

Beach 42nd Street Outfall Project

Environmental Assessment Statement

Prepared for:



New York City Department of Design and Construction
and



New York City Department of Environmental Protection

By:
AKRF, Inc with Hazen & Sawyer, PC

May 14, 2009

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City Environmental Quality Review

ENVIRONMENTAL ASSESSMENT STATEMENT
PART I, GENERAL INFORMATION

Reference Numbers

1. 09DEP040Q
CEQR REFERENCE NUMBER (TO BE ASSIGNED BY LEAD AGENCY)
N.A.
ULURP REFERENCE NO. IF APPLICABLE

Lead Agency &

2a. LEAD AGENCY
NYC Department of Environmental Protection
NAME OF LEAD AGENCY

Applicant Information
PROVIDE APPLICABLE INFORMATION

2b. APPLICANT INFORMATION
NYC Department of Environmental Protection
NAME OF APPLICANT
James Roberts, Deputy Commissioner
NAME OF APPLICANT'S REPRESENTATIVE OR CONTACT PERSON
59-17 Junction Boulevard
ADDRESS
Flushing NY 11368
CITY STATE ZIP
(718) 595-4398 (718) 595-4479
TELEPHONE FAX
alicata@dep.nyc.gov jimr@dep.nyc.gov
EMAIL ADDRESS

Action Description

SEE CEQR MANUAL SECTIONS 2A & 2B

3a. NAME OF PROPOSAL Capital Project SEQ-200533—Beach 42nd Street
3b. DESCRIBE THE ACTION(S) AND APPROVAL(S) BEING SOUGHT FROM OR UNDERTAKEN BY CITY (AND IF APPLICABLE, STATE AND FEDERAL AGENCIES) AND, BRIEFLY, DESCRIBE THE DEVELOPMENT OR PROJECT THAT WOULD RESULT FROM THE PROPOSED ACTION(S) AND APPROVAL(S)
This proposed action involves the construction of a new storm sewer from Beach Channel Drive to Norton Basin in the Edgemere section of Queens. Figure 1 shows the project area and the locations of the proposed outfall and storm sewers.
3c. DESCRIBE THE PURPOSE OF AND NEED FOR THE ACTION(S) AND APPROVAL(S)
The proposed action is needed to provide a drainage outlet for the collected stormwater in a newly sewered area of the Rockaways. As a result, the proposed action would improve stormwater drainage and relieve street flooding in the drainage area of the proposed action area.

Required Action or Approvals

4. CITY PLANNING COMMISSION
Change in City Map Zoning Certification Site Selection - Public Facility
Zoning Map Amendment Zoning Authorization Disposition - Real Property Franchise
Zoning Text Amendment Housing Plan & Project UDAAP Revocable Consent Concession
Charter 197-a Plan
Zoning Special Permit, specify type:
Modification of:
Renewal of:
Other:
5. UNIFORM LAND USE PROCEDURE (ULURP) Yes No
6. BOARD OF STANDARDS AND APPEALS Yes No
Special Permit New Renewal Expiration Date
Variance Use Bulk
Specify affected section(s) of Zoning Resolution
7. DEPARTMENT OF ENVIRONMENTAL PROTECTION Yes No
Title V Facility Power Generation Facility Medical Waste Treatment Facility

PLEASE NOTE THAT MANY ACTIONS ARE NOT SUBJECT TO CEQR. SEE SECTION 110 OF TECHNICAL MANUAL.

8. OTHER CITY APPROVALS Yes No

Legislation Rulemaking: specify agency: _____

Construction of Public Facilities Funding of Construction, Specify _____ Funding of Programs, Specify _____

Policy or plan Permits, Specify: _____

Other, explain: **See Project Description, Permits and Approvals.**

9. STATE ACTIONS/APPROVALS/FUNDING Yes No

If "Yes," identify **401 Water Quality Certification; NYSDEC Tidal Wetlands Permit; NYSDEC SPDES Permit; SPDES General Permit GP-02-01 for activities during construction.**

10. FEDERAL ACTIONS/APPROVALS/FUNDING Yes No

If "Yes," identify **Section 10, Construction in navigable waters; Section 401, dredging and filling of wetlands**

Action Type

11a. Unlisted; or Type 1, specify category (see 6 NYCRR 617.4 and NYC Executive Order 91 of 1977, as amended): _____

11b. Localized action, site specific Localized action, change in regulatory control for small area Generic action

Analysis Year

12. Identify the analysis year (or build year) for the proposed action: **2010 (August)**

Would the proposal be implemented in a single phase? Yes No NA.

Anticipated period of construction: **1 year**

Anticipated completion date: **2010 (August)**

Would the proposal be implemented in multiple phases? Yes No NA.

Number of phases: _____

Describe phases and construction schedule: _____

Directly

Affected Area

INDICATE LOCATION OF PROJECT SITE FOR ACTIONS INVOLVING A SINGLE SITE ONLY (PROVIDE ATTACHMENTS AS NECESSARY FOR MULTIPLE SITES)

13a. LOCATION OF PROJECT SITE
See Project Description in Attachment A.

STREET ADDRESS
The project area is bounded by Norton Basin and the U.S. Bulkhead Line to the north and Beach Channel Drive to the south.

DESCRIPTION OF PROPERTY BY BOUNDING OR CROSS STREETS
R5 31a

EXISTING ZONING DISTRICT, INCLUDING SPECIAL ZONING DISTRICT DESIGNATION, IF ANY **N.A.** ZONING SECTIONAL MAP NO **14**

TAX BLOCK AND LOT NUMBERS **Queens** BOROUGH **14** COMMUNITY DISTRICT NO.

13b. PHYSICAL DIMENSIONS AND SCALE OF PROJECT

TOTAL CONTIGUOUS SQUARE FEET OWNED OR CONTROLLED BY PROJECT SPONSOR **48,000 sq. ft. below grade (Existing city sewer easement.)** SQ. FT.

PROJECT SQUARE FEET TO BE DEVELOPED **N.A.** SQ. FT.

GROSS FLOOR AREA OF PROJECT **N.A.** SQ. FT.

IF THE ACTION IS AN EXPANSION, INDICATE PERCENT OF EXPANSION PROPOSED _____ % OF _____

IN THE NUMBER OF UNITS, SQ. FT. OR OTHER APPROPRIATE MEASURE _____

DIMENSIONS (IN FEET) OF LARGEST PROPOSED STRUCTURE: _____ HEIGHT _____ WIDTH _____ LENGTH _____

LINEAR FEET OF FRONTAGE ALONG A PUBLIC THOROUGHFARE: **±1,200 linear feet along sewer easement**

13c. IF THE ACTION WOULD APPLY TO THE ENTIRE CITY OR TO AREAS THAT ARE SO EXTENSIVE THAT A SITE-SPECIFIC DESCRIPTION IS NOT APPROPRIATE OR PRACTICABLE, DESCRIBE THE AREA LIKELY TO BE AFFECTED BY THE ACTION:
N.A.

13d. DOES THE PROPOSED ACTION INVOLVE CHANGES IN REGULATORY CONTROLS THAT WOULD AFFECT ONE OR MORE SITES NOT ASSOCIATED WITH A SPECIFIC DEVELOPMENT? Yes No

IF "YES," IDENTIFY THE LOCATION OF THE SITES PROVIDING THE INFORMATION REQUESTED IN 13a. & 13b. ABOVE.

PART II, SITE AND ACTION DESCRIPTION

Site Description

1. GRAPHICS Please attach: (1) a Sanborn or other land use map; (2) a zoning map; (3) a tax map. On each map, clearly show the boundaries of the directly affected area or areas and indicate a 400-foot radius drawn from the outer boundaries of the project site. The maps should not exceed 8 1/2 x 14 inches in size.

See Figures 1 through 3.

2. PHYSICAL SETTING (both developed and undeveloped areas)

Total directly affected area (sq. ft.): 48,500 Water surface area (sq. ft.): 500
 Roads, building and other paved surfaces (sq. ft.): 24,000 Other, describe (sq. ft.): 24,000 (vacant land)

3. PRESENT LAND USE

Residential **N.A.**

Total no. of dwelling units _____ No. of low-to-moderate income units _____

No. of stories _____ Gross floor area (sq. ft.) _____

Describe type of residential structures:

Commercial **N.A.**

Retail: No. of bldgs. _____ Gross floor area of each building (sq. ft.): _____

Office: No. of bldgs. _____ Gross floor area of each building (sq. ft.): _____

Other: No. of bldgs. _____ Gross floor area of each building (sq. ft.): _____

Specify type(s): _____ No. of stories and height of each building: _____

Manufacturing/Industrial **N.A.**

No. of bldgs. _____ Gross floor area of each building (sq. ft.): _____

No. of stories and height of each building: _____

Types of use(s): _____ Open storage area (sq. ft.) _____

If any unenclosed activities, specify: _____

Community facility **N.A.**

Type of community facility: _____

No. of bldgs. _____ Gross floor area of each building (sq. ft.): _____

No. of stories and height of each building: _____

Vacant Land

Is there any vacant land in the directly affected area? Yes No

If yes, describe briefly:

Approximately half of the proposed outfall sewer segment is vacant waterfront land and the other half is a parking lot for the NYCHA Beach Channel Drive Houses. All of the land is under the ownership of the City and the jurisdiction of the NYCHA.

Publicly accessible open space

Is there any existing publicly accessible open space in the directly affected area? Yes No

If yes, describe briefly:

The waterfront land along Norton Basin is used for waterfront recreation, and observed activities along the waterfront include fishing. However, the land is not designated as waterfront open space nor does it contain facilities.

Does the directly affected area include any mapped City, State or Federal parkland? Yes No

If yes, describe briefly:

Does the directly affected area include any mapped or otherwise known wetland? Yes No

If yes, describe briefly:

The project includes tidal wetlands with Norton Basin. (See Attachment B, Natural Resources.)

Other Land Use **N.A.**

No. of stories _____ Gross floor area (sq. ft.): _____

Type of use(s): _____

4. EXISTING PARKING

Garages **N.A.**

No. of public spaces: _____

Operating hours: _____

Lots

No. of public spaces: **0**

Operating hours: **24 hours**

No. of accessory spaces: _____

Attended or non-attended? _____

No. of accessory spaces: **100**

Attended or non-attended? **non-attended**

The area of the proposed outfall construction includes about 100 accessory parking spaces within the Beach Chanel Drive Houses complex fronting on Beach Channel Drive. This area has been previously dedicated for a sewer easement.

Other (including street parking) – please specify and provide same data as for lots and garages, as appropriate.

5. EXISTING STORAGE TANKS

Gas or service station? Yes No Oil storage facility? Yes No Other? Yes No

If yes, specify: _____

Number and size of tanks: _____ Last NYFD inspection date: _____

Location and depth of tanks: _____

6. CURRENT USERS **N.A.**

No. of residents: _____

No. and type of businesses: _____

No. and type of workers by business: _____

No. and type of non-residents who are not workers: _____

7. HISTORIC RESOURCES (ARCHITECTURAL AND ARCHAEOLOGICAL RESOURCES)

Answer the following two questions with regard to the directly affected areas, lots abutting that area, lots along the same blockfront or directly across the street from the same blockfront, and, where the directly affected area includes a corner lot, lots which front on the same street intersection.

Do any of the areas listed above contain any improvement, interior landscape feature, aggregate of landscape of landscape features, or archaeological resource that:

- (a) has been designated (or is calendared for consideration as) a New York City Landmark, Interior Landmark or Scenic Landmark: **No**
- (b) is within a designated New York City Historic District: **No**
- (c) has been listed on, or determined eligible for, the New York State or National Register of Historic Places: **No**
- (d) is within a New York State or National Register Historic District, or **No**
- (e) has been recommended by the New York State Board for listing on the New York State or National Register of Historic Places? **No**

Identify any resource: _____

Do any of the areas listed in the introductory paragraph above contain any historic or archaeological resource, other than those listed in response to the previous question? Identify any resource.

8. WATERFRONT REVITALIZATION PROGRAM

Is any part of the directly affected area within the City's Waterfront Revitalization Program boundaries? Yes No

(A map of the boundaries can be obtained at the Department of City Planning bookstore.)

If yes, append a map showing the directly affected area as it relates to such boundaries. A map requested in other parts of this form may be used.

See Figure E-1 in Attachment E, "Waterfront Revitalization Program."

9. CONSTRUCTION

Will the action result in demolition of or significant physical alteration to any improvement? Yes No

If yes, describe briefly: _____

Will the action involve either above-ground construction resulting in any ground disturbance or in-ground construction? Yes No

If yes, describe briefly: _____

While the proposed in-ground construction requires excavation in City streets, in an existing parking lot, and on vacant land, reconstruction of affected structures and land restoration would be necessary to avoid all impacts.

10. PROPOSED LAND USE

Residential **N.A.**

Total no. of dwelling units _____

No. of low-to-moderate income units _____

Gross floor area (sq. ft.) _____

No. of stories _____

SEE CEQR TECHNICAL MANUAL CHAPTER III F., HISTORIC RESOURCES

SEE CEQR TECHNICAL MANUAL CHAPTER III K., WATERFRONT REVITALIZATION PROGRAM

Project Description

THIS SUBPART SHOULD GENERALLY BE COMPLETED ONLY IF YOUR ACTION INCLUDES A SPECIFIC OR KNOWN DEVELOPMENT AT PARTICULAR LOCATIONS

Describe type of residential structures:

Commercial **N.A.**
Retail: No. of bldgs. _____
Office: No. of bldgs. _____
Other: No. of bldgs. _____

Gross floor area of each building (sq. ft.): _____
Gross floor area of each building (sq. ft.): _____
Gross floor area of each building (sq. ft.): _____
No. of stories and height of each building: _____

Manufacturing/Industrial **N.A.**
No. of bldgs. _____
No. of stories and height of each building: _____
Type of use(s): _____
If any unenclosed activities, specify: _____

Gross floor area of each building (sq. ft.) _____
Open storage area (sq. ft.): _____

Community facility **N.A.**
Type of community facility: _____
No. of bldgs. _____
No. of stories and height of each building: _____

Gross floor area of each building (sq. ft.): _____

Vacant land
Is there any vacant land in the directly altered area?
If yes, describe briefly:

Yes No

The City owns vacant land along the waterfront of Norton Basin. With the proposed project there would be a restoration program along the shoreline in the vicinity of the proposed outfall that would restore tidal wetlands (see details in Attachment A).

Publicly accessible open space
Is there any publicly accessible open space to be removed or altered?
If yes, describe briefly:

Yes No

There is vacant land along the waterfront of Norton Basin that is used informally for fishing. As stated above, with the proposed project there would be a restoration program along the shoreline in the vicinity of the proposed outfall that would restore tidal wetlands (see details in Attachment A). This restoration would not conflict with the current waterfront public access with the exception of the short term construction period.

Is there any existing publicly accessible open space to be added?
If yes, describe briefly:

Yes No

Other Land Use **N.A.**
No. of stories _____

Gross floor area (sq. ft.): _____

Type of use(s):
Vacant land

11. PROPOSED PARKING

Garages **N.A.**
No. of public spaces: _____
Operating hours: _____

No. of accessory spaces: _____
Attended or non-attended? _____

Lots
No. of public spaces: **0**
Operating hours: **N.A.**

No. of accessory spaces: **0**
Attended or non-attended? **N.A.**

Other (including street parking) – please specify and provide same data as for lots and garages, as appropriate.
No. and location of proposed curb cuts:

There are approximately 100 off-street parking spaces in the project area that are accessory parking and are part of the NYCHA Beach Channel Drive Houses. While there would be temporary construction-period impacts to parking (e.g., relocation), ultimately, the project proposes no changes in parking, and all off-street parking at the NYCHA facility is proposed to be replaced and the parking lot restored. Additional details are provided in Attachment A, "Project Description."

12. PROPOSED STORAGE TANKS

Gas or storage stations? Yes No
Other? Yes No

Oil storage facility? Yes No

If yes, specify: _____
Number and size of tanks: _____ Location and depth of tanks: _____

13. **PROPOSED USERS NA**
 No. of residents: _____ No. and type of businesses? _____
 No. and type of workers by businesses: _____ No. and type of non-residents who are not workers: _____

14. **HISTORIC RESOURCES (ARCHITECTURAL AND ARCHAEOLOGICAL RESOURCES)**
 Will the action affect any architectural or archaeological resource identified in response to either of the two questions at number 7 in the Site Description section of the form? Yes No
 If yes, describe briefly:

SEE CEQR
 TECHNICAL MANUAL
 CHAPTER III B.
 SOCIOECONOMIC
 CONDITIONS

15. **DIRECT DISPLACEMENT**
 Will the action directly displace specific businesses or affordable and/or low income residential units? Yes No
 If yes, describe briefly:

SEE CEQR
 TECHNICAL MANUAL
 CHAPTER III C.
 COMMUNITY
 FACILITIES & SERVICES

16. **COMMUNITY FACILITIES**
 Will the action directly eliminate, displace, or alter public or publicly funded community facilities such as educational facilities, libraries, hospitals, and other health care facilities, day care centers, police stations, or fire stations? Yes No
 If yes, describe briefly:

**Zoning
 Information**

17. What is the zoning classification(s) of the directly affected area?
R5

18. What is the maximum amount of floor area that can be developed in the directly affected area under the present zoning? Describe in terms of bulk for each use.
N.A.

19. What is the proposed zoning of the directly affected area?
N.A.

20. What is the maximum amount of floor area that could be developed in the directly affected area under the proposed zoning? Describe in terms of bulk for each use.
N.A.

21. What are the predominant land uses and zoning classifications within a ¼-mile radius of the proposed action?
R5 and R4

**Additional
 Information**

22. Attach any additional information as may be needed to describe the action. If your action involves changes in regulatory controls that affect one or more sites not associated with a specific development, it is generally appropriate to include here one or more reasonable development scenarios for such sites and, to the extent possible, to provide information about such scenario(s) similar to that requested in the Project Description questions 9 through 16.

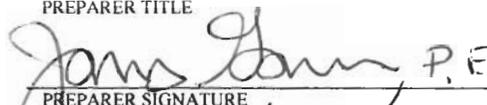
Analyses

23. Attach analyses for each of the impact categories listed below (or indicate where an impact category is not applicable):

- | | | |
|----|-------------------------------------|---------------------------------------|
| a. | LAND USE, ZONING, AND PUBLIC POLICY | See Attachment B for impact analysis. |
| b. | SOCIOECONOMIC CONDITIONS | See Attachment B for impact analysis. |
| c. | COMMUNITY FACILITIES AND SERVICES | See Attachment B for impact analysis. |
| d. | OPEN SPACE | See Attachment B for impact analysis. |
| e. | SHADOWS | See Attachment B for impact analysis. |
| f. | HISTORIC RESOURCES | See Attachment B for impact analysis. |
| g. | URBAN DESIGN/VISUAL RESOURCES | See Attachment B for impact analysis. |
| h. | NEIGHBORHOOD CHARACTER | See Attachment B for impact analysis. |
| i. | NATURAL RESOURCES | See Attachment B for impact analysis. |
| j. | HAZARDOUS MATERIALS | See Attachment B for impact analysis. |
| k. | WATERFRONT REVITALIZATION PROGRAM | See Attachment B for impact analysis. |
| l. | INFRASTRUCTURE | See Attachment B for impact analysis. |
| m. | SOLID WASTE AND SANITATION SERVICES | See Attachment B for impact analysis. |
| n. | ENERGY | See Attachment B for impact analysis. |
| o. | TRAFFIC AND PARKING | See Attachment B for impact analysis. |
| p. | TRANSIT AND PEDESTRIANS | See Attachment B for impact analysis. |
| q. | AIR QUALITY | See Attachment B for impact analysis. |
| r. | NOISE | See Attachment B for impact analysis. |
| s. | CONSTRUCTION IMPACTS | See Attachment B for impact analysis. |
| t. | PUBLIC HEALTH | See Attachment B for impact analysis. |

The CEQR Technical Manual sets forth methodologies developed by the City to be used in analyses prepared for the above-listed categories. Other methodologies developed or approved by the lead agency may also be utilized. If a different methodology is contemplated, it may be advisable to consult with the Mayor's Office of Environmental Coordination. You should also attach any other necessary analyses or information relevant to the determination whether the action may have a significant impact on the environment, including, where appropriate, information on combined or cumulative impacts, as might occur, for example, where actions are independent or occur within a discrete geographical area or time frame.

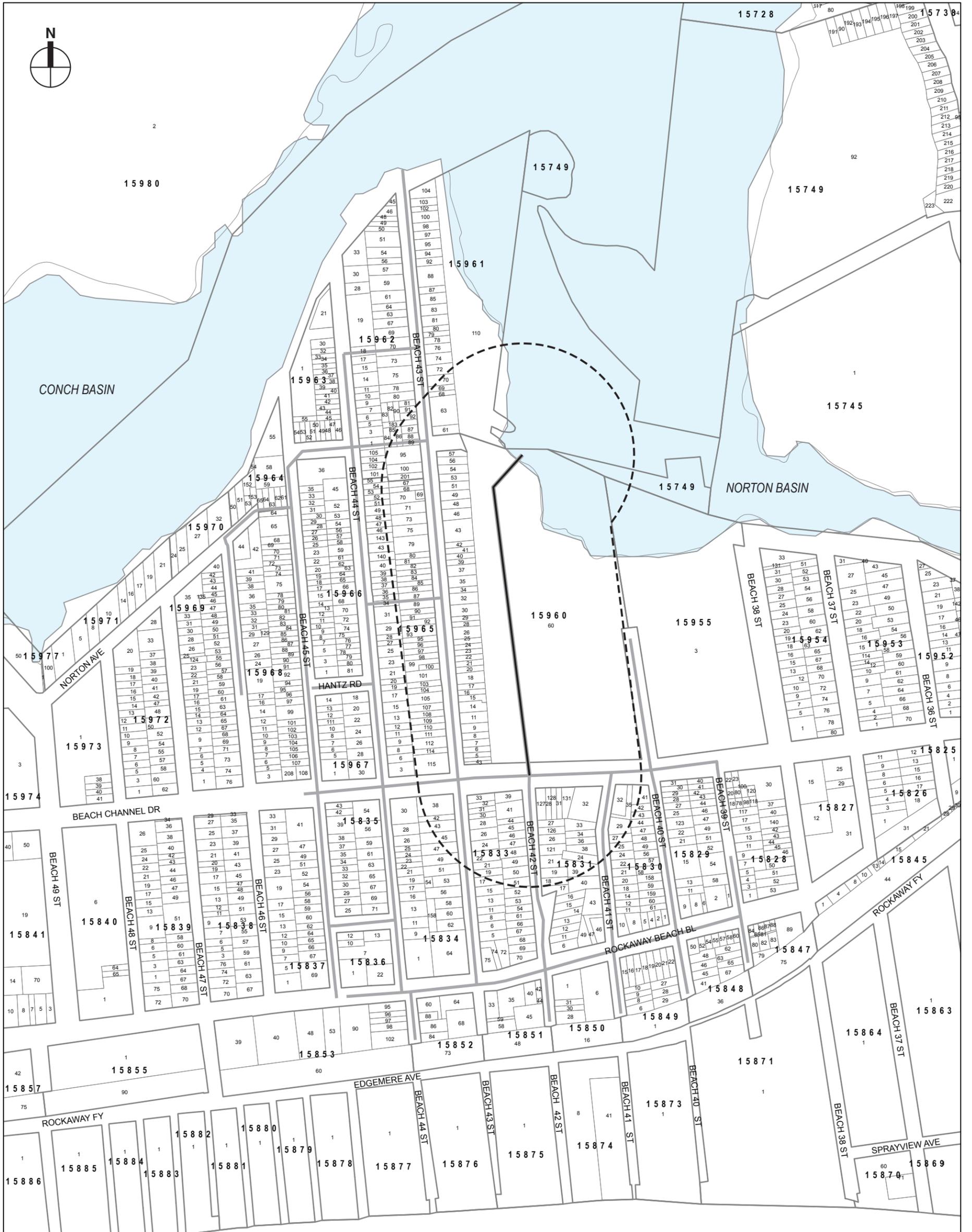
**Applicant
Certification**

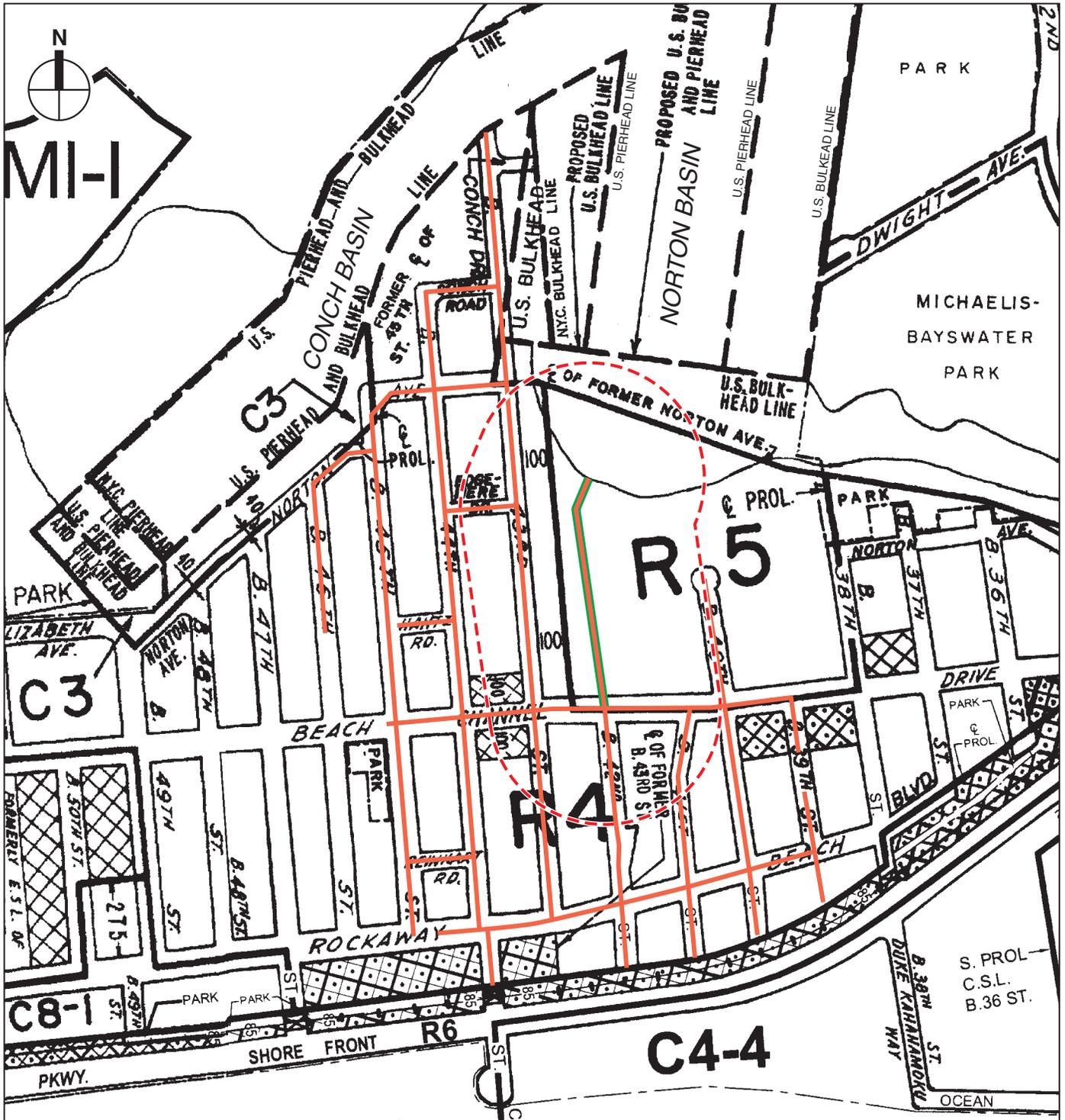
24. **James Garin, NYCDEP**
PREPARER NAME
**Capital Projects, Bureau of Water and Sewer
Operations**
PREPARER TITLE

PREPARER SIGNATURE
DATE **5/14/09**

NYCDEP
PRINCIPAL
Esther Siskind
NAME OF PRINCIPAL REPRESENTATIVE
**Assistant Commissioner, Bureau of
Environmental Planning and Analysis**
TITLE OF PRINCIPAL REPRESENTATIVE

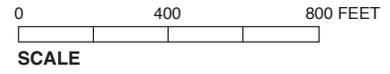
SIGNATURE OF PRINCIPAL REPRESENTATIVE
DATE **5/14/09**

NOTE: Any person who knowingly makes a false statement or who knowingly falsifies any statement on this form or allows any such statement to be falsified shall be guilty of an offense punishable by fine or imprisonment or both, pursuant to Section 10-154 of the New York City Administrative Code, and may be liable under applicable laws.





-  Project Area Drainage Plan (Storm and Sanitary Sewers)
-  Study Area Boundary (400-Foot Perimeter)
-  Proposed Outfall
-  Zoning District Boundary
-  C1-2 Overlay
-  C2-2 Overlay
-  C2-4 Overlay



A. DESCRIPTION OF PROPOSED ACTION

The New York City Department of Design and Construction (DDC), on behalf of the New York City Department of Environmental Protection (NYCDEP), is proposing Capital Project No. SEQ200533. The proposed action would provide a new storm sewer outfall serving the Edgemere section of Queens which is largely a residential area with commercial uses along Beach Channel Drive (see Figure A-1).

The proposed outfall would extend along an unbuilt section of Beach 42nd Street from Beach Channel Drive north to the Norton Basin within a 40-foot-wide DEP sewer easement. There is also an existing storm sewer within this easement. The project would be constructed within Queens Block 15960, Lot 60. The project also includes tidal wetland restoration and the reconstruction of a New York City Housing Authority (NYCHA) parking lot which lies within the project area easement and would be affected by the proposed construction. Figure A-1 shows the location of the proposed outfall.

Specific elements of the proposed action include:

- Installation of a reinforced concrete box culvert that is approximately 1,200 feet in length, seven feet wide, five feet high and extends about 30 feet out into Norton Basin, as measured from the mean high water line.
- The proposed storm sewer outfall would be constructed on 20-ton timber piles.
- The outfall would be covered by grouted stone pavement and protected by 50-pound stone.
- A rip-rap apron from the headwall would be constructed of 50-pound boulders and would lie within the natural bottom of Norton Basin, below mean low water.
- Landscaped restoration of the easement area post-construction, including additional restoration of tidal wetlands at the Chandler Street Site.
- Reconstruction of existing pavement, sidewalks and landscaping in NYCHA's Beach Channel Drive Houses accessory parking lot.
- Limited construction in the street of Beach Channel Drive in order to make the outfall connection to the storm sewer.
- Dredging in the northernmost segment of the outfall (about 236 cubic yards).

Design of the proposed outfall has been developed with the objectives of limiting disturbance to tidal wetlands, providing the necessary restoration for areas disturbed by construction, and developing the appropriate wetland restoration. To this end, with the proposed action, all disturbed areas within the easement would be restored with in-kind restoration of habitat(s) and restoration of pre-construction grades. This includes restoration of salt-marsh (with salt marsh cord grass, [*Spartina alterniflora*]); high marsh (with species such as salt-meadow cord grass (*S. patens*), sea lavender [*Limonium carolinianum*], and spikegrass [*Distichlis spicata*]; and

transition areas between tidal wetland and upland (with species such as groundsel tree [*Baccharis halimifolia*], pasture rose [*Rosa Carolina*], salt meadow cord grass [*S. patens*], black grass [*Juncus gerardii*], and switch grass [*Panicum virgatum*]). Upland habitats would be restored with species typical of a maritime shrubland such as eastern red cedar (*Juniperus virginiana*), beach plum (*Prunus maritima*), and shining sumac (*Rhus copallinum*).

The total restoration area for the proposed project is 1.05 acres. There will be the creation of 0.02 acres of tidal wetland (882 square feet) to compensate for the loss of 0.01 acres (441 square feet) with the installation of the proposed outfall. This restoration would be implemented under a separate contract at the Chandler Street site along with a larger wetland restoration. This site is also City-owned property located approximately 1.3 miles to the northeast of Beach 42nd Street outfall and also within the Jamaica Bay Watershed. The Chandler Street project is designed to provide cumulative wetland restoration for a number of NYCDDC/NYCDEP Jamaica Bay outfall projects, including the outfall at Beach 42nd Street. With the Chandler Street project, NYCDEP/NYCDDC would restore approximately 0.44 acres of high salt marsh tidal wetland habitat and create an additional 0.21 acres of high salt marsh habitat located in the Mott Basin section of Jamaica Bay (additional details are provided in Appendix B of this EAS).

PURPOSE AND NEED FOR THE PROPOSED ACTION

The proposed outfall is part of a larger drainage area sewer system that covers about 180 acres in the Edgemere section of the Rockaways in Southeastern Queens. The area is a low-lying residential area that is subject to street flooding. Historically, only portions of the drainage area had storm sewers in local streets. A full network of collection storm sewers is currently being installed in the area under a separate NYCDEP project.

This proposed outfall would provide a needed drainage outlet for the collected stormwater in this newly sewered area of the Rockaways. It is necessary to construct the outfall in order to properly convey stormwater collected from local streets out to Norton Basin and thereby relieve local street flooding. The site of the proposed outfall has several advantages. First, it is within an existing City property and a NYCDEP sewer easement, such that no land acquisition is required. Secondly, the area is mostly previously disturbed which minimizes impacts to natural resources. Lastly the proposed outfall would also parallel an existing NYCDEP outfall (SPDES Permit ROC-647).

B. CONSTRUCTION SCHEDULE

Construction of the proposed action would begin in August 2009 and be completed in August 2010. The duration of construction is expected to be about one year. Construction in NYCHA's Beach Channel Drive Houses accessory parking lot would proceed in two phases, with each phase occupying only half of the parking lot. The first phase of the work (about 250 linear feet) would cover activities in the northern half of the lot, which would include dredging and a tidal wetland restoration program. The second phase of the work (also about 250 linear feet) would consist of work between the chamber connection in Beach Channel Drive and the southern half of the parking lot. The second phase of construction would commence only after the first phase work has restored the parking area so that it can be safely used by NYCHA residents. In both phases, the work would be programmed to ensure that the residents of Beach Channel Drive Houses have a safe and secure walkway between the parking area and the residential complex.

C. ENVIRONMENTAL REVIEW, PERMITS AND APPROVALS

ENVIRONMENTAL REVIEW

This Environmental Assessment Statement has been prepared in accordance with both the City Environmental Quality Review Act (CEQR) and the State Environmental Quality Review Act (SEQRA). It has been prepared following the methodologies of the 2001 *City Environmental Quality Review (CEQR) Technical Manual*, which were used to assess the potential for environmental impacts resulting from the proposed action.

PERMITS AND APPROVALS

This EAS has been prepared in support of these applications and approvals with NYCDEP as lead agency. The proposed action may require the following permits and approvals prior to construction.

NEW YORK CITY

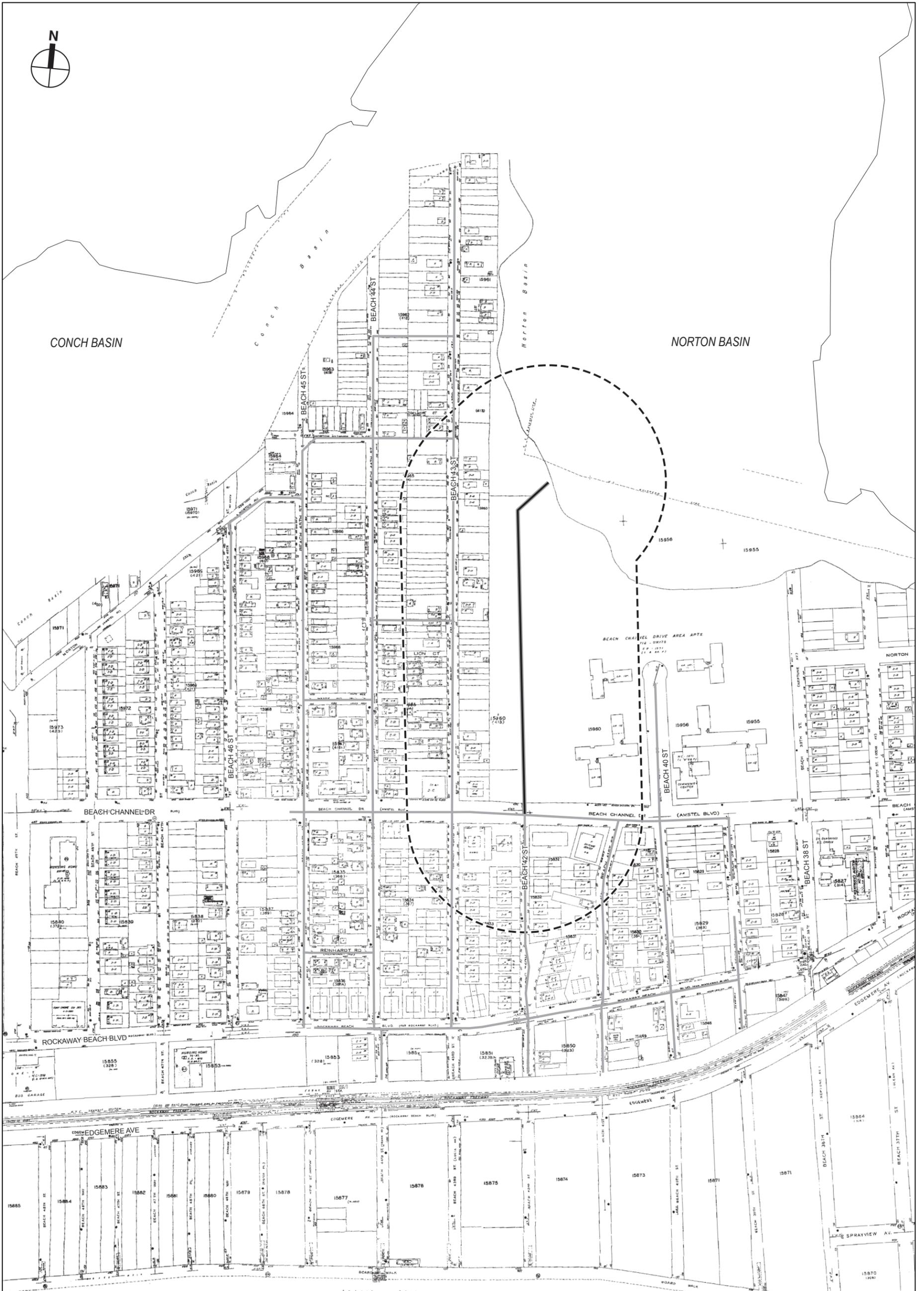
- Approval of the capital project (NYCDEP).
- New York City Department of Transportation (NYCDOT) street and sidewalk construction permit for the work in Beach Channel Drive to connect the proposed outfall to the storm sewer collection system.

STATE (DEC)

- Approval from the New York State Department of Environmental Conservation (DEC) for activities in tidal wetlands and tidal wetlands adjacent areas (Article 25).
- Section 401 Water Quality Certification for the activities in state waters (protection of waters, Article 15).
- Industrial SPDES Discharge Permit for a new outfall for dewatering that is expected for the northernmost segment of the proposed outfall and for discharges to Norton Basin (Article 1, Part 608) in accordance with the current Industrial SPDES Discharge Permit NY-0267651.
- SPDES General Permit GP-02-01 for activities during construction.
- Long Island Well permit (pending to be determined groundwater pumping rates for dewatering activities during construction).

FEDERAL (USACE)

- Section 404 of the Clean Water Act (Waters of the United States) permit for the proposed placement of the project outfall within tidal wetlands (dredging and filling activities) and the proposed tidal wetland restoration.
- Section 10 permit for structures in navigable waters. *



CONCH BASIN

NORTON BASIN

- Project Area Drainage Plan (Storm and Sanitary Sewers)
- Study Area Boundary (400-Foot Perimeter)
- Proposed Outfall



A—INTRODUCTION

This environmental assessment has been prepared to examine the potential environmental impacts of the proposed action. It follows the impact analyses of New York City's *CEQR Technical Manual* (2001). As described in greater detail in Attachment A, the proposed action is an outfall about 1,200 feet in length and extending north from Beach Channel Drive to Norton Basin. It is proposed to convey stormwater flows from the streets in the upland sections of Edgemere, Queens. The proposed action also includes .02 acres of wetland restoration at an off-site location to compensate for permanent wetland loss associated with the project (see Natural Resources). The figures for this chapter are presented in Attachment C.

B.1—LAND USE, ZONING, AND PUBLIC POLICY**INTRODUCTION**

This section examines the existing land use, zoning, and public policies that apply to the project site and surrounding area. As described in Attachment A, "Project Description," the proposed action involves the installation of a new storm sewers outfall in the Edgemere section of Queens (see Figure C-1). The proposed action would be constructed along an existing 40-foot-wide sewer easement, and the proposed outfall would discharge into Norton Basin just beyond (north of) the existing shoreline. The proposed outfall would be constructed on land that is under the jurisdiction of the City of New York, a portion of which is currently used for accessory parking for the Beach Channel Drive Houses while the majority is vacant waterfront land along Norton Basin. This assessment identifies the current land use conditions for the project site and presents any anticipated changes in land use, zoning, and public policy that are expected to occur independently of the proposed action by 2010 (the project build year). The analysis then assesses any potential adverse impacts to land use, zoning, and public policy that are expected as a result of the proposed action. As described below, the proposed action would be compatible with and supportive of existing land uses in the study area, and would not result in any significant adverse impacts to land use, zoning, or public policy.

LAND USE

The project site is an existing outfall easement that is 40 feet wide and extends north from Beach Channel Drive to Norton Basin. The land is all City land under the jurisdiction of the New York City Housing Authority. The NYCHA housing complex is the Beach Channel Drive Houses, and includes residential buildings, an accessory parking lot, undeveloped waterfront land, and community facilities. That property, identified as tax lot number Block 15960, Lot 60, is approximately 15 acres. The area where the proposed storm sewer outfall would be constructed is an approximately 40-foot-wide easement across the property that is partially used for accessory parking and also includes vacant waterfront land north of the parking lot (see Figure C-2).

The land use study area is defined as within 400 feet of the proposed outfall. Residential uses are the dominant land use in the study area, several of which are new construction. As shown in Figures C-2 and C-3, vacant lands in the project area are limited—mostly along the waterfront—and with the exception of the Beach Channel Drive Houses, most of the lots are occupied with detached, attached, and semi-detached residential uses. There are also some community facility uses.

In the future without the proposed action, it is assumed that the project site would remain unchanged. In addition, no substantive changes in local land use are anticipated by the project's 2010 build year.

The proposed action involves the installation of a new storm sewer outfall within an existing NYCDEP sewer easement situated between Beach Channel Drive and Norton Basin. It also includes the work within the existing Beach Channel Drive Housing accessory parking lot a portion of which (within the 40-foot-wide easement and for a linear distance of about 500 feet) would need to be excavated for installation of the proposed storm sewer outfall.

While the proposed action would require some temporary disruptions to the Beach Channel Drive Houses accessory parking lot, it would not result in any long-term impacts on land use. Once the proposed storm sewer is installed, the land uses in the impacted areas would be reconstructed (accessory parking) and restored (vegetated areas in vacant waterfront lands). The proposed action would not require any removal or relocation of uses. With the exception of the headwall at the outfall, the proposed sewer would be below-grade and not visible. In addition, the proposed action would support local land uses by improving street drainage. For all these reasons, it is concluded that the proposed action would not result in any significant adverse impacts to local land uses (see also the analysis below related to the potential construction period impacts).

ZONING

As shown in Figure C-4, the project area is predominantly zoned for moderate-density residential zoning districts, including R4 and R5 districts (Figure C-4).

R4 districts are characterized by a mix of medium density housing and maximum lot coverage of 45 percent. R5 districts are also characterized by a range of houses including row houses to large scale developments. These districts also allow lower buildings with high lot coverage that reflect the traditional neighborhood streetscape.

In the future without the proposed action, it is assumed that the project site would remain unchanged. In addition, no substantive changes in local land zoning are anticipated by the project's 2010 build year.

The proposed action would not require any changes to existing zoning, nor would it conflict with existing zoning district regulations. Therefore, it is concluded that the proposed action would not result in any significant adverse impacts to zoning.

PUBLIC POLICY

There are two comprehensive public policies that apply to the study area. One is the recently released policies of the NYCDEP regarding management of the Jamaica Bay watershed as described in the Jamaica Bay Watershed Protection Plan. These policies are described under "Natural Resources," below. In addition, the proposed action is located within the boundaries of New York City's Coastal Zone. This analysis is also provided "Waterfront Revitalization Program" below.

In the future without the proposed action, it is assumed that the project site would remain unchanged. No substantive changes in public policy are anticipated through the project's 2010 build year.

It is concluded under “Natural Resources” (see the discussion below) that the proposed action would not conflict with the City’s public policy goals for Jamaica Bay. In addition, the proposed action would be consistent with City policies as stated in the “Waterfront Revitalization Program.” For these reasons, it is concluded that the proposed action would be consistent with public policy.

B.2—SOCIOECONOMIC CONDITIONS

The proposed action would not result in any new development that would generate new employees or residents. As described above, the proposed action would not displace any residential populations, businesses, institutions, or employees. While part of the NYCHA parking lot would be excavated in order to install the proposed storm sewer, this temporary construction would not adversely impact any residential or business uses of these properties (see Attachment A, “Project Description”) and all affected areas would be restored post-construction. Therefore, it is concluded that the proposed action would not result in significant adverse impacts on socioeconomic conditions.

B.3—COMMUNITY FACILITIES AND SERVICES

The *CEQR Technical Manual* specifies that proposed projects or actions that would add fewer than 100 residential units to an area generally do not need to consider community facilities and services unless the proposal would have a direct effect on a community facility. The proposed action would not result in an increase in residential units, nor would it directly or indirectly affect any community facilities. Therefore, it is concluded that the proposed action would not result in significant adverse impacts on community facilities and services.

B.4—OPEN SPACE

The *CEQR Technical Manual* recommends a detailed open space assessment if a proposed project or action would add 200 residents or 500 employees to an area, or if a proposal would have a direct impact on an open space. The proposed construction of a new storm sewer outfall would not introduce new residents or employees to the project area. The vacant waterfront land is not formally designated as public accessible open space and currently consists of an overgrown vegetated area. However, the area is informally used for fishing activities. These activities would be temporarily ceased at this location during the construction phase, although there are other nearby locations for these activities. This impact is temporary and short in duration and not expected to be a significant impact on recreational fishermen. In addition, although the City property is used in this way, it is not formally dedicated open space.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on open space.

B.5—SHADOWS

The *CEQR Technical Manual* states that an assessment of shadows is generally necessary only for proposals that would result in new structures or additions to existing structures of at least 50 feet in height. The proposal would not result in any structures 50 feet in height or greater than 50 feet in height, nor would they result in any new shadows. Therefore, the proposed action is not expected to result in potential significant impacts due to shadows.

B.6—HISTORIC RESOURCES

According to the *CEQR Technical Manual*, a historic resources assessment is required if there is the potential to affect either archaeological or architectural resources. Actions that could affect archaeological resources and that typically require an assessment are those that involve above-ground construction resulting in ground disturbance, or below-ground construction, such as excavation. Actions that trigger an architectural resources assessment include new construction, demolition, or significant alteration to any building, structure, or object; a change in scale, visual prominence, or visual context of any building, structure, or object or landscape feature; construction, including but not limited to, excavation, vibration, subsidence, dewatering, and the possibility of falling objects; additions to or significant removal, grading, or replanting of significant historic landscape features; screening or elimination of publicly accessible views; and the introduction of significant new shadows or significant lengthening of the duration of existing shadows over a historic landscape or on a historic structure with sunlight-dependent features.

On February 13, 2008, the New York Landmarks Preservation Commission provided a letter indicating that the project site is not archeologically significant. In addition, the proposed action will not result in any new or significantly altered above ground buildings or structures with the exception of the out fall headwall which will be visible from the shoreline. There are no standing structures or historic architectural resources in the project area. For these reasons, it is concluded that the proposed action would not adversely impact historic resources.

Therefore, the proposed action is not expected to result in potential significant impacts to historic resources.

B.7—URBAN DESIGN AND VISUAL RESOURCES

The *CEQR Technical Manual* advises that an assessment of potential impacts to urban design is appropriate if a proposal would result in structures that are substantially different in height, bulk, form, setbacks, size, scale, use, or arrangement from those that already exist, or if a proposal would change the form, arrangement, or use of blocks and streets to interrupt the general pattern of an area or jeopardize the consistency of street walls, curb cuts, pedestrian flow, or other streetscape elements. A visual resources assessment is generally appropriate when above-ground construction would limit or alter existing view corridors.

The proposed action would install a new below-grade storm sewer line and one new outfall. The storm sewer outfall would be buried and not visible, although the headwall/tide would be visible at the shoreline. However, the outfall headwall would be a minor structural addition at the water's edge and partially screened by existing and restored vegetation. Based on the impact assessment guidelines of the *CEQR Technical Manual*, it is concluded that none of the proposed infrastructure would change the form or arrangement of blocks, and the design of the street, sidewalks, and any streetscape elements to be reconstructed would be consistent with the existing pattern in the area. The proposed action also includes reconstruction of the final parking lot and landscaping the areas affected by the proposed construction.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on urban design and visual resources.

B.8—NEIGHBORHOOD CHARACTER

Neighborhood character is considered under CEQR to be a cumulative assessment of the many elements that collectively define a community. In a CEQR analysis, these elements typically include

land use, urban design and visual resources, socioeconomics, traffic, air quality, and noise. As described in greater detail in other sections of this EAS, the proposed action would not result in any significant adverse impacts with respect to these neighborhood elements. The proposed action would reduce street flooding and improve storm sewer conditions along streets upstream of the sewer outfall construction in the Edgemere section of Queens. This is a positive impact for the neighborhood. The proposed action would not result in significant increases in traffic or noise, or impact local air quality. For these reasons, it is concluded that the proposed action would not result in any significant adverse impacts on neighborhood character.

B.9—NATURAL RESOURCES

METHODOLOGY

The proposed storm sewer outfall would extend across undeveloped City waterfront land and also across tidal wetlands into Norton Basin. In order to understand the potential for natural resources impacts of the project a 400-foot study area was delineated (see Figure C-5). Within this study area there are vacant lands, waterfront lands, tidal wetlands, and open waters (Norton Basin). Since the proposed action would not be expected to significantly impact natural resources outside this study area (either directly or indirectly), either during construction or operation, this analysis focuses on the area of the proposed outfall. An exception was made for the identification of threatened or endangered species; a New York Natural Heritage Program (NYNHP) database search was performed for federal- and state-listed species for a distance of 0.5 miles from the project site. In addition, water quality conditions of Jamaica Bay, Norton Basin, and Conch Basin were summarized from NYCDEP Harbor Survey reports and Jamaica Bay Borrow Pit Evaluation Project reports prepared by NYSDEC and ACOE.

In order to document existing conditions, site investigations were conducted in February, May, and July 2008. The project site was investigated by a field team, and observations of flora and fauna were recorded. The site visits were conducted between 7:30 AM and 5:00 PM to identify wildlife activity at times of peak activity (i.e., morning and evening for bird feeding activity, etc.). Habitat classifications were made based on the field surveys and related to general habitat classifications identified on Ecological Communities of New York State (Reschke [1990], Edinger et al. [2002]) based on the observed dominant cover types and current uses of the project site. During the July 2008 site visit, a survey for any threatened or endangered species was conducted using a modified version of the relieve survey technique, as described in American Society for Testing and Materials (ASTM) “Standard Guide for Sampling Terrestrial and Wetlands Vegetation” (2008).¹ Surveyors targeted the search to specific plant species as identified by the New York Natural Heritage Program (NYNHP) as potentially present within the 0.5-mile study area. In addition to the field surveys, existing conditions at the project site were summarized from information contained in the following literature sources, database, reports, maps, and other sources, including United States Geological Survey (USGS)—topographic quadrangle map for the Flushing quadrangle; New York State Department of Environmental Conservation (NYSDEC)—Breeding Bird Atlas, Critical Environmental Areas of Queens County, tidal wetlands maps, the Amphibian and Reptile Atlas Project, and reports pertaining to the Jamaica Bay Borrow Pit Evaluation Project; Federal Emergency Management Agency (FEMA)—Flood Insurance Rate Maps; United States Fish and Wildlife Service (USFWS)—National Wetland Inventory (NWI) maps; National Oceanic Atmospheric Administration (NOAA) National

¹ Two observers identified potential habitat for the target species and walked these areas compiling a list of species. Where site conditions allowed, observers walked line-transects, stopping every three or four feet for approximately five seconds to search for the targeted species.

Marine Fisheries Service (NMFS)—Essential Fish Habitat (EFH); and NYCDEP—Harbor Survey Program reports, Jamaica Bay and CSO Tributaries Waterbody/Watershed Facility Plan, and Jamaica Bay Watershed Protection Plan. Information on rare, threatened and endangered species or special habitats within the vicinity of the study area as obtained by USFWS, NMFS, New York State Department of State (NYS DOS), and the New York Natural Heritage Program (NYNHP).

Potential impacts to natural resources from the proposed action were assessed by considering the existing and expected future natural resources at the project location and the potential changes in wetlands and aquatic habitat that would occur as a result of the proposed action. Water quality modeling was also performed for the proposed outfall.

EXISTING CONDITIONS

OVERVIEW

The project site is located in the southeastern portion of the Jamaica Bay Watershed along the north shore of the Rockaway Peninsula. Jamaica Bay is one of the largest coastal wetland ecosystems in New York State. The approximately 9,135 acres Jamaica Bay Wildlife Refuge encompasses southern shore of the City of New York, and straddles the boroughs of both Brooklyn and Queens, with the Rockaway Peninsula barrier beach forming the bay shoreline to the south. Jamaica Bay provides critical habitat for fish and wildlife, and contains extensive areas of salt marsh (1,000 acres), tidal flats, dredge spoil islands, dredged channels and basins, and upland habitats of shrub thickets, fields, and developing forests. Resident wildlife found on the islands and shorelines of the bay include reptiles, amphibians, and small mammals. Jamaica Bay is also part of the Atlantic Flyway bird migration route; more than 300 species of birds have been observed in the bay over the past 35 years. The bay provides a productive ecosystem for approximately 81 species of finfish, 121 benthic species, and other aquatic biota that use it for nursery and feeding habitats (USFWS 1997).

Jamaica Bay is also a unit in the National Park Service’s Gateway National Recreation Area (GNRA), which also encompasses parts of South Shore Staten Island (Great Kills) and Sandy Hook National Park in New Jersey. The Jamaica Bay Unit has three components: the North Shore, Breezy Point, and the Jamaica Bay Wildlife Refuge, all of which provide open spaces with coastal and upland habitats. One of the most unique features of the Jamaica Bay Unit is the Jamaica Bay Wildlife Refuge, which includes mixed habitat zones with freshwater and brackish ponds, upland fields, developing forests and, most notably, a vast network of salt marshes and islands in the center of the bay (NPS 2004). NYSDEC has designated all tidal wetlands within Jamaica Bay as Critical Environmental Areas (CEA).¹ The project site and 400-foot study area is comprised of Jamaica Bay wetlands and upland habitats including high marsh, intertidal wetlands, tidal flats, and undeveloped and developed upland areas.

¹ NYSDEC indicates that “To be designated as a CEA, an area must have an exceptional or unique character with respect to one or more of the following: a benefit or threat to human health; a natural setting (e.g., fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality); agricultural, social, cultural, historic, archaeological, recreational, or educational values; or an inherent ecological, geological or hydrological sensitivity to change that may be adversely affected by any change. Following designation, the potential impact of any Type I or Unlisted Action on the environmental characteristics of the CEA is a relevant area of environmental concern and must be evaluated in the determination of significance prepared pursuant to Section 617.7 of SEQR.”

WETLANDS

NWI mapping for the area (see Figure C-6) shows that the wetlands of Norton Basin are defined as unconsolidated substrates that are continuously submerged at depths below extreme mean low water and are always flooded (E1UBL). Estuarine intertidal wetlands are characterized by erect, rooted, herbaceous hydrophytes that are regularly flooded with saline waters of the bay (E2EM5N). Figure C-7 shows that NYSDEC designates this part of Jamaica Bay as having high marsh, intertidal marsh, coastal shoals, bars, mudflats, and littoral zone wetlands.

Wetlands within the 400-foot study area are bordered in the upland by residential land uses along the Beach 43rd Street shoreline edge and paralleling Norton Basin. The intertidal plant community is composed of monotypic patches of saltwater cordgrass (*Spartina alterniflora*); salt grass (*Distichlis spicata*), black grass (*Juncus gerardi*), and common reed (*Phragmites australis*) in high marsh areas. A dense layer of sea lettuce (*Ulva latuca*) was observed in the shallow areas of Norton Basin. Wrack (i.e., sections of piers, timber pilings, derelict boats, and vegetation) is present on the bare substrate and the vegetated portions of the intertidal wetland area, as is evidence of dumping (e.g., piles of construction and demolition debris and household garbage), which is particularly apparent in upland and high marsh zones abutting residential uses along Beach 43rd Street. Eroding substrate and vegetated marsh are evident between the intertidal marsh areas and upland areas. Portions of the 400-foot study area contain degraded vegetated wetlands and segments of bare substrate. However, expanses of healthy and intact high marsh and intertidal marsh are also present within the 400-foot study area.

The shoreline at the location of the existing outfall is comprised of riprap, bare sand, high marsh and intertidal marsh vegetation and resembles the composition of the wetlands observed within the 400-foot study area. Sea lettuce and wrack were also observed in the vicinity of the outfall. At the time of the May 2008 and July 2008 site visits, the outfall was discharging into Norton Basin. On the landward side of the existing outfall, a large population of fiddler crabs was observed in unvegetated and vegetated intertidal and high marsh areas during the May 2008 and July 2008 site visits.

FLOODPLAINS

Figure C-8 presents the 100-year floodplain (i.e., the area with a 1 percent chance of flooding each year) and the 500-year floodplain (i.e., the area with a 0.2 percent of flooding each year) for the project site and surrounding area. As shown in those figures, the majority of the 400-foot study area, including the project site, is located within the 100-year floodplain, with the exception of the NYCHA buildings and parking lot, which are partially located only within the 500-year floodplain. Within the 400-foot study area, evidence of coastal flooding (i.e., soil slumping, standing water and wrack) is visible in some upland areas, particularly backyards and the western portion of the lawn area behind the parking lot of the Beach Channel Drive Houses.

TERRESTRIAL RESOURCES

Vegetation

The majority of the uplands in the 400-foot study area is highly developed (buildings, lawns, parking lots, streets) or disturbed vacant lots (see Figures C-5). The majority of the undeveloped land is located along the shorelines of the Norton Bay peninsula that is bounded on both sides by vegetated and unvegetated wetlands (see Figures C-8a through C-9h and the discussion under “Wetlands,” below). This undeveloped upland is within NYSDEC’s tidal wetland regulated adjacent area (150 feet from the mean high water [MHW] line) and could be characterized by Edinger et al. (2002) as salt shrub habitat. However, the community is poorly structured and is dominated by common reed. Edinger et. al defines a salt shrubland community as “a community that forms the ecotone between

salt marsh and upland vegetation. Salinity levels are generally lower here than in the salt marsh (soil pore salinity ranges 7 ppt to 27 ppt). Salt shrub does not usually develop on deep peat. More often, it occurs on a thin (0-10 cm) layer of peat, and soils share characteristics of both estuarine and maritime terrestrial settings. Periodic disturbance associated with storms causes dieback of shrubs.” Characteristic plants of this habitat include groundsel tree (*Baccharis halimifolia*), saltmarsh-elder (*Iva frutescens*), pasture rose (*Rosa carolina*), salt-meadow grass (*Spartina patens*), black-grass (*Juncus gerardii*), and switchgrass (*Panicum virgatum*). Based on the field surveys, dominant plant species in this area were common reed, poison ivy (*Rhus radicans*), northern bayberry (*Myrica penslyvanica*), groundsel tree, and marsh elder (*Iva frutescens*). Other trees and shrubs observed in the landward zones included olive (*Elaeagnus* sp.), choke cherry (*Prunus virginiana*), cherry (*Prunus* sp.), and sumacs (*Rhus* spp.). Observed herbs and grasses included Japanese knotweed (*Polygonum cuspidatum*), fox grape (*Vitis labrusca*), multi-flora rose (*Rosa multiflora*), and goldenrod (*Solidago* spp.). Table B-1 provides a comprehensive list of plants observed at the project site.

Table B-1

Flora Identified within the Project Site, 2008

Trees and Shrubs	
Tree-of-Heaven	Ailanthus altissima
Groundsel Bush	Baccharis halimifolia
Autumn Olive	Eleagnus umbellata
Marsh Elder	Iva frutescens
White Mulberry	Morus alba
Bayberry	Myrica pensylvanica
Cherry sp.	Prunus sp.
Choke Cherry	Prunus virginiana
Sumac sp.	Rhus sp.
Forbs	
Wild Garlic	Allium vineale
Mugwort	Artemisia vulgaris
Chicory	Chicorium intybus
Queen Anne's Lace	Daucus carota
Goldenrod sp.	Euthamia/Solidago spp.
Lettuce sp.	Lactuca sp.
Sea Lavendar	Limonium nashii
Black Medoc	Medicago lupulina
White Sweet Clover	Melilotus alba
Pokeweed	Phytolacca Americana
Japanese Knotweed	Polygonum cuspidatum
Multiflora Rose	Rosa multiflora
Curly Dock	Rumex crispus
Saltwort	Salicornia sp.
Seaside Goldenrod	Solidago sempervirens
Salt Sandspurry	Spergularia salina
Cow vetch	Vicia cracca
Vines	
Porcelain Berry	Ampelopsis brevipedunculata
Asiatic Bittersweet	Celastrus orbiculata
Field Bindweed	Convolvulus arvensis
Morning Glory	Ipomoea sp.
Japanese Honeysuckle	Lonicera japonica
Virginia Creeper	Parthenocissus quinquefolia
Poison Ivy	Rhus radicans
Bittersweet Nightshade	Solanum dulcamara
Herbaceous Seepweed	Suaeda maritima
Grape sp.	Vitis sp.
Wisteria	Wisteria sp.
Grasses and Sedges	
Yellow Sedge	Carex flava
Orchard Grass	Dactylis glomerata
Saltgrass	Distichlis spicata
Common Reed	Phragmites australis
Three-square Bulrush	Scirpus americanus
Cereal Rye	Secale cereale
Saltmarsh Cordgrass	Spartina alterniflora
Saltmeadow Cordgrass	Spartina patens
Note: This list represents flora observed at the project site during multiple surveys conducted in February, May, and July 2008.	
Source: AKRF, Inc. field surveys, 2008.	

Edinger et al. would describe the terrestrial resources in the developed portions of the project site as paved road/path and mowed lawn. The paved road/path community is comprised of the NYCHA

parking lot and sidewalks surrounding the project site. There are approximately 15 tree pits, with trees measuring less than 10 inches in diameter at breast height (dbh), running north to south through the parking lot. The mowed lawn area is situated between the salt shrub community and the parking lot.

Wildlife

Birds

The New York State Breeding Bird Atlas is an ongoing project to document the presence of avian breeders throughout the state. As defined by the breeding bird atlas, the project site is located in the northwestern portion of Block 5949D. Between 2000 and 2005, the New York State Breeding Bird Atlas recorded 21 species of potential breeding birds within Block 5949D (see Table B-2). The upland and wetland features of the project site have the potential to provide suitable forage and breeding habitat for ring-necked pheasant (*Phasianus colchicus*), killdeer (*Charadrius vociferous*), barn swallow (*Hirundo rustica*), common yellowthroat (*Geothlypis trichas*), and red-winged blackbird (*Agelaius phoeniceus*). Breeding bird species listed for Block 5949D and observed on or adjacent to the project site during the field survey conducted in May 2008 are indicated in Table B-2. Species observed on or adjacent to the project site during field surveys but not listed in the breeding bird atlas included American black duck (*Anas rubripes*), mallard (*Anas platyrhynchos*), great egret (*Ardea alba*), willet (*Catoptrophorus semipalmatus*), laughing gull (*Larus atricilla*), ring-billed gull (*Larus delawarensis*), herring gull (*Larus argentatus*), Forester's tern (*Sterna forsteri*), gray catbird (*Dumetella carolinensis*), boat-tailed grackle (*Quiscalus major*), common tern (*Sterna hirundo*), least tern (*Sterna antillarum*), and black skimmer (*Rynchops niger*).

Table B-2
Birds Listed in New York State Breeding Bird Atlas (Block 5949D)

Common Name	Scientific Name
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Piping Plover ¹	<i>Charadrius melodus</i>
Killdeer*	<i>Charadrius vociferous</i>
American Oystercatcher	<i>Haematopus palliatus</i>
Common Tern*	<i>Sterna hirundo</i>
Least Tern*	<i>Sterna antillarum</i>
Rock Pigeon*	<i>Columba livia</i>
Mourning Dove	<i>Zenaida macroura</i>
Willow Flycatcher	<i>Empidonax traillii</i>
American Crow	<i>Corvus brachyrhynchos</i>
Barn Swallow	<i>Hirundo rustica</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
European Starling*	<i>Sturnus vulgaris</i>
Yellow Warbler	<i>Dendroica petechia</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Song Sparrow*	<i>Melospiza melodia</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Red-winged Blackbird*	<i>Agelaius phoeniceus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
House Sparrow*	<i>Passer domesticus</i>
<p>Notes: *Observed during the 2008 field surveys. ¹ Piping plover is a federally-listed threatened and state-listed endangered species; least tern is a federally- and state-listed threatened species; and common tern is a state-threatened species.</p> <p>Source: Breeding Bird Atlas Block 5949D 2005 Survey (NYSDEC 2007).</p>	

Mammals

Protected areas in and around Jamaica Bay provide habitat for mammals that is otherwise absent or limited in the urban core of New York City. Some of these species include opossum (*Didelphis virginiana*), white-footed mouse (*Peromyscus leucopus*), eastern cottontail rabbit (*Sylvilagus floridanus*), little brown myotis (*Myotis lucifugus*), meadow vole (*Microtus pennsylvanicus*), and gray squirrel (*Sciurus carolinensis*) (USFWS 1997). The terrestrial zones of the project site could provide habitat to small rodents, feral cats, raccoon, and Virginia opossum, while the aquatic zones could support muskrat and mammals that forage along the shore (i.e., raccoon, Virginia opossum). Only feral cats were observed during the February 2008 and July 2008 field surveys.

Reptiles and Amphibians

The NYSDEC Herp Atlas Project conducted a survey of reptiles and amphibians from 1990 to 1999, documenting the geographic distribution of New York's turtles, snakes, lizards, frogs, toads, and salamanders (NYSDEC 1999). Although habitats within Jamaica Bay have been found suitable for the reintroduction of several reptiles and amphibians, species that have the potential to use the project site would be limited to those tolerant of urban conditions and dependent on coastal habitats. These species, listed in the NYSDEC Herp Atlas Project, could include eastern milk snake (*Lampropeltis triangulum triangulum*), Fowler's toad (*Bufo woodhousii fowleri*), and northern brown snake (*Storeria dekayi dekayi*). In addition, the mix of upland and salt marsh features could provide habitat

for one important reptile, the northern diamondback terrapin (*Malaclemys terrapin*). The northern diamondback terrapin is a diurnal species of estuarine areas, brackish waters along coastal rivers and creeks, salt marshes, and tidal flats. The species is known to breed and forage for fish, crustaceans, mollusks, and insects (Conant and Collins 1998) throughout Jamaica Bay (USFWS 1997). In the bay, female terrapins are known to nest from early June through early August and oviposit at least two clutches per year. Nests occur in shrubland, dune, mixed-grassland habitats, sandy trails, and beaches (Feinberg and Burke 2003). No northern diamondback terrapin or nests were observed during the May or July 2008 site visits, which would address any potential nesting activity.

AQUATIC RESOURCES

Overview

The project site fronts on Norton Basin, which connects with Conch Basin and the greater southeastern portion of Jamaica Bay. Both basins are hydrodynamically confined by the surrounding land masses and have 6 deep, dredged depressions, or borrow pits, which were created in 1938 as part of the development of the Edgemere Landfill (Barry A. Vittor & Associates, Inc. 2001). These pits, located at the southern ends of the basins, range between approximately 45 to 50 feet in depth MLW in the three Norton Basin pits and 60 to 65 feet in depth MLW in the Conch Basin pits, and are relatively steep-sided, which restricts them from wind and currents that affect Jamaica Bay (Barry A. Vittor & Associates, Inc. 2001). In addition, the entrance channel to Norton Basin is shallow, which contributes to constricted tidal exchange in the basin. This restricted circulation can contribute to stagnant conditions in the deeper parts of the basin. In addition, sediments drop out of the water column and settle to the bottom of the pits. There is also a drastic temperature gradient between surface and bottom waters at the basins, with low dissolved oxygen concentrations during the summer months (NYSDEC 2003).

Water Quality

Water quality in Jamaica Bay is regulated by Title 6 of the NYCRR (Part 703), which defines water classification standards for each New York City water body. The open waters of Jamaica Bay include Norton and Conch Basins, which are classified as SB waters, designating that these waters, be suitable for bathing or other secondary contact recreation. Water quality should also be suitable for fish propagation and survival. Standards for SB waters are listed in Table B-3. (There are no New York State standards for chlorophyll *a* or water clarity.)

**Table B-3
New York State Water Quality Standards by Use Class**

Parameter	SB
Fecal Coliform (per 100mL)	Monthly geometric mean shall not exceed ≤200 Colonies/100mL from 5 or more samples.
Total Coliform (per 100mL)	Monthly geometric mean shall not exceed ≤ 2,400 colonies/100 milliliters (mL) from 5 or more samples.
Dissolved Oxygen (DO) (mg/L)	≥5.0 mg/L
pH	Normal range shall not be extended by more than 0.1 of a pH unit.
Source: NYCRR, Title 6, Part 703, 2008.	

The City of New York has monitored New York Harbor water quality for over 95 years through its Harbor Survey Program. Harbor Survey data show that water quality has improved significantly throughout the Harbor Estuary since the 1970s as a result of the construction, upgrade, and operational improvements to both City-operated and regional water pollution control plants. Water

quality improvements include both reductions in fecal and total coliform concentrations and significant increases in DO concentrations. NYCDEP evaluates surface water quality in four designated areas of the Harbor: the Inner Harbor, Upper East River-Western Long Island Sound, Lower New York Bay-Raritan Bay, and Jamaica Bay.

Specific to Norton and Conch Basins, the ACOE, in coordination with NYSDEC and other federal, state, and City agencies, developed the Dredged Material Management Plan (DMMP) for NY/NJ Harbor. The DMMP identifies a number of options for management of dredged material, but prioritizes options that “employ beneficial re-use” of such materials. Proposed re-use locations include the borrow pits in Norton and Conch Basins where several studies, under the Jamaica Bay Borrow Pit Evaluation Project, have been conducted to determine baseline water quality conditions in the pits of these waterbodies (see the discussion above). In support of this effort, between 2000 and 2002, NYSDEC monitored both basins between the months of June and September (NYSDEC 2003). The study established nine monitoring stations between the two basins and in open areas of Jamaica Bay to determine dissolved oxygen, salinity, and temperature changes within the pits relative to the balance of the bay. Monitoring was performed in two dominant pit features in Norton Basin to depths of approximately 50 and 42 feet MLW, and at one representative site in Conch Basin measuring 60 feet in depth MLW. General water quality trends for Jamaica Bay, based on Harbor Survey Program reports and research conducted as part of the Jamaica Bay Borrow Pit Evaluation Project, are summarized below.

Coliform

The presence of coliform bacteria in surface waters indicates potential health impacts from human or animal waste. Elevated levels of coliform can result in the closing of bathing beaches and shellfish beds. Within Jamaica Bay, overall mean fecal coliform bacteria levels have been at or below 200 cells/100mL over the past 20 years. In 2006, water quality for much of Jamaica Bay was consistent with recent trends; summer fecal coliform concentrations were below 200 cells/100mL for all stations, and seven of nine open waters stations sites had geometric means below 50 cells/100mL (NYCDEP 2007a). Although open waters of Jamaica Bay are meeting state standards for fecal coliform most of the time, tributaries of Jamaica Bay do receive combined sewer overflows (CSO). However, Norton and Conch Basins are not CSO tributaries to Jamaica Bay.

Temperature, Salinity, and Dissolved Oxygen

Both temperature and salinity influence several physical and biological processes within aquatic ecosystems. Temperature has an effect on the spatial and seasonal distribution of aquatic species and affects oxygen solubility, respiration, and other temperature-dependent water column and sediment biological and chemical processes. Mean annual temperatures of Jamaica Bay range between 1° to 26° C (33.8° to 78.8° F) (Barry A. Vittor & Associates, Inc. 2001b). In general, temperatures in deep zones within Jamaica Bay rarely exhibit a surface-to-bottom temperature difference of greater than 1° to 2° C (1.8° to 3.6° F).

In this respect, temperatures in the Norton Basin pits were similar to other areas of Jamaica Bay, but often times demonstrated stratified conditions with a 5° to 9° C (9° to 16.2° F) difference between surface and bottom waters (NYSDEC 2003). The Conch Basin pit demonstrated greater stratification, with the sharpest contrast between temperatures in surface and bottom waters occurring during the months of June and September. Between 2000 and 2002, temperatures at the surface of the Conch

Basin pits were between 24° to 28° C (75.2° to 82.4° F) and 3° to 5° C (37.4° to 41.0° F) at the bottom, with the thermocline¹ occurring between 25 and 35 feet (NYCDEC 2003).

Salinity fluctuates in response to tides and freshwater inputs. Salinity and temperature largely determine water density and can affect vertical stratification of the water column. Salinity is also an important habitat variable, as a number of aquatic species have a limited salinity tolerance. Surface and bottom water salinities of Jamaica Bay generally range between 23 and 27 ppt, but vary for different portions of the bay. Salinity levels are generally higher (above 26.5 ppt) in the western and southern areas and lower (below 26.5 ppt) in the eastern and northern portions of the bay (NYCDEP 2007a). In Conch and Norton Basins, salinity concentrations and patterns were similar to other areas of Jamaica Bay. Between May and October 2002, salinity concentrations in surface waters were generally between 25 and 27 ppt and varied with depth by only a few ppt, with a slight increase at the bottom of the pits. In the Conch Basin pit, salinity increased slightly at the level of the thermocline (Continental Shelf Associates, Inc. 2004).

The concentration of DO in the water column is one of the most universal indicators of overall water quality in aquatic systems. Sufficient levels of oxygen are needed for the survival of marine life and for the prevention of nuisance conditions such as hydrogen sulfide odors produced from the anaerobic decay of organic material in sediments. Oxygen concentrations in coastal waters depend on a variety of interrelated chemical, physical, and biological factors such as salinity, temperature, photosynthesis, and respiration. Hypoxic conditions (DO < 3.0 mg/L), which can severely stress or kill aquatic organisms, are common in the New York region. Although DO levels have improved in Jamaica Bay, periods of low DO concentrations and hypoxia remain a problem in certain areas of the bay, particularly at the bottom of Norton and Conch Basins' pits.

Between the summer months of 2000 and 2002, DO concentrations in the Norton Basin pits declined sharply within the water column and demonstrated hypoxic conditions at approximately 30 feet, with further declines at the bottom of pits. September DO concentrations were similar to the summer months, but with a less dramatic decline: DO concentrations were closer to 4 mg/L at 30 feet and 3 mg/L at the pit floors. October and November also indicated less dramatic change in DO concentrations, with approximately a 1 mg/L to 2 mg/L difference between surface and bottom waters (NYSDEC 2003). Overall, hypoxic conditions in the Norton Basin pits during the months of June to August at depths below 30 feet occur each year between 2000 and 2002 (NYSDEC 2003). In the Conch Basin pit, the DO profile above the thermocline (~25 feet) is similar to the Norton Basin pits. However, between the months of June and September, DO declines are more severe, with values near or below anoxic conditions (DO ≤ 1 mg/l) from below the thermocline to the bottom of the Conch Basin pit. Between 2000 and 2002, there were no records of bottom DO in the Conch Basin pit above 3 mg/l (NYSDEC 2003).

Nutrients and Turbidity

High levels of nutrients (ammonia, nitrates/nitrites) can lead to excessive plant growth (a sign of eutrophication), reduced water clarity, and a depletion of DO. This is a particular issue in Jamaica Bay, where nitrogen and phosphorous are discharged by the WPCPs. An estimated 41,000 pounds per day of nitrogen enters the bay from WPCPs (NYCDEP 2005). Trends for nitrogen levels in Jamaica Bay have declined since 1995.

¹ The thermocline is the layer of water in a waterbody where the temperature gradient is greater than that of the warmer layer above and the colder layer below. In the pits of Norton and Conch Basins the thermocline occurs between 25 and 35 feet.

Secchi transparency is a measure of the clarity/turbidity in surface waters. Transparency greater than 5 feet (1.5 meters) is a sign of clear water in a turbid estuary. Decreased clarity can be caused by high suspended solid concentrations or plankton blooms. Secchi transparencies less than 3 feet (0.9 meters) are generally indicative of poor water quality conditions. Data show that average Secchi depths greater than 5.0 feet were common in the bay prior to 1993 (NYCDEP 2005).

Sediment Quality

Sediments in the New York Harbor Estuary often contain evidence of contamination. A 1998 survey found that the mean sediment contaminant concentrations in the Harbor were statistically higher than other coastal areas of the East Coast for 50 of the 59 chemicals measured (Adams et al. 1998), and Newark and Jamaica Bays have been ranked as the Harbor's highest for the most toxic sediments on the basis of sediment chemistry, toxicity, and benthic community (Adams and Benyi 2003). Biological effects, measured by relative impacts on the benthic invertebrate community, were found to be associated with the chemical contamination. While the sediments of the Harbor are contaminated, the concentrations of contaminants have been decreasing over the past 30 years (Steinberg et al. 2002). Between 1993 and 1998, the percentage of sediment samplings with benthic macroinvertebrate communities considered impacted, or of degraded quality, also decreased throughout the Harbor (Steinberg et al. 2004).

Jamaica Bay has a complex distribution of sediments because of variable currents and a high degree of sediment input from both natural and human sources. Sediments in the bay vary from coarse sands and gravels in high-energy areas to fine-grained silts and clays in low-energy areas. Jamaica Bay's sediments are contaminated from wastewater and sewage inputs, landfill leachate, atmospheric deposits, and other sources and contain various metals, such as nickel, zinc, copper, and cadmium from sewage effluent and lead from storm sewers and atmospheric deposition. The atmospheric contribution of zinc, copper, and cadmium is a substantial portion of the metals in the bay, and landfill leachate appears to be a lesser source of contamination (Seidemann 1991).

Although Norton and Conch Basins do not receive any major land-based industrial inputs, there are municipal stormwater outfalls that currently discharge to Norton Basin. In addition, Edgemere Landfill is a known source of leachate contamination (NYSDEC 2003). Leachate flows into Jamaica Bay directly from the base of the landfill, particularly from three leachate seeps on the Conch Basin side of the landfill (NYSDEC 2003). The average net flow of groundwater from the landfill to the bay is estimated to be 146,000 gallons per day (gpd) (53 million gallons per year) and the average net flow of groundwater from the neck of the landfill to Conch Basin and Somerville Basin (west of Conch Basin) is 130,000 gpd (47.5 million gallons per year) (Barry A. Vittor & Associates, Inc. 2001b).

Dominant sediment types present throughout Norton Basin are silt and fine sand. The borrow pits contain highly aqueous organic fine sediments. Sandy sediments overlain by shell hash are present in the vicinity of the entrance channel to Norton Basin. As discussed previously under "Wetlands," sediments throughout Norton Basin are covered with dense mats of sea lettuce. Sediments in the Conch Basin borrow pit are soft, black, and highly aqueous. In studies conducted as part of the Jamaica Bay Borrow Pit Evaluation Project, no analytes of pesticides, PCBs, dioxins, furans, cyanide, coliform, nitrate, and nitrite were detected above state standards. However, arsenic, cadmium, chromium, copper, iron, nickel, zinc, and mercury were detected above state standards (Barry A. Vittor & Associates, Inc., et al. 2002).

Aquatic Biota

Primary Producers

Phytoplankton are microscopic plants whose movements within the system are largely governed by the prevailing tides and currents. Several species can obtain larger sizes as chains or in colonial forms. Light penetration, turbidity, and nutrient concentrations are important factors in determining phytoplankton productivity and biomass. In a 1993 survey of the Harbor, 29 taxa of phytoplankton were identified. Phytoplankton sampling conducted at five stations in Jamaica Bay from 1995 through 1996 identified 83 species of phytoplankton. The most abundant species, accounting for 21 percent of phytoplankton organisms collected, was the diatom *Skeletonema costatum* (EEA 1997).

Zooplankton

Zooplankton are an integral component of aquatic food webs. They are primary grazers on phytoplankton and detritus material and provide a major food source for organisms of higher trophic levels. The higher-level consumers of zooplankton include forage fish, such as bay anchovy, striped bass, and white perch. Predacious zooplankton species can consume eggs and larvae and can have a detrimental effect on certain fish species.

Crustacean taxa are the most abundant group of zooplankton collected throughout the Harbor. The most dominant species include the copepods (*Acartia hudsonica*, *Acartia tonsa*, *Eurytemora affinis*, and *Temora longicornis*), with each species being prevalent in certain seasons (Stepien et al. 1981, Lonsdale and Cosper 1994, Perlmutter 1971, Lauer 1971, Hazen and Sawyer 1983). A total of 31 species of zooplankton were noted during EEA surveys of the bay from 1995-1996, with *Acartia hudsonica* representing 39.5 percent of all organisms collected (EEA 1997).

Benthic Invertebrates

Benthic invertebrates inhabit the sediments and surfaces of submerged objects such as rock, pilings, or debris. They are important to the energy flow of aquatic systems because they use detrital and suspended organic matter as food, and in turn provide an important food source for fish and waterfowl. Benthic invertebrates include those that are retained on a 0.5 millimeter (mm) screen (macroinvertebrates) and smaller forms (nematodes and harpacticoid copepods). Some of these animals live on top of the substratum (epifauna) and some within the substratum (infauna). Substrate type (rocks, pilings, sediment grain size, etc.) are the primary factors influencing benthic invertebrate communities. Secondary factors include currents, wave action, predation, succession, and disturbance.

Inventories of infaunal benthic organisms (i.e., mollusks, worms, arthropods) and epibenthos (i.e., organisms living on or above hard substrates, including barnacles, shrimp, and certain polychaete worms) were conducted as part of a 2001 Jamaica Bay Field Sampling and Analysis Program (HydroQual 2001a). Overall, the infaunal benthic community in Jamaica Bay can be characterized as abundant and somewhat diverse (NYCDEP 2007b). The presence of a large number of pollution-tolerant species collected during this sampling program indicated a degree of habitat degradation, although some positive indicators of habitat quality (i.e., presence of amphipods) were also noted. A total of 34 taxa of benthic organisms were collected during Ponar grab samples in Jamaica Bay, predominantly representing Annelida, Arthropoda and Mollusca, with one Cnidarian collected. Annelids that are typically found in human-enriched sediments, including the polychaete mud worm (*Streblospio benedicti*) and family Capitellidae (i.e., lugworms), accounted for 59 percent of individuals collected (NYCDEP 2007b). Patterns of polychaete worm abundance and species diversity in Jamaica Bay suggest the presence of overly enriched sediments (Gosner 1978, Weiss 1995). Two amphipod species (*Ampelisca* and *Corophium*) and the mollusc *Nassarius obsoletus* were

also dominant. Amphipods are considered indicators of good localized environmental quality due to their limited mobility and susceptibility to pollution.

For epibenthos, the Harbor-wide Epibenthic Recruitment and Survival sampling program (Hydroqual 2001a) identified a total of 43 taxa of Annelida, Arthropoda, Bryozoa, Chlorophyta, Chordata, Cnidaria, Mollusca, and Porifera within Jamaica Bay (Hydroqual 2001a). Taxa dominant by weight included ivory barnacle (*Balanus eberneus*), the golden star tunicate (*Botryllus schlosseri*), the blue mussel (*Mytilus edulis*), and the cnidarians Tubularia and Campanularia. Epibenthic communities within the Harbor typically exhibit a vertical distribution on hard surfaces, such as piles and bulkheads, due to changes in water level, salinity, and DO associated with the tides and salinity stratification. The epibenthic sampling did not indicate a similar vertical distribution in Jamaica Bay, suggesting that low DO levels are not limiting to epibenthos in the lower portion of the water column in open areas of Jamaica Bay (NYCDEP 2007b). During the May 2008 field inventory undertaken by AKRF, dense clusters of ribbed mussels (*Geukenzia demissa*) were observed in a semi-infaunal state in the sediment and rhizomes of saltwater cordgrass.

Fish

Jamaica Bay is a highly productive and regionally significant habitat for finfish. Recent sampling identified 49 species of finfish within the bay (Kurtzke and Schriebman 2002), and a four-year survey in the 1980s identified 81 species (Scaglione 1991). Common marine species in Jamaica Bay include winter flounder (*Pleuronectes americanus*), weakfish (*Cynoscion regalis*), and windowpane (*Scophthalmus aquosus*). Forage fish species occurring in high abundances include Atlantic silverside (*Menidia menidia*), bay anchovy (*Anchoa mitchilli*), mummichog (*Fundulus heteroclitus*), Atlantic menhaden (*Brevoortia tyrannus*), and striped killifish (*Fundulus majalis*). These species form an important prey base for other fish and birds that use Jamaica Bay. Important recreational fish species include, but are not limited to weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), scup (*Stenotomus chrysops*), striped bass, and winter flounder (USFWS 1997). Winter flounder is considered the most important commercial and recreational fish of the bay in great numbers during all life stages (USFWS 1997). Anadromous species that use the bay include blueback herring (*Alosa aestivalis*), Atlantic sturgeon (*Acipenser oxyrinchus*), alewife (*Alosa pseudoharengus*), American shad (*Alosa sapidissima*), and striped bass (*Morone saxatilis*). The single catadromous species common to the bay is American eel (*Anguilla rostrata*).

Table B-4 lists species captured during a 2002 study in Norton and Conch Basins. Sampling conducted at bottom and mid-depths of the Norton Basin pits produced 256 and 85 individuals representing 6 and 3 species, respectively.¹ The dominant species at both the middle and bottom depths was striped searobin (*Prionotus evolans*). At the surface and mid-depths of both the Norton and Conch basin pits, Atlantic menhaden (*Brevoortia tyrannus*) dominated the catch. Shallow waters of both Norton and Conch Basins appeared to have higher species diversity with ten and five species captured, respectively. No fish were captured at the bottom of the Conch Basin pit (Barry A. Vittor & Associates, Inc. 2002).

ESSENTIAL FISH HABITAT

The project is within a portion of the Great South Bay estuary EFH that is situated in the NOAA/NMFS 10 minute x 10 minute square with coordinates (North) 40° 40.0' N, (East) 73° 40.0' W, (South) 40° 30.0' N, (West) 73° 50.0' W, which includes Atlantic Ocean waters covering the following areas in New York: Western Long Beach, Hewlett, Woodmere, Cedarhurst, Lawrence, Inwood, Far Rockaway, East Rockaway Inlet, eastern Jamaica Bay, Brosewre Bay, Grassy Bay, Head of Bay, Grass Hassock Channel, eastern Rockaway Beach, Atlantic Beach, Howard Beach,

¹ Numbers include macro-crustaceans and fish species.

J.F.K. International Airport, Springfield, and Rosedale, along with many smaller islands. Eastern Jamaica Bay, containing the proposed action, has been identified as EFH for 25 species (including fish, skates, and sharks). Table B-5 lists the species and life stages of fish identified as having EFH in eastern Jamaica Bay.

**Table B-4
Species Captured in Norton Basin and Conch Basin (May to June 2002)**

Scientific Name	Common Name
Striped Searobin*	<i>Prionotus evolans</i>
Atlantic Menhaden	<i>Brevoortia tyrannus</i>
Weakfish	<i>Cynoscion regalis</i>
Scup	<i>Stenotomus chrysops</i>
Alewife	<i>Alosa pseudoharengus</i>
Bluefish**	<i>Pomatomus saltatrix</i>
Bay Anchovy**	<i>Anchoa mitchilli</i>
Tautog	<i>Tautoga onitis</i>
Striped Bass	<i>Morone saxatilis</i>
Common Spider Crab	<i>Libinia emarginata</i>
Clearnose Skate	<i>Raja eglanteria</i>
Atlantic Horseshoe Crab	<i>Limulus polyphemus</i>
Lady Crab	<i>Ovalipes ocellatus</i>
Blue Crab	<i>Callinectes sapidus</i>
Notes:	
* Represented 75.2 percent of the total catch in May	
** captured in Conch Basin only.	
Source: Barry A. Vittor & Associates, Inc. 2002.	

Table B-5

Essential Fish Habitat Designated Species for Eastern Jamaica Bay

Species	Eggs	Larvae	Juveniles	Adults
Atlantic salmon (<i>Salmo salar</i>)				X
Pollock (<i>Pollachius virens</i>)			X	
Whiting (<i>Merluccius bilinearis</i>)	X	X	X	
Red hake (<i>Urophycis chuss</i>)	X	X	X	
Winter flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
Windowpane flounder (<i>Scophthalmus aquosus</i>)			X	X
Atlantic sea herring (<i>Clupea harengus</i>)				X
Monkfish (<i>Lophius americanus</i>)	X	X		X
Bluefish (<i>Pomatomus saltatrix</i>)			X	X
Atlantic butterfish (<i>Peprilus triacanthus</i>)	X	X	X	X
Atlantic mackerel (<i>Scomber scombrus</i>)	X	X	X	X
Summer flounder (<i>Paralichthys dentatus</i>)			X	X
Scup (<i>Stenotomus chrysops</i>)	n/a	n/a	X	X
Black sea bass (<i>Centropristus striata</i>)	n/a		X	
King mackerel (<i>Scomberomorus cavalla</i>)	X	X	X	X
Spanish mackerel (<i>Scomberomorus maculatus</i>)	X	X	X	X
Cobia (<i>Rachycentron canadum</i>)	X	X	X	X
Clearnose skate (<i>Raja eglanteria</i>)			X	X
Little skate (<i>Leucoraja erinacea</i>)			X	X
Winter skate (<i>Leucoraja ocellata</i>)			X	X
Sand tiger shark (<i>Odontaspis taurus</i>)*		X		
Blue shark (<i>Prionace glauca</i>)*				X
Dusky shark (<i>Charcharinus obscurus</i>)*		X		
Sandbar shark (<i>Charcharinus plumbeus</i>)*		X	X	X
Tiger shark (<i>Galeocerdo cuvieri</i>)*		X		
Note: * None of these species have a free-swimming larval stage; rather they are live bearers that give birth to fully formed juveniles. For the purposes of this table, "larvae" for this species refers to neonates and early juveniles				
Source: National Marine Fisheries Service. "Summary of Essential Fish Habitat (EFH) Designation" posted on the internet at http://www.nero.noaa.gov/hcd/STATES4/conn_li_ny/40307340.html .				

PROTECTED, ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Introduction

Information on endangered, threatened, special concern, and rare species within a half mile of the project site was requested from the USFWS, NMFS, and NYNHP. NYNHP records indicate that four state-listed plant species and one special concern vegetative community are present within the 0.5 mile study area. In addition, NYNHP's database includes two plant species known to occur in the vicinity of the project site prior to 1979, but no recorded observations have been made in recent years. According to the list of federally threatened or endangered species for Queens County, furnished by the USFWS, four species were identified: seabeach amaranth (*Amaranthus pumilus*), piping plover (*Charadrius melodus*), roaseate tern (*Sterna dougallii dougallii*), and shortnose sturgeon (*Acipenser brevirostrum*) (Papa 2008). In addition to the piping plover, NYNHP listed the common tern (*Sterna hirundo*) and the least tern (*Sternula antillarum*) as potentially occurring within the project site. NMFS indicated that there are no endangered, threatened, or special concern species that are likely to occur along the shoreline where the proposed action would take place (Colligan 2008). As indicated above, the common tern, least tern, and black skimmer were observed during field surveys. Both the common tern and the least tern are state-listed threatened, and the least tern is federally-listed, but

only for interior populations. The black skimmer is state-listed special concern. A short description of these species is provided below.

Vegetative Communities and Individual Species

Low salt marsh is a coastal marsh community that occurs in sheltered areas of the seacoast, in a zone extending from mean high water down to mean mid-water and is regularly flooded by semidiurnal tides. The mean tidal range of low salt marshes on Long Island is about 80 cm, and they often form in basins with a depth of 1.6 m or greater. About one-half of the total marsh acreage of Jamaica Bay on the south shore is low salt marsh. A monotypic stand of cordgrass (*Spartina alterniflora*) is the characteristic plant of this vegetative community; other plants, present in very low numbers, include glasswort (*Salicornia europaea*), salt marsh sand-spurry (*Spergularia marina*), and lesser sea blite (*Suaeda maritima*) (Edinger et. al 2002).

Seabeach amaranth is a federally-listed threatened and state-listed endangered annual plant with habitat that consists of dynamic barrier beach landscapes where there is low competition from other plants as it is intolerant of vegetative competition. The plant often colonizes accreting shoreline, upper beach, foredune, overwash flat, dredge spoil, and sand/shell beach replenishment areas. Seabeach amaranth shares habitat with other endangered species including piping plover and roseate tern (USFWS undated). The species flowers in the middle of August to end of October, and exposes fruit in the beginning of September to middle of November (Young 2007).

Side-oats grama (*Bouteloua curtipendula* var. *curtipendula*) is a state-endangered species with open habitats associated with dry limestone-derived soils and disturbed soils. Side-oats grama occurs in abandoned sandpits, pastures, railroads, and power line right-of-ways. In the project area, the species occurs in highly disturbed beach habitats containing native and non-native species. The species flowers in the middle of July to middle of August, and exposes fruit in the beginning of August to end of November (Young 2007).

Dune sandspur (*Cenchrus tribuloides*) is a state-listed threatened annual with habitat that includes dunes, loose sands, woodland fragments, and open areas (Duncan and Duncan 1987). The species flowers in the middle of June to end of July, and exposes fruit in the middle of July to end of October (Young 2007).

Seabeach knotweed (*Polygonum glaucum*) is a state-listed rare prostrate plant of sandy beaches, brackish swales, and edges of salt marshes (Duncan and Duncan 1987). In the project area, the species is located on a moderately used beach. The species flowers in the middle of July to middle of November, and exposes fruit in the Middle of August to middle of November (Young 2007).

Historical Records

Retrorsed flatsedge (*Cyperus retrorsus* var. *retrosus*) is a state endangered plant that occurs in beach habitats and salt marshes. This species yields fruit from the middle of July through the end of October (Young 2007).

Slender crabgrass (*Digitaria filiformis*) is a state threatened plant with habitat in sandy soils and sterile open fields that receive full sun. It yields fruit from the middle of August through the end of September (Young 2007).

Wildlife

Piping plover (*Charadrius melodus*) is a federally-listed threatened and state-listed endangered shorebird that arrives to coastal breeding-grounds around mid-March in New York State. Breeding habitat is typically dry sandy beaches or areas filled with dredged sand, often near dunes, in areas with little or no beach grass. Although nests are typically sited in areas with little or no vegetation, on

occasion, piping plovers will nest under stands of American beachgrass (*Ammophila breviligulata*) or other vegetation (USFWS 2007). Breeding takes place between April and September in the New York area (USFWS 2007). There are three known populations of piping plovers: one along the east coast, another on the upper Great Lakes, and a third on the major river systems and wetlands of the northern Great Plains. In the New York area, breeding occurs on Long Island's sandy beaches, from Queens and east to the Hamptons, particularly in the eastern bays and harbors of northern Suffolk County. In the New York City area, piping plover and the state-listed threatened least tern breed and nest in a protected area on Rockaway Beach in the neighborhoods of Arverne, Queens (between Beach 44th and Beach 57th Streets) (DPR undated). They have also been observed at Breezy Point on the western tip of Rockaway Peninsula.

Least tern (*Sternula antillarum*) is a state-listed threatened shorebird that arrives to breeding grounds in coastal areas by late April to the middle of May in New York State. Breeding habitat typically includes level expanses of open sand or gravel beach, dredge spoil, and open shoreline areas. In New York, migrants of this species are found on Long Island's outer coast and rarely on the lower Hudson River. By late August and early September, least terns leave their northern breeding grounds to head for wintering areas ranging from the Gulf Coast south to Brazil (NYSDEC undated [a]).

Common tern (*Sterna hirundo*) is the most widespread and abundant state-listed threatened tern in New York. Common terns arrive to breeding grounds in the Long Island area from late April to mid-May. Colonies may contain several hundred to several thousand birds, including roseate, least, and gull-billed terns, and black skimmers. Nests consist of a simple scrape, typically lined with vegetation, built above the high tide line in sand, gravel, shells, or seaweed. By mid-October, the terns depart for wintering grounds. In New York, common terns nest predominantly on Long Island, but they are also known to breed on small natural and artificial islands in the Great Lakes, the St. Lawrence and Niagara rivers, and Oneida Lake in central New York (NYSDEC undated [b]).

Roseate tern (*Sterna dougallii dougallii*) is a federally- and state-listed endangered shorebird that arrives to breeding grounds in late April or early May and begins nesting one month later. Nests typically consist of a simple depression in sand, shell, or gravel that are lined with bits of grass and other debris and situated in dense grass clumps, under boulders, or in rip-rap. In New York State, roseate terns are always found nesting with common terns. Roseate terns feed on American sand lance—a small fish of estuarine, open-coastal, and offshore habitats that are an important prey species of many marine fishes and mammals. In New York, the roseate tern breeds primarily at a small number of Long Island colonies; the largest located at the eastern end of Long Island (NYSDEC undated[c]).

Black Skimmer (*Rynchops niger*) is a state-listed special concern shorebird. In North America black skimmer habitat is primarily coastal, ranging along the Atlantic and Gulf coasts from Massachusetts to Texas, and through Central and South America. Nests typically consist of a simple depression on open sandy beaches, inlets, sandbars, offshore islands, and dredge disposal islands that are sparsely vegetated and contain shell fragments. Skimmers forage mainly in tidal waters of bays, estuaries and lagoons.

Shortnose sturgeon (*Acipenser brevirostrum*) is a federally-listed endangered anadromous bottom-feeding fish that can be found throughout the Hudson River system, but it spawns, develops, and overwinters well north of the project site in the Hudson River, and prefers colder, deeper waters for all lifestages. While documented as occurring below the Tappan Zee Bridge in the Hudson River (Colligan 2007), this portion of the river is not considered optimal shortnose sturgeon habitat (Bain 2004), and sturgeon would be expected to occur rarely south of the southern tip of Manhattan (Bain 1997). Therefore, the shortnose sturgeon would not be expected in Jamaica Bay.

NATURAL RESOURCES POLICIES AND PROGRAMS

Significant Coastal Fish and Wildlife Habitat

NYSDOS has designated Jamaica Bay as a Significant Coastal Fish and Wildlife Habitat (Block NY-22, NYS Coastal Management Program Atlas 2002). To designate a Significant Coastal Fish and Wildlife Habitat, NYSDEC evaluates the significance of the habitat and, following a recommendation from NYSDEC, NYSDOS designates and maps the area.

The Jamaica Bay Significant Coastal Fish and Wildlife Habitat covers an approximately 9,100-acre area that is defined by the mean high water elevation along the shorelines of the bay and also includes fringing tidal marsh and adjacent upland areas, which are important for nesting birds. The habitat does not include the deepwater portions of Beach Channel to the south. The fish and wildlife habitat is the entire bay, which includes extensive areas of salt marsh (1,000 acres), tidal flats, dredge spoil islands, dredged channels, and dredged basins. Some of the islands in the bay have upland communities including open field, shrub thicket, developing woodlands, and beach grass dune. Water depths in the bay average 16 feet, with depths up to 40 feet in the deepest portions of the dredged channels and basins. The tidal range averages about 5 feet, and the flushing rate for most of the bay is about 7 days while the back tributaries can take about 33 days. The designation recognizes that the only remaining significant natural inflow of surface water into Jamaica Bay is Hook Creek, which drains into the head of the bay area at the northeastern end of the habitat. Additional freshwater inputs are limited to runoff (40%) and sewage effluent (60%). As stated in the designation report, salinity in the bay ranges from 24 to 30 parts per thousand.

Jamaica Bay Critical Environmental Area

Under the environmental laws of the State of New York, local agencies may designate specific geographic areas within their boundaries as “Critical Environmental Areas.” State agencies may also designate geographic areas they own, manage, or regulate. To be designated as a Critical Environmental Area, an area must have an exceptional or unique character with respect to one or more of the following:

- A benefit or threat to human health;
- A natural setting (e.g., fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality);
- Agricultural, social, cultural, historic, archaeological, recreational, or educational values; or
- An inherent ecological, geological or hydrological sensitivity to change that may be adversely affected by any change.

Once designated, the potential impact of any Type I or Unlisted Action on the environmental characteristics of the Critical Environmental Area is determined to be a relevant area of concern and must be examined in accordance with the environmental review requirements of Part 617. In accordance with the above requirements, and in consideration of Jamaica Bay’s role as a significant coastal fish and wildlife habitat, NYSDEC designated Jamaica Bay a Critical Environmental Area in the mid 1980s.

State and Regional Projects

New York/New Jersey Harbor Estuary Program (HEP) Projects

The New York/New Jersey Harbor Estuary Program (HEP) Final Comprehensive Conservation and Management Plan (CCMP) outlined a number of goals to improve water quality and aquatic resources throughout the Harbor. To achieve these goals, the CCMP outlines objectives for the management of

toxic contamination, dredged material, pathogenic contamination, floatable debris, nutrients and organic enrichment, and rainfall-related sources. Most of these objectives aim to heighten knowledge and awareness of the bay's natural features and the extent of various sources of pollution (e.g., toxic chemicals, sewage overflows, and floatables), techniques for reducing these pollutants, and increasing the habitat and human use potential of the Harbor. The floatables action plan of HEP seeks to reduce the amount of debris entering the water. It includes marine debris survey collection programs, improved street cleaning, combined sewer overflow and stormwater abatement, enforcement of solid waste transfer regulations, shoreline cleanup programs, and public education.

The HEP Habitat Workgroup developed watershed-based priorities for acquisition, protection, and restoration

of wetland, aquatic, and upland communities that included the following criteria: the presence of species or communities that are rare, endangered, or threatened at the federal, state, or local level; existing and potential ecological value and size; and economic and development factors. The ACOE New York District, as part of the HEP Habitat Workgroup, began a feasibility study in 2001 to assess potential sites for habitat restoration in New York Harbor. In May 2003, the Regional Plan Association (RPA) also identified needs and opportunities for environmental restoration in the Hudson-Raritan Estuary. These sites include the preservation and enhancement of tidal wetlands that will provide improved habitat for fish and macroinvertebrates as well as the birds, mammals, and reptiles that depend on these habitats. HEP Acquisition and Restoration Sites in close proximity to the project site are listed below. HEP actions taken with respect to these sites could occur with or without the proposed action.

- *Conch Basin*—A sub-basin of Norton Basin, located approximately 0.2 miles from the project site, was identified for salt marsh restoration.
- *Healy Avenue and Michaelis Bayswater Park*—Located along Norton Basin, 0.3 miles northeast of the proposed action, was identified for salt marsh restoration.
- *Somerville Basin*—Located 0.9 miles west of the project site, was identified for salt marsh restoration.
- *Arverne Urban Renewal Area*—Located approximately 0.3 miles southwest of the project site on Rockaway Beach, was identified for beachfront habitat acquisition.
- *Dubos Point*—Located approximately 0.9 miles west of the project site, was identified for salt marsh restoration.

Hudson-Raritan Estuary Ecosystem Restoration Project

The Hudson-Raritan Estuary Ecosystem Restoration Project is a cooperative project led by ACOE that was funded by a House of Representatives Resolution on April 15, 1999. PANYNJ is a co-sponsor of this project. Other agencies involved in this project include EPA, USFWS, NOAA, NRCS, the New Jersey Department of Environmental Protection (NJDEP), New Jersey Department of Transportation (Office of Maritime Resources), NYSDEC, NYSDOS, NYCDEP, NYCDPR, and New Jersey Meadowlands Commission. The focus of the study is to identify the actions needed to restore the Hudson-Raritan Estuary and to develop a plan for their implementation. The study area for the program includes all the waters of the New York and New Jersey Harbor and the tidally influenced portions of all rivers and streams that empty into the Harbor and ecologically influence the Harbor. The program identifies measures and plans to restore natural areas within the estuary and enhance their ecological value, and address habitat fragmentation and past restoration and mitigation efforts that were piecemeal in nature.

Jamaica Bay Borrow Pit Evaluation Project

The New York district of the USACE in coordination with NYSDEC and several other federal, state, and local entities developed the Dredged Material Management Plan (DMMP) for NY/NJ Harbor. The DMMP identifies a number of options for the management of dredged material, but places a priority on options that “employ beneficial re-use” of dredged materials. The DMMP identified borrow pits (Grassy Bay, Norton Basin, Conch Basin, Jo-Co) as potential sites for the placement of dredged sediment (ACOE, 1999). Between 2000 and 2003, NYSDEC and the New York District of the USACE conducted a number of ecological investigations, known as the Jamaica Bay Borrow Pit Evaluation Project, to determine the feasibility of beneficial re-use of sediments dredged from the New York-New Jersey Harbor for the restoration of borrow pits in Jamaica Bay, and a multi-agency committee was established to review data and determine the ecological conditions in the borrow pits. The committee established that if these pits were deemed to be degraded, the next steps would be to apply hydrodynamic modeling to determine whether a net environmental benefit could result from material disposal and improved water exchange. Study findings indicate that benthic habitat functions are suboptimal; Conch Basin is significantly impaired (hypoxia persists within the pits during the summer months) and, as a result, the southern portion of Norton Basin and Conch Basin are sufficiently degraded. For these reasons, the Jamaica Bay Borrow Pit Evaluation Project technical committee recommended the implementation of the next step in the assessment process, which will include hydrodynamic modeling and an evaluation of alternatives for improving conditions in these pits (NYSDEC undated[d]).

RELATED NYCDEP PROJECTS

Jamaica Bay Long Term Control Plan

A 2005 CSO Consent Order signed by NYSDEC and the City of New York (NYSDEC 2008) directs the City to develop and implement watershed and facility plans to address CSO discharges and bring waters into compliance with the CWA (NYCDEP 2007a). The goal of the Jamaica Bay and CSO Tributaries Waterbody/Watershed Facility Plan is to reduce CSO discharges in Jamaica Bay and the CSO tributaries. The Long Term Control Plan includes some of the following measures: improvements related to WPCP drainage area infrastructure; separation of storm and combined sewers in the Rockaway WPCP service area (currently partially separated); and reductions in the number and volume of CSO discharges to CSO tributaries. The draft Jamaica Bay and CSO Tributaries Waterbody/Watershed Facility Plan was submitted to NYSDEC in June 2007.

Jamaica Bay Watershed Protection Plan

Overview

In October 2007, NYCDEP released the Jamaica Bay Watershed Protection Plan (October 2, 2007). Preparation of the Plan was required by Local Law 71 of 2005, which mandated NYCDEP to assess the “technical, legal, environmental and economical feasibility” of a diverse set of protection approaches for Jamaica Bay, with efforts to promote a comprehensive approach toward maintaining and restoring the ecosystems within the bay. The plan covers a number of major issues organized under six key elements: Water Quality; Restoration Ecology; Stormwater Management; Public Education and Outreach; Public Use and Enjoyment; and Implementation and Coordination. Within each of the six plan elements, recommendations related to implementation strategies are provided that promote a multifaceted approach to maintaining and restoring the integrity of the bay. Among the objectives and management strategies presented in the plan, it is recognized that several are being implemented through the City’s CSO Long Term Control Plan for Jamaica Bay and the CSO Tributaries Waterbody/Watershed Facility Plan submitted to NYSDEC in June 2007 (see the discussion above). The recommended strategies, which are summarized below, use a combination of

infrastructure and engineering solutions, pilot studies using new technology, and ecosystem-based approaches to improve conditions in the bay.

Water Quality

Four priority objectives were identified in the plan with respect to improving water quality including reducing nitrogen loading to the bay. NYCDEP is undertaking a number of capital improvements to reduce nitrogen discharges to the bay.

Restoration Ecology

Federal, state, and City agencies as well as local environmental groups have been very active in restoring and preserving open spaces along the shoreline in Jamaica Bay and, to a lesser degree, portions of the upland. Restoration objectives of the plan focus on restoring the salt marsh islands within the bay and protecting natural areas along the shorelines of the bay.

Stormwater Best Management Practices (BMPs)

The City's Jamaica Bay Watershed Protection Plan calls for the treatment and control of stormwater at its source using both onsite (i.e., runoff captured on a single lot) and offsite (i.e., runoff captured from multiple parcels including streets and vacant lots) control measures as a way to reduce CSO and overland runoff currently entering the bay.

Wetlands Transfer Task Force

Local Law 83 of 2005 established a Wetlands Transfer Task Force (WTTF) established by the Mayor and City Council to evaluate the technical, legal, environmental, and economic feasibility of transferring City-owned properties containing wetlands to the jurisdiction of NYCDPR. Two high priority assessment areas are located in the vicinity of Norton Basin: Edgemere Urban Renewal Area and Norton Basin. A number of parcels in Block 15961, including Lot 110, which borders the project site, are recommended for transfer to NYCDPR by the Task Force, whose recommendations were submitted to the Mayor in September 2007.

FUTURE WITHOUT THE PROPOSED ACTION

The future without the proposed action (also referred to as the "No Build" condition) is a projection of natural resources conditions independent of the proposed action. Without the proposed action, the conditions described above are expected to remain essentially the same, although the undeveloped upland areas may continue to develop and reduce habitat.

It is noted that the majority of the significant resources and habitats of Jamaica Bay are owned or regulated by myriad federal, state, and city agencies and special programs have been developed to protect the bay's natural resources. Among the federal agencies, NPS and USFWS own or manage wetland and upland habitats and aquatic resources within Jamaica Bay. As mentioned above, state designations include a Significant Coastal Fish and Wildlife Habitat (NYSDOS) and CEA (NYSDEC). In the city, the New York City Department of City Planning identifies Jamaica Bay as one of three Special Waterfront Natural Areas (SWNA) in its Waterfront Revitalization Program (WRP); the Department of Parks and Recreation (NYCDPR) manages habitat on properties within its purview; and NYCDEP has developed a Comprehensive Watershed Management Plan (1993), a Jamaica Bay Watershed Protection Plan (2007), and a Jamaica Bay and CSO Tributaries Waterbody/Watershed Facility Plan (2007) have been prepared to protect water quality and habitats of the bay. These elements of federal, state, and city programs and other programs that are specifically directed at improving biological resources and habitats of Jamaica Bay would be expected to improve natural resources over time.

IMPACTS OF THE PROPOSED ACTION

The proposed action is being designed and implemented by NYCDDC on behalf of NYCDEP. After construction, the proposed sewer outfall would be maintained by NYCDEP. An impact assessment of the proposed action relative to both the construction and operational phases of the proposed action is presented below.

TERRESTRIAL RESOURCES

In all areas disturbed by construction of the proposed action would include a final landscaping plan (see Appendix B). In the upland, that plan would include a final planting cover using native species. Upland habitats along the proposed sewer corridor would be restored with species typical of a maritime shrubland such as eastern red cedar (*Juniperus virginiana*), beach plum (*Prunus maritima*), and shining sumac (*Rhus copallinum*).

The proposed storm sewer would also be installed within the lawn area and parking lot of the Beach Channel Drive Houses. Within this segment of the proposed action, approximately 500 linear feet of parking lot would be excavated within the 40-foot wide easement for the installation of the proposed storm sewer outfall. This segment of the proposed action would not impact any sensitive terrestrial habitats or resources. In addition, all landscaped areas would be restored and replanted post-construction.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on terrestrial resources.

WETLANDS

The northern segment of the proposed construction would include dredging and installation of the proposed outfall headwall. This requires construction in a limited area of NYSDEC/ACOE regulated tidal wetlands. In total it is estimated that the proposed action would impact 0.01 acres (about 441 square feet) of tidal wetlands. Design of the proposed outfall has been developed with the objectives of limiting disturbance to tidal wetlands, providing the necessary restoration for areas disturbed by construction, and developing the appropriate wetland restoration. To this end, with the proposed project, all disturbed areas would be restored with in-kind restoration of habitat(s) and restoration of pre-construction grades. This includes restoration of salt-marsh (with salt marsh cord grass, [*Spartina alterniflora*]) and high marsh (with species such as salt-meadow cord grass (*S. patens*), sea lavender [*Limonium carolinianum*], and spikegrass [*Distichlis spicata*]; and transition areas between tidal wetland and upland (with species such as groundsel tree [*Baccharis halimifolia*], pasture rose [*Rosa Carolina*], salt meadow cord grass [*S. patens*], black grass [*Juncus gerardii*], and switch grass [*Panicum virgatum*]) with the creation of 0.02 acres of tidal wetland (882 square feet) to compensate for the loss of 0.01 acres (441 square feet) with the installation of the proposed outfall.

This restoration would be implemented under a separate contract as would a larger wetland restoration proposed at the Chandler Street site, which is also City-owned property located approximately 1.3 miles to the northeast of Beach 42nd Street outfall at the intersection of Chandler Street and Battery Road and also within the Jamaica Bay Watershed. The Chandler Street project is designed to provide cumulative wetland restoration for a number of NYCDDC/NYCDEP Jamaica Bay outfall projects, including the outfall at Beach 42nd Street. With the Chandler Street restoration, NYCDEP/NYCDDC would restore approximately 0.44 acres of high salt marsh tidal wetland habitat and create an additional 0.21 acres of high salt marsh habitat located in the Mott Basin section of Jamaica Bay (additional details on this mitigation are provided in Appendix B of this EAS).

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on wetlands (see also the analysis under ‘Construction’ below).

FLOODPLAINS

Much of the project would be located within the 100-year floodplain. However, installation of the proposed storm sewer outfall would not adversely affect the floodplain or exacerbate flooding conditions in the area. New York City is affected by local (e.g., flooding of inland portions of the city from short-term, high-intensity rain events in areas with poor drainage), fluvial (e.g., rivers and streams overflowing their banks), and coastal flooding (e.g., long and short wave surges that affect the shores of the Atlantic Ocean, bays such as Jamaica Bay, and tidally influenced rivers, streams, and inlets [FEMA 2007]). The floodplain over the project site is affected by coastal flooding, which is a result of astronomic tides and meteorological forces (e.g., northeasters and hurricanes [FEMA 2007]). This floodplain would not be adversely impacted by the proposed action. Rather, the project would provide beneficial impacts with respect to flooding as one of the project goals is to reduce local street flooding.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on floodplains.

WATER QUALITY

Operational Phase (Long Term)¹

Installation of the proposed storm sewer outfall is for the purpose of improving stormwater drainage in this area of Queens. As part of the Jamaica Bay Watershed Protection Plan and the Jamaica Bay and CSO Tributary Waterbody/Watershed Facility Plan, NYCDEP is working to install separate sewers in the Rockaway WPCP drainage area as a way to reduce flooding during wet weather events (NYCDEP 2007a, NYCDEP 2007b).

The Norton Basin/Little Bay Eutrophication Model was used to analyze the potential for any water quality impacts associated with the proposed outfall. The year 1988 was used for the baseline condition, as it typically represents annual rainfall conditions and was considered suitable for completing the stormwater impact analyses. A baseline water quality condition was developed using this model, which included all existing point and nonpoint sources to Norton Basin, Little Bay, and Grass Haddock Channel, as well as the neighboring Thurston, Mott, and Somerville Basins, less any stormwater discharge for the drainage area covered by the proposed outfall. Impacts were assessed by comparing baseline conditions with projected water quality conditions with the proposed stormwater outfall. Conditions were compared to the applicable water quality standards and guidance values. The Norton Basin/Little Bay Model was developed based on boundary conditions in Grass Haddock Channel and loadings for stormwater, CSOs, and WPCPs. Boundary conditions came from the Jamaica Bay Eutrophication Model, and concentrations used to compute loadings were those developed as part of the development of the Jamaica Bay Eutrophication Model. Since both models used the same baseline conditions (1988 rainfall runoff, 2045 WPCP flows), using the Jamaica Bay Eutrophication Model boundary as well as the point source concentrations would provide compatible inputs to the Norton Basin/Little Bay Model.

Norton Basin is a NYSDEC-designated Class SB waterbody, which has a best usage of primary and secondary contact recreation and fishing; i.e., waters that are suitable for fish propagation and

¹ The discussion below is summarized from “Water Quality Impact Assessment of the Proposed Beach 42nd Street Outfall,” prepared by Hydroqual, March 2009.

survival. Dissolved oxygen (DO) water quality data in Norton Basin/Little Bay are higher than applicable Class SB water quality standards in Norton Basin most of the time, with the exception of bottom layer DO levels, which experience low periods below the 5 mg/L standard in Little Bay and in the head to the middle of Norton Basin. These low DO levels, which occur in the basin's bottom waters, are indicative of the effects of stratification in Norton Basin/Little Bay during summer conditions.

Maximum (short-duration) and median (long-term) potential water quality impacts with the Beach 42nd Street outfall were assessed based on the Norton Basin/Little Bay Eutrophication Model and the Jamaica Bay Eutrophication Model, and the results are summarized below:

- With the proposed action, water quality in Norton Basin/Little Bay is expected to be in compliance with applicable NYSDEC water quality standards for total and fecal coliform, copper, lead, and zinc.¹
- Under baseline and proposed conditions, surface water DO levels would continue to be higher than Class SB water quality standards the majority of the time, but could go below the standard during the summer months, as currently is the case.
- The maximum projected decrease from existing background DO levels due to the proposed action would be 0.01 mg/L, a 0.17 percent change, and the median impact would be 0.01 mg/L. These additional decreases would only occur in the bottom layer of the deepest layers of the basin. As the maximum impact would only occur in a very limited area of the basin, this impact is not concluded to be significant.
- Both baseline and projected worst case total, fecal, and enterococci monthly geometric means are within standards or, in the case of enterococci, for the reference level. Loads for the proposed stormwater outfall were computed using stormwater concentrations and runoff for the projection run. Results indicate that changes in water quality due to the new outfall would be minimal with respect to these constituents. Thus, it is anticipated that the water quality will be in compliance given the available information to formulate the baseline.

In sum, existing water quality conditions within Norton Basin/Little Bay would not be significantly impacted due to the proposed outfall. Model results indicate that surface DO levels in the Norton Basin and Little Bay borrow pits can dip below the 5 mg/L standard during the summer when DO demand is the highest, but are typically above the standard. With the proposed project, DO concentrations would continue to be generally above the standard, with the exception of occasional surface DO and longer-term summer bottom layer DO which are expected to be below water quality standards under both the baseline and projected conditions.

AQUATIC BIOTA

The proposed outfall would permanently remove some limited benthic habitat at the end of the pipe and the headwall. This limited loss of aquatic habitat would not result in significant adverse impacts to populations of macroinvertebrates in Jamaica Bay. Benthic macroinvertebrates would also be expected to recolonize the area shortly after construction is completed. As stated above, no significant

¹ Since no metals data in the immediate Norton Basin/Little Bay were available, a dilution computation was completed. The stormwater load for the proposed discharge was computed using stormwater concentrations and the discharge flow. A dilution model run was completed to compute the concentration that would result in the water column due to the proposed discharge. This concentration was then added to metals concentrations measured in Jamaica Bay to estimate the increase from metals background concentrations due to the proposed discharge.

water quality impacts are expected with the proposed action. Therefore, in the long term, it is concluded that no significant impacts to the benthic macroinvertebrate community are expected to occur as a result of the construction of the proposed outfall. In addition, no impacts are expected with respect to shellfish and finfish resources.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on aquatic biota.

ESSENTIAL FISH HABITAT

As described above, no significant adverse operational impacts are expected on water quality with the proposed action. In addition, no significant direct impacts would occur with respect to finfish habitats. Likewise, no significant indirect impacts (e.g., impacts to key water quality parameters, food sources) are expected as well. Therefore, it is concluded that the proposed action would not result in significant adverse impacts on essential fish habitat.

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES

Vegetation

No federally- or state-listed threatened, endangered, or rare plants or ecological communities were listed as occurring on the project site. As discussed under “Existing Conditions,” species including seabeach amaranth, dune sandspur, and seabeach knotweed habitat require sandy beach habitat, which is found approximately 0.5 miles southwest of the project site along Rockaway Beach. This habitat is not present on the project site.

Due to the wide-range of habitats, the disturbed conditions, and the close proximity (0.3 miles) of a known population of side-oats grama in the vicinity of Healy Avenue and Michaelis Bayswater Park, it is possible that this species could occur on the project site. However, a threatened and endangered species survey for side-oats grama, performed in July 2008, confirmed that this species is not present on the project site.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on endangered, threatened or special concern vegetation species.

Wildlife

The federally and state-listed least tern was observed flying off shore at the project site. In addition, the state-listed threatened common tern and the state-listed special concern black skimmer were observed foraging along the shoreline of the project site. As noted above, breeding habitat for piping plover, least tern, common tern, and black skimmer consists of dry sandy beaches or areas that have been filled with dredged sand, often occur near dunes in areas with little or no beach grass. These conditions are not present on the project site. In addition, suitable habitat and known populations of these species occur approximately 0.3 miles south of the project site on Rockaway Beach. For these reasons, occurrences of these species may be limited to transient individuals that could utilize the waters of Norton Basin for feeding purposes. Disturbance on the project site would be temporary and short in duration. For these reasons, it is concluded that no significant adverse impacts would occur to individuals of piping plover, least tern, common tern, and black skimmer and associated habitat as a result of the proposed action.

Shortnose sturgeon habitat is well outside of the project area in the Hudson River. The shallow waters of Jamaica Bay would not provide adequate habitat to the shortnose sturgeon. As mentioned above, shortnose sturgeon would not be expected to occur in the offshore waters of the project site.

Therefore, it is concluded that the proposed action would not result in significant adverse impacts on endangered, threatened or special concern wildlife species.

PUBLIC POLICIES

As stated above, under “Wetlands” and “Aquatic Resources,” SWPPP measures operation of the proposed action would not adversely impact coastal fish and wildlife habitat. In addition, a wetlands improvement plan is proposed for areas impacted by NYSDEC/ACOE impacted wetlands. With these measures in place, the proposed action would not result in significant adverse impacts to wetlands, plant communities, wildlife, water quality, or the aquatic biota of Jamaica Bay. Therefore, it is concluded that the proposed action would not conflict with the natural resources public policies that apply to the project including the Jamaica Bay Watershed Protection Plan, the Jamaica Bay Long-Term Control Plan, the Jamaica Bay Significant Coastal Fish and Wildlife Habitat, the New York and New Jersey Harbor Estuary Program, the Hudson-Raritan Estuary Ecosystem Restoration Project. Therefore, it is concluded that the proposed action would not result in significant adverse impacts with respect to natural resources policies.

B.10—HAZARDOUS MATERIALS

A Limited Subsurface Corridor Investigation was performed on [insert date here] for the project area which includes vacant land and an accessory property, under the jurisdiction of the NYCHA lot. A Corridor Assessment Report was prepared for the purposes of understanding any potential impacts related to hazardous materials that may exist within the project corridor. This investigation provided an examination of the project corridor that documented current uses, reviewed fire insurance maps, documented historical use, and reviewed state and federal environmental databases to identify any locally contaminated sites. Based on that investigation, a subsurface testing investigation was also conducted to determine if the corridor soil conditions could be impaired by hazardous materials. Investigations conducted to date have included the following:

- Field testing, which included seven soil composite soils samples that were advanced using hollow stem auger drilling techniques. All soil borings were advanced to 42 feet below grade. Soil was collected using a two-foot-long, two-inch-diameter split spoon;
- Field screening, classification, and identification of soils from the ground surface to the bottom of each boring. Soil samples were visually classified in the field using the Burmister-based soil classification protocol with Unified Soil Classification System (USCS) symbols in accordance with American Society for Testing and Materials (ASTM) D 2488. The Munsell® Rock-Color charts were used for the color identification. Field screening consisted of visual and olfactory indicators of impacts, as well as screening with a photoionization detector;
- Each sample consisted of a composite of soil from ground surface to either 15 or 16 feet below grade depending on field conditions. Composite soil samples were analyzed for Target Compound List (TCL) Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) metals, Polychlorinated Biphenyls (PCBs), and pesticides. In addition, samples were collected from the 0.5-foot interval above the water table at each boring location and analyzed for Volatile Organic Compounds (VOCs); and
- Installation of three permanent monitoring wells. One groundwater sample was collected from each monitoring well.

In order to determine the subsurface soil quality, laboratory analytical results were compared with United States Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYSDEC), and NYCDEP regulatory standards as listed in:

- Spill Technology and Remediation Series (STARS) Memo #1, Toxicity Characteristic Leaching Procedures (TCLP) Alternative Guidance Values (AGVs);
- Characteristics of Hazardous Waste published in the Resource Conservation and Recovery Act (RCRA) and NYSDEC Part 371;
- Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
- Technical and Administrative Guidance Memorandum #4046 (TAGM), Recommended Soil Cleanup Objectives (RSCOs); and
- NYCDEP Limitations of Effluent to Sanitary or Combined Sewers.

Based on the results of the field investigation and a review of the analytical results compared to applicable regulatory standards, the following conclusions were made regarding conditions within the project area:

- Photo-ionization Detector readings did not identify levels above the background level of 1 part per million (ppm).
- No evidence of visual or olfactory contamination was observed at any of the soil borings;
- Target Compound List (TCL) VOCs were either not detected or measured at levels below regulatory standards in soil collected from all seven borings advanced during this investigation. These low level detections may be attributed to fill materials or historical usage.
- TCL SVOCs were either not detected or measured at levels below regulatory standards in soil collected from all seven borings advanced during this investigation. The low level detections of bis(2-ethylhexyl)phthalate may be attributed to laboratory contamination.
- Target Analyte List (TAL) Metals were detected above applicable standards in soil collected from each of the seven borings advanced during this investigation. All soil samples contained iron at concentrations exceeding TAGM RSCOs but not Eastern USA Soil Background concentrations. Elevated metals levels are mainly attributed to native background concentrations;
- Pesticides were not detected in any of the seven soil borings advanced during this investigation;
- PCBs were not detected in any of the seven soil borings advanced during this investigation; and
- Groundwater collected from one location (B-7GW) exceeded regulatory standards for total suspended solids. Groundwater would have to be treated before it is discharged. This exceedance is likely due to the increased turbidity of the water from conventional purge groundwater sampling procedures.

Based on the above findings of the field investigations, sampling, and testing performed within the easement area to date, a number of measures are proposed to avoid project impacts due to hazardous materials, including:

- Excavated soils can be disposed of as metals-impacted, non-hazardous soil in accordance with all federal, state, and local regulations;
- Provisions for the management, handling and transport of non-hazardous materials, with handling of hazardous materials management as a contingency, in accordance with all federal, state, and local regulations;
- Dust control procedures (due to the presence of iron in the soils) to minimize the creation and dispersion of fugitive airborne dust;
- Prior to construction, the preparation and implementation of a site-specific construction health and safety plan (HASP) for construction workers that meets the standard of the Occupational Safety and Health Administration (OSHA) and the New York State Department of Health

(NYSDOH) and any other applicable regulations will be submitted to DEP for review and approval;

- Use of clean fill and backfill, as well as top soils for landscaping and wetlands restoration. Any soil imported to the site must be imported from an improved facility/source. The clean top soil must be segregated at the source facility, have qualified environmental personnel collect at a frequency of one sample for every 250 cubic yards and analyzed for TCL, VOC, SVOCS, pesticides/PCBs and TAL and receive NYCDEP written approval to use the clean fill/top soil. This material should also not include any construction and demolition debris; and
- It is expected that construction will require dewatering and discharge to Norton Basin. Thus, Industrial SPDES Discharge Permits from NYSDEC are required and have been obtained. It is proposed that remedial/engineering controls would be implemented during the dewatering activities, such as the use of a portable sediment tank to remove sediments prior to discharge. With these measures in place and the requirements of SPDES discharge permits, it is expected that the proposed project would not result in any adverse impacts on water quality from these activities.

Impacts associated with construction of the proposed action including hazardous materials would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to hazardous materials.

B.11—WATERFRONT REVITALIZATION PROGRAM

This section examines the proposed action's consistency with the City's Waterfront Revitalization Program.

The New York City Waterfront Revitalization Program (WRP), first adopted in 1982, encourages coordination among all levels of government to promote sound waterfront planning and requires consideration of the program's goals in making land use decisions. The New York City Department of City Planning (DCP) administers the program which is designed to balance economic development and preservation by promoting waterfront revitalization and water-dependent uses while protecting fish and wildlife, open space and scenic areas, public access to the shoreline, and farmland; and minimizing adverse changes to ecological systems and in erosion and flood hazards.

Because the proposed action is located within the City's coastal zone (see Figure C-10), it is subject to a review under the City's Coastal Zone Management Program. Therefore, this section reviews the applicable WRP policies and assesses the consistency of the proposed action with specific policies. A completed New York City Waterfront Revitalization Program Consistency Assessment Form is also provided with this EAS (see Appendix A).

As described in greater detail below, the proposed action is expected to be consistent with the City's coastal zone policies and specifically policies that address infrastructure and development in the coastal zone, protection and restoration of coastal ecosystems (e.g. wetlands), protection of water quality, and minimizing coastal flooding and erosion impacts.

APPLICABLE NEW YORK CITY WATERFRONT REVITALIZATION POLICIES

Policy 1: Support and facilitate commercial and residential redevelopment in appropriate coastal zone areas.

Since the proposed action would not result in any new land uses, residential or commercial uses, or redevelopment, these policies do not apply. However, installation of the proposed infrastructure would support existing commercial and residential development in the coastal zone through the installation of new infrastructure (the proposed outfall) that would relieve local

flooding (see also “Attachment A: Project Description” under the section “Background Purpose and Need”).

Policy 4: Protect and restore the quality and function of ecological systems within the New York City coastal area.

A portion of the proposed outfall would be built on tidal wetlands along Norton Basin. In addition, the project site is located within the Waterfront Revitalization Program and the Jamaica Bay Special Natural Waterfront Area (SNWA) and Norton Basin is also within the New York State-designated Jamaica Bay Significant Coastal Fish and Wildlife Habitat and the Jamaica Bay Critical Environment Area. The proposed action involves the installation of a storm sewer system and the installation of a new outfall into Norton Basin. As described above under “Natural Resources,” and also below under “Construction Impacts” consistent with this policy, the proposed action would not adversely impact water quality and includes a restoration plan for tidal wetlands and adjacent areas. With these measures in place, and consistent with this policy, the proposed action would not result in any significant adverse impacts on ecological systems and aquatic resources in Jamaica Bay.

In addition, in order to avoid impacts due to construction-period activity, consistent with this policy, the proposed action includes techniques to protect tidal wetlands from construction-period impacts. These protection and restoration measures are described below under “Construction” and would be implemented with the project construction program.

With these measures in place, it is concluded that the proposed action is consistent with this policy.

Policy 5: Protect and improve water quality in the New York City coastal area.

As described below, the proposed action would manage any direct or indirect discharges to waterbodies during construction through a Stormwater Pollution Prevention Plan (SWPPP). In addition, during operation, as described above under “Natural Resources,” the proposed action would not have any adverse impacts on water quality. It is therefore concluded that the proposed action is consistent with this policy.

Policy 6: Minimize the loss of life, structures, and natural resources caused by flooding and erosion.

The proposed action is a publicly funded capital improvement project that would provide a new stormwater conveyance via outfall improvements that would relieve flooding on local roadways. It would therefore provide the public benefits of reducing street flooding in the Edgemere neighborhood of Queens. All construction activities would also be performed in accordance with NYSDEC’s technical standards for erosion and sediment control (e.g. use of silt fences, hay bales, and containment booms) that would be implemented in accordance with a Stormwater Pollution Prevention Plan (SWPPP) in order to minimize potential erosion impacts. With these measures in place, no significant erosion impacts are expected as a result of project construction. It is therefore concluded that the proposed action is consistent with this policy.

B.12—INFRASTRUCTURE

WATER SUPPLY

The proposed action would not introduce new residents or employees and no water main work is proposed; no increase in water usage or changes in water supply would occur. Therefore, the proposed action is not expected to result in potential significant adverse impacts to water supply.

STORM AND SANITARY DRAINAGE

As stated above, the proposed action would not introduce any new development leading to new residents or employees. Thus, no increase in sewage generation is expected, and the proposed action would not result in significant adverse impacts to wastewater and sewage treatment. The proposed action would provide a substantial improvement in the local storm sewer conveyance system with the proposed outfall, thereby resulting in a positive impact on infrastructure and relieving local street flooding conditions. Therefore, the proposed action is not expected to result in potential significant adverse impacts to storm and sanitary drainage.

B.13—SOLID WASTE AND SANITATION SERVICES

The proposed action would not introduce any new residents or employees; thus, no increase in solid waste generation is expected. Therefore, the proposed action is not expected to result in potential significant adverse impacts to solid waste or sanitation services.

B.14—ENERGY

The proposed action would not generate any additional demand for energy. Therefore, the proposed action is not expected to result in potential significant adverse impacts to energy supplies.

B.15—TRAFFIC AND PARKING

TRAFFIC

The impact methodology guidelines of the 2001 *CEQR Technical Manual* suggest analyses for projects that create new vehicular trips, such as the construction of new residential or commercial buildings. The proposed action would install a new outfall, but would not create new vehicular trips—nor would it open new streets that would generate any permanent traffic diversions. Therefore, the proposed action is not expected to result in potential significant adverse impacts to traffic (see also the discussion below under “Construction”).

PARKING

The proposed action does not include any changes in local on-street parking regulations. While there would be some temporary displacement of off-street accessory parking during construction (about 100 spaces), this impact would be temporary and it is expected that displaced parkers would be accommodated elsewhere on-site during construction (see also the discussion below under “Construction”). Therefore, the proposed action is not expected to result in potential significant adverse impacts to parking.

B.16—TRANSIT AND PEDESTRIANS

The proposed action involves the installation of a new storm sewer outfall and would not result in any additional peak hour pedestrians, nor would it generate any rail or bus riders. Therefore, the proposed action is not expected to result in potential significant adverse impacts to transit and pedestrians (see also the discussion below under “Construction”).

B.17—AIR QUALITY

As described in the *CEQR Technical Manual*, an air quality analysis is appropriate if a proposed action would result in direct or indirect impacts on ambient air quality. Direct impacts are defined as

emissions generated by stationary sources, such as fuel burned on-site for heating, ventilation or air conditioning (HVAC) systems. The proposed action does not include any new HVAC emission sources. The proposed action would not generate new vehicle trips (see “Traffic and Parking,” above). Therefore, the proposed action is not expected to result in potential significant adverse impacts to air quality.

B.18—NOISE

According to the *CEQR Technical Manual*, a noise analysis is appropriate if a proposal could generate any mobile or stationary sources of noise, or is a noise-sensitive use that would be located in an area with high ambient noise levels. The proposed action would not increase traffic over current levels, and therefore no significant increase in noise levels due to traffic is anticipated. The proposed action would also not result in the introduction of any new sensitive noise receptors. Therefore, the proposed action is not expected to result in potential significant adverse impacts to noise.

B.19—CONSTRUCTION IMPACTS

DESCRIPTION OF CONSTRUCTION ACTIVITIES

The proposed action is the installation of a new storm sewer outfall approximately 1,200 linear feet in length, 7 feet wide and 5 feet high. All work would occur within a 40-foot-wide NYCDEP easement. If the proposed project is approved, construction is expected to start in August 2009 and be completed by August 2010. The major phases of construction would include:

- Project initiation and staging;
- Construction of the northern portion of the project including excavation and installation of the proposed outfall and headwall (this is within vacant unbuilt land);
- Dredging that outfall headwall including the following stages of construction: installation of a turbidity curtain; a cofferdam would be installed to allow dewatering pumps to remove water within the construction area before dredging; a portable sediment tank would be used to remove sediments from dewatered water prior to discharging the water into Jamaica Bay; when water level within the cofferdam reaches certain acceptable levels, mechanical dredging would be performed; and dredge spoils would be transported in a sealed/watertight container and disposed of at a NYSDEC approved upland disposal facility. Dredge material would undergo chemical analyses prior to disposal to satisfy requirements of the disposal facility. No dewatering effluent from the dredging operation will be discharged directly to the Jamaica Bay;
- Partial and phased closure of accessory parking at Beach Channel Drive Houses parking lot including removal of the asphalt paving, excavation and installation of the proposed outfall south to its connection with the collector sewer in Beach Channel Drive;
- Final paving and restoration of the Beach Channel Drive Houses parking;
- Landscaping and wetland restoration at the headwall;
- Additional restoration to compensate for wetland loss associated with the proposed action at the Chandler Street Outfall Project site under a separate contract.

While it is expected that construction activities would overlap, the general duration of the activities is expected to be as follows:

- Project initiation and staging—45 days;
- Outfall and headwall construction—180 days;

- Final paving and restoration of parking lot—60 days;
- Landscaping and wetlands restoration--45 days (in-kind restoration only);
- Final finishes and close out--30 days.

Principal activities during construction are expected to include heavy equipment for construction of the outfall and headwall including the use of backhoes and small cranes, pile driving, concrete and dump trucks for the delivery and removal of materials, tractor trailers that would deliver materials, and pavement cutters and pavers during the phase of work within the parking lot and Beach Channel Drive. Use of lighter duty vehicles and equipment would be used during the final landscaping and finishing work.

Construction activities are expected to take place Monday through Friday, between 7:00AM and 4:00PM in accordance with City laws and regulations. Any work between 4:00PM and 6:00PM for exceptional circumstances will require approval per NYC Noise Code. Construction staging areas will be located within the sewer easement.

LAND USE, ZONING AND PUBLIC POLICY

The project area is comprised of vacant City owned land on the northern section; the southern section is occupied by an accessory parking lot for the Beach Channel Drive Houses. The Beach Channel Drive Houses is a mid-rise residential housing complex sited to the east of the outfall corridor; to the west are single- and two-family houses fronting along Beach 43rd Street.

The proposed outfall would cross the Beach Channel Drive Houses property in an existing NYCDEP sewer easement. It would directly affect the existing accessory parking lot and would require the temporary disruption of the accessory parking lot. Residential users of the parking lot will have access to other parking options during construction.

The proposed work at the parking lot would proceed in two phases, with each phase occupying only half of the parking lot affected areas. The first phase of the work (about 250 linear feet) would cover activities in the northern half of the parking lot. The second phase of the work (also about 250 linear feet) would consist of work between the chamber connection in Beach Channel Drive and would extend over the southern half of the parking lot. The second phase of construction would commence only after the first phase construction area has been restored so that the walkway and parking area can safely be crossed and used by NYCHA residents. In both phases, the work would be programmed to ensure that the residents of Beach Channel Drive Houses have a safe and secure walkway between the parking area and the residential complex.

Impacts associated with construction of the proposed action including parking and pedestrian impacts on adjacent residential users would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts land use, zoning, or public policy during construction.

HAZARDOUS MATERIALS

See Hazardous Materials above.

NATURAL RESOURCES

TERRESTRIAL RESOURCES

Within the northern segment of the project area is an area of salt shrub thicket approximately 20 feet in length. Under the proposed action, this thicket would be cleared for the installation of the proposed storm sewer outfall. As discussed above under "Natural Resource," this thicket is poorly developed and invaded by common reed. While there would be temporary construction period impacts on terrestrial resources due to clearing and construction activities, these impacts would be limited to the 40-foot-wide sewer corridor and are not expected to be significant (see Appendix B).

Impacts associated with construction of the proposed action including terrestrial resources would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to terrestrial resources during construction.

RUNOFF AND SEDIMENT CONTROL

Construction activities associated with the installation of the proposed outfall would include disturbance of sediments at the location of the outfall headwall. Water quality impacts associated with these activities are expected to include potential localized increases in suspended sediment that would be temporary and limited to the immediate area of the activity. Suspended sediments are expected to dissipate and not result in any construction period adverse impacts to water quality.

All construction activities would also be performed in accordance with NYSDEC's technical standards for erosion and sediment control (e.g. use of silt fences, hay bales, and containment booms) that would be implemented in accordance with a Stormwater Pollution Prevention Plan (SWPPP) in order to minimize potential adverse impacts to water quality and aquatic biota. With these measures in place, no significant impacts on the water quality of Jamaica Bay are expected as a result of project construction. This SWPPP must be in compliance with New York's State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Runoff from Construction Activity.

The SWPPP would describe the specifics of Stormwater Management Practices (SMPs) to be used to reduce the pollutants in stormwater runoff, and would ensure that with the implementation of the prescribed SMPs the proposed action would not contravene water quality standards. The SWPPP also includes a soil and erosion control plan (SECP) in conformance with NYSDEC's "Standard and Specifications for Erosion and Sediment Control" that at a minimum includes, but is not limited to, the following control measures: construction limit fence, staked straw bales, reinforced silt fence, sediment trap with filter, sediment filter, portable sediment tank, storm drain inlet protection, and sandbags.

Following the review and approval of the SWPPP by NYCDDC, the qualified professional must ensure that the appropriate control measures specified in the SWPPP are implemented during construction. The contractor shall be liable for any resulting discharge that either causes or contributes to a violation of water quality standards. Should any stormwater runoff from the site violate the State's water quality standards, the contractor would be directed to take immediate steps, at their own expense, to correct the situation and prevent any further sediments from entering the storm sewer system. In the event that pollutants are discharged to the stormwater system due to the contractor's negligence, NYCDDC would direct the contractor to cease any or all construction activities contributing to the release of these pollutants, and the contractor shall be held responsible, at their own cost, for any and all necessary actions to remedy the damage. In addition, the contractor shall maintain a record of all inspection reports in a site logbook. Prior to starting construction, the

contractor must certify in the logbook that the SWPPP meets all federal, state, and local erosion and sediment control requirements.

During construction, the qualified professional must conduct a site inspection at least once a week and after each rainfall of 0.5 inches or more, and would perform a final site inspection to certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long term erosion control have been removed. The contractor would also be required to retain the services of a licensed/certified professional to develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that would minimize the pollutants entering the storm sewer systems in compliance with New York's State Pollutant Discharge Elimination System (SPDES) General Permit for Storm Water Runoff from Construction Activity (GP-02-01). The proposed action would also need to implement measures to avoid impacts from hazardous materials during construction. These measures are described above.

Impacts associated with construction of the proposed action including runoff and sediment control would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts with respect to water quality and aquatic resources during construction.

NATURAL RESOURCES AND WATER QUALITY PROTECTIONS

Construction of the proposed action involves activities within tidal wetlands and tidal wetland adjacent areas. As a result, the following measures are proposed to avoid this potential impact:

- Sediment and erosion control practices that would be made part of the contract requirements. The plans would contain the specific techniques and methods to control sedimentation and erosion, such as snow fencing and silt fence/surface water collectors along the particularly sensitive segments, as appropriate (see the discussion above).
- Within the wetland areas to be replanted, biodegradable erosion-control matting or jute mesh would be used to stabilize soils during the grown-in period. Individual plants would be planted after the mat has been installed. This matting reduces erosion and sedimentation from the created wetlands to existing wetlands by protecting soil during the period when new wetland plantings are taking root.
- Flagging and marking the edge of wetlands so that construction activities do not extend into wetland areas not intended for construction or restoration.
- Removal of debris and invasive species within the project area. With the installation of the proposed outfall, several measures would be undertaken to restore the areas disturbed under the current condition. This would include the removal of invasive plants including but not limited to Autumn Olive (*Elaeagnus sp.*), Japanese knotweed (*Polygonum cuspidatum*) and multiflora rose (*Rosa multiflora*) as well as the removal of debris (e.g., derelict boats). Under this proposal, these disturbed areas would be planted with tidal plants that are native to Jamaica Bay and consistent with surrounding habitats.

In addition, to protect surface waters from the impacts of turbidity during construction, the proposed action would include techniques to minimize turbidity impacts and ensure that the proposed construction activity does not adversely impact the Jamaica Bay water quality. It is expected that these measures would be indentified during the permit review process with the NYSDEC and ACOE.

Impacts associated with construction of the proposed action including natural resources and water quality would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to natural resources during construction.

AQUATIC BIOTA

As discussed above, the proposed action would have limited short-term construction related impacts to water quality and aquatic biota. These impacts may include localized increases in suspended sediment and re-suspension of contaminated sediments, fish habitat avoidance, and a *de minimis* disturbance to benthic communities during the installation of the outfall into Norton Basin. Water quality changes associated with these increases in suspended sediment are expected to be minimal, temporary, and limited to the immediate area of the activity. Protection measures (e.g., silt curtains and erosion control) are also expected to be required during the NYSDEC and AOE permitting process.

In addition, as described above, the proposed action would comply with all construction period requirements for runoff control and sediment control practices, which would be specified in a SWPPP and the construction documents. Lastly, the proposed action would need to implement measures as required by the permits to protect tidal wetlands, water quality, and natural resources during construction.

Impacts associated with construction of the proposed action including aquatic biota would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to aquatic biota during construction.

TIDAL WETLAND IMPACTS AND RESTORATION

The northern segment of the proposed construction would include dredging and installation of the proposed outfall and headwall. This requires construction in a limited area of NYSDEC/ACOE regulated tidal wetlands. In total it is estimated that the proposed action would impact 0.01 acres (about 441 square feet) of tidal wetlands. Design of the proposed outfall has been developed with the objectives of limiting disturbance to tidal wetlands, providing the necessary restoration for areas disturbed by construction, and developing the appropriate wetland restoration. To this end, with the proposed project, all disturbed areas would be restored with in-kind restoration of habitat(s) and restoration of pre-construction grades within the easement area.

Additional restoration of salt-marsh to compensate for the loss of 0.01 acres (441 square feet) with the installation of the proposed outfall will create 0.02 acres of tidal wetland (882 square feet) (including salt marsh cord grass, [*Spartina alterniflora*]) and high marsh (with species such as salt-meadow cord grass (*S. patens*), sea lavender [*Limonium carolinianum*], and spikegrass [*Distichlis spicata*]; and transition areas between tidal wetland and upland (with species such as groundsel tree [(*Baccharis halimifolia*), pasture rose [*Rosa Carolina*], salt meadow cord grass [*S. patens*], black grass [*Juncus gerardii*], and switch grass [*Panicum virgatum*]). This restoration would be implemented under a separate contract along with a larger wetland restoration proposed at the Chandler Outfall Project Street site, which is also City-owned property located approximately 1.3 miles to the northeast of Beach 42nd Street outfall at the intersection of Chandler Street and Battery Road and also within the Jamaica Bay Watershed. The Chandler Street project is designed to provide cumulative wetland restoration for a number of NYCDDC/NYCDEP Jamaica Bay outfall projects, including the outfall at Beach 42nd Street. With the Chandler Street restoration project, NYCDEP/NYCDDC would restore approximately 0.44 acres of high salt marsh tidal wetland habitat and create an additional 0.21 acres of high salt marsh habitat located in the Mott Basin section of Jamaica Bay. Appendix B to this EAS contains a description of the project's proposed wetland restoration program. The construction for the

restoration at the Chandler Street Outfall Project site would be temporary and short in duration and is not expected to result in potential significant adverse construction traffic, air or noise impacts. However, restoration activities at the Chandler Street site will be subject to a separate environmental review which will include an assessment of potential construction impacts.

Restoration and protection of wetlands as a result of construction is also expected to be required pursuant to ACOE and NYSDEC permit requirements which may include the following measures:

- Restoration and creation of tidal wetlands to offset areas that would be directly and indirectly impacted by the proposed outfall;
- A post-construction maintenance and monitoring program for the proposed wetlands; and
- Water quality protection measures to avoid indirect impacts to tidal wetlands and water quality in areas adjacent to the proposed construction.

Impacts associated with construction of the proposed action including wetlands would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to tidal wetland or adjacent areas during construction.

TRAFFIC AND PARKING

CONSTRUCTION TRAFFIC

Construction Workers

Temporary increases in vehicular traffic during construction of the proposed outfall would not be expected to exceed the 50-peak hour trip threshold established by the CEQR guidelines. The project would generate trips from workers traveling to and from the site, as well as from the movement of goods and equipment. The estimated average number of construction workers on site at any one time would vary, depending on the stage of construction, as follows:

- Outfall work would require an average of approximately 10 to 20 individuals;
- Street and parking area construction work would require an average of approximately 10 to 15 individuals; and
- For lesser intensive work periods, average workers at the site work would total between 5 to 10 individuals.

Given typical construction hours (described above), worker trips occur in off-peak travel times and are not represent a substantial increase in local traffic. Standard peak hours are between 8:00AM-9:00AM and 5:00PM-6:00PM. Therefore, vehicle trips associated with construction are not expected to have any significant adverse effects on the surrounding streets.

Truck Traffic

Truck movements would also be spread throughout the weekday, and generally occur between the hours of 7:30 AM and 3:30 PM on weekdays, depending on the period of construction. The following estimated numbers of trucks (for delivery of soils, materials, and concrete) are anticipated during the various stages of construction based upon NYCDDC experience for other construction projects would be as follows:

- Outfall work: 10-15 trucks per day (e.g. dump trucks, concrete trucks)
- Street construction work: 7 trucks per day
- Other site work: 2 trucks per day

It is assumed that all construction truck traffic work be distributed throughout the day and only a limited number of trips would occur in the standard peak hours (e.g., 8-9AM and 5-6PM).

Impacts associated with construction of the proposed action including traffic generated during construction would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to traffic generated during construction.

TRAFFIC DIVERSIONS

The proposed action would require some work in the north half of the Beach Channel Drive in order to connect the proposed outfall to the stormwater collection sewer in Beach Channel Drive. This would require some temporary work in the street and disruption of traffic. Because only half of Beach Channel Drive is affected by connecting the outfall to the collector sewer chamber, it is expected that traffic flows would be only partially and temporarily affected by the proposed action and the proposed action would not require a full street closure. This impact is also expected to be short term and last for approximately two months. In addition, the contractor would be required to restore the full width of the street at the end of each daily construction period to allow free flow of traffic along Beach Channel Drive. Lastly, all construction activities and closure of the street would be subject to NYCDOT approval under a street and sidewalk construction permit.

Impacts associated with construction of the proposed action including traffic diversions would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to traffic diversions during construction.

PARKING

Off-street Parking

As discussed above the proposed action would have a temporary impact on the off-street accessory parking lot at the Beach Channel Drive Houses. At any one time only a portion of the parking area would be affected during construction. It is therefore anticipated that about 50 parking spaces would be affected at any one time. During the period of construction, in this segment of the project (about six months), residents of the Beach Channel Drive Houses would not have use of these 50 accessory spaces. Residents would be able to use other available accessory parking spaces within the housing complex or would be able to park on-street during construction activities.

Impacts associated with construction of the proposed action including off-street parking would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to off-street parking during construction.

ON-STREET PARKING

In addition, construction may temporarily affect curbside parking along Beach Channel Drive. It is expected that the affected curbside parking areas would be limited (about 40 linear feet) and temporary (as stated above, about two months). All construction activities and temporary removal of street parking would be subject to a NYCDOT approval under a street and sidewalk construction permit.

Impacts associated with construction of the proposed action including on-street parking would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to on-street parking during construction.

TRANSIT AND PEDESTRIANS

TEMPORARY SIDEWALK CLOSURE

It is expected that the proposed action would require a temporary sidewalk closure along the north side of Beach Channel Drive for the purposes of installing the connection to the storm collector sewer in the street. Given that this connection needs to only extend about 30 feet in the local street, it is expected that that the closure time would be limited and that an adequate temporary diversion could be provided without a full sidewalk closure. All construction activities and sidewalk closures would be subject to NYCDOT approval under a street and sidewalk construction permit.

Impacts associated with construction of the proposed action including temporary sidewalk closures would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to public pedestrians during construction.

CIRCULATION AND PEDESTRIAN ACTIVITIES WITHIN BEACH CHANNEL DRIVE HOUSES PROPERTY

The proposed action would include a number of measures to protect the residents of Beach Channel Drive Houses during construction with respect to pedestrian safety. These measures would include barricades in any work areas with temporary jersey barriers and six foot chain link fences and caution signs for pedestrian safety. NYCDDC would restore the areas affected by construction including all sidewalks and pedestrian paths.

Impacts associated with construction of the proposed action including circulation and pedestrian activities within the Beach Channel Drive House would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to pedestrian circulation within Beach Channel Drive Houses during construction.

NOISE AND VIBRATION

NOISE

Construction activities associated with the proposed construction would cause localized temporary noise increases.

Impacts on community noise levels during construction can result from construction equipment operation and from construction vehicles and delivery vehicles traveling to and from the site. Noise levels at a given location would depend on the number and types of construction equipment being operated, distance of the receptor from the construction site, and any shielding effects (attenuation due to structures or natural barriers). Noise levels caused by construction activities vary widely, depending on the phase of construction and the location of the construction relative to receptor locations (at its closest the beach Channel Drive Houses is approximately 100 feet from the site of the proposed construction and at its farthest the Beach Channel Drives Houses is about 600 feet away). Typically, the loudest noise associated with construction is jackhammers and pile driving.

Construction noise is regulated by the New York City Noise Control Code (Local Law 113) and the Environmental Protection Agency noise emission standards for construction equipment. These federal and local requirements mandate that certain classifications of construction equipment and motor vehicles meet specified noise emissions standards. Except under exceptional circumstances, construction activities must be limited to weekdays between the hours of 7 AM and 6 PM. Construction materials would also be handled and transported in such a manner as to not create any

unnecessary noise. Compliance with these noise control measures will be ensured by including them in the contract documents as specifications and directives to the construction contractors.

In addition, in accordance with City regulations, a noise control plan will be developed and implemented to minimize intrusive noise into nearby areas and effects on sensitive receptors. The noise control plan could include such restrictions as locations of generators and avoiding unnecessary evening construction activities. A copy of the noise mitigation plan would be kept on-site for compliance review by the NYCDEP and the New York City Department of Buildings (DOB). Significant noise impacts to sensitive receptors would not result from the proposed action due to the temporary nature and short duration of construction.

Impacts associated with construction of the proposed action including noise would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to noise during construction.

VIBRATIONS

Vibrations generated by construction activities can also be perceptible and in some cases potentially damaging to structures. No blasting would be performed as part of the proposed action; however, pile driving (or drilling) is expected. In general, vibratory levels at a receptor are a function of the source strength (which in turn is dependent upon the construction equipment and construction methods utilized), the distance between the equipment and the receiver, the characteristics of the transmitting medium, and the receiver building construction. Construction equipment operation causes ground vibrations that spread through the ground and decrease in strength with distance. Vehicle traffic, even in locations close to major roadways, typically does not result in perceptible vibration levels, unless there are irregular road surfaces. With the exception of the case of fragile, historically significant structures or buildings, generally construction activities do not reach the levels that cause architectural or structural damage, but they can achieve levels that are perceptible. During the pile phase of construction, monitoring would be used to determine if vibration levels are potentially damaging to nearby structures.

Impacts associated with construction of the proposed action including vibration would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to public sidewalk pedestrians during construction.

AIR QUALITY

Emissions from construction can include mobile source emissions from motor vehicles (e.g., trucks and automobiles) and particulate matter from dust. During construction, such emissions may result from trucks delivering construction materials and removing debris; worker vehicles; and construction equipment. While it would be expected that there would be a limited localized increase in mobile source emissions during construction, these emissions are not expected to significantly impact air local quality. Moreover, any such impacts, while minimal, would also be temporary. City regulations require all project contractors to reduce particulate matter emissions to the extent practicable by employing relatively new equipment including diesel oxidation catalysts (DOCs). Construction activities would be subject to New York City Local Law 77, which requires the use of Best Available Technology (BAT) for equipment at the time of construction.¹

¹ New York City Administrative Code § 24-163.3, adopted December 22, 2003, also known as Local Law 77, requires that any diesel-powered non-road engine with a power output of 50 hp or greater that is owned by, operated by or on behalf of, or leased by a city agency shall be powered by ultra low sulfur diesel fuel

The contractor would also be required to implement a dust control plan with fugitive dust control measures and specifications. For example, watering could be used for excavation and earth moving activities to ensure that soils are dampened as necessary to avoid the suspension of dust into the air. Loose materials could be watered, stabilized with a biodegradable suppressing agent, or covered. In addition, the soil erosion and sediment control practices presented above would have the dual benefit of providing dust suppression. In addition, all fugitive dust control measures would be employed as required by the City of New York to reduce the creation and spread of construction dust.

Impacts associated with construction of the proposed action including air quality would be temporary and short-term in duration. Therefore, the proposed action would not result in potential significant adverse impacts to air quality during construction.

B.20—PUBLIC HEALTH

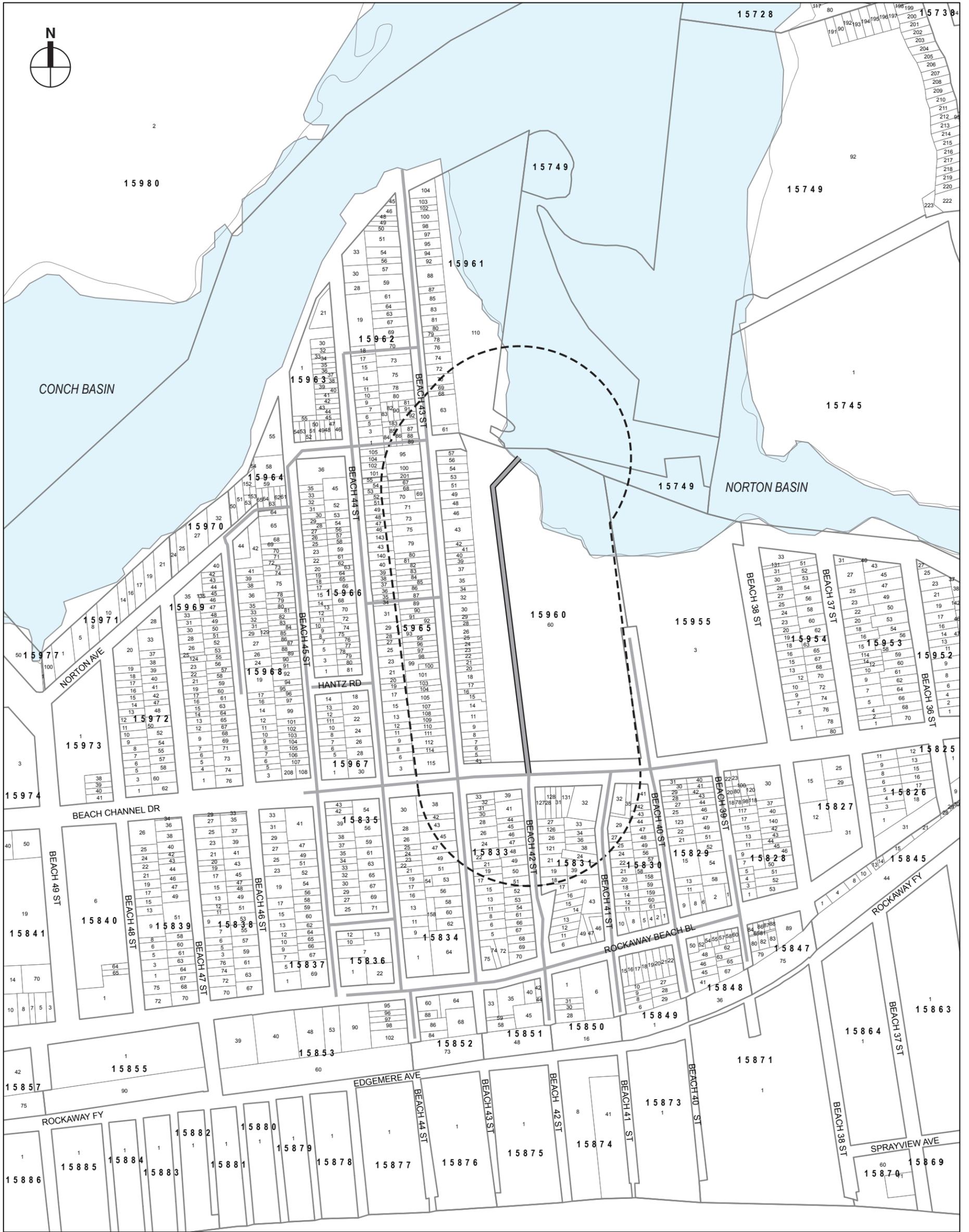
According to the 2001 *CEQR Technical Manual*, public health can potentially be impacted by poor air quality resulting from traffic or stationary sources, hazardous materials in soil or groundwater used for drinking, extensive impacts related to noise or odors, solid waste management practices that attract vermin and pest populations, and actions that exceed City, state, or federal standards.

As described above, the proposed action would not result in significant adverse impacts to traffic, air quality, or noise, nor would any applicable City, state, or federal standards be exceeded. The project would not involve solid waste management practices that would attract vermin or pest populations. In addition, any hazardous materials encountered during construction would be handled in accordance with all federal, state, and local regulations, and in accordance with the protection measures described throughout this environmental assessment.

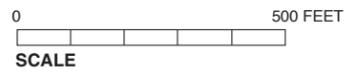
Therefore, the proposed action would not result in any potential significant adverse impacts to public health. *

(ULSD), and utilize the best available technology (BAT) for reducing the emission of pollutants, primarily particulate matter and secondarily nitrogen oxides. NYCDEP is charged with defining and periodically updating the definition of BAT.

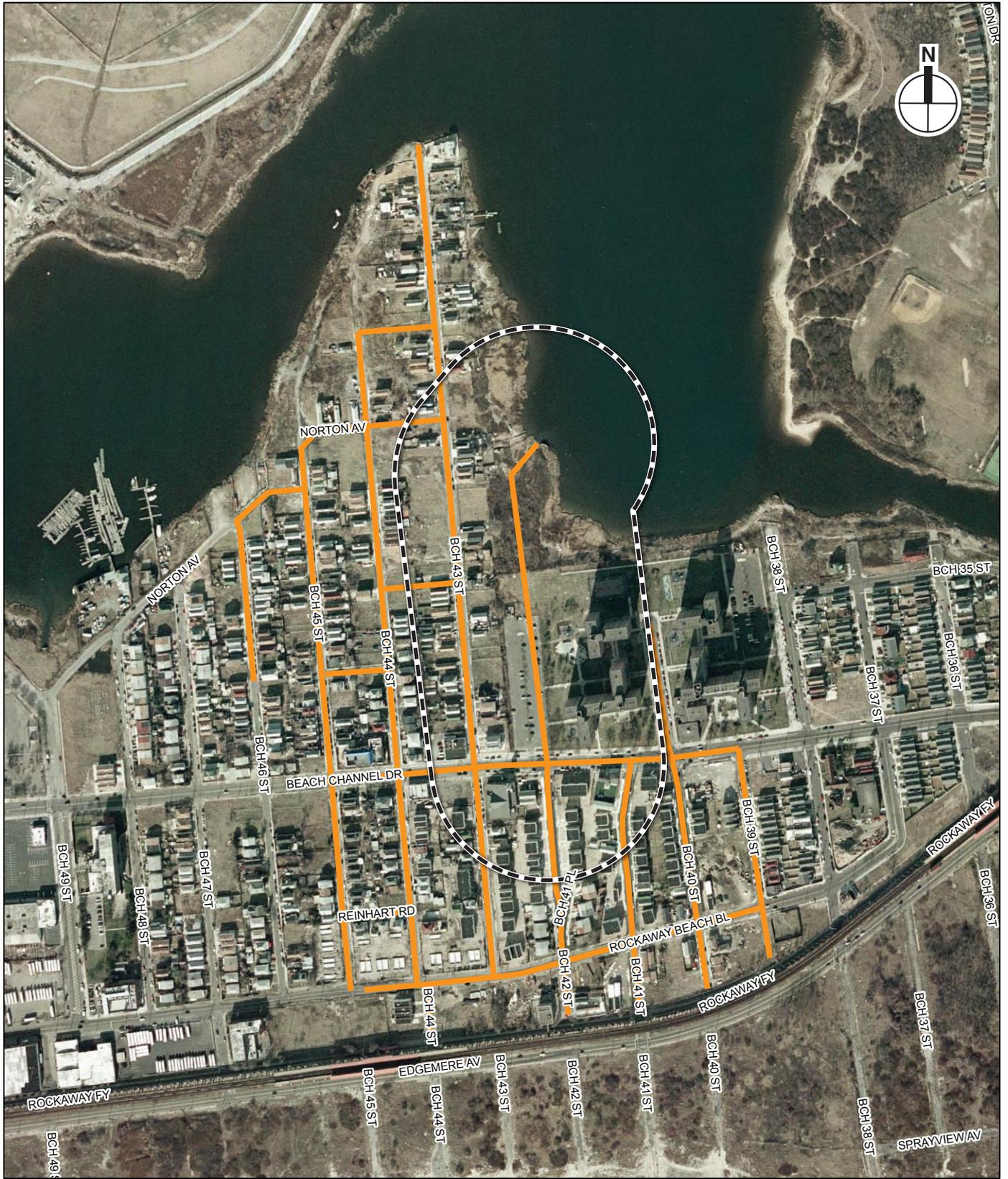
ATTACHMENT C
Graphics



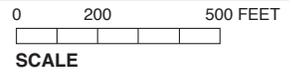
-  Project Area Drainage Plan (Storm and Sanitary Sewers)
-  Study Area Boundary (400-Foot Perimeter)
-  Block Number
-  Lot Number
-  Proposed Outfall



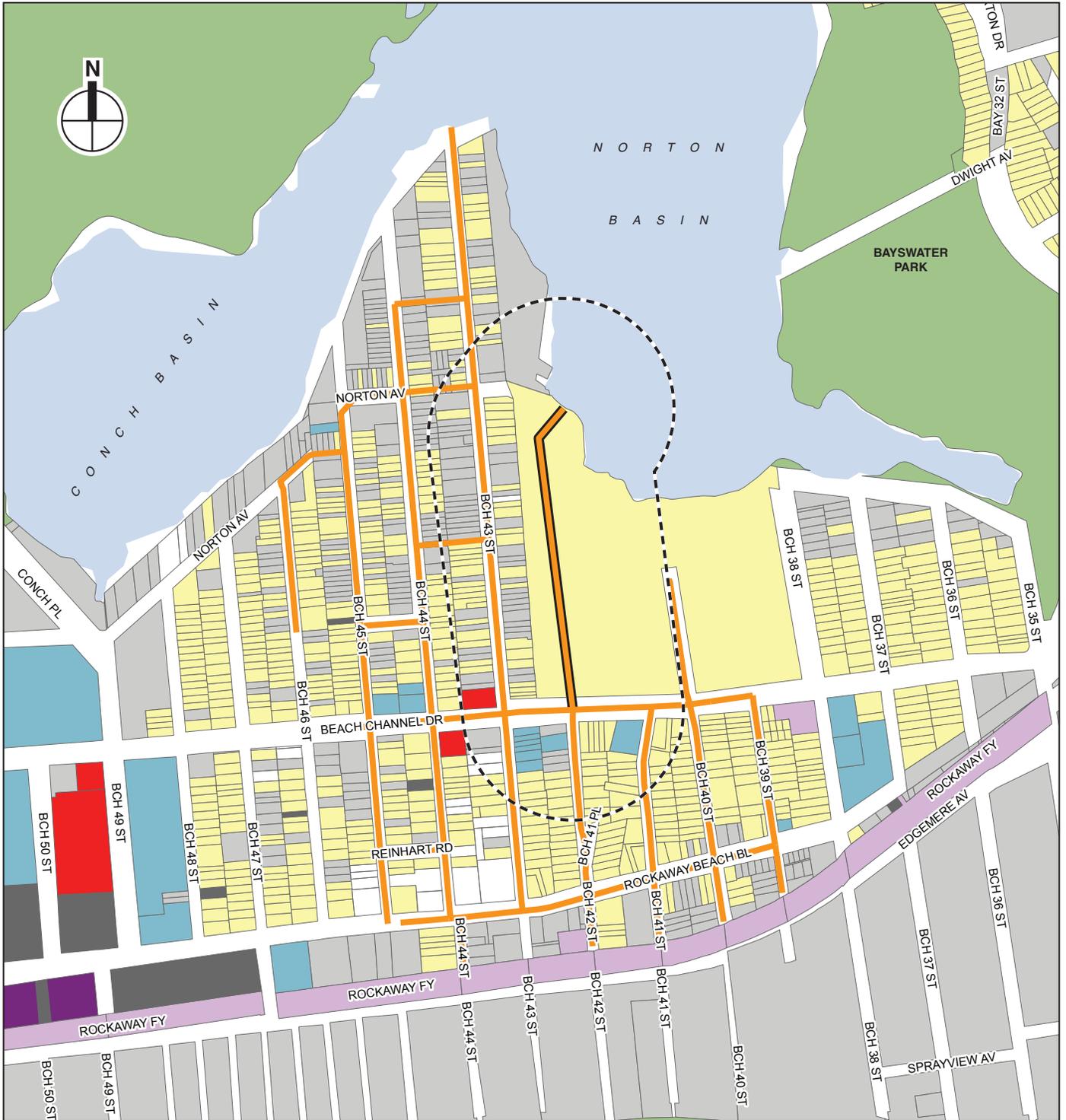
Project Area Tax Lots
Figure C-1a



-  Project Area Drainage Plan
(Storm and Sanitary Sewers)
-  Study Area Boundary
(400-Foot Perimeter)

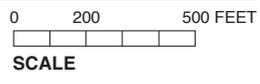


Aerial Photograph (2006)
Figure C-2

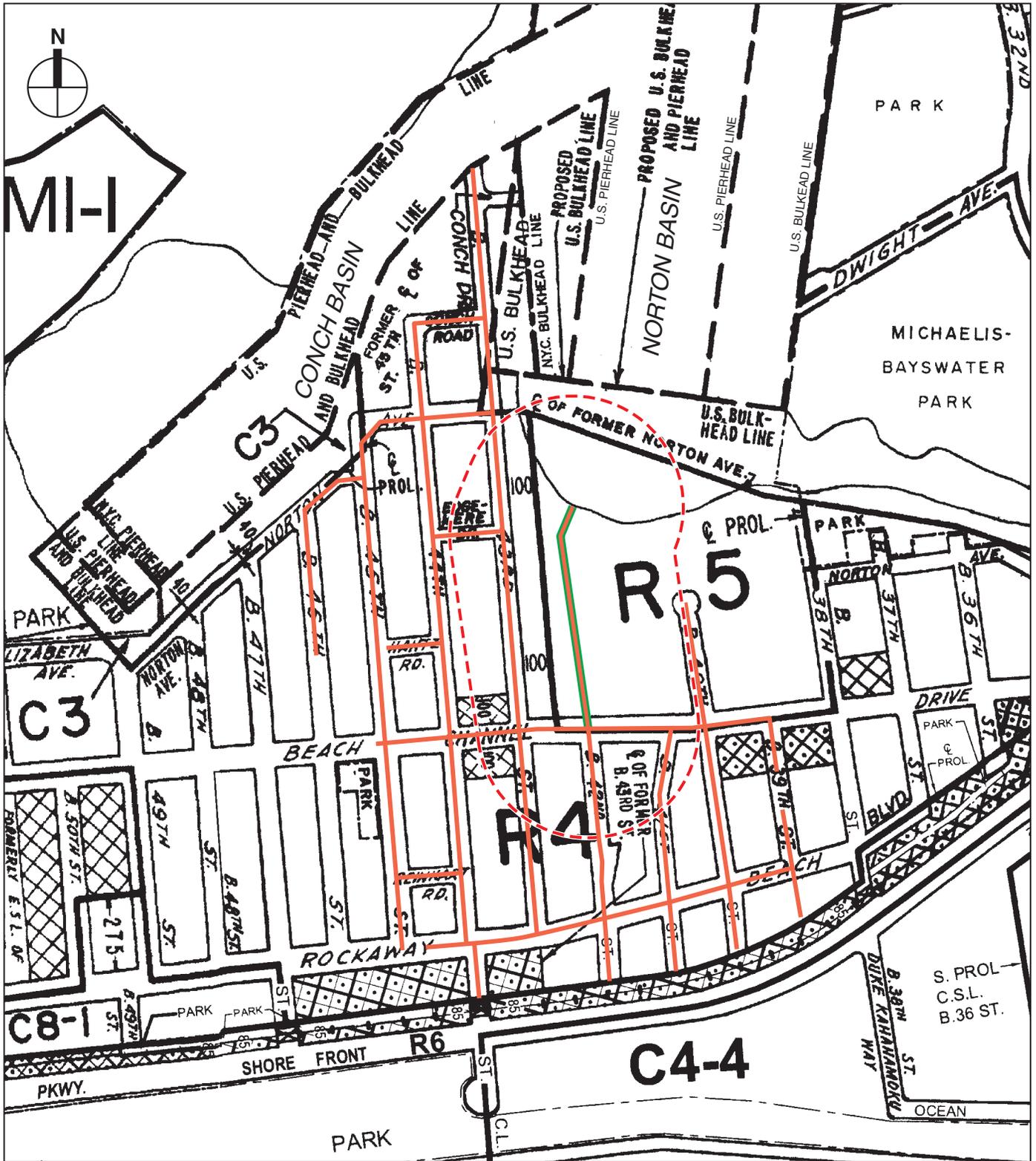


- Project Area Drainage Plan (Storm and Sanitary Sewers)
- Study Area Boundary (400-Foot Perimeter)
- Proposed Outfall
- Residential*
- Commercial

- Industrial and Manufacturing
- Transportation and Utility
- Public Facilities and Institutions
- Open Space and Outdoor Recreation
- Parking Facilities
- Vacant Land

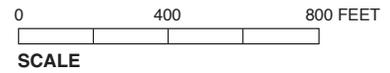


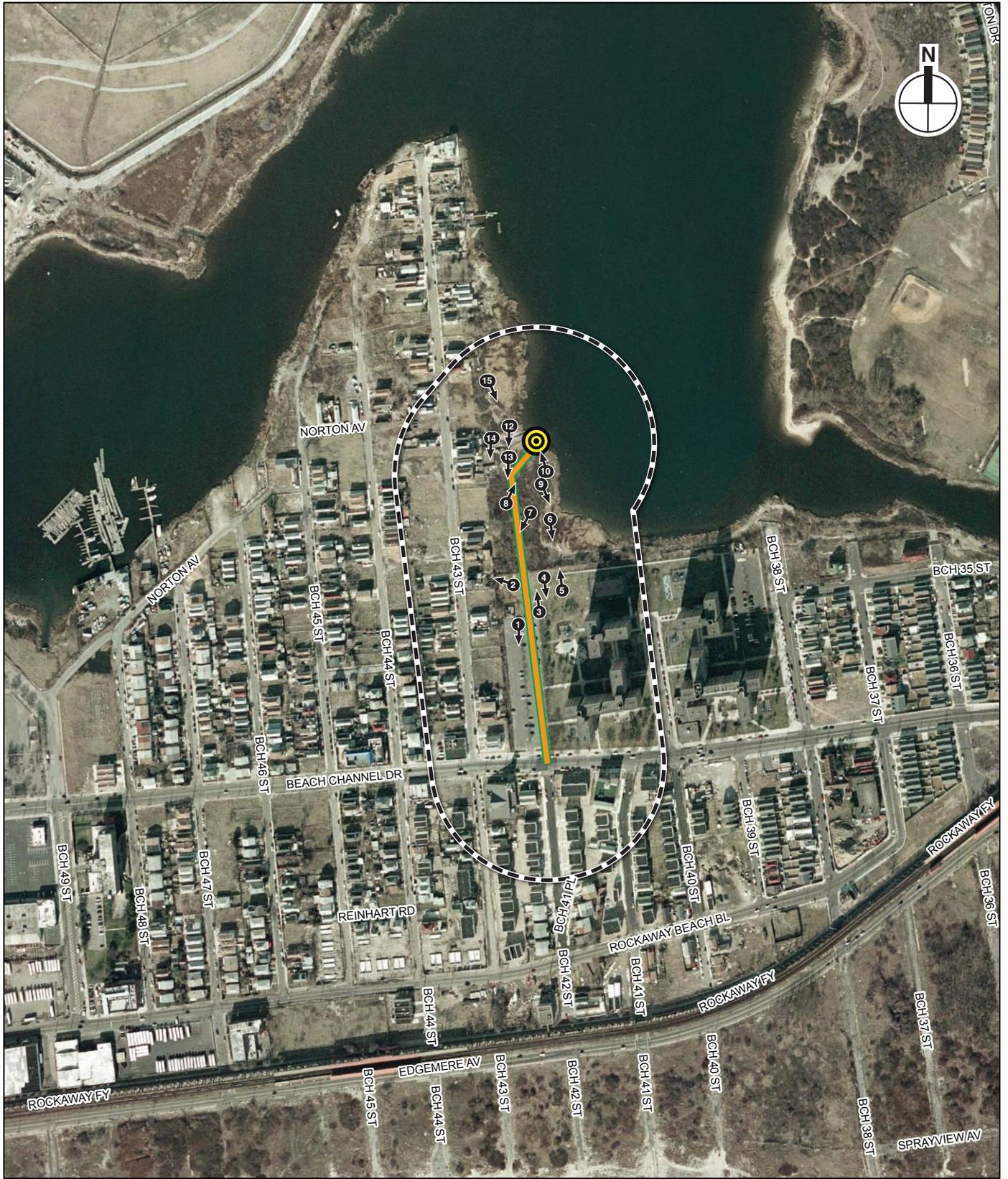
*See also Aerial Photograph Figure C-2 for site specific details



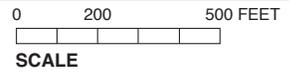
- Project Area Drainage Plan (Storm and Sanitary Sewers)
- - - Study Area Boundary (400-Foot Perimeter)
- Proposed Outfall
- Zoning District Boundary

- C1-2 Overlay
- C2-2 Overlay
- C2-4 Overlay





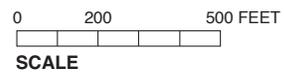
-  *Outfall*
-  *Proposed Storm Sewer*
-  *Photograph View Direction*



Natural Resources Photograph Key
Figure C-5



-  Project Area Drainage Plan (Storm and Sanitary Sewers)
-  Study Area Boundary (400-Foot Perimeter)
-  Proposed Outfall
-  E1UBL - Estuarine Subtidal Unconsolidated Bottom Subtidal
-  E2USM - Estuarine Intertidal Unconsolidated Shore Irregularly Exposed
-  E2EM5N - Estuarine Intertidal Emergent Mesohaline Regularly Flooded





- Project Area Drainage Plan (Storm and Sanitary Sewers)
- Proposed Outfall
- Study Area Boundary (400-Foot Perimeter)

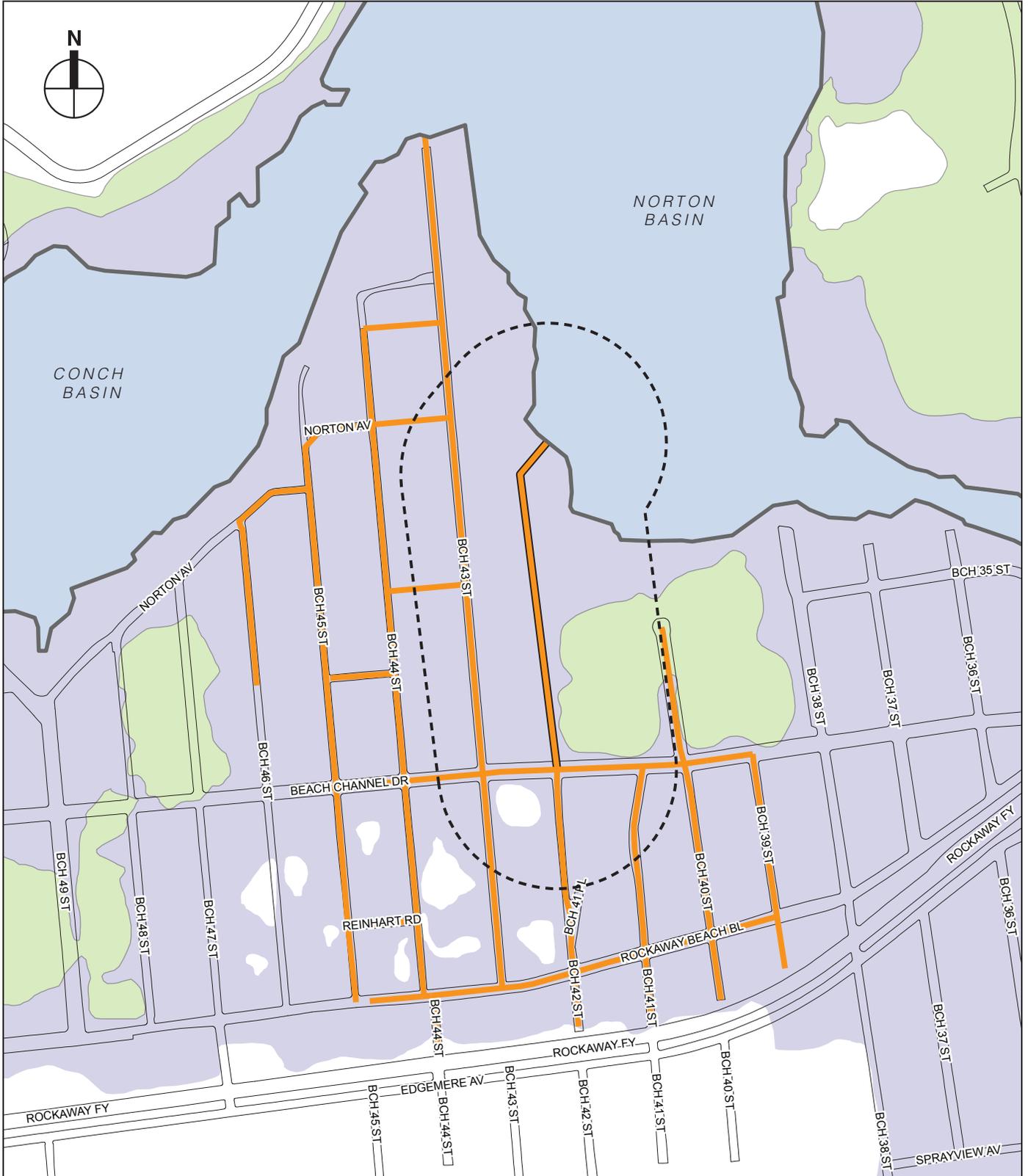
- Littoral Zone
- Coastal Shoals, Bars and Mudflats
- Intertidal Marsh



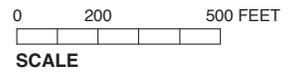
NYSDEC Mapped Wetlands
Figure C-7



Source: Digital Flood Insurance rate Map Database, FEMA, 2007



-  Project Area Drainage Plan (Storm and Sanitary Sewers)
-  Study Area Boundary (400-Foot Perimeter)
-  Proposed Outfall
-  1% Annual Chance of Flooding
-  2% Annual Chance of Flooding
-  Elevation Above Flood Plain



Floodplains
Figure C-8



View of west side of parking lot facing south toward Beach Channel Drive 1



View of flooded lawn area facing west toward Beach 43rd Street 2



View of lawn area facing north toward undeveloped area of mapped 42nd Street **3**



View from lawn area facing south toward mapped Beach 42nd Street and Beach Channel Drive **4**



View from lawn facing north toward intertidal marsh and upland area 5



View facing south from high marsh area 6



View facing west of upland area 7



View facing north toward existing outfall of upland area 8



View facing south of marsh and upland area 9



View from southeast facing northwest toward outfall 10



View of discharge from existing outfall 11



View from west facing east toward existing outfall and Bayswater State Park 12



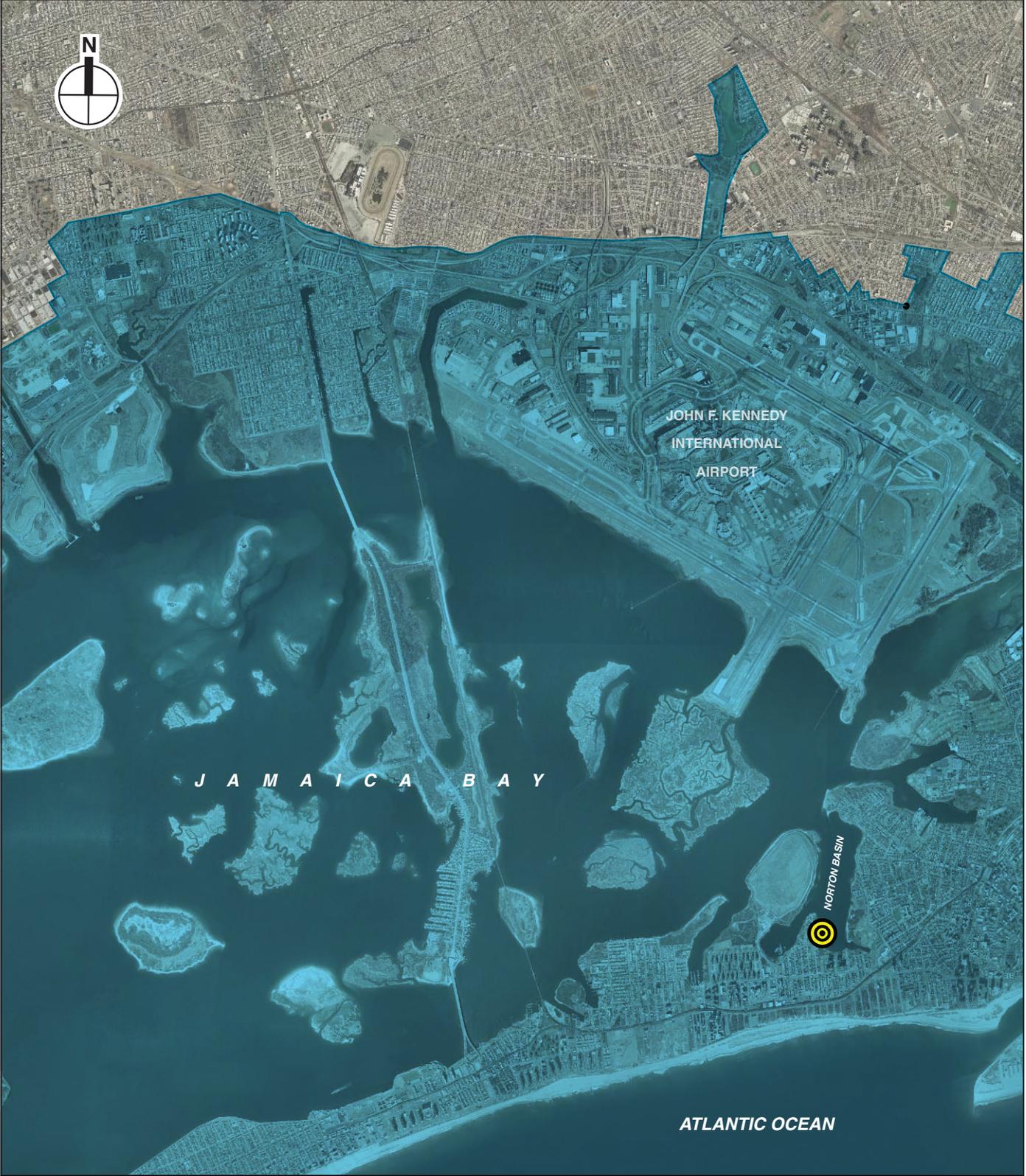
View facing south from wetland area west of existing outfall 13



View from area west of existing outfall toward back yard on Beach 43rd Street 14



View of upland outfall and upland area 15



Project Area



Coastal Zone



APPENDIX A
NYC Waterfront Revitalization Program
Consistency Assessment Form

For Internal Use Only:
Date Received: _____

WRP no. _____
DOS no. _____

**NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM
Consistency Assessment Form**

Proposed action subject to CEQR, ULURP, or other Local, State or Federal Agency Discretionary Actions that are situated within New York City's designated Coastal Zone Boundary must be reviewed and assessed for their consistency with the *New York City Waterfront Revitalization Program (WRP)*. The WRP was adopted as a 197-a Plan by the Council of the City of New York on October 13, 1999, and approved in coordination with local, state and Federal laws and regulations, including the State's Coastal Management Program (Executive Law, Article 42) and the Federal Coastal Zone Management Act of 1972 (P.L. 92-583). As a result of these approvals, state and federal discretionary actions within the city's coastal zone must be consistent to the maximum extent practicable with the WRP policies and the city must be given the opportunity to comment on all state and federal projects within its coastal zone.

This form is intended to assist an applicant in certifying that the proposed activity is consistent with the WRP. It should be completed when the local, state, or federal application is prepared. The completed form and accompanying information will be used by the New York State Department of State, other State Agency or the New York City Department of City Planning in its review of the applicant's certification of consistency.

A. APPLICANT

1. Name: **Jim Garin, NYCDEP**
-
- Address: **59-17 Junction Blvd. Flushing, NY 11373**
-
3. Telephone: **718-595-5501** Fax: _____
-
- E-mail Address: **garinj@dep.nyc.gov**
-
4. Project site owner: **City of New York**
-

B. PROPOSED ACTIVITY

1. Brief description of activity: **The proposed capital project involves the installation of a storm sewer system, including a new outfall into Norton Basin in the Edgemere section of Far Rockaway, Queens.**
-
2. Purpose of activity: **The proposed storm sewer system and outfall are necessary to improve drainage and to reduce street flooding in the area.**
-
3. Location of activity: **The proposed outfall would be located along the shores of Norton Basin, which is part of Jamaica Bay, at north of the northern terminus of Beach 42nd Street (Block 15961, Lot 110). In addition to the proposed outfall, the project would include the installation of a new storm sewer line within a 40-foot-wide easement on a lot to the south of the location of the proposed outfall and headwall (Block 15960, Lot 60).
Borough: **Queens****
-
- Street Address or Site Description: **See above.**
-

Proposed Activity Cont'd

- 4. If a federal or state permit or license was issued or is required for the proposed activity, identify the permit type(s), the authorizing agency and provide the application or permit number(s), if known: **New York State Department of Environmental Conservation (NYSDEC) 401 Water Quality Certification, NYSDEC Tidal Wetlands Permit, NYSDEC State Pollution Discharge Elimination System (SPDES) permit for a new outfall, SPDES General Permit GP-02-01 for activities during construction**

- 5. Is federal or state funding being used to finance the project? If so, please identify the funding source(s). **No**

- 6. Will the proposed project result in any large physical change to a site within the coastal area that will require the preparation of an environmental impact statement? Yes No
 If yes, identify Lead Agency: _____

- 7. Identify City discretionary actions, such as zoning amendment or adoption of an urban renewal plan, required for the proposed project.
The proposed capital project would be a discretionary action undertaken by the New York City Department of Design and Construction; an easement would also be required from the New York City Department of Parks and Recreation in order to construct the new outfall and a portion of the proposed storm sewer system.

C. COASTAL ASSESSMENT

The following questions represent, in a broad sense, the policy of the WRP. The number in the parentheses after each question indicated the policy or policies that are the focus of the question. A detailed explanation of the Waterfront Revitalization Program and its policies are contained in the publication the *New York City Waterfront Revitalization Program*.

Check either "Yes" or "No" for each of the following questions. Once the checklist is completed, assess how the proposed project affects the policy or standards indicated in "()" after each question with a Yes response. Explain how the action is consistent with the goals of the policy or standard.

Location Questions:

	Yes	No
1. Is the project site on the waterfront or at the water's edge?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Does the proposed project require a waterfront site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land underwater, or coastal waters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Policy Questions:

The following questions represent, in a broad sense, the policies of the WRP. Numbers in parentheses after each questions indicate the policy or policies addressed by the question. The new Waterfront Revitalization Program offers detailed explanations of the policies, including criteria for consistency determinations.

Check either "Yes" or "No" for each of the following questions. For all "yes" responses, provide an attachment assessing the effects of the proposed activity on the relevant policies or standards. Explain how the action would be consistent with the goals of those policies and standards.

	Yes	No
4. Will the proposed project result in revitalization or redevelopment of a deteriorated or under- used waterfront site? (1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Is the project site appropriate for residential or commercial redevelopment? (1.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Will the action result in a change in scale or character of a neighborhood? (1.2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Will the proposed activity require provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (1.3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Policy Questions cont'd:

	Yes	No
8. Is the action located in one of the designated Significant Maritime and Industrial Areas (SMIA): South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, or Staten Island? (2)	_____	✓ _____
9. Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)	_____	✓ _____
10. Would the action involve the siting or construction of a facility essential to the generation or transmission of energy, or a natural gas facility, or would it develop new energy resources? (2.1)	_____	✓ _____
11. Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)	_____	✓ _____
12. Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)	✓ _____	_____
13. Would the action involve mining, dredging, or dredge disposal, or placement of dredged or fill materials in coastal waters? (2.3, 3.1, 4, 5.3, 6.3)	_____	✓ _____
14. Would the action be located in a commercial or recreational boating center, such as City Island, Sheepshead Bay or Great Kills or an area devoted to water-dependent transportation? (3)	_____	✓ _____
15. Would the proposed project have an adverse effect upon the land or water uses within a commercial or recreation boating center or water-dependent transportation center? (3.1)	_____	✓ _____
16. Would the proposed project create any conflicts between commercial and recreational boating? (3.2)	_____	✓ _____
17. Does the proposed project involve any boating activity that would have an impact on the aquatic environment or surrounding land and water uses? (3.3)	_____	✓ _____
18. Is the action located in one of the designated Special Natural Waterfront Areas (SNWA): Long Island Sound-East River, Jamaica Bay, or Northwest Staten Island? (4 and 9.2)	✓ _____	_____
19. Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitats? (4.1)	✓ _____	_____
20. Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1 and 9.2)	_____	✓ _____
21. Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)	✓ _____	_____
22. Does the project site contain a rare ecological community or would the proposed project affect a vulnerable plant, fish, or wildlife species? (4.3)	_____	✓ _____
23. Would the action have any effects on commercial or recreational use of fish resources? (4.4)	_____	✓ _____
24. Would the proposed project in any way affect the water quality classification of nearby waters or be unable to be consistent with that classification? (5)	_____	✓ _____
25. Would the action result in any direct or indirect discharges, including toxins, hazardous substances, or other pollutants, effluent, or waste, into any waterbody? (5.1)	✓ _____	_____
26. Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)	✓ _____	_____
27. Will any activity associated with the project generate nonpoint source pollution? (5.2)	✓ _____	_____

Policy Questions cont'd:

	Yes	No
28. Would the action cause violations of the National or State air quality standards? (5.2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
29. Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
30. Will the project involve the excavation or placing of fill in or near navigable waters, marshes, estuaries, tidal marshes or other wetlands? (5.3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
31. Would the proposed action have any effects on surface or ground water supplies? (5.4)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
32. Would the action result in any activities within a Federally designated flood hazard area or State designated erosion hazards area? (6)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
33. Would the action result in any construction activities that would lead to erosion? (6)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
34. Would the action involve construction or reconstruction of flood or erosion control structure? (6.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
35. Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
36. Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
37. Would the proposed project affect a non-renewable source of sand? (6.3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
38. Would the action result in shipping, handling, or storing of solid wastes; hazardous materials, or other pollutants? (7)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
39. Would the action affect any sites that have been used as landfills? (7.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
40. Would the action result in development of a site that may contain contamination or has a history of underground fuel tanks, oil spills, or other form or petroleum product use or storage? (7.2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
41. Will the proposed activity result in any transport, storage, treatment, or disposal of solid wastes or hazardous materials, or the siting of a solid or hazardous waste facility? (7.3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
42. Would the action result in a reduction of existing or required access to or along coastal waters, public access areas, or public parks or open spaces? (8)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
43. Will the proposed project affect or be located in, on, or adjacent to any federal, state, or city park or other land in public ownership protected for open space preservation? (8)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
44. Would the action result in the provision of open space without the provision for its maintenance? (8.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
45. Would the action result in any development along the shoreline but NOT include new water enhanced or water dependent recreational space? (8.2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
46. Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Policy Questions cont'd:

	Yes	No
47. Does the proposed project involve publically owned or acquired land that could accommodate waterfront open space or recreation? (8.4)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
48. Does the project site involve lands or waters held in public trust by the state or city? (8.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
49. Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
50. Does the site currently include elements that degrade the area's scenic quality or block views to the water? (9.1) The area where the proposed outfall will be located is blocked by a fence and other natural resources.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
51. Would the proposed action have a significant adverse impact on historic, archeological, or cultural resources? (10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
52. Will the proposed activity affect or be located in, on, or adjacent to an historic resource listed on the National or State Register of Historic Places, or designated as a landmark by the City of New York? (10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

D. CERTIFICATION

The applicant must certify that the proposed activity is consistent with New York City's Waterfront Revitalization Program, pursuant to the New York State Coastal Management Program. If this certification cannot be made, the proposed activity shall not be undertaken. If the certification can be made, complete this section.

"The proposed activity complies with New York State's Coastal Management Program as expressed in New York City's approved Local Waterfront Revitalization Program, pursuant to New York State's Coastal Management Program, and will be conducted in a manner consistent with such program."

Applicant/Agent Name: Jim Garin, NYCDEP

Address: 59-17 Junction Blvd. Flushing, NY 11373

Telephone

718-595-5501

Applicant/Agent Signature:

Jim Garin, P.E.

Date:

5/14/09

APPENDIX B
Wetland Restoration Program

APPENDIX B

WETLAND RESTORATION PROGRAM

BEACH 42ND STREET OUTFALL PROJECT

All areas disturbed during the construction of the Beach 42nd Street sewer and outfall would be restored with in-kind restoration of habitat(s) disturbed during construction. All disturbed areas will be restored to pre-construction grades. Low marsh habitat will be replanted with salt-marsh cord grass (*Spartina alterniflora*). High marsh habitat will be replanted with species such as salt-meadow cord grass (*S. patens*), sea lavender (*Limonium carolinianum*), and spikegrass (*Distichlis spicata*). Transition areas between tidal wetland and upland will be replanted with species typical of a salt shrub community such as groundsel tree (*Baccharis halimifolia*), pasture rose (*Rosa carolina*), salt meadow cord grass (*S. patens*), black grass (*Juncus gerardii*), and switch grass (*Panicum virgatum*). Upland habitat will be replanted with species typical of a maritime shrubland such as eastern red cedar (*Juniperus virginiana*), beach plum (*Prunus maritima*), and shining sumac (*Rhus copallinum*).

Additional restoration of impacts to wetland habitats with the Beach 42nd Street storm sewer and outfall would be provided with the Chandler Street Outfall Project, located approximately 1.3 miles to the northeast of Beach 42nd Street at the intersection of Chandler Street and Battery Road, which will take place under a separate contract and is described in detail below. The tidal wetland restoration/creation proposed for the Chandler Street project will satisfy the mitigation goals of 0.02 acres for the Beach 42nd Street Outfall Project impact as well as provide 2:1 wetland restoration for the other NYCDDC outfall projects. While the construction of the Chandler Street outfall would not happen concurrently with the Beach 42nd Street outfall, it is a necessary NYCDDC/NYCDEP project and will occur in the near future.

CHANDLER STREET OUTFALL PROJECT

As part of the Chandler Street Outfall Construction Project, the NYCDEP/NYCDDC will restore approximately 0.44 acres of high salt marsh tidal wetland habitat and create an additional 0.21 acres of high salt marsh habitat located in the Mott Basin section of Jamaica Bay. The proposed restoration also includes the creation of 0.16 acres of maritime shrubland habitat along the landward perimeter of the project area. This restoration will create a total of XX acres of restoration as compensatory restoration for approximately six NYCDEP/NYCDDC projects.

The work area is bounded by Horton Avenue to the north, Pinson Street to the east, Battery Road to the south, and McBride Street to the west. The creation and restoration of high marsh tidal wetland habitat in this area would be supported by tidal inputs from Mott Basin. Restoration work at this site includes grading 0.44 acres of existing secondary high marsh that is dominated by *Phragmites australis* to elevations that would support high marsh vegetation such as salt-meadow cord grass (*Spartina patens*), sea lavender (*Limonium carolinianum*), and spikegrass (*Distichlis spicata*). Existing upland areas, also dominated by *Phragmites australis*, would be graded to elevations that would support 0.21 acres of high marsh vegetation. The perimeter of the project area would be graded to support 0.16 acres of maritime shrubland habitat that would

be planted with species that are characteristic of this type of upland environment such as eastern red cedar (*Juniperus virginiana*), beach plum (*Prunus maritime*), and shining sumac (*Rhus copallinum*). See below for species lists for the proposed high salt marsh and maritime shrubland habitats.

The Chandler Street site presents ample opportunity for a larger restoration and is also the site of one of several NYCDEP/NYCDDC outfall projects to be built in the coming years. Because all of these projects have or will permanently disturb NYSDEC designated tidal wetlands, the Chandler Street restoration and creation project is designed to provide mitigation for the cumulative impacts to tidal wetlands that will occur from these NYCDDC projects. Future outfall construction and restoration activities at the Chandler Street site will be subject to a separate environmental review.

SPECIES LISTS FOR BEACH 42ND STREET OUTFALL RESTORATION

Appendix Table B-1 - Species List for Low Salt Marsh Habitat

Herbaceous

Common Name	Scientific Name
Salt-marsh cord grass	<i>Spartina alterniflora</i>

Appendix Table B-2 - Species List for High Salt Marsh Habitat

Herbaceous

Common Name	Scientific Name
Salt-meadow cord grass	<i>Spartina patens</i>
Spikegrass	<i>Distichlis spicata</i>
Sea Lavender	<i>Limonium carolinianum</i>
Slender Salt Marsh Aster	<i>Aster tenuifolius</i>

Appendix Table B-3 - Species List for Salt Shrub Habitat

Shrubs

Common Name	Scientific Name
Groundsel-tree	<i>Baccharis halimifolia</i>
Pasture Rose	<i>Rosa carolina</i>

Herbaceous

Common Name	Scientific Name
Salt-meadow Grass	<i>Spartina patens</i>
Black-grass	<i>Juncus gerardii</i>
Switchgrass	<i>Panicum virgatum</i>

Appendix Table B-4 - Species List for Maritime Shrubland Habitat

Trees*

Common Name	Scientific Name
Eastern Red Cedar	<i>Juniperus virginiana</i>
Sassafras	<i>Sassafras albidum</i>

* Less than 25% coverage

Shrubs

Common Name	Scientific Name
Shining Sumac	<i>Rhus copallinum</i>
Beach Plum	<i>Prunus maritime</i>
Wild Rose	<i>Rosa virginiana</i>
American Holly	<i>Ilex opaca</i>

Herbaceous/Vines

Common Name	Scientific Name
Flat-topped Goldenrod	<i>Euthamia graminifolia</i>
Wild Indigo	<i>Baptisia tinctoria</i>
White-topped Aster	<i>Aster paternus</i>
Little Bluestem	<i>Schizachyrium scoparium</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>

Based on species listed in Edinger, G. 2002. *Ecological Communities of New York State*, 2nd Ed. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

**SPECIES LISTS FOR PROPOSED TIDAL WETLAND AND UPLAND RESTORATION:
CHANDLER STREET RESTORATION PROJECT (MOTT BASIN, JAMIACA BAY)**

Appendix Table B-5 - Species List for High Salt Marsh

Herbaceous

Common Name	Scientific Name
Salt-meadow cord grass	<i>Spartina patens</i>
Spikegrass	<i>Distichlis spicata</i>
Sea Lavender	<i>Limonium carolinianum</i>
Slender Salt Marsh Aster	<i>Aster tenuifolius</i>

Appendix Table B-6 - Species List for Maritime Shrubland

Trees*

Common Name	Scientific Name
Eastern Red Cedar	<i>Juniperus virginiana</i>
Sassafras	<i>Sassafras albidum</i>

* Less than 25% coverage

Shrubs

Common Name	Scientific Name
Shining Sumac	<i>Rhus copallinum</i>
Beach Plum	<i>Prunus maritime</i>
Wild Rose	<i>Rosa virginiana</i>
American Holly	<i>Ilex opaca</i>

Herbaceous/Vines

Common Name	Scientific Name
Flat-topped Goldenrod	<i>Euthamia graminifolia</i>
Wild Indigo	<i>Baptisia tinctoria</i>
White-topped Aster	<i>Aster paternus</i>
Little Bluestem	<i>Schizachyrium scoparium</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>

Based on species listed in Edinger, G. 2002. *Ecological Communities of New York State*, 2nd Ed. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

APPENDIX C
Chandler Street Wetland Restoration Project



Proposed Chandler Street Wetland
Appendix Figure C-1