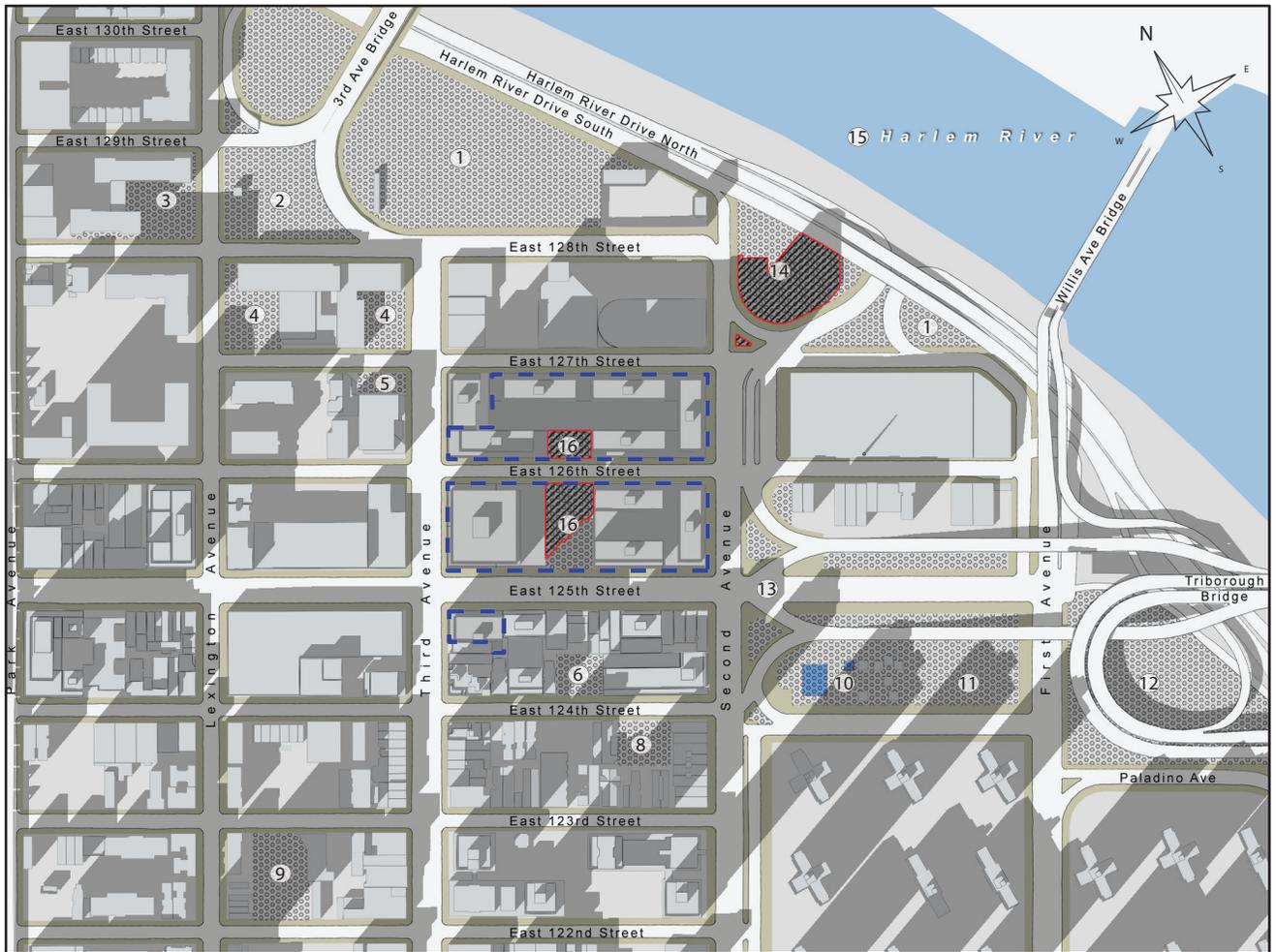
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Legend

- Project Site Boundary
- Shadows
- Open Space
- Incremental Shadow on Shadow-Sensitive Resources

Figure 3.5-15
Future with the Action Shadows 10:00am March 21st

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River
16. New/Proposed Open Spaces

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

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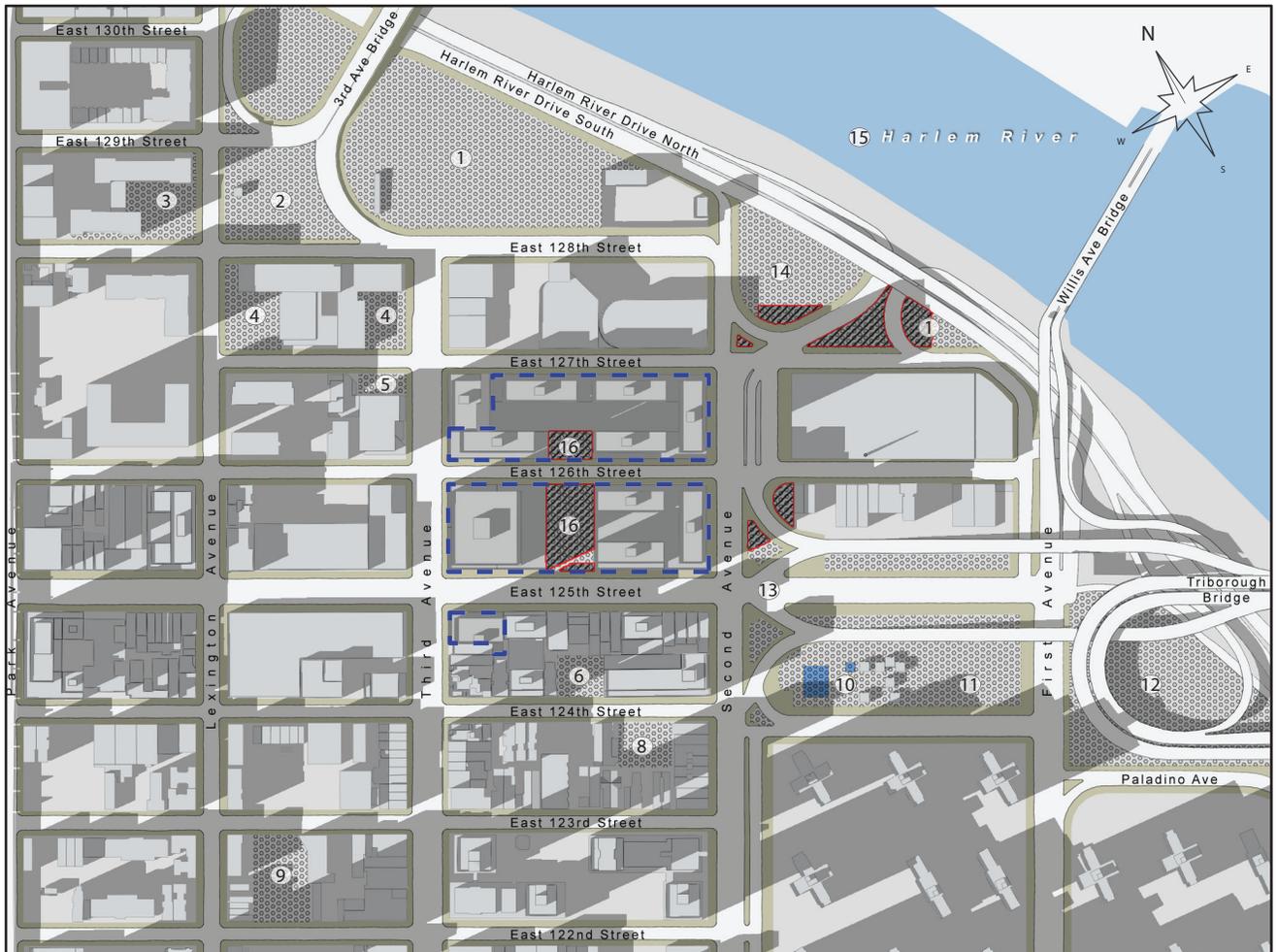
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Legend

- Project Site Boundary
- Shadows
- Open Space
- Incremental Shadow on Shadow-Sensitive Resources

Figure 3.5-16
Future with the Action Shadows 5:00pm March 21st

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River
16. New/Proposed Open Spaces

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

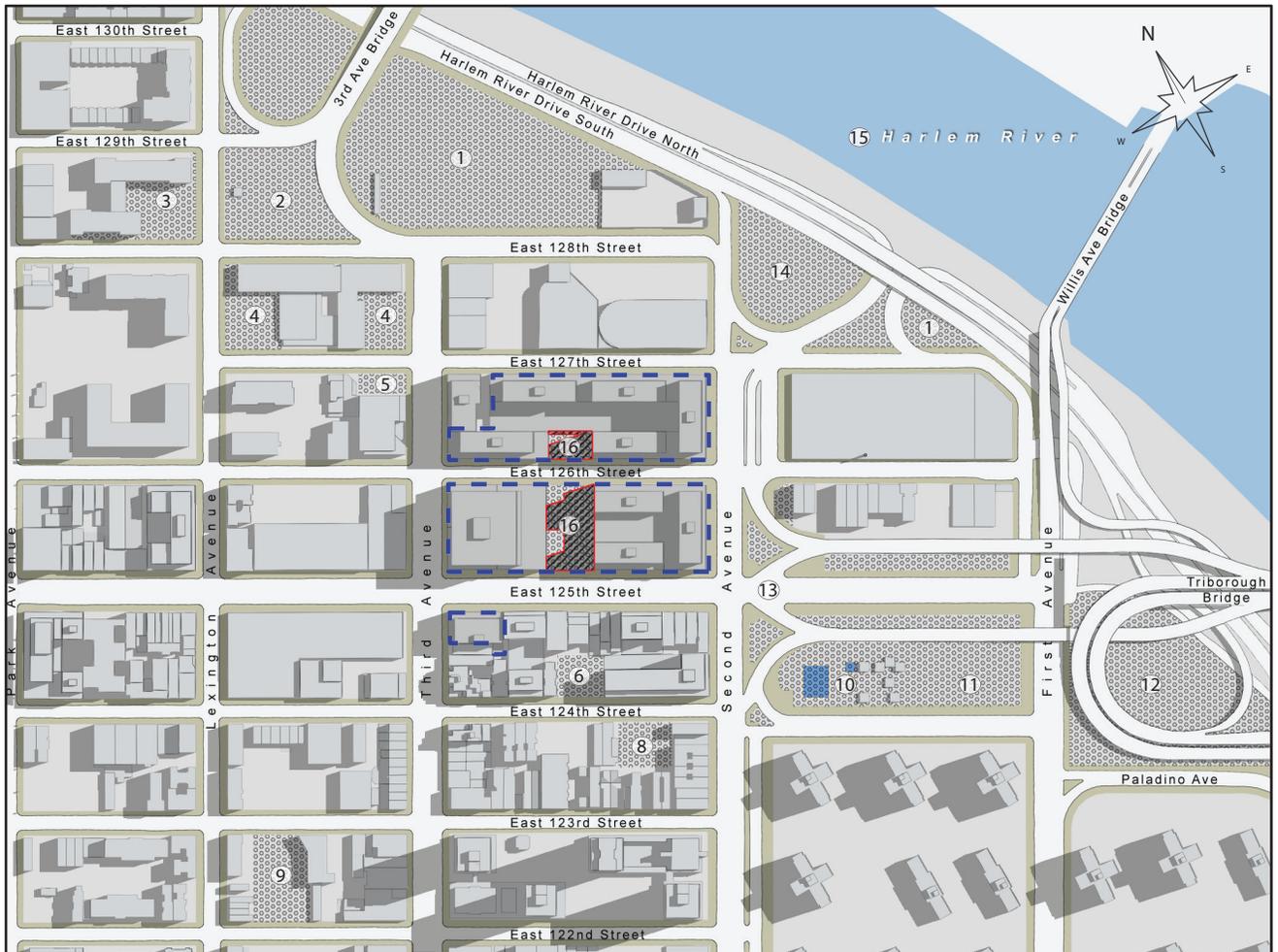
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Legend

- Project Site Boundary
- Shadows
- Open Space
- Incremental Shadow on Shadow-Sensitive Resources

Figure 3.5-17
Future with the Action Shadows 6:00pm May 6th

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

- 1. Harlem River Park
- 2. Alice Kornegay Triangle
- 3. Jackie Robinson Houses Playground
- 4. PS 30 Playground
- 5. Tot Lot *
- 6. Dream Street Park
- 8. Carver Community Garden
- 9. McNair Playground
- 10. Wagner Houses Pool
- 11. Othmar Ammann Playground
- 12. Louis Cuvillier Park
- 13. Triborough Plaza
- 14. Crack is Wack Playground
- 15. Harlem River
- 16. New/Proposed Open Spaces

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

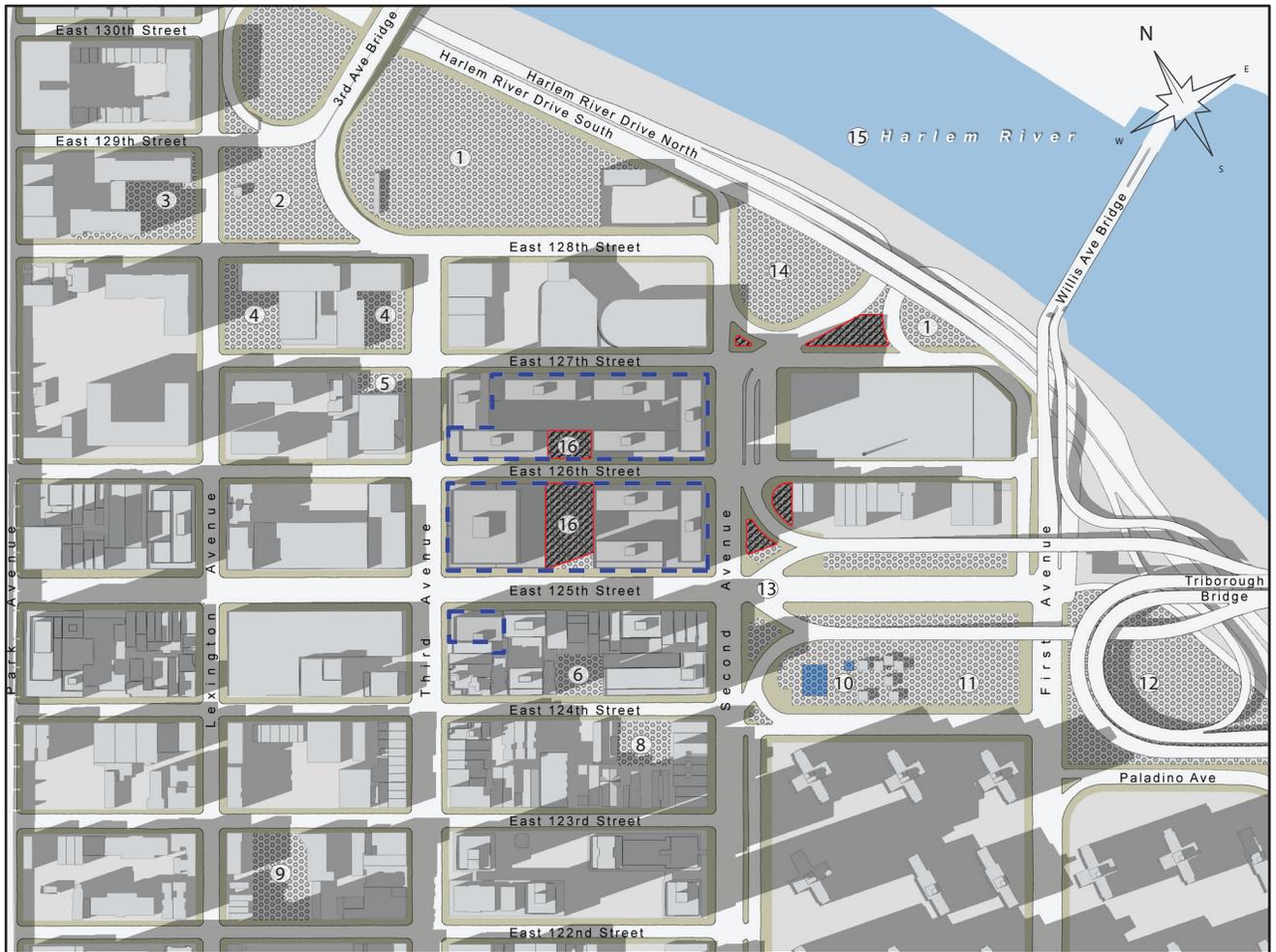
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Legend

-  Project Site Boundary
-  Shadows
-  Open Space
-  Incremental Shadow on Shadow-Sensitive Resources

Figure 3.5-18
Future with the Action Shadows 10:00am June 21st

East 125th Street Development EIS
 NYC Economic Development Corporation



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
3. Jackie Robinson Houses Playground
4. PS 30 Playground
5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River
16. New/Proposed Open Spaces

Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

0 200 500 FEET

Legend

-  Project Site Boundary
-  Shadows
-  Open Space
-  Incremental Shadow on Shadow-Sensitive Resources

Figure 3.5-19
Future with the Action Shadows 6:00pm June 21st

East 125th Street Development EIS
 NYC Economic Development Corporation

Harlem River Park

Harlem River Park would receive incremental shadows from the proposed action during all of the four analysis periods (March 21st, May 6th, June 21st, and December 21st). The proposed project would cast shadows on the small portion of Harlem River Park just north of the MTA Bus Depot in the afternoons starting shortly after 3pm in March, May, and June. On each of these days the incremental shadow from the proposed project would extend to the end of the analysis period. Although the duration of incremental shadows that remain on these open areas is relatively long (from 2 hours 17 minutes to 3 hours 54 minutes), the overall impact from the proposed project during these periods is not significant, as it should not impact the usability of the open space or the survival of its planted vegetation.

On December 21st, these small portions of Harlem River Park north of the MTA Bus Depot would be unaffected by shadows from the project. Instead, the portion of Harlem River Park between 128th Street and the Harlem River Drive would be impacted by incremental shadows from the proposed project. A small portion of Harlem River Park at the southeast corner would be impacted around noon (11:13pm – 12:09pm). The shadow from the proposed project would re-enter Harlem River Park at 1:02pm and would remain on the open space until the end of analysis period, or about 2 hours. This portion of Harlem River Park is the location of renovated playfields, and while these fields are not heavily utilized in the winter, these shadows in the late afternoon would reduce the usability of these open spaces as they would block radiant heat from the sun, making the fields colder at this time of year. Nevertheless, this shadow would not cause a substantial reduction in the usability of the space, as this is an active recreation area, without spectator seating, and does not require direct solar access for its usability. The fields would remain bright due to their continued access to the sky (see proposed mitigation below).

PS 30 Playgrounds

For the entry and exit analysis of incremental shadows, the PS 30 Playground is divided into two parts: the eastern portion that is at the corner of 127th Street and Third Avenue, and the western portion that is at the corner of 127th Street and Lexington Avenue. In the May and June analysis periods there would be no incremental shadow on any part of the PS 30 Playground. On March 21st, a tiny portion of the eastern part of the playground would be shadowed for 18 minutes.

In December, the proposed project's shadow impact would be at its greatest on the PS 30 Playgrounds, as incremental shadows would reach to both parts of the PS 30 Playgrounds. The western portion would be affected from the beginning of the analysis period (8:46am), to 9:32am (for 46 minutes). The eastern part of the PS 30 Playground would receive incremental shadow for a longer period, starting at the beginning of the analysis period and extending well past noon. During much of this time the eastern portion of the playground would be nearly fully shaded. By noon, this resource would still be about 70 percent shaded, and the incremental shadow would not completely exit this resource until 12:58pm. Overall, the proposed action would result in significant amounts of incremental shadows on the PS 30 Playgrounds in December, as the project would impact the usability of this open space. There would be no shadow impact in the other analysis periods. Most of the shadow impact on the PS 30 Playground would result from the reasonable worst case development scenario pertaining to the off-site parcel (Block 1791, Lot

44, currently the United Moravian Church) that is to be rezoned only, with no actual development proposed at this time.

Triborough Plaza

Triborough Plaza would receive most of the incremental shadows from the proposed action during the late afternoons in the May (starting 4:45pm) and June (starting 4:00pm) analysis periods, extending to the end of the analysis period. On March 21st, the open space would receive incremental shadows for just 6 minutes. This shadow impact would not be considered to be significant as the shadow impact would not affect how this resource is used or the survival of its planted areas.

Crack is Wack Playground

Incremental shadow impact from the proposed project would affect this resource in all analysis periods. In the June and the December analysis periods, the incremental impact would affect a small area for less than a half an hour.

On May 6th the proposed project would cast incremental shadows on this resource for 2 hours 40 minutes. Even though the duration of this incremental shadow would be long, the impact of the incremental shadow on this resource would not be significant, as this shadow would cover a small area (no more than 20 percent) of the playground at the southern edge of the resource, mostly away from the basketball courts found in the center of the playground.

During the March analysis period, incremental shadow from the proposed action would enter the playground at 3:25pm and remain on the open space until the end of the analysis period (2 hours 16 minutes). During this time the incremental shadows would increase so that by the end of the period nearly 80 percent of this resource would be in shadow cast by the proposed project. At 5:00pm the incremental shadow by the proposed action would be more than 60 percent of the total area of the open space. These incremental shadows would mostly impact the basketball courts that occupy most of this resource. These late afternoon shadows would reduce their usability at this time of year, as the proposed project would block the radiant heat from the sun and make the courts colder. Nevertheless, this shadow would not cause a substantial reduction in the usability of the space, as this is an active recreation area, without spectator seating, and does not require direct solar access to be used. In addition, the amount of light this area receives would still be high, because the shadow impact would be from a long shadow (see proposed mitigation measures below).

Harlem River

The Harlem River would receive incremental shadow from the proposed development on each of the analysis periods, but the durations of the shadows would be short. On June 21st and May 6th the durations would be just two and eight minutes, respectively. On March 21st the duration would be 37 minutes, while on December 21st the Harlem River would be shadowed for 54 minutes. In each case, the shadowing would start in the late afternoon and continue to the end of the analysis period. Because of its short duration at the end of the day, this shadow impact would not significantly affect this natural resource.

Proposed Open Space

The proposed open spaces created as a part of the proposed action would experience the largest shadow impact from the proposed project. Both the northerly (Block 1791) and the southerly (Block 1790) open space plazas would be in shadow from the proposed project for a significant period of time for each of the analysis periods. The project development guidelines and program, which require high density, contextual-style buildings, are not conducive to the development of sunny, on-site open spaces. The height-limited, high coverage buildings that would result from the development program and design guidelines would make it very difficult to develop on-site open spaces that are sunny and bright for the majority of the time.

On March 21st, both proposed open spaces would start entirely in shadow and would be completely shadowed by the proposed project until about 10:00am. The amount of this open space in shadow would steadily decrease until 2:21pm when for a moment there would be no incremental shadows on the proposed open spaces. Two minutes later incremental shadows would start increasing again until the open spaces would be completely shadowed by about 5pm.

The same pattern is seen on May 6th, where the proposed open spaces would start completely in incremental shadow and, as the day progresses, that incremental shadow would get smaller and smaller until about 1:45pm, when for a few minutes no incremental shadow would be cast on the proposed open spaces. Incremental shadows would then increase until the proposed open spaces would be completely shadowed at the end of the analysis period. Likewise, on June 21st, the proposed open spaces would entirely be in incremental shadow from the early morning, with the incremental shadow decreasing until 1:37pm, when the open spaces would be entirely in sun for two minutes. Incremental shadow impacts would steadily increase on these proposed spaces until the end of the analysis period.

On December 21st, incremental shadows on the proposed open spaces would be less than the other analysis dates, as there would already be existing shadows reaching the proposed open spaces. December 21st is the only analysis period that would not start the analysis day in complete incremental shadow, as a small portion of the southern open space would receive sun at 8:46am. These open spaces would never be in complete incremental shadow. Rather, like the other analysis periods, they would experience most of their direct sun around mid-day.

Because the creation of this open space is part of the proposed action, these shadows are not considered a significant adverse impact. Moreover, the proposed open spaces would be programmed to support the commercial uses of the development and are expected to be most heavily utilized around lunch hour. The open space would be oriented so that it would receive the most sun during these times. The open space would also have mostly hard surfaces to support the high utilization expected, and would not include plantings that require long periods of direct sun.

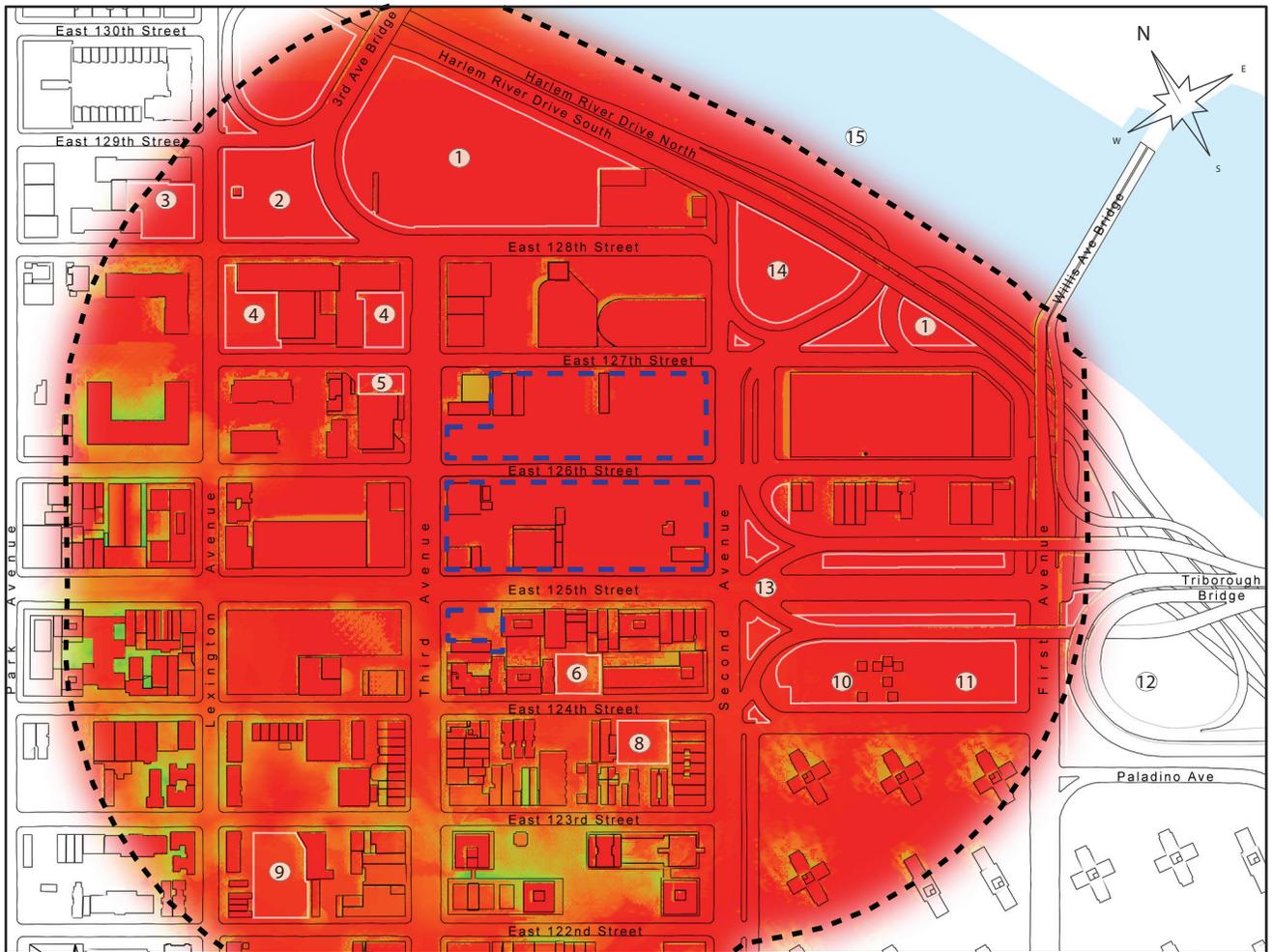
Mitigation

Eastern Portion of PS 30 Playground

Most of the shadow impact on the PS 30 Playground would result from reasonable worst case development scenario development on the off-site parcel (Lot 44 of Block 1791) that is to be rezoned only, with no actual development proposed at this time. For the purposes of this EIS, it has been assumed that this site could theoretically be built as a quality housing building to the maximum streetwall and height allowed in the zoning district, which would create the significant impact discussed above. Because the Zoning Resolution largely determines the form of buildings built under these regulations, there are no meaningful mitigation measures that could be taken when the building is constructed according to the maximum development allowed for a quality housing building. A building constructed under the Zoning Resolution's height factor regulations would likely have a smaller shadow impact on this resource. As a result, the impact disclosed herein can be viewed as the likely maximum incremental shadow impact.

Active Recreation Areas in Harlem River Park and Crack is Wack Playground

Natural light is composed of direct light from the sun (sunlight), direct light from the sky (daylight) and reflected light from these sources. Shadows are simply the presence or absence of direct sunlight, yet a substantial amount of the natural light received is light from the sky, or daylight. The proposed project would cast long afternoon shadows on the active recreation areas of Harlem River Park and the Crack is Wack playground at certain times of the year, but the proposed project would have a small impact on the amount of daylight that these resources receive. Consequently, even in the afternoon when these spaces would be in shadow they would still receive enough light so that the playfield and the basketball courts could continue to be used. For example, on March 21st at 5pm, when most of the Crack is Wack playground would be in incremental shadow, it would still be receiving, on average, about 95 foot-candles of natural light on a clear day. For comparison, the northern portion of the proposed open space, which would also be in incremental shadow at that time, would have, on average, about 52 foot-candles of natural light. The difference in the amount of light that these two shadowed areas would receive would result from changes in access to the sky. The Crack is Wack playground would maintain largely unobstructed access to the sky, while the proposed open spaces would have the buildings of the proposed action blocking much of sky. For the active recreation uses at the Harlem River Park playfield and the Crack is Wack playground, access to light would be considered more important than access to the radiant heat that direct sun provides, and so while there would be incremental shadow on these open spaces from the proposed project at certain times of the year, they would remain bright and usable because of their continued access to the sky. Figures 3.5-20 and 3.5-21 demonstrate this by showing total annual natural light levels (or illuminance) in the study area in the Future without the Action (see Figure 3.5-20) and the Future with the Action (see Figure 3.5-21). The open spaces to the north of the project area would experience imperceptible changes in total annual natural light levels.



Key to Shadow-Sensitive Resources

1. Harlem River Park
2. Alice Kornegay Triangle
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5. Tot Lot *
6. Dream Street Park
8. Carver Community Garden
9. McNair Playground
10. Wagner Houses Pool
11. Othmar Ammann Playground
12. Louis Cuvillier Park
13. Triborough Plaza
14. Crack is Wack Playground
15. Harlem River

0 200 500 FEET

Footcandles



Source:
 DCP 125th Street Rezoning & Related Actions project EIS study model
 NYC Map 2004 - Bytes of Big Apple Map Pluto 2006.
 Environmental Simulation Center

* Not publicly accessible; not a shadow sensitive resource

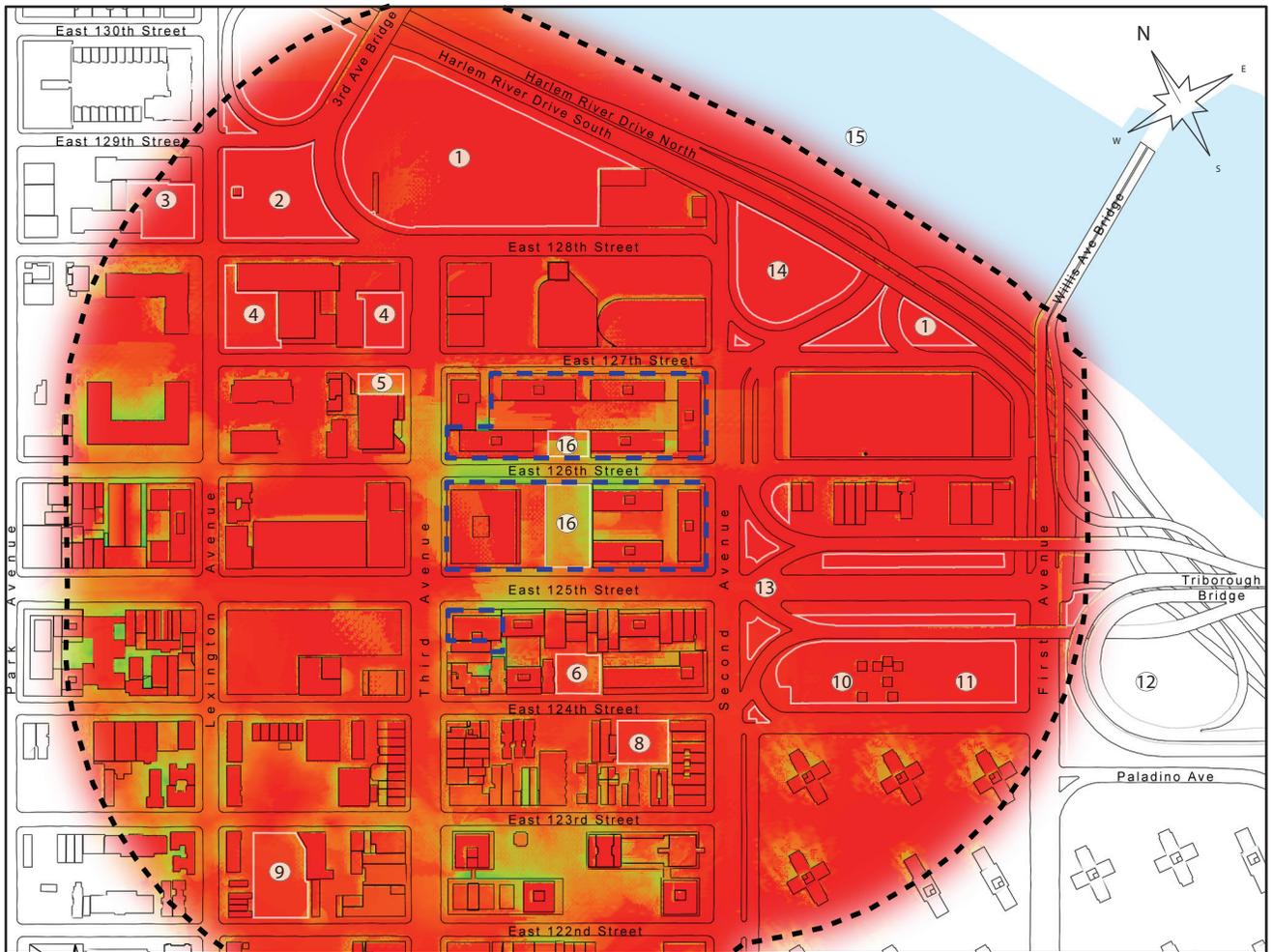
Legend

- Project Site Boundary
- Open Space
- Study Area

Future without the Action - Total Annual Natural Light Levels

Figure 3.5-20

*East 125th Street Development EIS
 NYC Economic Development Corporation*



Key to Shadow-Sensitive Resources

1. Harlem River Park
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16. New/Proposed Open Spaces

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 Environmental Simulation Center

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0 200 500 FEET

Footcandles



Legend

- Project Site Boundary
- Open Space
- Study Area

Future with the Action - Total Annual Natural Light Levels

*East 125th Street Development EIS
 NYC Economic Development Corporation*

Figure 3.5-21

Conclusions

Most shadow sensitive resources in the study area would not experience shadow impacts from the proposed project. Five existing resources would experience incremental shadow impacts from the proposed project, but most of those impacts would not be considered significant. The only significant shadow impact from the proposed project on existing shadow sensitive resources would be on the eastern portion of the PS 30 Playground in the winter, which would reduce the usability of this open space in the morning hours during the coldest months. The proposed open spaces created by the action would also be shadowed by the proposed buildings. While much of this shadow impact would be an unavoidable consequence of the design guidelines, the impact would be addressed through the programming of those open spaces, and their orientation, which provides the most sun during times of day when these open space plazas would be expected to be most highly utilized. Because the creation of this open space is part of the proposed action, these shadows are not considered a significant adverse impact.