



New York City
Department of Environmental Protection

**PROPOSED ENVIRONMENTAL DREDGING
OF
GOWANUS CANAL**

**PER
ADMINISTRATIVE ORDER OF CONSENT
(CO2-20000107-8)**

ENVIRONMENTAL ASSESSMENT STATEMENT

February 2012

TABLE OF CONTENTS

GOWANUS CANAL ENVIRONMENTAL ASSESSMENT STATEMENT FULL FORM

ATTACHMENT A EAS SCREENING ANALYSIS

A. PROJECT DESCRIPTION.....1
INTRODUCTION1
PURPOSE AND NEED.....2
EXISTING CONDITIONS.....3
PROPOSED PROJECT5
ELEMENTS OF PROPOSED PROJECT6
 Mechanical Dredging.....6
 Hydraulic Dredging7
 Subaqueous Sand Cap.....7
 Scour Protection (Apron).....7
PROJECT SCHEDULE.....7
REQUIRED PERMITS AND APPROVALS8
B. LAND USE, ZONING AND PUBLIC POLICY9
LAND USE.....9
ZONING10
PUBLIC POLICY.....11
C. SOCIOECONOMIC CONDITIONS.....12
D. COMMUNITY FACILITIES AND SERVICES.....12
E. OPEN SPACE.....13
F. SHADOWS.....13
G. HISTORIC AND CULTURAL RESOURCES14
H. URBAN DESIGN AND VISUAL RESOURCES15
I. NATURAL RESOURCES15
J. HAZARDOUS MATERIALS17
 Comparison to NYSDEC Values.....19
 Comparison to Superfund Cleanup Values.....25
 Conclusion26
K. WATER AND SEWER INFRASTRUCTURE.....28
L. SOLID WASTE AND SANITATION SERVICES28
M. ENERGY28
N. TRANSPORTATION.....28
O. AIR QUALITY29
P. GREENHOUSE GAS EMISSIONS.....29
Q. NOISE.....29
R. PUBLIC HEALTH30
S. NEIGHBORHOOD CHARACTER30

TABLE OF CONTENTS
(Continued)

T.	CONSTRUCTION IMPACTS	30
	Mechanical Dredging.....	31
	Hydraulic Dredging	31
	Subaqueous Sand Cap.....	32
	Scour Protection (Apron).....	33
	NATURAL RESOURCES	33
	HAZARDOUS MATERIALS	35
	ENERGY	35
	TRANSPORTATION.....	36
	AIR QUALITY	37
	Mobile and Stationary Sources	37
	Odors.....	40
	NOISE.....	41
	Conclusion	41
	REFERENCES	42

ATTACHMENT B FIGURES AND SITE PHOTOGRAPHS

ATTACHMENT C WATERFRONT REVITALIZATION PROGRAM

ATTACHMENT D ESSENTIAL FISH HABITAT ASSESSMENT



City Environmental Quality Review
ENVIRONMENTAL ASSESSMENT STATEMENT FULL FORM
Please fill out, print and submit to the appropriate agency (see instructions)

PART I: GENERAL INFORMATION

PROJECT NAME Environmental Dredging of Gowanus Canal

1. Reference Numbers

CEQR REFERENCE NUMBER (To Be Assigned by Lead Agency) 11DEP033K	BSA REFERENCE NUMBER (If Applicable)
ULURP REFERENCE NUMBER (If Applicable)	OTHER REFERENCE NUMBER(S) (If Applicable) (e.g. Legislative Intro, CAPA, etc)

2a. Lead Agency Information

NAME OF LEAD AGENCY
NYC Department of Environmental Protection

NAME OF LEAD AGENCY CONTACT PERSON
Ms. Angela Licata, Deputy Commissioner

ADDRESS 59-17 Junction Blvd, 11th Floor

CITY Flushing STATE NY ZIP 11371

TELEPHONE (718) 595-4352 FAX (718) 595-4479

EMAIL ADDRESS AngelaL@dep.nyc.gov

2b. Applicant Information

NAME OF APPLICANT
NYC Department of Environmental Protection

NAME OF APPLICANT'S REPRESENTATIVE OR CONTACT PERSON
Ms. Kathryn Mallon, Deputy Commissioner

ADDRESS 96-05 Horace Harding Expressway, 4th Floor Low Rise

CITY Corona STATE NY ZIP 11373

TELEPHONE (718) 595-6183 FAX (718) 595-5999

EMAIL ADDRESS KMallon@dep.nyc.gov

3. Action Classification and Type

SEQRA Classification

UNLISTED TYPE I; SPECIFY CATEGORY (see 6 NYCRR 617.4 and NYC Executive Order 91 of 1977, as amended):

Action Type (refer to Chapter 2, "Establishing the Analysis Framework" for guidance)

LOCALIZED ACTION, SITE SPECIFIC LOCALIZED ACTION, SMALL AREA GENERIC ACTION

4. Project Description:

The NYC Department of Environmental Protection (DEP) proposes to dredge and remove approximately 9,300 cubic yards of material and place a sand cap (7,000 cubic yards) at the head end of the Gowanus Canal, a tributary to the Gowanus Bay and Upper New York Bay, in Brooklyn, New York. The removal of the dredged materials is required by a Consent Order with the New York State Department of Environmental Conservation (NYSDEC) that requires the DEP to dredge the Canal to remove sediments deposited by combined sewer overflows (CSOs). See Attachment A for complete project description.

4a. Project Location: Single Site (for a project at a single site, complete all the information below)

ADDRESS Gowanus Canal, north of Union Street to the head end	NEIGHBORHOOD NAME Gowanus
TAX BLOCK AND LOT Not Applicable	BOROUGH Brooklyn COMMUNITY DISTRICT 6
DESCRIPTION OF PROPERTY BY BOUNDING OR CROSS STREETS Within the Gowanus Canal, north of Union Street, east of Bond Street, south of Butler Street and west of Nevins Street (See Figure B-2)	
EXISTING ZONING DISTRICT, INCLUDING SPECIAL ZONING DISTRICT DESIGNATION IF ANY: M2-1	ZONING SECTIONAL MAP NO: 16c

4b. Project Location: Multiple Sites (Provide a description of the size of the project area in both City Blocks and Lots. If the project 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 of the project, including bounding streets, etc.)

Not Applicable.

5. REQUIRED ACTIONS OR APPROVALS (check all that apply)

- City Planning Commission:** YES NO
- CITY MAP AMENDMENT
 - ZONING MAP AMENDMENT
 - ZONING TEXT AMENDMENT
 - UNIFORM LAND USE REVIEW PROCEDURE (ULURP)
 - CONCESSION
 - UDAAP
 - REVOCABLE CONSENT
 - ZONING CERTIFICATION
 - ZONING AUTHORIZATION
 - HOUSING PLAN & PROJECT
 - SITE SELECTION — PUBLIC FACILITY
 - FRANCHISE
 - DISPOSITION — REAL PROPERTY

Board of Standards and Appeals: YES NO

- SPECIAL PERMIT
- EXPIRATION DATE MONTH DAY YEAR
- VARIANCE (USE)
- VARIANCE (BULK)

ZONING SPECIAL PERMIT, SPECIFY TYPE:

- MODIFICATION OF
- RENEWAL OF
- OTHER

SPECIFY AFFECTED SECTION(S) OF THE ZONING RESOLUTION

Department of Environmental Protection: YES NO

Other City Approvals: YES NO

<input type="checkbox"/> LEGISLATION	<input type="checkbox"/> RULEMAKING
<input checked="" type="checkbox"/> FUNDING OF CONSTRUCTION, SPECIFY NYC Dept. of Environ. Protection	<input type="checkbox"/> CONSTRUCTION OF PUBLIC FACILITIES
<input type="checkbox"/> POLICY OR PLAN, SPECIFY	<input type="checkbox"/> FUNDING OF PROGRAMS, SPECIFY
<input type="checkbox"/> LANDMARKS PRESERVATION COMMISSION APPROVAL (not subject to CEQR)	<input checked="" type="checkbox"/> PERMITS, SPECIFY: See Table A-2 of Attachment A
<input type="checkbox"/> 384(b)(4) APPROVAL	<input type="checkbox"/> OTHER, EXPLAIN
<input type="checkbox"/> PERMITS FROM DOT'S OFFICE OF CONSTRUCTION MITIGATION AND COORDINATION (OCMC) (not subject to CEQR)	

6. State or Federal Actions/Approvals/Funding: YES NO IF "YES," IDENTIFY

See Table A-2 of Attachment A.

7. Site Description: Except where otherwise indicated, provide the following information with regard to the directly affected area. The directly affected area consists of the project site and the area subject to any change in regulatory controls.

GRAPHICS The following graphics must be attached and each box must be checked off before the EAS is complete. Each map must clearly depict the boundaries of the directly affected area or areas and indicate a 400-foot radius drawn from the outer boundaries of the project site. Maps may not exceed 11x17 inches in size and must be folded to 8.5 x 11 inches for submission.

Site location map Zoning map Photographs of the project site taken within 6 months of EAS submission and keyed to the site location map

Sanborn or other land use map Tax map For large areas or multiple sites, a GIS shape file that defines the project sites

PHYSICAL SETTING (both developed and undeveloped areas)

Total directly affected area (sq. ft.): Not Applicable.	Type of waterbody and surface area (sq. ft.): Saline tributary to Upper New York Bay	Roads, building and other paved surfaces (sq. ft.): Not Applicable
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Other, describe (sq. ft.): 82,500 square feet of Gowanus Canal to be dredged.

8. Physical Dimensions and Scale of Project (if the project affects multiple sites, provide the total development below facilitated by the action)

Size of project to be developed: **Not Applicable.** (gross sq. ft.)

Does the proposed project involve changes in zoning on one or more sites? YES NO

If 'Yes,' identify the total square feet owned or controlled by the applicant: N/A Total square feet of non-applicant owned development: N/A

Does the proposed project involve in-ground excavation or subsurface disturbance, including but not limited to foundation work, pilings, utility lines, or grading? YES NO

If 'Yes,' indicate the estimated area and volume dimensions of subsurface disturbance (if known):

Area: 82,500 square feet (to be dredged)	sq. ft. (width x length)	Volume: 251,100	cubic feet (width x length x depth)
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Does the proposed project increase the population of residents and/or on-site workers? YES NO Number of additional residents? 0 Number of additional workers? 0

Provide a brief explanation of how these numbers were determined:
Following completion of the proposed project, there will be no additional permanent residents or workers.

Does the project create new open space? YES NO If Yes: (sq. ft)

Using Table 14-1, estimate the project's projected operational solid waste generation, if applicable: Not Applicable (pounds per week)

Using energy modeling or Table 15-1, estimate the project's projected energy use: Not Applicable (annual BTUs)

9. Analysis Year CEQR Technical Manual Chapter 2

ANTICIPATED BUILD YEAR (DATE THE PROJECT WOULD BE COMPLETED AND OPERATIONAL): See Att. A ANTICIPATED PERIOD OF CONSTRUCTION IN MONTHS: TBD

WOULD THE PROJECT BE IMPLEMENTED IN A SINGLE PHASE? YES NO IF MULTIPLE PHASES, HOW MANY PHASES:

BRIEFLY DESCRIBE PHASES AND CONSTRUCTION SCHEDULE: See Project Schedule of Attachment A

10. What is the Predominant Land Use in Vicinity of Project? (Check all that apply)

RESIDENTIAL MANUFACTURING COMMERCIAL PARK/FOREST/OPEN SPACE OTHER, Describe: See Figure A-2

DESCRIPTION OF EXISTING AND PROPOSED CONDITIONS

The information requested in this table applies to the directly affected area. The directly affected area consists of the project site and the area subject to any change in regulatory control. The increment is the difference between the No-Action and the With-Action conditions.

	EXISTING CONDITION	NO-ACTION CONDITION	WITH-ACTION CONDITION	INCREMENT
Land Use				
Residential	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following				
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	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following:				
Describe type (retail, office, other)				
No. of bldgs				
GFA of each bldg (sq.ft.)				
Manufacturing/Industrial	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following:				
Type of use				
No. of bldgs				
GFA of each bldg (sq.ft.)				
No. of stories of each bldg				
Height of each bldg				
Open storage area (sq.ft.)				
If any unenclosed activities, specify				
Community Facility	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following:				
Type				
No. of bldgs				
GFA of each bldg (sq.ft.)				
No. of stories of each bldg				
Height of each bldg				
Vacant Land	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, describe:				
Publicly Accessible Open Space	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify type (mapped City, State, or Federal Parkland, wetland—mapped or otherwise known, other)				
Other Land Use	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, describe				
Parking				
Garages	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following:				
No. of public spaces				
No. of accessory spaces				
Operating hours				
Attended or non-attended				

	EXISTING CONDITION	NO-ACTION CONDITION	WITH-ACTION CONDITION	INCREMENT
Parking (continued)				
Lots	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following:				
No. of public spaces				
No. of accessory spaces				
Operating hours				
Other (includes street parking)	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, describe				
Storage Tanks				
Storage Tanks	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If yes, specify the following:				
Gas/Service stations	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Oil storage facility	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	
Other, identify:	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	YES <input type="checkbox"/> NO <input type="checkbox"/>	
If yes to any of the above, describe:				
Number of tanks				
Size of tanks				
Location of tanks				
Depth of tanks				
Most recent FDNY inspection date				
Population				
Residents	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If any, specify number				
Briefly explain how the number of residents was calculated:				
Businesses	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If any, specify the following:				
No. and type				
No. and type of workers by business				
No. and type of non-residents who are not workers				
Briefly explain how the number of businesses was calculated:				
Zoning*				
Zoning classification	M2-1	No Change	No Change	
Maximum amount of floor area that can be developed (in terms of bulk)	2.0 / Required Parking	No Change	No Change	
Predominant land use and zoning classifications within a 0.25 mile radius of proposed project	Manufacturing/Residential	No Change	No Change	
Attach any additional information as may be needed to describe the project.				
If your project involves changes in regulatory controls that affect one or more sites not associated with a specific development, it is generally appropriate to include the total development projections in the above table and attach separate tables outlining the reasonable development scenarios for each site.				

*This section should be completed for all projects, except for such projects that would apply to the entire city or to areas that are so extensive that site-specific zoning information is not appropriate or practicable.

PART II: TECHNICAL ANALYSES

INSTRUCTIONS: For each of the analysis categories listed in this section, assess the proposed project's impacts based on the thresholds and criteria presented in the CEQR Technical Manual. Check each box that applies.

- If the proposed project can be demonstrated not to meet or exceed the threshold, check the 'NO' box.
- If the proposed project will meet or exceed the threshold, or if this cannot be determined, check the 'YES' box.
- For each 'Yes' response, answer the subsequent questions for that technical area and consult the relevant chapter of the CEQR Technical Manual for guidance on providing additional analyses (and attach supporting information, if needed) to determine whether the potential for significant impacts exists. Please note that a 'Yes' answer does not mean that an EIS must be prepared—it often only means that more information is required for the lead agency to make a determination of significance.
- The lead agency, upon reviewing Part II, may require an applicant to either provide additional information to support the Full EAS Form. For example, if a question is answered 'No,' an agency may request a short explanation for this response.

	YES	NO
1. LAND USE, ZONING AND PUBLIC POLICY: CEQR Technical Manual Chapter 4		
(a) Would the proposed project result in a change in land use or zoning that is different from surrounding land uses and/or zoning? Is there the potential to affect an applicable public policy? If "Yes", complete a preliminary assessment and attach.		✓
(b) Is the project a large, publicly sponsored project? If "Yes", complete a PlaNYC assessment and attach.		✓
(c) Is any part of the directly affected area within the City's Waterfront Revitalization Program boundaries? If "Yes", complete the Consistency Assessment Form .	✓	
2. SOCIOECONOMIC CONDITIONS: CEQR Technical Manual Chapter 5		
(a) Would the proposed project:		
• Generate a net increase of 200 or more residential units?		✓
• Generate a net increase of 200,000 or more square feet of commercial space?		✓
• Directly displace more than 500 residents?		✓
• Directly displace more than 100 employees?		✓
• Affect conditions in a specific industry?		✓
(b) If 'Yes' to any of the above, attach supporting information to answer the following questions, as appropriate. If 'No' was checked for each category above, the remaining questions in this technical area do not need to be answered.		
(1) Direct Residential Displacement		
• If more than 500 residents would be displaced, would these displaced residents represent more than 5% of the primary study area population?		
• If 'Yes,' is the average income of the directly displaced population markedly lower than the average income of the rest of the study area population?		
(2) Indirect Residential Displacement		
• Would the expected average incomes of the new population exceed the average incomes of the study area populations?		
• If 'Yes,' would the population increase represent more than 5% of the primary study area population or otherwise potentially affect real estate market conditions?		
• If 'Yes,' would the study area have a significant number of unprotected rental units?		
Would more than 10 percent of all the housing units be renter-occupied and unprotected?		
Or, would more than 5 percent of all the housing units be renter-occupied and unprotected where no readily observable trend toward increasing rents and new market rate development exists within the study area?		

		YES	NO
(3) Direct Business Displacement			
• Do any of the displaced businesses provide goods or services that otherwise could not be found within the trade area, either under existing conditions or in the future with the proposed project?			
• Do any of the displaced businesses provide goods or services that otherwise could not be found within the trade area, either under existing conditions or in the future with the proposed project?			
• Or, is any category of business to be displaced the subject of other regulations or publicly adopted plans to preserve, enhance, or otherwise protect it?			
(4) Indirect Business Displacement			
• Would the project potentially introduce trends that make it difficult for businesses to remain in the area?			
• Would the project capture the retail sales in a particular category of goods to the extent that the market for such goods would become saturated as a result, potentially resulting in vacancies and disinvestment on neighborhood commercial streets?			
(5) Affects on Industry			
• Would the project significantly affect business conditions in any industry or any category of businesses within or outside the study area?			
• Would the project indirectly substantially reduce employment or impair the economic viability in the industry or category of businesses?			
3. COMMUNITY FACILITIES: CEQR Technical Manual Chapter 6			
(a)	Would the project 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?		✓
(b)	Would the project exceed any of the thresholds outlined in Table 6-1 in Chapter 6 ?		✓
(c)	If 'No' was checked above, the remaining questions in this technical area do not need to be answered. If 'Yes' was checked, attach supporting information to answer the following, if applicable.		✓
(1) Child Care Centers			
• Would the project result in a collective utilization rate of the group child care/Head Start centers in the study area that is greater than 100 percent?			
• If Yes, would the project increase the collective utilization rate by 5 percent from the No-Action scenario?			
(2) Libraries			
• Would the project increase the study area population by 5 percent from the No-Action levels?			
• If Yes, would the additional population impair the delivery of library services in the study area?			
(3) Public Schools			
• Would the project result in a collective utilization rate of the elementary and/or intermediate schools in the study area that is equal to or greater than 105 percent?			
• If Yes, would the project increase this collective utilization rate by 5 percent from the No-Action scenario?			
(4) Health Care Facilities			
• Would the project affect the operation of health care facilities in the area?			
(5) Fire and Police Protection			
• Would the project affect the operation of fire or police protection in the area?			
4. OPEN SPACE: CEQR Technical Manual Chapter 7			
(a)	Would the project change or eliminate existing open space?		✓
(b)	Is the project located within an underserved area in the Bronx , Brooklyn , Manhattan , Queens , or Staten Island ?		✓
(c)	If 'Yes,' would the proposed project generate more than 50 additional residents or 125 additional employees?		
(d)	Is the project located within a well-served area in the Bronx , Brooklyn , Manhattan , Queens , or Staten Island ?		✓
(e)	If 'Yes,' would the project generate more than 350 additional residents or 750 additional employees?		
(f)	If the project is not located within an underserved or well-served area, would it generate more than 200 additional residents or 500 additional employees?		✓
(g)	If 'Yes' to any of the above questions, attach supporting information to answer the following:		
• Does the project result in a decrease in the open space ratio of more than 5%?			
• If the project is within an underserved area, is the decrease in open space between 1% and 5%?			
• If 'Yes,' are there qualitative considerations, such as the quality of open space, that need to be considered?			

	YES	NO
5. SHADOWS: CEQR Technical Manual Chapter 8		
(a) Would the proposed project result in a net height increase of any structure of 50 feet or more?		✓
(b) Would the proposed project result in any increase in structure height and be located adjacent to or across the street from a sunlight-sensitive resource?		✓
(c) If "Yes" to either of the above questions, attach supporting information explaining whether the project's shadow reach any sunlight-sensitive resource at any time of the year.		
6. HISTORIC AND CULTURAL RESOURCES: CEQR Technical Manual Chapter 9		
(a) Does the proposed project site or an adjacent site contain any architectural and/or archaeological resource that is eligible for, or has been designated (or is calendared for consideration) as a New York City Landmark, Interior Landmark or Scenic Landmark; is listed or eligible for listing on the New York State or National Register of Historic Places; or is within a designated or eligible New York City, New York State, or National Register Historic District? If "Yes," list the resources and attach supporting information on whether the proposed project would affect any of these resources.	✓	
7. URBAN DESIGN AND VISUAL RESOURCES: CEQR Technical Manual Chapter 10		
(a) Would the proposed project introduce a new building, a new building height, or result in any substantial physical alteration to the streetscape or public space in the vicinity of the proposed project that is not currently allowed by existing zoning?		✓
(b) Would the proposed project result in obstruction of publicly accessible views to visual resources that is not currently allowed by existing zoning?		✓
(c) If "Yes" to either of the above, please provide the information requested in Chapter 10 .		
8. NATURAL RESOURCES: CEQR Technical Manual Chapter 11		
(a) Is any part of the directly affected area within the Jamaica Bay Watershed? If "Yes", complete the Jamaica Bay Watershed Form .		✓
(b) Does the proposed project site or a site adjacent to the project contain natural resources as defined in Section 100 of Chapter 11 ? If "Yes," list the resources: Attach supporting information on whether the proposed project would affect any of these resources.	✓	
9. HAZARDOUS MATERIALS: CEQR Technical Manual Chapter 12		
(a) Would the proposed project allow commercial or residential use in an area that is currently, or was historically, a manufacturing area that involved hazardous materials?		✓
(b) Does the proposed project site have existing institutional controls (e.g. (E) designations or a Restrictive Declaration) relating to hazardous materials that preclude the potential for significant adverse impacts?		✓
(c) Does the project require soil disturbance in a manufacturing zone or any development on or near a manufacturing zone or existing/historic facilities listed in Appendix 1 (including nonconforming uses)?		✓
(d) Does the project result in the development of a site where there is reason to suspect the presence of hazardous materials, contamination, illegal dumping or fill, or fill material of unknown origin?		✓
(e) Does the project result in development where underground and/or aboveground storage tanks (e.g. gas stations) are or were on or near the site?		✓
(f) Does the project result in renovation of interior existing space on a site with potential compromised air quality, vapor intrusion from on-site or off-site sources, asbestos, PCBs or lead-based paint?		✓
(g) Does the project result in development on or near a government-listed voluntary cleanup/brownfield site, current or former power generation/transmission facilities, municipal incinerators, coal gasification or gas storage sites, or railroad tracks and rights-of-way?		✓
(h) Has a Phase I Environmental Site Assessment been performed for the site? If "Yes," were RECs identified? Briefly identify:		✓
(i) Based on a Phase I Assessment, is a Phase II Assessment needed?		
10. WATER AND SEWER INFRASTRUCTURE: CEQR Technical Manual Chapter 13		
(a) Would the project result in water demand of more than one million gallons per day?		✓
(b) Is the proposed project located in a combined sewer area and result in at least 1,000 residential units or 250,000 SF or more of commercial space in Manhattan or at least 400 residential units or 150,000 SF or more of commercial space in the Bronx, Brooklyn, Staten Island or Queens?		✓
(c) Is the proposed project located in a separately sewered area and result in the same or greater development than that listed in Table 13-1 in Chapter 13 ?		✓
(d) Does the proposed project involve development on a site five acres or larger where the amount of impervious surface would increase?		✓
(e) Would the proposed project involve development on a site one acre or larger where the amount of impervious surface would increase and is located within the Jamaica Bay Watershed or in certain specific drainage areas including: Bronx River, Coney Island Creek, Flushing Bay and Creek, Gowanus Canal, Hutchinson River, Newtown Creek, or Westchester Creek?		✓
(f) Would the proposed project be located in an area that is partially sewered or currently unsewered?		✓
(g) Is the project proposing an industrial facility or activity that would contribute industrial discharges to a WWTP and/or generate contaminated stormwater in a separate storm sewer system?		✓
(h) Would the project involve construction of a new stormwater outfall that requires federal and/or state permits?		✓
(i) If "Yes" to any of the above, conduct the appropriate preliminary analyses and attach supporting documentation.		
11. SOLID WASTE AND SANITATION SERVICES: CEQR Technical Manual Chapter 14		
(a) Would the proposed project have the potential to generate 1000,000 pounds (50 tons) or more of solid waste per week?		✓
(b) Would the proposed project involve a reduction in capacity at a solid waste management facility used for refuse or recyclables generated within the City?		✓

	YES	NO
12. ENERGY: <u>CEQR Technical Manual Chapter 15</u>		
(a) Would the proposed project affect the transmission or generation of energy?		✓
13. TRANSPORTATION: <u>CEQR Technical Manual Chapter 16</u>		
(a) Would the proposed project exceed any threshold identified in <u>Table 16-1 in Chapter 16</u> ?		✓
(b) If "Yes," conduct the screening analyses, attach appropriate back up data as needed for each stage, and answer the following questions:		
(1) Would the proposed project result in 50 or more Passenger Car Equivalents (PCEs) per project peak hour? If "Yes," would the proposed project result in 50 or more vehicle trips per project peak hour at any given intersection? **It should be noted that the lead agency may require further analysis of intersections of concern even when a project generates fewer than 50 vehicles in the peakhour. See <u>Subsection 313 in Chapter 16</u> for more information.		
(2) Would the proposed project result in more than 200 subway/rail or bus trips per project peak hour? If "Yes," would the proposed project result, per project peak hour, in 50 or more bus trips on a single line (in one direction) or 200 subway trips per station or line?		
(3) Would the proposed project result in more than 200 pedestrian trips per project peak hour? If "Yes," would the proposed project result in more than 200 pedestrian trips per project peak hour to any given pedestrian or transit element, crosswalk, subway stair, or bus stop?		
14. AIR QUALITY: <u>CEQR Technical Manual Chapter 17</u>		
(a) <i>Mobile Sources:</i> Would the proposed project result in the conditions outlined in <u>Section 210 in Chapter 17</u> ?		✓
(b) <i>Stationary Sources:</i> Would the proposed project result in the conditions outlined in <u>Section 220 in Chapter 17</u> ? If "Yes," would the proposed project exceed the thresholds in the <u>Figure 17-3, Stationary Source Screen Graph</u> ? (attach graph as needed)		✓
(c) Does the proposed project involve multiple buildings on the project site?		✓
(d) Does the proposed project require Federal approvals, support, licensing, or permits subject to conformity requirements?		✓
(e) Does the proposed project site have existing institutional controls (e.g. E) designations or a Restrictive Declaration) relating to air quality that preclude the potential for significant adverse impacts?		✓
(f) If "Yes," conduct the appropriate analyses and attach any supporting documentation.		
15. GREENHOUSE GAS EMISSIONS: <u>CEQR Technical Manual Chapter 18</u>		
(a) Is the proposed project a city capital project, a power plant, or would fundamentally change the City's solid waste management system?		✓
(b) If "Yes," would the proposed project require a GHG emissions assessment based on the guidance in <u>Chapter 18</u> ?		
(c) If "Yes," attach supporting documentation to answer the following: Would the project be consistent with the City's GHG reduction goal?		
16. NOISE: <u>CEQR Technical Manual Chapter 19</u>		
(a) Would the proposed project generate or reroute vehicular traffic?		✓
(b) Would the proposed project introduce new or additional receptors (see <u>Section 124 in Chapter 19</u>) near heavily trafficked roadways, within one horizontal mile of an existing or proposed flight path, or within 1,500 feet of an existing or proposed rail line with a direct line of site to that rail line?		✓
(c) Would the proposed project cause a stationary noise source to operate within 1,500 feet of a receptor with a direct line of sight to that receptor or introduce receptors into an area with high ambient stationary noise?		✓
(d) Does the proposed project site have existing institutional controls (e.g. E-designations or a Restrictive Declaration) relating to noise that preclude the potential for significant adverse impacts?		✓
(e) If "Yes," conduct the appropriate analyses and attach any supporting documentation.		
17. PUBLIC HEALTH: <u>CEQR Technical Manual Chapter 20</u>		
(a) Would the proposed project warrant a public health assessment based upon the guidance in <u>Chapter 20</u> ?		✓
18. NEIGHBORHOOD CHARACTER: <u>CEQR Technical Manual Chapter 21</u>		
(a) Based upon the analyses conducted for the following technical areas, check Yes if any of the following technical areas required a detailed analysis: Land Use, Zoning, and Public Policy, Socioeconomic Conditions, Open Space, Historic and Cultural Resources, Urban Design and Visual Resources, Shadows, Transportation, Noise.		✓
(b) If "Yes," explain here why or why not an assessment of neighborhood character is warranted based on the guidance in Chapter 21, "Neighborhood Character." Attach a preliminary analysis, if necessary.		

		YES	NO
19.	CONSTRUCTION IMPACTS: <i>CEQR Technical Manual Chapter 22</i> Would the project's construction activities involve (check all that apply):		
	• Construction activities lasting longer than two years;		✓
	• Construction activities within a Central Business District or along an arterial or major thoroughfare;		✓
	• Require closing, narrowing, or otherwise impeding traffic, transit or pedestrian elements (roadways, parking spaces, bicycle routes, sidewalks, crosswalks, corners, etc);		✓
	• Construction of multiple buildings where there is a potential for on-site receptors on buildings completed before the final build-out;		✓
	• The operation of several pieces of diesel equipment in a single location at peak construction;	✓	
	• Closure of community facilities or disruption in its service;		✓
	• Activities within 400 feet of a historic or cultural resource; or	✓	
	• Disturbance of a site containing natural resources.	✓	

If any boxes are checked, explain why or why not a preliminary construction assessment is warranted based on the guidance of in Chapter 22, "Construction." It should be noted that the nature and extent of any commitment to use the Best Available Technology for construction equipment or Best Management Practices for construction activities should be considered when making this determination.

See Attachment A, "Construction Impacts"

20. APPLICANT'S CERTIFICATION

I swear or affirm under oath and subject to the penalties for perjury that the information provided in this Environmental Assessment Statement (EAS) is true and accurate to the best of my knowledge and belief, based upon my personal knowledge and familiarity with the information described herein and after examination of pertinent books and records and/or after inquiry of persons who have personal knowledge of such information or who have examined pertinent books and records.

Still under oath, I further swear or affirm that I make this statement in my capacity as the

Deputy Commissioner of NYC Department of Environmental Protection
 APPLICANT/SPONSOR NAME THE ENTITY OR OWNER

the entity which seeks the permits, approvals, funding or other governmental action described in this EAS.

Check if prepared by: APPLICANT/REPRESENTATIVE OR LEAD AGENCY REPRESENTATIVE (FOR CITY-SPONSORED PROJECTS)

Angela Licata

APPLICANT/SPONSOR NAME:

LEAD AGENCY REPRESENTATIVE NAME:


SIGNATURE

2/24/12
DATE:

PLEASE NOTE THAT APPLICANTS MAY BE REQUIRED TO SUBSTANTIATE RESPONSES IN THIS FORM AT THE DISCRETION OF THE LEAD AGENCY SO THAT IT MAY SUPPORT ITS DETERMINATION OF SIGNIFICANCE.

PART III: DETERMINATION OF SIGNIFICANCE (To Be Completed By Lead Agency)

INSTRUCTIONS:
 In completing Part III, the lead agency should consult 6 NYCRR 617.7 and 43 RCNY §6-06 (Executive Order 91 of 1977, as amended) which contain the State and City criteria for determining significance.

1. For each of the impact categories listed below, consider whether the project may have a significant effect on the environment. For each of the impact categories listed below, consider whether the project may have a significant adverse effect on the environment, taking into account its (a) location; (b) probability of occurring; (c) duration; (d) irreversibility; (e) geographic scope; and (f) magnitude.	Potential Significant Adverse Impact	
	YES	NO
IMPACT CATEGORY		
Land Use, Zoning, and Public Policy		✓
Socioeconomic Conditions		✓
Community Facilities and Services		✓
Open Space		✓
Shadows		✓
Historic and Cultural Resources		✓
Urban Design/Visual Resources		✓
Natural Resources		✓
Hazardous Materials		✓
Water and Sewer Infrastructure		✓
Solid Waste and Sanitation Services		✓
Energy		✓
Transportation		✓
Air Quality		✓
Greenhouse Gas Emissions		✓
Noise		✓
Public Health		✓
Neighborhood Character		✓
Construction Impacts		✓
2. Are there any aspects of the project relevant to the determination whether the project may have a significant impact on the environment, such as combined or cumulative impacts, that were not fully covered by other responses and supporting materials? If there are such impacts, explain them and state where, as a result of them, the project may have a significant impact on the environment.		✓

3. LEAD AGENCY'S CERTIFICATION

Deputy Commissioner

 TITLE
 Angela Licata

 NAME

NYC Department of Environmental Protection

 LEAD AGENCY


 SIGNATURE FOR ANGELA LICATA

Check this box if the lead agency has identified one or more potentially significant adverse impacts that MAY occur.

Issue **Conditional Negative Declaration**

A **Conditional Negative Declaration (CND)** may be appropriate if there is a private applicant for an Unlisted action AND when conditions imposed by the lead agency will modify the proposed project so that no significant adverse environmental impacts would result. The CND is prepared as a separate document and is subject to the requirements in 6 NYCRR Part 617.

Issue **Positive Declaration** and proceed to a draft scope of work for the Environmental Impact Statement.

If the lead agency has determined that the project may have a significant impact on the environment, and if a conditional negative declaration is not appropriate, then the lead agency issues a **Positive Declaration**.

NEGATIVE DECLARATION (To Be Completed By Lead Agency)

Statement of No Significant Effect

Pursuant to Executive Order 91 of 1977, as amended, and the Rules of Procedure for City Environmental Quality Review, found at Title 62, Chapter 5 of the Rules of the City of New York and 6NYCRR, Part 617, State Environmental Quality Review, the [] assumed the role of lead agency for the environmental review of the proposed project. Based on a review of information about the project contained in this environmental assessment statement and any attachments hereto, which are incorporated by reference herein, the [] has determined that the proposed project would not have a significant adverse impact on the environment.

Reasons Supporting this Determination

The above determination is based on information contained in this EAS that finds, because the proposed project:

No other significant effects upon the environment that would require the preparation of a Draft Environmental Impact Statement are foreseeable. This Negative Declaration has been prepared in accordance with Article 8 of the New York State Environmental Conservation Law (SEQRA).

_____ TITLE

_____ LEAD AGENCY

_____ NAME

_____ SIGNATURE

ATTACHMENT A

EAS SCREENING ANALYSIS

A. PROJECT DESCRIPTION

INTRODUCTION

This Environmental Assessment Statement (EAS) has been prepared to assess the potential environmental effects of proposed dredging activities at the head end of the Gowanus Canal, located in Brooklyn, New York. The New York City Department of Environmental Protection (DEP) is proposing to dredge an approximately 825 foot long area extending from the head of the Canal to approximately the Union Street Bridge (“proposed project”) in accordance with an Administrative Order of Consent (CO2-20000107-8) (“CSO Consent Order”) between the DEP and the New York State Department of Environmental Conservation (NYSDEC). The proposed project is expected to eliminate accumulated sediment mounds at the head end of the Canal and the associated odors, improve the visual aesthetics of the waterbody and improve substrate for benthic habitat. This EAS presents the technical analyses completed for the proposed project based on DEP’s Gowanus Canal Waterbody/Watershed Facility Plan (WWFP) and Basis of Design Report (BODR) and following the methodology set forth in the *City Environmental Quality Review (CEQR) Technical Manual* (2010).

The United States Environmental Protection Agency (USEPA) placed the Gowanus Canal (USEPA ID#: NYN000206222) on its National Priorities List of hazardous waste sites requiring further evaluation on March 2, 2010. As DEP’s proposed project was initiated prior to USEPA’s 2010 listing of the Canal as a “Superfund” site and following NYSDEC’s 2009 approval of the Gowanus Canal Waterbody/Watershed Facility Plan (WWFP), this environmental review and related permit applications have been developed to meet the obligations of the CSO Consent Order between DEP and NYSDEC. The currently proposed DEP dredging project was developed to dredge CSO-impacted sediments; it was not intended to address the more extensive sediment contamination discussed in the USEPA’s RI related to PAHs, PCBs, metals, and other toxic contaminants. A remediation dredging design to address these contaminants would require additional efforts in order to focus on dredge depths for the removal of elevated contaminant concentrations and a more rigorous examination of the cap. On December 29, 2011, USEPA released a draft Feasibility Study (FS) for the Canal. The draft FS contains remedial alternative, which include dredging as part of the overall remedy for the Canal. As such, DEP will continue to coordinate with NYSDEC and USEPA to ensure that the proposed project design meets the milestones required by the CSO Consent Order and is aligned with USEPA’s overall clean-up program.

The Gowanus Canal is a physically altered, brackish tidal canal located in Kings County, New York that begins at Butler Street and runs approximately 1.8 miles southwest until emptying into Gowanus Bay and Upper New York Bay, as shown in Figure B-1. The shoreline of the Canal is predominantly bulkheaded with a few areas of rip-rap and piers. The width of the Canal within the proposed dredge area is approximately 100 feet. Water depths vary over the length of the Canal, but water depths at the head end of the Canal are shallow, less than one foot at mean low water (MLW) in many locations, and sediments can be exposed at low tide within this area resulting in odors. The Canal is classified as a saline tributary to the Upper New York Bay and Class SD waterbody, per NYSDEC water quality standards. Freshwater inflows to the Canal are limited to wet-weather combined sewer overflows (CSOs) and stormwater discharges and overland flow. The Gowanus Flushing Tunnel conveys salt water from Buttermilk Channel to the Canal when operational and provides an additional source of flow to the Canal of marine water. The Canal experiences a semi-diurnal tidal cycle with a vertical tidal range of approximately 4.7 to 5.7 feet.

As a result of its narrow width, limited freshwater input and enclosed upper end, the Canal has low current speeds and limited tidal exchange with Gowanus Bay. There are numerous CSO outfall discharge locations within the Canal, four of which (RH-033, RH-034, RH-037 and RH-038) are located north of the Union Street Bridge within the limits of the proposed project. Sediment mounds have accumulated within the head end of the Canal as a result of discharges of stormwater and untreated wastewater during wet weather events. Dredging of the Canal has occurred periodically since its creation in the 19th century. U.S. Army Corps of Engineers (USACE) records indicate that the navigation channel, generally extending from Gowanus Bay to the Hamilton Avenue Bridge, was last dredged by the USACE in 1971. Dredging north of Union Street was previously conducted by DEP in 1975 and sediments were removed from an area near the Gowanus Flushing Tunnel to facilitate rehabilitative construction and ensure unobstructed discharge from the Flushing Tunnel in 1998. Currently, proposed dredging activities would be conducted through either mechanical or hydraulic methods. At the conclusion of dredging, DEP has proposed a two foot subaqueous sand cap that would be placed over the exposed sediments. In addition, scour protection systems, such as concrete mats or equivalent would be installed on top of the sand cap at the large CSO outfall (e.g., RH-034) and Flushing Tunnel outlet.

PURPOSE AND NEED

DEP is required by the CSO Consent Order modification of which is expected to take effect early 2012, to perform environmental dredging and remove accumulated sediment mounds that are

visually observable and contribute to nuisance odors. DEP prepared the Gowanus Canal WWFP as part of its City-Wide Long-Term Control Plan (LTCP) Program, which was approved by NYSDEC in 2009. This plan identified a series of improvements to achieve compliance with existing New York State water quality standards. Other objectives of the plan include eliminating odors, reducing floatables, and improving dissolved oxygen (DO) concentrations. DEP's planned improvements for the Gowanus Canal include the following components:

- Modernization of the Gowanus Canal Flushing Tunnel
- Reconstruction of the Gowanus Wastewater Pumping Station
- Dredging of Gowanus Canal

The proposed project would involve initial dredging to a depth of five feet below mean lower low water (MLLW) and the placement of a two foot subaqueous sand cap. This would result in a proposed final water depth of three feet below MLLW. As one component of the proposed improvement program, the proposed dredging at the head end of the Canal is expected to result in the removal of the accumulated sediment mounds that are currently exposed at low tide and the mitigation of related nuisances such as odors. In addition, the proposed capping would replace the existing substrate for improved benthic habitat.

EXISTING CONDITIONS

Gowanus Canal begins at Butler Street and extends southward approximately 8,500 feet to its mouth, between the end of Clinton Street to the west and the end of 25th Street to the east. The Canal is approximately 100 feet in width up to Hamilton Avenue where it widens and flows into Gowanus Bay and Upper New York Bay. Present land uses along the Canal consist primarily of manufacturing, industrial and commercial uses. The Canal's drainage area is fully developed, and its shorelines are entirely altered consisting almost exclusively of bulkheads with some areas of rip-rap and piers. Vessel traffic through the Canal is limited with only the federal navigational channel maintained south of Hamilton Avenue (NOAA, 2011). There are four "turning basins" located north of Hamilton Avenue at 4th Street, 6th Street, 7th Street and 11th Street. These basins experience limited marine traffic as they are not part of the main navigational channel and are primarily used as a means for vessels to reverse direction during transit. Marine-based access to the Canal is through Gowanus Bay. There are five New York City Department of Transportation (DOT) street-level bridges that carry city streets over the Canal and can restrict vessel traffic.

The Canal was formerly part of Gowanus Creek, a natural tidal creek surrounded by tributaries and marshland. In the 1860's, to accommodate the rapid development of the adjacent

communities, the Canal was created by significantly altering the natural creek with bulkhead, rip-rap and filling of its adjacent marshes and tributaries. Subsequent to the construction of the Canal, the industrial community flourished and heavy industrial uses, such as manufactured-gas plants (MGP), cement manufacturers, chemical plants, oil refineries and other uses were constructed along its waterfront. During the decades of industrial growth, the waterway received untreated industrial wastes, raw sewage and surface water runoff, which has contributed to the continuous deposition of organic and inorganic sediments within the Canal. Combined with physical modifications to the Canal's alignment and shoreline, deposition and discharges over time resulted in considerable sediment oxygen demand and aquatic habitat impairments.

The ecological habitat of the Gowanus Canal at the proposed project area is degraded. The substrate is comprised of accumulated, organically enriched sediment mounds, water quality is poor due to low DO levels and restricted tidal exchange, and the shoreline is devoid of any natural resources. An Essential Fish Habitat (EFH) Assessment was completed (Attachment D) and concluded that due to the existing water quality conditions and physical characteristics of the waterbody, many aquatic and benthic species would not be expected to occur in high densities within the proposed project area. In addition, the Canal's highly modified shoreline is a further limiting factor for species due to a lack of basic habitat. A review of the proposed project area and surrounding area confirmed that there are no vegetated wetlands or significant habitats. In addition, no threatened or endangered species or species of special concern are located in the proposed project area.

The bottom of the Canal is covered with a layer of sediments with a high water content, very soft, dark gray to black, highly plastic clay, often with traces of sand and some occasional gravel (USEPA, 2011). Sediments within the overall Canal generally consist of two distinct layers. The upper layer consists of soft sediments that have accumulated since the Canal was originally constructed and vary in thickness. These soft sediments are then underlain by the alluvial and marsh-deposits associated with the original Gowanus Creek and salt marsh complex, which was characterized by several streams and ponds prior to its development and channelization. Prior sampling has shown sediments in Gowanus Canal to be contaminated with a variety of pollutants, including polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), coal tar wastes, pesticides and metals (USEPA, 2011).

The shoreline within the proposed project area is developed with a range of timber, steel sheet pile and concrete bulkheads. Certain bulkheads in the project area may be considered a historic

resource and portions of the bulkheads, which can be dated prior to 1960, may be considered eligible for the National Register.

DEP's Gowanus Wastewater Pumping Station and a CSO outfall (RH-034) are located at the head end of the Canal. Three additional CSO outfalls (RH-033, RH-037 and RH-038) are located along the eastern shoreline, between the head end and Union Street, or within the proposed area. In addition, several other outfalls from unknown sources are located on either side of the shoreline.

The pumping station is currently undergoing an upgrade to increase capacity and to reduce CSOs and screens are being inserted at the end of Outfall RH-034 to reduce floatables in the Canal. In addition, the Gowanus Flushing Tunnel is also located near the head end of the Canal at the terminus of Douglass Street on the western shoreline, just south of the pumping station. The tunnel, originally constructed in the early 1900s, is currently being rehabilitated to supplement the limited flushing that occurs at the head end of the Canal and provide oxygenated water from Buttermilk Channel. DEP has installed a temporary oxygenation system that generally extends along the eastern side of the Canal from the head end to approximately 4th Street for the duration of the Flushing Tunnel upgrade. The tunnel is currently scheduled to be re-commissioned in 2013 and the Gowanus Wastewater Pumping Station upgrade will be completed by the end of 2013. Based upon current available information, no other pipelines or cables are known to exist in the proposed project area.

PROPOSED PROJECT

DEP is proposing to dredge approximately 825 feet of the Canal bottom extending from the head end of the Canal to approximately Union Street (see Figure B-2). The proposed project would involve dredging to a depth of five feet below MLLW. An estimated 9,400 cy of material would be removed. This volume is inclusive of a 0.5 foot overdredge totaling approximately 1,600 cy. The conceptual design for the proposed project was prepared using 2010 bathymetric survey data from USEPA's Remedial Investigation (RI) report (2011) and updated bathymetry data collected in 2011 by DEP.

Dredging would be completed through the use of either hydraulic or mechanical dredging means. All dredging activities would be water-based. All materials needed to support both methods (e.g. work barges, disposal barges, dewatering facilities, etc.) would be delivered to the proposed dredge area or staging/dewatering area via barges and tugboats. The use of modular barge systems may be considered given the spatial constraints between the existing bridge piers and

overhead clearances of the bridges. The staging/dewatering area would be located within the Canal at the 6th Street Basin, located on the eastern shore of the Canal at the intersection of 6th Street and 2nd Avenue (see Figure B-2). This location would be approximately 2,800 feet from the southernmost limit of proposed dredging. This location was selected based on its proximity to the proposed project area. An alternative location within the Canal may be used by the contractor if more suitable conditions are presented.

Following the dredging activities, a two foot cap consisting of approximately 8,000 cubic yards (cy) of sand would be placed over the exposed sediments. This would result in a final water depth of three feet below MLLW. In addition to the dredging and capping activities, scour protection systems would be installed on top of the cap at large CSO outfalls (e.g., RH-034) and the Flushing Tunnel outlet.

The proposed project area is devoid of vegetated wetlands; however, as design advances, appropriate wetland mitigation measures, if required, would be developed in accordance with federal and state regulations. Prior to commencement of dredging activities, a turbidity curtain, constructed of filter fabric with folds to accommodate water elevation fluctuations, would be positioned to enclose the entire work area. The turbidity curtain would contain and control the dispersion of silt in the waterbody and would remain in place and functional during all active dredging and capping activities.

ELEMENTS OF PROPOSED PROJECT

Dredging would be completed through the use of either hydraulic or mechanical dredging means and is subject to selection by the contractor. All dredging activities would be water-based. The following descriptions of the proposed project elements are based on the Gowanus Canal WWFP and BODR. Refer to Section T - Construction Impacts for additional details on construction-related activities associated with the proposed project.

Mechanical Dredging

Mechanical dredging, if used, would utilize a barge-mounted excavator dredge equipped with an environmental bucket. Mechanically-dredged material would be transported using watertight micro-scows to a hopper barge staged at the dewatering area within the water. Material would be transferred from these scows to a larger hopper barge where the sediment would be allowed to settle for a minimum of 24 hours. Treated decant waters would then be pumped through a temporary pipeline to the dredging site upstream of the turbidity curtain.

Hydraulic Dredging

Hydraulic dredging would involve the use of a hydraulic dredge that would be transported to the site via a tugboat. Materials removed by hydraulic means would be transported to a hopper barge moored at the staging/dewatering area via a temporary pipeline. Dewatering of the materials would be accomplished through the use of presses, hydrocyclones and physical separation. Dewatering equipment located on the barge(s) would generally consist of mix tanks, press-coat tanks, filter presses and feed pumps. Filtrate from the dewatering process would be collected into tanks located on the dewatering barge and pumped back to the dredging site upstream of the turbidity curtain. Treatment goals would be determined during the design, and permitting activities and the method of treatment would be selected by the contractor.

Subaqueous Sand Cap

After completion of dredging activities, a two foot subaqueous sand cap would be placed over the newly exposed sediments. Placement of this cap would be consistent with NYSDEC Technical and Operational Guidance Series (TOGS) 5.1.9, which recommends covering exposed sediments with an available cleaner material if dredging exposes more contaminated sediments.

Scour Protection (Apron)

Scour protection would be required at several high energy locations within the dredging area, particularly at the discharge locations for large CSO outfalls (e.g., RH-034) at the head of the Canal and at the Gowanus Flushing Tunnel outlet. As an example, scour protection may be comprised of a cabled concrete block mat system, or equivalent, that would be placed on top of the cap.

PROJECT SCHEDULE

Presented within Table A-1 is a summary of the proposed project and the current estimated durations of related construction activities. The proposed schedule is based on the CSO Consent Order which requires specific dredging related milestones. As a result, permit applications would be submitted in February 2012. Notice to Proceed with environmental dredging would be three years from the effective date of NYSDEC and USACE permits, and completion of environmental dredging would be five years from the date of NYSDEC and USACE permits. As the design of the proposed project advances, the duration of the activities presented below may change (see Table A-1 below).

Table A-1. Approximate Duration of Construction Activities

Task	Duration
Mobilization	2.5 months
Dredging	12 months ⁽¹⁾
Capping	4 months
Scour Protection	3.5 months
Demobilization	2 months
Total Duration (Months):	24 months
⁽¹⁾ The duration is presented using the maximum estimates for both hydraulic and mechanical dredging methods.	

REQUIRED PERMITS AND APPROVALS

Permits and approvals from various local, state and federal agencies would be required to conduct the proposed project, as noted in Table A-2 below.

Table A-2. Key Regulatory Permits and Approvals Required for the Proposed Project

Agency	Permit/Approval	Regulated Activity
Federal		
U.S. Army Corps of Engineers (USACE)	Section 404 of the Clean Water Act (Individual Permit)	Discharge of dredged or fill material into waters of the United States (including non-isolated and tidal wetlands).
USACE	Section 10 of the Rivers and Harbors Act of 1899 – (Individual Permit)	Work within navigable waters of the United States.
State		
New York State Department of Environmental Conservation (NYSDEC)	Section 401 of the Clean Water Act (Water Quality Certification)	Project includes placement of fill or activities that result in a discharge to a jurisdictional water body. Certification is used to ensure that federal agencies issuing permits or carrying out direct actions which may result in a discharge to the waters of the United States do not violate New York State’s water quality standards or impair designated uses

Table A-2. Key Regulatory Permits and Approvals Required for the Proposed Project

Agency	Permit/Approval	Regulated Activity
NYSDEC	Protection of Waters – Excavation and Fill (6 NYCRR PART 608)	Project includes activities within a navigable waterway and the excavation and placement of fill material.
NYSDEC	Tidal Wetlands (6 NYCRR Part 661)	Project is located in areas mapped by NYSDEC as New York State designated littoral zone and/or their adjacent areas (150 feet in NYC), as well as the placement of fill, dredging, excavation in tidal wetlands
New York State Department of State (NYSDOS)	Federal Consistency (Federal Coastal Consistency Assessment Form)	Project is located in an area mapped by NYSDOS as a designated coastal area.
Local		
New York City Department of City Planning (DCP)	New York City Waterfront Revitalization Program - Consistency Assessment	Project is located within the New York City mapped coastal zone boundary.

B. LAND USE, ZONING AND PUBLIC POLICY

The *CEQR Technical Manual* identifies that a land use or zoning analysis may not be required if a proposed project would not involve a change in land use or zoning. In these instances, the *Technical Manual* recommends that “a brief description of existing land uses and zoning designations in the immediate area, the policies, if any, affecting the area, and any changes anticipated to occur by the time the project is constructed” be completed, as these may infer to other technical areas that are assessed. The proposed project would not result in any change in land use, zoning or existing public policies. A brief discussion of existing conditions within a 400-foot radius of the proposed project is provided, and no further assessment is required.

LAND USE

Land uses within 400-feet of the proposed project were assessed to determine if they would be affected by the proposed project and if the action would be compatible with these uses and development trends. Land uses within a 400-foot radius of the proposed project area are classified as industrial, manufacturing, transportation and utility (Figure B-3). In addition, there are several parcels of residential, commercial, open space and outdoor recreation, and vacant land uses also within the study area. The proposed dredge area is predominantly bounded by transportation and utility uses to the north, manufacturing uses to the east and a mix of transportation and utility, manufacturing and parking facilities to the west. DEP’s Gowanus

Canal Wastewater Pumping Station, currently undergoing construction, is located at the head of the Canal at Douglass Street. New York City Housing Authority's (NYCHA) Gowanus Houses, a medium-density residential complex, is located northwest of the proposed project area. In addition, NYCHA's Wyckoff Gardens, a medium-density residential complex, is located approximately 500 feet to the northeast on Baltic Street. A site visit confirmed that the property identified as an "unknown" land use in Figure B-3 and on the western shoreline of the Canal between Sackett and Union Streets, a formerly active Bayside Fuel Facility, is currently used for truck parking, predominantly oil trucks.

The proposed staging/dewatering area for the proposed project would be located in the Canal, approximately 2,800 feet south of the southernmost limit of the dredge area at the mouth of the 6th Street Basin (Figure B-3). Land uses within 400 feet of this site are comprised of transportation and utility, manufacturing, parking facilities and vacant land. The site is bounded by transportation and utility uses to the north, and transportation and utility and parking facility uses to the south. The head of the 6th Street Basin is bounded by manufacturing land uses. Likewise, uses west of the site, across the Canal, are also manufacturing. Currently, there are no active water-dependent uses located within the proposed project area. The proposed project would not have a significant effect on existing or proposed land uses as it would not displace existing land uses or generate land uses that would be incompatible with the surrounding area. The proposed project would be beneficial to residents and workers by eliminating accumulated sediment mounds at the head end of the Canal and the associated odors, and by improving the visual aesthetics of the waterbody. Therefore, the proposed project would not result in potential significant adverse impacts to land use.

ZONING

The proposed project is adjacent to and located within a manufacturing (M2-1) district as shown on Figure B-4. M2 districts are characterized by medium industrial uses and are mainly mapped within the City's older industrial areas along the waterfront and have a required floor area ratio (FAR) of 2.0 with required parking. Beyond this district to the north and east is an M1-2 manufacturing district. To the west of the proposed dredge area and Bond Street are residential districts (R6 and R6B) inclusive of medium-density residential districts. These districts include NYCHA's Gowanus Houses, Wyckoff Gardens and privately-owned traditional row-houses.

Several rezoning proposals within the proposed project area have been evaluated by the New York City Department of City Planning (DCP) in recent years. DCP has proposed a change to zoning along the Gowanus Canal corridor to allow for a mix of uses, including residential,

commercial, retail and light industrial in currently zoned M1-2 and M2-1 manufacturing districts. The proposed zoning change would affect 25 blocks that are generally bounded by Baltic Street to the north, 4th Street to the east, Hamilton Avenue to the south and Smith Street to the west, covering approximately 70 acres. A draft scope of work and EAS for the rezoning of the Gowanus Corridor were distributed in 2009 and are still pending. Separate from this proposal is the development of Public Place, a six-acre brownfield site owned by National Grid, located between Smith Street and the Gowanus Canal to the east and west respectively and between 5th Street to the north and Huntington Street to the south. This site is located immediately west of the proposed dewatering/staging area and is proposed for mixed-use development, including a large residential apartment complex and open space development.

West of Bond Street and the proposed project area is the approved Carroll Gardens/Columbia Street rezoning. The 86 block rezoning area of the Carroll Gardens and Columbia Street neighborhoods is generally bounded by Warren Street to the north, Bond Street to the east, the Gowanus Expressway to the south and generally between Columbia Street and Van Brunt Street to the west. Lots zoned as R6 were rezoned to R6A, R6B and R7A with commercial overlays. The rezoning sets height limits of buildings to maintain the existing character of the neighborhood, prevent out-of-scale development and reduce the depths of commercial districts to reflect existing development patterns. South of the proposed project area, a privately sponsored rezoning was approved for a three-acre MX-11 manufacturing site located between Carroll and 3rd Streets. The Toll Brothers rezoning allows for the development of a mixed-use condominium and retail development alongside the eastern shore of the Gowanus Canal. However, a schedule for the development of this site has not been determined.

The proposed project would not result in a change in current zoning or effect existing and proposed zoning districts in the surrounding area. The proposed project would be beneficial to residents and workers by eliminating accumulated sediment mounds at the head end of the Canal and the associated odors, and by improving the visual aesthetics of the waterbody. Therefore, the proposed project would not result in potential significant adverse impacts to zoning.

PUBLIC POLICY

The proposed project would be located within the boundaries of the New York City's Coastal Zone as shown in Figure B-2. The proposed project would, therefore, be subject to review under the 10 primary policies and 32 subpolicies of the "New York City Waterfront Revitalization Program (WRP)" that addresses the waterfront's important natural, recreational, industrial, commercial, ecological, cultural, aesthetic and energy resources. A full assessment of the

proposed project was completed and is provided as Attachment C to this document. The assessment concluded that for the policies deemed applicable, the proposed project would be consistent with the WRP. The proposed project would also be consistent with the City's "PlaNYC: A Greener, Greater New York", the City's long-term sustainability plan. The Plan focuses on several initiatives and goals, including those relating to the quality of the City's waterways. The proposed project would be consistent with the Plan's goal to "improve the quality of our waterways to increase opportunities for recreation and restore coastal ecosystems."

The proposed project would not have a significant effect on existing or proposed public policy. The proposed project would be beneficial to residents and workers by eliminating accumulated sediment mounds at the head end of the Canal and the associated odors, improving the visual aesthetics of the waterbody, and improving substrate for benthic habitat. Therefore, the proposed project would not result in potential significant adverse impacts to public policy.

The reduction in odors and anticipated aesthetic improvements as a result of the proposed project would be beneficial to residents and workers in the vicinity of the proposed project area. Further, the proposed project would improve substrate in the Canal for benthic habitat. Therefore, the proposed project is not expected to result in potential significant adverse impacts to land use, zoning or public policy and no further assessment is necessary.

C. SOCIOECONOMIC CONDITIONS

Socioeconomic character is defined by elements such as the population, housing and economic activity of an area. In addition to determining whether a proposed project would directly or indirectly displace residents or businesses, the objective of the CEQR socioeconomic analysis is to disclose whether any changes created by the project would have a significant impact on land use patterns, low-income populations, the availability of goods and services, or economic investment in a way that changes the socioeconomic character of the area. The proposed project would not create any residential, commercial or manufacturing uses, or changes in employees or resident populations in the area. Therefore, the proposed project is not expected to result in potential significant adverse impacts to socioeconomic conditions and no further assessment is necessary.

D. COMMUNITY FACILITIES AND SERVICES

The *CEQR Technical Manual* specifies that a community facilities analysis is needed if the potential exists for a project to have a direct or indirect effect on any community facility. The proposed project would be temporary and would not result in any type of development. In

addition, there are no schools, libraries, fire stations, police stations, houses of worship or health care facilities located within 400-feet of the proposed project area. The proposed project area is located within a highly urbanized area that is dominated by industrial, manufacturing, transportation and utility uses as discussed previously in Section B – Land Use, Zoning and Public Policy.

The proposed project would not displace any public or publicly funded community facilities, nor would it result in any direct or indirect negative impacts to such facilities, or result in the need for new or expanded facilities or services. Therefore, the proposed project is not expected to result in potential significant adverse impacts to community facilities and services and no further assessment is necessary.

E. OPEN SPACE

An analysis of open space is conducted to determine whether or not a proposed project will have a direct or indirect impact to open space, as defined in the *CEQR Technical Manual*. The proposed project would not require a detailed open space assessment as it would not directly affect an open space or generate more than 200 new residences or 500 employees to the area. Currently, the only existing green space in the vicinity of the proposed project is the New York City Department of Parks and Recreation (DPR)-operated Thomas Greene Playground, which is located approximately 250 feet east of the proposed project at Douglass Street, between Nevins Street and 3rd Avenue (see Figure B-3). Additionally, a DPR Green Street is located at the terminus of Degraw Street, immediately west of the proposed project.

The proposed project would not eliminate, change or diminish any open space nor introduce additional users to the area. The proposed project would be beneficial to residents and workers by eliminating accumulated sediment mounds at the head end of the Canal and the associated odors, and by improving the visual aesthetics of the waterbody. Therefore, the proposed project is not expected to result in potential significant adverse impacts to open space and no further assessment is necessary.

F. SHADOWS

In accordance with the *CEQR Technical Manual*, a shadow assessment is required “only if the project would either result in new structures of 50 feet or more or be located adjacent to, or across the street from, a sunlight-sensitive resource.” The proposed project would not result in the development of any permanent above-ground structures that would cast shadows. The

proposed project is not expected to result in potential significant adverse impacts resulting from shadows in the surrounding area and no further assessment is necessary.

G. HISTORIC AND CULTURAL RESOURCES

An assessment of potential historic and cultural resources is required under the *CEQR Technical Manual* to help protect New York City's cultural heritage from the potential impacts. Historic and cultural resources include both architectural and archeological resources.

A draft report, prepared for the USACE in 2004 entitled "National Register of Historic Places Eligibility Evaluation and Cultural Resource Assessment" concluded that due to its role in the development of Brooklyn, the Gowanus Canal is eligible for inclusion in the National Register of Historic Places as a historic district ("National Register-eligible Gowanus Canal Historic District"). Following their review of this report, the New York State Historic Preservation Office (SHPO) concurred with this determination, however, no formal action by SHPO has been made.

The shoreline within the proposed project area is previously developed with a range of timber, steel sheet pile and concrete bulkheads. Although not officially listed on the National or State Register of Historic Places, an investigation of the existing bulkheads within the Canal in 2010 recommended that all bulkhead portions that can be dated to before 1960 and timber crib bulkheads be considered eligible for the National Register (John Milner & Associates, 2010). The historic significance of the older bulkheads would be assessed and considered as the design of the proposed project is advanced. For purposes of the current environmental assessment, it has been assumed based on the current conceptual project design that no impacts to bulkheads would occur. Consultation with the Landmark Preservation Commission (LPC) and SHPO would be advanced prior to construction activities as part of the permit process.

The proposed project would not involve any physical alteration or contact with State or National Register listed or eligible resources of historic or archeological significance surrounding or adjacent to the Canal such as the Gowanus Canal Flushing Tunnel and system building, Gowanus Facilities gate house, two street-level bridges (Carroll Street and 3rd Avenue) and five buildings adjacent to the Canal. The proposed project would not involve any direct or indirect impacts that would affect these eligible resources.

The proposed project is expected to provide an overall a benefit to the Canal and the surrounding community. Therefore, the proposed project is not expected to result in potential significant adverse impacts to historic and cultural resources within the proposed project area or in the surrounding area and no further assessment is necessary.

H. URBAN DESIGN AND VISUAL RESOURCES

An urban design assessment focuses on the components of a proposed project that may have the potential to alter the arrangement, appearance, and functionality of the built environment, as defined in the *CEQR Technical Manual*. As discussed in Section B – Land Use, Zoning and Public Policy, the proposed project would be consistent with adjacent land uses, zoning classifications and existing public policies. No aboveground structures that may affect views are proposed. The proposed project would be beneficial to residents and workers by eliminating accumulated sediment mounds at the head end of the Canal and the associated odors, and by improving the visual aesthetics of the waterbody. Therefore, the proposed project is not expected to result in potential significant adverse impacts to urban design and visual resources and no further assessment is necessary.

I. NATURAL RESOURCES

The *CEQR Technical Manual* indicates that a natural resource assessment should be conducted when a natural resource is present on or near a project site, and when that project has the potential to cause direct or indirect disturbances to a natural resource. The following may be considered, as appropriate, in a natural resources analysis: “ground water, soils and geologic features, numerous types of natural and human-created aquatic and terrestrial habitats (including wetlands, dunes, beaches, grasslands, woodlands, landscaped areas, gardens, parks and built structures) and any areas used by wildlife.” The following provides a review of the aquatic habitats within the proposed project area. No ground water, soils, geologic features or terrestrial habitats exist at the proposed project area or the proposed staging/dewatering area.

Based upon a review of NYSDEC and U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, Gowanus Canal is located within tidal wetlands. Gowanus Canal is mapped by the NYSDEC as littoral zone, which is defined as tidal wetlands that include all lands under tidal waters shallower than six feet at mean low water (MLW). The NWI maps classify the Canal as “estuarine, subtidal, open water, excavated.” Portions of the head of the Canal are exposed at low tide and the overall depth of the proposed project area is shallow. A site visit conducted in October 2011 during low tide, indicated that there are no vegetated wetlands or significant habitats within the proposed project area and the existing shoreline has been previously developed with bulkheads.

Available information from the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA-NMFS), NYSDEC Natural Heritage Program (NHP) and

USFWS were reviewed to identify the presence of rare, threatened or endangered species at the proposed project area. Correspondence with the NHP in November 2011 indicated that there are no records or known occurrences of rare or state-listed animals, plants, significant natural communities or other significant habitats on or in the immediate vicinity of the proposed project area. The USFWS database indicated that the Shortnose sturgeon (*Acipenser brevirostrum*), a federally-designated endangered species under the Endangered Species Act (ESA), is known to occur within Kings County. A complete assessment of the proposed project's potential for impacts to fish is presented in Attachment D, Essential Fish Habitat Assessment. The EFH concluded that the proposed project would not result in potential significant adverse impacts to this species as they are generally found in the Hudson River from the southern tip of Manhattan north to the Federal dam at Troy. This species would be expected to occur further west of the proposed project area within the waters of the Upper Bay, and would not be expected to be found within Gowanus Bay or Canal. As a result, it is not anticipated that this species would be impacted by the proposed project.

Gowanus Canal has experienced poor water quality caused by current and past industrial uses along the Canal, input from CSO and stormwater discharges, and existing oxygen demanding sediments. DO levels have been routinely measured below the NYSDEC standard for Class SD waters of 3.0 mg/L. These hypoxic conditions produce hydrogen sulfide and cause nuisance odor problems. Implementation of a temporary oxygenation system in the Canal by DEP while the Gowanus Flushing Tunnel has been undergoing repairs has resulted in improved DO levels. The upgrade activities at the Gowanus facilities, including the Flushing Tunnel rehabilitation, aim to reduce the frequency and intensity of the CSO discharges to the Canal by 34 percent, increase the reliability of the Flushing Tunnel system, preserve DO levels at the NYSDEC standards, and to create reductions in the frequency of nuisance odors, the amount of floatables and sedimentation in the Gowanus Canal.

A review of prior benthic grab studies performed within the proposed project area in Fall 2003 (USACE, 2003) and Spring 2004 (LMS, 2004) indicated that the benthic community is dominated by pollutant-tolerant species of annelid worms (polychaetes and oligochaetes) and amphipods. The dominant polychaete species were annelids; specifically the species *Streblospio benedicti*, *Polydora* sp. and *Capitella* sp. that are known to be pollutant-tolerant benthic invertebrates. *Capitella* sp. and *Streblospio benedicti* are often found in sediments associated with high organic matter, sewage and low oxygen levels. Additional species that have been identified within the project area and which are known to tolerate degraded habitats were *Nematoda* sp., the polychaete worm *Nereis* sp., and *Mytilus edulis*, a species of mollusk in the Oligochaeta class of annelid worms. The species identified are typical of stressed environments,

are capable of reproducing quickly and would be expected to recolonize the proposed project area within six months to a year. Therefore, no significant adverse impacts to these species would occur.

As the result of a century of heavy industrial use, existing habitat within the Canal is already significantly impacted and degraded (USACE, 2007; GEI, 2007). Based on bathymetry data collected in 2011, accumulated sediment mounds are located at the head end of the Canal, roughly 825 feet upstream of Union Street. Dredging the Canal north of Union Street and placement of a two-foot deep sand cap would eliminate the exposed sediments and the associated odors, improve the visual aesthetics of the waterbody and improve the substrate for benthic habitat. The proposed project would remove accumulated sediment mounds at the head of the canal through dredging then place a subaqueous sand cap over the exposed sediments after dredging is completed. The elevation of the top of the cap would be at approximately three feet below MLLW. Upon completion of dredging and capping activities, the proposed project area would continue to be a littoral zone habitat and would increase tidal exchange by removing sediment from the intertidal range.

The proposed project would not have a significant effect on natural resources as it is expected to improve water quality and overall habitat potential from the Canal's current conditions. The proposed project would eliminate accumulated sediment mounds at the head end of the Canal, increase water depths and tidal flushing, and improve substrate for benthic habitat. Therefore, the proposed project would not result in potential significant adverse impacts to natural resources and no further review is required. Additional information addressing protective measures during construction can be found in Section T - Construction Impacts.

J. HAZARDOUS MATERIALS

In accordance with the *CEQR Technical Manual*, an evaluation was conducted to determine whether the proposed project would increase the exposure of people or the environment to hazardous materials. As part of the hazardous materials assessment, existing documentation was reviewed, including: Phase I/II Environmental Site Assessments (ESA), completed by DEP for the Gowanus Facilities Upgrade (DEP, 2008); and the Gowanus Canal Remedial Investigation (RI) report (USEPA, 2011), which includes data used to determine the nature and extent of chemical contamination in the Gowanus Canal.

The Phase II ESA for the Gowanus Facilities Upgrade concluded the soil encountered at the Gowanus Wastewater Pumping Station and its vicinity surrounding the Canal was predominantly

unconsolidated, non-native fill material consisting of sand with fine to medium gravel and varying amounts of brick, concrete and metal fragments (DEP, 2008). Given the presence of VOCs, SVOCs metals and gasoline and diesel range TPHs detected in several soil samples, soil management and construction health and safety plans were developed for the construction activities associated with the Gowanus Facilities Upgrade.

USEPA placed the Gowanus Canal (USEPA ID#: NYN000206222) on its National Priorities List of hazardous waste sites requiring further evaluation on March 2, 2010. As the proposed project was initiated prior to USEPA's 2010 listing of the Canal as a "Superfund" site and following NYSDEC's 2009 approval of the Gowanus Canal WWFP, this environmental review and related permit applications have been developed to meet the terms of the CSO Consent Order between DEP and NYSDEC. On December 29, 2011, USEPA released a draft Feasibility Study (FS) for the Canal. The draft FS contains remedial alternatives, which include dredging as part of the overall remedy for the Canal. USEPA has suggested that dredging will be part of the overall remedy for the Canal, and, as such, DEP will continue to coordinate with NYSDEC and USEPA to ensure that the proposed project design meets the milestones required by the CSO Consent Order and is aligned with USEPA's overall clean-up program.

USEPA conducted extensive sediment sampling as part of the RI process. Sediment cores were collected from 135 locations within the overall Canal during January, March and April 2010. Of these, 14 sample locations were located within the proposed project area. These samples were collected at two foot increments and depths including five feet below MLLW, which generally encompasses the proposed project depth. There were also a total of 14 sample locations in the proposed project area where samples were collected from 5.0 to 5.5 feet below MLLW, which are generally representative of the depth of sediments that would be exposed during the proposed project (i.e., after dredging but before capping activities). Stations that were sampled within the proposed project area are shown on Figure B-6.

Sediment samples were analyzed for TCL volatile organics, TCL semivolatile organics, TCL PCBs, TAL metals (including mercury and cyanide), grain size, total organic carbon (TOC) and sulfide. Sediment samples were analyzed for Toxic Characteristic Leaching Procedure (TCLP) parameters and hazardous waste characteristics only in new core locations not positioned on transects. In lieu of project-specific sampling, results of these analyses were used to characterize the sediments to be dredged, as well as the sediments that would be exposed during the proposed project.

Comparison to NYSDEC Values

For the purposes of this EAS, sediment sampling results collected in the proposed project area as part of USEPA's RI, were compared to the NYSDEC TOGS 5.1.9 In-Water and Riparian Management of Sediment and Dredged Material threshold values for sediment. NYSDEC TOGS 5.1.9 presents threshold values for metals (arsenic, cadmium, copper, lead and mercury), total PAHs, petroleum-related compounds benzene and total BTEX, pesticides DDT, DDD, DDE, chlordane, dieldrin and total PCBs. NYSDEC identifies three classes of sediment quality thresholds, Class A, B and C. Class A is identified as sediments that have no appreciable contamination and would not be toxic to aquatic life. If sediment chemistry is found to be at or below the chemical concentrations that define this class, then dredging and in-water or riparian placement can generally proceed at approved locations. Class B materials are identified as those which have moderate contamination and may exhibit chronic toxicity to aquatic life. Dredging and riparian placement may be conducted with several restrictions. Class C is identified as materials that have high levels of contamination and are expected to be potentially acutely toxic to aquatic life. Dredging and disposal requirements for this latter class of material may, therefore, be more stringent.

RI samples, taken at two foot increments, were averaged over the proposed project dredge depth. Table J-1 presents the average sediment concentrations over the dredging depth and sediment class based upon NYSDEC TOGS 5.1.9 guidance for the sediment to be dredged. Table J-2 presents the same information for the material to be exposed after dredging.

Comparison of the data in Tables J-1 and J-2 with the NYSDEC TOGS 5.1.9 threshold values demonstrates that arsenic and dieldrin concentrations are generally classified as Class A in both the sediments to be dredged and the sediments to be exposed after dredging. Benzene and BTEX concentrations in the sediments to be dredged are generally classified as Class A, while the sediments to be exposed after dredging are generally classified as Class B. The cadmium concentrations are generally classified as Class B within the sediments to be dredged and are generally classified as Class C within the sediments to be exposed after dredging. Copper, lead, mercury, total PCBs, the sum of DDT+DDD+DDE, chlordane and total PAH concentrations in both the sediments to be dredged and the sediments to be exposed after dredging are generally classified as Class C.

Table J-3 presents the concentration range, the average concentration and the sediment class based on the guidance provided in NYSDEC TOGS 5.1.9 for the materials to be dredged. The same information for the material to be exposed after dredging is presented in Table J-4.

Review of NYSDEC TOGS 5.1.9, indicates the material to be dredged within Gowanus Canal are characterized as Class C, which is potentially acutely toxic to aquatic biota based upon those parameters discussed above that exceeded Class C thresholds. Based upon a review of the RI sediment data within the proposed project area, NYSDEC TOGS 5.1.9 identifies copper, lead, mercury, total PCBs, the sum of DDT+DDD+DDE, chlordane and total PAHs as the chemicals of concern.

The results of USEPA's RI indicate that chemical contamination within Gowanus Canal sediment is unacceptable to human health and the environment due to elevated levels of PAHs, PCBs and metals (barium, cadmium, copper, lead, mercury, nickel and silver) resulting from current and historical discharges to the Canal. However, no compounds were observed to exceed the thresholds for any listed hazardous waste, and sediment samples did not exhibit any characteristics of hazardous waste as defined by 6 NYCRR Part 371 and USEPA criteria. The proposed sediments to be dredged and exposed during dredging activities would not be characterized as a hazardous waste. Although the levels of chemical concentrations may be higher, designation of the sediments within the proposed project area as Class C would not be inconsistent with other sediments within New York Harbor, which are also classified as Class B or C under NYSDEC TOGS 5.1.9. The proposed project would remove Class C sediments from the proposed project area and include a cap and scour protection to prevent erosion of the cap. Therefore, the proposed project would not result in potential significant adverse impacts associated with hazardous materials as compared to NYSDEC values.

Table J-1. Average Sampling Results of Sediments to be Dredged Based Upon USEPA RI Data (2011) for Gowanus Canal

Station Location	Units	NYSDEC	NYSDEC	NYSDEC	GC-SD-107	GC-SD-125	GC-SD-126	GC-SD-152	GC-SD-108	ERT1-1	ERT1-2	ERT1-3	ERT2-1	ERT2-2	ERT2-3	ERT3-1	ERT3-2	ERT3-3	
Sample Depth (MLLW)		TOGS 5.1.9 Class A	TOGS 5.1.9 Class B	TOGS 5.1.9 Class C	-0.69 to -4.69	1.11 to -4.89	0.91 to -5.09	-0.49 to -4.49	-1.19 to -5.19	-1.49 to -4.49	-1.49 to -4.49	-1.49 to -4.49	0.01 to -4.99	0.01 to -4.99	0.01 to -4.99	-1.89 to -4.89	-1.89 to -4.89	-1.89 to -4.89	
Parameter																			
Metals																			
Arsenic	mg/kg	< 14	14-53	> 53	3.2	6.5	14.2	8.4	8.7	5.4	5	4.7	12	12	20	3.5	3.8	5.8	
Cadmium	mg/kg	< 1.2	1.2-9.5	> 9.5	2.2	6.6	4.1	12.2	7.5	7.6	2.9	6.8	3.9	4.5	3.4	4.3	1.7	2.2	
Copper	mg/kg	< 33	33 - 207	> 207	202	378	31.5	595	397	423	200	492	233	262	266	171	104	148	
Lead	mg/kg	< 33	33 - 166	> 166	793	1,071	595	1,149	736	937	1,164	1,130	422	581	536	391	183	242	
Mercury	mg/kg	< 0.17	0.17 - 1.6	> 1.6	1.5	3.9	2.3	4.4	2.1	4.1	1.6	21.2	2.1	2	1.5	1.4	0.65	1.5	
PCB																			
Total PCB (sum of Aroclors)	ug/kg	< 100	100 - 1,000	> 1,000	1,175	6,627	4,339	5,071	2,691	5,535	2,473.50	7,932.50	5,146.67	4,703.33	3,900	3,452.50	4,102.50	3,930	
Pesticides																			
Dieldrin	ug/kg	< 110	110 - 480	> 480	8.15	49	79.33	33.20	34.00	39.75	24.75	8.90	19.80	56.05	82.58	80.00	79.00	128.5	
Sum of DDT+DDD+DDE	ug/kg	< 3	3 - 30	> 30	108	681.67	910	204.70	187.00	281.55	151.75	88.90	133.70	320.97	330.84	37.17	223.50	502	
Chlordane	ug/kg	< 3	3 - 30	> 30	118	107.67	215.8	117.40	113.50	275.10	163.75	16.70	99.45	150.83	222.50	245.98	105.50	245.75	
SVOC																			
TOTAL PAH	ug/kg	< 4,000	4,000 -35,000	> 35,000	94,325	145,883	339,752	329,775	488,850	3,429,485	139,093	449,075	1,996,533	561,542	170,218	311,225	425,715	166,939	
VOC																			
Benzene	ug/kg	< 590	590 - 2,160	> 2,160	345	607	28	17	385	261	31	123	549	944	224	68	131	70	
BTEX	ug/kg	< 960	960 - 5,900	> 5,900	316	540	29	18	785	446	83	90	3,923	1,235	71	31	43	35	

Table J-2. Average Sampling Results of Sediments to be Exposed After Dredging Based Upon USEPA RI Data (2011) for Gowanus Canal

Station Location		NYSDEC TOGS 5.1.9 Class A	NYSDEC TOGS 5.1.9 Class B	NYSDEC TOGS 5.1.9 Class C	GC-SD-107	GC-SD-125	GC-SD-126	GC-SD-152	GC-SD-108	ERT1-1	ERT1-2	ERT1-3	ERT2-1	ERT2-2	ERT2-3	ERT3-1	ERT3-2	ERT3-3
Sample Depth (MLLW)	Units				-6.89 to -8.89	-4.89 to -6.89	-5.09 to -6.69	-4.49 to -6.49	-5.19 to -7.19	-4.49 to -5.49	-4.49 to -5.49	-4.49 to -5.49	-4.99 to -5.99	-4.99 to -5.99	-4.99 to -5.99	-4.89 to -5.89	-4.89 to -5.89	-4.89 to -5.89
Parameter																		
Metals																		
Arsenic	mg/kg	< 14	14-53	> 53	12	22	7	18	14	14	4.1	7.5	15	11	7.3	3.3	3.5	11
Cadmium	mg/kg	< 1.2	1.2 -9.5	> 9.5	9.7	18	8.7	13	24	17	4.1	14.5	8.7	17	11	1.6	2.5	11
Copper	mg/kg	< 33	33 - 207	> 207	666	989	521	724	939	1,040	338	622	451	784	557	183	125	562
Lead	mg/kg	< 33	33 - 166	> 166	2,240	2,780	1,270	1,430	1,830	1,940	966	1,890	2,510	1,690	1,550	173	244	1,090
Mercury	mg/kg	< 0.17	0.17 - 1.6	> 1.6	2.1	3.6	2.5	5.9	4.3	18	2.3	3.3	2.9	4.8	3	0.45	0.75	4.2
PCB																		
Total PCB (sum of Aroclors)	ug/kg	< 100	100 - 1,000	> 1,000	5,100	10,400	4,412	3,300	7,308	9,480	3,190	6,710	4,830	8,300	3,330	1,950	4,220	8,480
Pesticides																		
Dieldrin	ug/kg	<110	110 - 480	> 480	63	4.6	79.3	250	34	50	13	5.9	140	110	300	170	84	8
Sum of DDT+DDD+DDE	ug/kg	< 3	3 - 30	> 30	900	89.3	595	870	250	177	141	6.2	980.7	1,320	500	790	166	45
Chlordane	ug/kg	< 3	3 - 30	> 30	79.8	89.8	17.8	213	274	352	55	28.3	540	5.6	1,450	380	384	18
SVOC																		
TOTAL PAH	ug/kg	< 4,000	4,000 -35,000	> 35,000	273,500	250,200	212,100	1,256,500	1,508,400	293,050	116,970	1,053,900	370,100	8,600,500	318,800	85,470	490,500	346,800
VOC																		
Benzene	ug/kg	< 590	590 - 2,160	> 2,160	370	32	28	793	1,600	450	62	430	490	14,000	2,400	22	400	440
BTEX	ug/kg	< 960	960 - 5,900	> 5,900	598	52	25	1,000	7,100	179	21	1,033	288	56,255	832	6.4	113	231

Table J-3. Summary of Sampling Results for Gowanus Canal Sediments to be Dredged Based Upon USEPA RI Data (2011)

Compound	Concentration Range	Average Concentration	NYSDEC TOGS 5.1.9 Sediment Classification
Metals (mg/kg)			
Arsenic	3.20 – 20.00	8.09	A
Cadmium	1.70 – 12.20	4.99	B
Copper	31.50 – 595.00	278.75	C
Lead	183.00 – 1,164.00	709.29	C
Mercury	0.65 – 21.20	3.59	C
PCB (ug/kg)			
Total PCB (sum of Aroclors)	1,175.00 – 7,932.50	4,362.79	C
Pesticides (ug/kg)			
Dieldrin	8.15 – 128.50	51.64	A
Sum of DDT+DDD+DDE	37.17 – 910.00	297.25	C
Chlordane	16.70 – 275.10	157.00	C
SVOC (ug/kg)			
Total PAH	94,325.00 – 3,429,485.00	646,315.00	C
VOC (ug/kg)			
Benzene	17.00 – 944.0	270.21	A
BTEX	18.00 – 3,923.00	546.07	A

Table J-4. Summary of Sampling Results for Gowanus Canal Sediment to be Exposed After Dredging Based Upon USEPA RI Data (2010)

Compound	Concentration Range	Average Concentration	NYSDEC TOGS 5.1.9 Sediment Classification
<i>Metals (mg/kg)</i>			
Arsenic	3.30 – 22.00	10.69	A
Cadmium	1.60 – 24.00	11.49	C
Copper	125.00 – 1,040.00	607.21	C
Lead	173.00 – 2,780.00	1,543.07	C
Mercury	0.45 – 18.00	4.15	C
<i>PCB (ug/kg)</i>			
Total PCB (sum of Aroclors)	1,950.00 – 10,400.00	5,786.43	C
<i>Pesticides (ug/kg)</i>			
Dieldrin	4.60 – 300.00	93.70	A
Sum of DDT+DDD+DDE	6.20 – 1,320.00	487.87	C
Chlordane	5.60 – 1,450.00	277.66	C
<i>SVOC (ug/kg)</i>			
Total PAH	85,470.00 – 8,600,200.00	1,084,056.43	C
<i>VOC (ug/kg)</i>			
Benzene	22.00 – 14,000.00	1,536.93	B
BTEX	6.40 – 56,255.00	4,838.10	B

Comparison to Superfund Cleanup Values

Sediment sampling results collected as part of USEPA's RI and within in the proposed project area and depth were compared to the risk-based cleanup values developed as a result of the Human Health and Ecological Risk Assessments reported in the RI. Chemicals of Concern (COCs) were identified based on unacceptable risks as reported in the RI. COCs were identified for sediments in Gowanus Canal based on risks posed to human health and ecological receptors. COCs identified for human health are: arsenic, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. COCs identified for ecological receptors are: barium, cadmium, copper, lead, mercury, nickel, silver, total PAHs, and total PCBs.

Table J-5 presents the range of sediment concentrations for several intervals, including the proposed project dredge depths. Data are grouped by the bottom depth of each result presented, as reported in the RI Report, and include data from samples as deep as nine (9) feet below MLLW. The risk-based cleanup values (RBCVs) presented in Table J-5 represent concentrations at which risks are acceptable to these receptors, based on USEPA's definition of acceptable risks, as stated in the National Contingency Plan (NCP). USEPA has defined the "acceptable risk range as within 10^{-6} to 10^{-4} for carcinogens and a Hazard Index (HI) of 1.0 for non-carcinogens. The range of measured chemical concentrations measured in Gowanus Canal sediments are compared to the RBCVs. Samples for which the RBCVs are exceeded are considered to require remedial action in order to be protective of human health and the environment. Sample depths for which concentrations exceed the RBCVs are identified in Table J-5. RBCVs are exceeded for barium, cadmium, copper, lead, mercury, nickel, and silver at all depths exceeding one foot below MLLW. RBCVs are exceeded for total PAHs and total PCBs at every potential dredge depth. Likewise, RBCVs are exceeded for five of the six individual PAHs identified as a COC at every potential dredge depth.

These results indicate that the sediments which would be exposed during the proposed project (i.e. after dredging, but before capping) would represent chemical concentrations that exceed the acceptable RBCVs for the COCs identified under Superfund, regardless of the dredge depth.

Sediments exposed during the proposed project are considered more contaminated with chemicals identified in the RI than current surficial sediments i.e., 0-0.5 feet (see Table J-5). The proposed project would involve the removal of accumulated sediment mounds that are visually unattractive and a source of odors when exposed during low tide. The proposed project would also involve the placement of a two foot cap of clean sand over the newly exposed sediments.

Coordination with NYSDEC and USEPA during the final design of the cap would be completed to ensure that contaminated sediments below the cap are well stabilized and reduce potential for scouring and related exposure of contaminated sediments below the cap. Design would determine the type and placement of cap materials necessary to provide this protection and prevent scouring. Therefore, the proposed project would not result in potential significant adverse impacts associated with hazardous materials as compared to Superfund cleanup values.

Conclusion

The sediments proposed for dredging are characterized as NYSDEC TOGS 5.1.9 Class C and were found to have chemical concentrations that exceed the acceptable RBCVs for the COCs identified under Superfund. The proposed project would involve the removal of accumulated sediment mounds that are visually unattractive and a source of odors when exposed during low tide. The proposed project would also involve capping of the sediments below that would be exposed after dredging. The proposed cap would provide a clean layer of surficial sediments that would be expected to improve substrate for benthic habitat. Scour protection, such as concrete mats, or equivalent, would be located at the Flushing Tunnel outlet and discharge locations of large CSO outfalls (e.g., RH-034) at the head end of the canal to prevent erosion of the cap after the construction of the proposed project. Furthermore, coordination with NYSDEC and USEPA during the final design of the cap including the type and placement of cap materials would be necessary to ensure that contaminated sediments below the cap are well stabilized and reduce potential for scouring and related exposure of contaminated sediments below the cap. Therefore, with the implementation of the above design and coordination measures, the proposed project is not expected to result in any potential significant adverse impacts from hazardous materials after construction. Potential hazardous materials impacts associated with construction activities are discussed in Section T – Construction Impacts.

Table J-5. Comparison of Chemical Concentrations in Sediments to Risk-Based Cleanup Values for COCs within Proposed Project Area

Sample Depth Range (MLLW) ft		Ecologica 1 RBCV*	Human Health RBCV*	Surficial (0- 0.5)**	0 to -1	-1 to -2	-2 to -3	-3 to -5	-5 to -7	-7 to -9
Parameter										
Metals										
Arsenic	mg/kg		138.5	8.2	6.7 - 12.2	3.6 - 16.8	2.3 - 12.3	1.8 - 13.5	3.3 - 21.9	1.4 - 23.9
Barium	mg/kg	141		99	58.1 - 98	75.6 - 338	77.6 - 664	78.3 - 1690	118 - 1370	25.7 - 1,860
Cadmium	mg/kg	2.6		2.7	1.1 - 1.7	1.4 - 5.4	1.4 - 7.6	1.3 - 21.3	1.6 - 18.1	0.29 - 26.9
Copper	mg/kg	188.6		211	65.8 - 129	106 - 448	110 - 458	126 - 990	125 - 1250	12.4 - 939
Lead	mg/kg	340		247	119 - 290	141 - 934	167 - 1210	207 - 2,880	173 - 2780	22.6 - 2080
Mercury	mg/kg	1.24		1.8	0.73 - 2.2	0.82 - 7.5	0.68 - 7.2	0.32 - 61.6	0.45 - 17.7	0.19 - 6.2
Nickel	mg/kg	41.75		39	30.3 - 35.8	24.5 - 49.7	25.3 - 87.1	23.7 - 187	29.5 - 301	11.9 - 230
Silver	mg/kg	4.1		4.8	6 - 23.7	0.58 - 15	0.74 - 33.7	0.37 - 42.1	0.93 - 42.1	0.93 - 1,277
PCB										
Total PCBs	ug/kg	690			210 - 330	350 - 6400	130 - 4140	194 - 15000	1450 - 10400	320 - 6900
SVOC										
Benzo(a)anthracene	ug/kg		27,600	11,000	2,800 - 86,000	4,000 - 41,000	2,400 - 390,000	1,500 - 79,000	6,300 - 160,000	11,000 - 290,000
Benzo(a)pyrene	ug/kg		2,700	8,400	2,600 - 71,000	3,500 - 33,000	2,200 - 280,000	1,200 - 64,000	5,700 - 47,000	9,100 - 320,000
Benzo(b)fluoranthene	ug/kg		27,600	8,900	2,500 - 31,000	2,700 - 14,000	1,700 - 170,000	1,100 - 48,000	2,700 - 57,000	8,700 - 320,000
Benzo(k)fluoranthene	ug/kg		276,000	6,900	2,200 - 41,000	2,700 - 22,000	1,600 - 140,000	1,200 - 51,000	4,000 - 67,000	8,900 - 320,000
Dibenz(a,h)anthracene	ug/kg		2,800	1,400	420 - 29,000	510 - 13,000	370 - 25,000	620 - 13,000	600 - 27,000	1,500 - 320,000
Indeno(1,2,3-c,d)pyrene	ug/kg		2,600	9,000	1,400 - 25,000	1600 - 13,000	1,200 - 85,000	2,000 - 23,000	2,200 - 39,000	6,200 - 120,000
Total PAHs	ug/kg	85,300		140,000	61,800 - 2,059,700	55,960 - 1,257,400	26,730 - 11,489,000	22,910 - 1,977,100	84,470 - 1,213,000	176,100 - 12,619,000
*RBCV= Risk-Based Cleanup Value ** Represent current surficial sediments. These data were used in the risk assessments in the RI. Exceedences are shown in italics										

K. WATER AND SEWER INFRASTRUCTURE

As identified in the *CEQR Technical Manual*, an infrastructure analysis is required only for projects that increase density or change drainage conditions on-site. The proposed project would involve water-based dredging and capping activities within the Gowanus Canal. No upland development is proposed or required, and no increase in density or change to existing drainage conditions would occur. Therefore, the proposed project is not expected to result in significant adverse impacts to water and sewer infrastructure and no further assessment is necessary.

L. SOLID WASTE AND SANITATION SERVICES

The *CEQR Technical Manual* identifies a significant impact to solid waste and sanitation services that would result from a project that generates 50 tons of solid waste or more per week. As discussed in previous sections, the proposed project would not result in a significant increase in resident or worker populations in the area and would therefore not result in an increase in solid waste that would impact existing services. Therefore, the proposed project is not expected to result in potential significant adverse impacts to solid waste and sanitation services and no further assessment is necessary. Potential impacts associated with solid waste and sanitation services during construction are discussed in Section T – Construction Impacts.

M. ENERGY

An assessment of potential impacts to energy, according to the *CEQR Technical Manual*, considers the “project's consumption of energy and, where relevant, potential effects on the transmission of energy that may result from the project.” No increase in the demand for energy or its transmission would result from the proposed project. Therefore, the proposed project is not expected to result in potential significant adverse impacts to energy and no further assessment is necessary. Potential impacts associated with energy uses during construction activities are discussed in Section T - Construction Impacts.

N. TRANSPORTATION

An assessment of transportation, according to the *CEQR Technical Manual*, considers “traffic operations and mobility, public transportation facilities and services, pedestrian elements and flow, safety of all roadway users (pedestrians, bicyclists and vehicles), on- and off-street parking, or goods movement.” The proposed project would not result in the generation of new pedestrian or vehicular trips or require the use of public transportation facilities and services. Construction activities would be water-based with no significant upland activities anticipated. Therefore, the

proposed project is not expected to result in potential significant adverse impacts to transportation and no further assessment is necessary. Potential impacts associated with transportation during construction are discussed in Section T – Construction Impacts.

O. AIR QUALITY

As discussed in the *CEQR Technical Manual*, “ambient air quality, or the quality of the surrounding air, may be affected by air pollutants produced by motor vehicles, referred to as ‘mobile sources;’ or by fixed facilities, usually referenced as ‘stationary sources’ or by a combination of both.” The accumulation of sediments within the head end of the Canal produce hydrogen sulfide (H₂S), a discernible gas that resembles “rotten egg,” and other nuisance odors when exposed during low tide. Dredging would remove these exposed sediments that contribute to nuisance odors and would therefore be beneficial to air quality in the proposed project area and surrounding community. Therefore, the proposed project is not expected to result in potential significant adverse impacts to air quality and no further assessment is necessary. Short-term impacts to air quality associated with construction activities are discussed in Section T- Construction Impacts.

P. GREENHOUSE GAS EMISSIONS

The *CEQR Technical Manual* identifies three main sources of Greenhouse Gas (GHG) emissions related to operations, mobile sources and construction activities. No significant direct or indirect GHG emissions would be produced on an annual basis as a result of the proposed project. The proposed project would not require any significant energy upon completion or have significant impacts to air quality as discussed in Section O – Air Quality. Therefore, the proposed project is not expected to result in potential significant adverse impacts from greenhouse gas emissions and no further assessment is necessary.

Q. NOISE

According to the *CEQR Technical Manual*, a detailed noise study may be required for stationary noise sources if the proposed project would cause the source to operate within the line of site and 1,500 feet of a receptor. However, the proposed project would not result in new noise following completion of construction activities. Therefore, the proposed project is not expected to result in potential significant adverse impacts from noise and no further assessment is necessary. Potential impacts from noise associated with construction activities are discussed in Section T – Construction Impacts.

R. PUBLIC HEALTH

The *CEQR Technical Manual* identifies that a public health assessment may be warranted if it is determined if “an unmitigated significant adverse impact is identified in other CEQR analysis areas, such as air quality, water quality, hazardous materials, or noise”. As discussed in previous sections, the proposed project would not result in unmitigated impacts upon completion. Therefore, the proposed project is not expected to result in potential significant adverse impacts to public health and, as a result, no further assessment is necessary. Due to sources of contamination that have been documented within the proposed project area, appropriate measures, such as a Health and Safety Plan for employees, would be taken to limit potential health impacts associated with these materials to workers and the public. Potential impacts to public health associated with construction activities are discussed in Section T – Construction Impacts.

S. NEIGHBORHOOD CHARACTER

A neighborhood character assessment, as defined by the *CEQR Technical Manual*, is an evaluation of various elements that define a local community. These elements may include land use, urban design, visual resources, historic resources, socioeconomics, traffic and/or noise. The proposed project location is within an industrialized section of Brooklyn that is currently zoned as an M2-1 district. The proposed project would be beneficial to the surrounding community by reducing odors and visual impacts caused by existing accumulated sediment mounds. Therefore, the proposed project is not expected to result in potential significant adverse impacts to neighborhood character and no further assessment is necessary.

T. CONSTRUCTION IMPACTS

The proposed project involves the environmental dredging of accumulated sediment mounds within an area of approximately 83,000 square feet (sf) at the head end of the Gowanus Canal. Construction activities would involve the marine-based removal of sediments through either mechanical or hydraulic dredge methods as determined by the contractor. In addition to the proposed dredging, a subaqueous sand cap and scour protection would be installed after the dredging activities are completed. Details related to these construction activities are provided below. The proposed construction-related activities are expected to be completed within 24 months and would, therefore, be temporary and short-term in duration. The overall construction schedule and estimated durations of construction activities are presented in Section A – Project Description.

Mechanical Dredging

Mechanical dredging would involve the use of a barge-mounted excavator-type dredge with a long-reach capability. Given the limited working area at the head end of the Canal, mechanically dredged materials would be transported via small (“micro”) watertight scows (with an approximate capacity of 10-cy of material) to an approximate 1,000-cy or similar sized hopper barge staged within the Canal at the 6th Street Basin. Each micro scow would be capable of moving under the existing bridge crossings without requiring them to be opened. The material would be offloaded into the larger barges using a conventional crane with an environmental bucket. Any transloading of dredged material from smaller to larger barges would be done with the use of drip pans or similar equipment that would be placed between the mechanical dredge, scows and hopper barges to cover the space between the barges and thereby prevent the potential spillage of material back into surface waters during the transfers.

Decant waters would be discharged back to the dredge area upstream of the turbidity curtain. The larger barges would transfer dredged material to a licensed off-site facility located in the region, where this material would be pug-milled¹ and disposed in accordance with federal, state and local regulations. Mechanical methods would also be used to remove large debris. Timing of the removal of the debris would parallel the removal of the dredge material when it would be transloaded to a larger barge located at the staging area for final transport to a processing facility.

Hydraulic Dredging

Hydraulic dredging would involve the use of a hydraulic dredge that would be transported to the site via a tugboat. It is anticipated that one hydraulic dredge would be used with pumping capabilities up to 8,000 feet. Materials removed by hydraulic methods would be pumped to a large hopper barge (~1,000 cy or similar) moored adjacent to the dewatering plant (located at 6th Street Basin) via a temporary pipeline that would extend from the hydraulic dredge to the dewatering barge.

Several barges would be used as a platform for the dewatering equipment and moored at a temporary site at the 6th Street Basin. Dewatering would be accomplished through the use of presses, hydrocyclones and physical separation. Filtrate water from the dewatering process would be collected into tanks located on the dewatering plant barge and pumped back to the dredging site, upstream of the turbidity curtain, using high density polyethylene (HDPE) pipe

¹ Pug-milled refers to the process of adding a stabilizer to sediments until a desired consistency is reached to make handling and transporting the material easier.

and a high volume pump. Once screened and dewatered, the dewatered materials would be conveyed to a barge staged adjacent to the dewatering system for storage prior to transport to a final offloading and processing facility. Dewatered and stabilized sediment from the dredge area would be considered a regulated solid waste requiring upland disposal at a licensed facility in accordance with federal, state and local regulations. Dewatered material would be transported via barge to a licensed processing facility located in the region.

As with mechanical dredging, visible debris, such as timbers, auto parts, etc. would be removed from the Canal bottom prior to dredging activities using mechanical methods. No hydraulic equipment would be used to remove debris buried below the existing mudline.

Subaqueous Sand Cap

Following the completion of the dredging activities, a sand cap would be installed over the exposed sediments. In accordance with the CSO Consent order capping is based on NYSDEC TOGS 5.1.9, which specifies that material with a Class C designation (based on the concentration of chemicals present) be capped “with available cleaner material.” Approximately 8,000 cy of sand would be used to cover an area of approximately 83,000 sf. Sand would be transported by using a large barge (approximately 3,000 ton capacity) to the 6th Street Basin. From this location, the sand would be transloaded by mechanical means (crane or excavator) to smaller barges that would be moved to the work area by small push boats. Once at the site, the sand would be taken from the barge using an excavator that would then distribute the sand over the project area using a multiple lift approach. This approach would involve applying the sand in multiple layers across a defined area until the required depth of two feet for the cap is achieved. Similarly, a hydraulic approach may be used where the sand would be delivered to the staging area and then transloaded to a slurry barge by mechanical means (crane or excavator) for hydraulic pumping to the capping area. The sand material would then be pumped out of the hydraulic-based pipeline for distribution over the area. This approach would require the use of an approximate 4,000 foot long slurry line. The line would be positioned in the Canal as to not obstruct navigation. Coordination with NYSDEC and USEPA during the final design of the cap including the type and placement of cap materials would be necessary to ensure that contaminated sediments below the cap are well stabilized and reduce potential for scouring and related exposure of contaminated sediments below the cap.

Scour Protection (Apron)

Scour protection would be required at several high energy locations within the proposed project area, particularly at the head end of the Canal (Figure B-2) at the discharge locations of large CSOs (e.g., RH-034) and the Gowanus Flushing Tunnel outlet. Scour protection would likely cover an area within approximately 200-feet of the head of the Canal for a total of approximately 20,000 sf. The scour protection would be placed on top of the cap. Materials would be delivered to the site by barge, then positioned into place by lifting them from the barge using a barge-mounted crane or excavator, and then positioned for final placement using a spreader bar.

According to the *CEQR Technical Manual*, a preliminary construction assessment is not needed for the following technical areas: land use, zoning and public policy, cultural and historical resources, open space, socioeconomic conditions, community facilities, neighborhood character and infrastructure if the following apply:

- The construction activities are not considered “long-term”; or
- Short-term construction activities would not directly affect a technical area, such as impeding the operation of a community facility (e.g., result in the closing of a community health clinic for a period of a month(s)).

Construction activities would be temporary and short-term in duration and would not directly affect the resources identified above. Therefore, an assessment of construction impacts was not completed for these technical areas. Potential construction-related impacts to natural resources, hazardous materials, energy, transportation, air quality and noise are discussed below.

NATURAL RESOURCES

Proposed construction activities would involve the direct disturbance to sediments at the head end of the Canal. However, as discussed in Section I - Natural Resources, existing natural resources are limited due to the lack of natural shoreline and the degraded water quality and sediments found within the proposed project area. Dredging and capping activities would alter approximately 83,000 sf of benthic habitat within the proposed dredge area. In addition, approximately 20,000 sf of scour protection would be placed on top of the sand cap at the head end of the Canal. This would result in a temporary impact to fish and benthic invertebrates through loss of benthic habitat and increased turbidity during dredging activities.

An EFH assessment was completed in support of the proposed project and is provided as Attachment D. This assessment concluded that four fish species, including winter flounder,

windowpane flounder, summer flounder and black sea bass may be located within the proposed project area. Finfish in the area would be capable of temporarily avoiding the proposed project area and would be expected to inhabit other existing shallow water habitats within the Canal. Benthic communities that would be disturbed during construction activities would likely recolonize the area after completion. The EFH concluded that the construction activities, which are expected to be localized, temporary and short-term in duration and would include turbidity measures, would not result in potential significant adverse impacts to designated species.

Specifically, the following measures would be implemented to minimize potential impacts to natural resources during construction:

- A turbidity curtain that would span the Canal from bulkhead to bulkhead would be put in place prior to the start of any construction activities within the Canal. The turbidity curtain would extend from the water surface to the bottom of the Canal and would be of sufficient length to compensate for the rise and fall of the tides. Rope or cables with attached floats would be used to suspend the top of the curtains on the water surface and a chain or weight would be fixed to the bottom to stretch the fabric to the floor of the Canal. The proper functioning of the turbidity curtain would be ensured using visual inspection methods. If a turbidity curtain malfunctions, any damaged portions of the turbidity curtain would be repaired. The turbidity curtain would remain in place until the completion of all construction activities within the Canal and would only be opened as necessary to allow for vessel ingress/egress.
- Turbidity outside of the curtain would be visually monitored for turbidity levels over ambient conditions. If turbidity outside of the curtain is observed, dredging operations would be suspended and appropriate adjustments would be made.
- Return water at the staging/dewatering area would be monitored on a regular basis in compliance with regulatory permits.
- If mechanical dredging techniques are utilized, drip pans would be used between the barges to prevent spillage during transfer of materials.

The proposed construction activities are necessary to remove accumulated sediment mounds that are causing nuisance odors and degraded habitat for benthic habitat at the head end of the Canal. The proposed construction activities would be short-term in duration and appropriate control measures as discussed above would be utilized. In total, all construction from mobilization to demobilization would be completed within 24 months. The construction of the proposed project is

temporary and short in duration. Therefore, the proposed project is not expected to result in potential significant adverse impacts on natural resources during construction.

HAZARDOUS MATERIALS

Based upon a review of existing RI data, sediments are classified as Class C under NYSDEC TOGS 5.1.9. Several management and handling options are recommended by NYSDEC TOGS 5.1.9 to manage Class C sediments, including the use of a closed bucket or other methods to minimize the loss of suspended solids while dredging and precluding in-water disposal of dredged sediment. In addition, as part of the proposed project, capping the site with Class A sediments to cover the sediments exposed after dredging is complete would be conducted in accordance with the recommendations of NYSDEC TOGS 5.1.9 and the CSO Consent Order.

The same measures described above for Natural Resources protections during construction would also minimize potential effects associated with the re-suspension of existing sediments during dredging. The entire work area would be isolated from downstream areas by a turbidity curtain made of filter fabric. The turbidity curtain would extend from the water's surface at high tide to the bottom of the Canal and from the bulkheads on either side of the Canal. The curtain would be used during all dredging and capping activities. In addition, the area immediately downstream of the turbidity curtain would be monitored for visual signs of turbidity. In the event that significant turbidity is observed outside the curtain, dredging would be halted until conditions return to the normal state and/or the cause of the excess turbidity is determined.

Use of the above measures during dredging and capping activities would minimize potential impacts during construction. In addition, a Health and Safety Plan would also be developed to limit potential impacts to workers and the surrounding community during construction activities. In total, all construction from mobilization to de-mobilization would occur within 24 months and would be temporary and short in duration. Therefore, the proposed project is not expected to result in potential significant adverse impacts from hazardous materials during construction.

ENERGY

During construction activities, equipment used for both the dredging and dewatering activities would require the use of generators and/or diesel fuel to operate. It is currently anticipated that a 100 kilowatt (kW) generator would be used to power dewatering equipment; however, the number and size of the generator(s) used would be determined by the contractor. Mechanical dredging methods would involve the use of tugboats and excavators with engine sizes ranging from 175 to 2,000 horsepower. Hydraulic dredging methods would involve the use of a hydraulic

dredge with an engine size of approximately 600 horsepower (refer to the Air Quality section below for an assessment of potential construction impacts resulting from the use of this equipment). In total, all construction from mobilization to de-mobilization would occur within 24 months and is temporary and short in duration. Therefore, the proposed project is not expected to result in potential significant adverse impacts to energy during construction.

TRANSPORTATION

The proposed project would not add any significant vehicular traffic during construction. Water-based transport would be the primary method for moving equipment and workers to the proposed project area. Under hydraulic dredging, tractor trailers would be used to bring equipment to a mobilization/demobilization site to be determined by the contractor. Equipment would then be loaded onto barges and transported to the site via tugboats. It is currently estimated that approximately 152 truck trip ends total for equipment and material deliveries would be required throughout the duration of construction including mobilization and demobilization. In accordance with the *CEQR Technical Manual*, a 2.5 passenger car equivalent (PCE) for truck trips was applied for the construction of the proposed project. A total of 380 PCE trip ends would therefore be anticipated over the duration of construction. For purposes of this assessment, it was assumed that, on average, approximately eight (8) PCE trip ends would occur each day during mobilization and demobilization activities. Even if all of these trip ends occurred during one hour, this would still be much less than the *CEQR* threshold of 50 peak hour vehicle trip ends and, as a result, no significant impacts to traffic would be anticipated.

In addition, up to 21 personal vehicles would be added to the street network in proximity to the proposed project area for construction workers each day throughout construction. If all construction worker vehicles parked in the same hour it would not exceed the 50 peak hour vehicle trip end threshold. Combined truck trip ends and employee vehicle trip ends would total 29 trip ends, which would also be below the screening threshold. Parking for these vehicles is not anticipated to be at the same location as truck deliveries associated with the mobilization/demobilization area noted above. In addition, a mooring location for the boats that would transport construction workers would be determined by the contractor, close to the proposed project area within the Canal.

There are several DOT-operated street-level bridges that cross the Canal and are movable either by opening or lifting. The vertical clearances of these bridges range from seven to 23 feet at MLW. During the marine-based transport of equipment and materials in and out of the Canal, several of these bridges, predominantly the 9th Street Bridge, would need to be opened to

accommodate contractor vessels. It is anticipated that, subsequent to mobilization activities, the majority of this marine-based traffic would be between the staging/dewatering area at the 6th Street Basin. Over the duration of total construction activities from mobilization to demobilization, it is estimated that Gowanus Canal bridges would need to be opened approximately 66 times. Under the hydraulic dredge alternative, it is estimated that approximately 50 barge trips would require the opening of the 9th Street Bridge. Vehicular traffic would be affected temporarily during the opening and closing of the bridges. However, it is not expected to result in significant traffic impacts in the surrounding neighborhoods, as the bridge operations would require a minimal amount of time to complete. Marine-based travel activities during construction would be timed, to the extent possible, in order to minimize the number of trips (e.g. empty barges being transported to the canal on the same day that a loaded barge would need to be removed), thereby reducing the number of openings required. Marine-based transportation would be coordinated with DOT and the U.S. Coast Guard.

Bridge openings and potential truck trips would be primarily associated with mobilization and de-mobilization activities over a very limited period of time, while passenger car trips would occur over the duration of construction. As discussed above, the proposed project would not be anticipated to exceed the CEQR traffic analysis screening threshold of 50 peak hour vehicle trip ends on any given day during construction. It is not anticipated that lane closures would be required for the proposed project. However, maintenance and protection of traffic (MP&T) plans or other appropriate measures, if applicable, would be developed and approval of these plans would be coordinated with the DOT, as necessary and appropriate. No significant adverse transportation impacts to the surrounding area would occur due to the proposed project. To the extent possible, marine-based transportation activities would be limited and coordinated with appropriate agencies, thereby minimizing potential conflicts with existing marine traffic in Gowanus Canal, and roadway traffic on bridges. In total, all construction from mobilization to de-mobilization would be completed within 24 months and is temporary and short in duration. Therefore, the proposed project is not expected to result in potential significant adverse impacts to transportation during construction.

AIR QUALITY

Mobile and Stationary Sources

In accordance with the *CEQR Technical Manual*, the assessment of potential impacts to air quality due to construction examined mobile and stationary sources. Potential impacts to air quality from construction of the proposed project would primarily result from stationary sources

and the use of diesel-powered equipment. Construction equipment that would be used varies depending upon the selected dredging method. Either a diesel-powered hydraulic dredge, mechanical excavator or a combination of the two methods would be required to conduct construction activities. Other diesel-powered vessels, generators and equipment would also be required. Table T-1 (below) presents a preliminary list of anticipated equipment for both hydraulic and mechanical dredging methods, and proposed dewatering equipment that would require the use of diesel fuel.

The use of diesel fuel to power construction equipment would result in emissions from stationary and mobile sources during construction. Equipment needed for construction activities would use ultra-low sulfur diesel fuel and Best Available Technology (BAT), such as air quality filters, for reducing emissions to the extent possible as set forth under Local Law 77. As shown on Figure B-7, there are no sensitive receptors, such as residences, schools, churches, parks, etc., located immediately adjacent to the proposed project area. Sensitive receptors within 400 feet of the proposed project area include Thomas Greene Playground located 275 feet from the proposed project area at the corner of Nevins and Degraw Streets; residential uses located 350 feet east of Nevins Street, between Sackett and Union Streets; and residences along Butler Street (between Bond and Nevins Streets) and Bond Street (between Butler and Union Streets), including the Gowanus Houses, approximately 400 feet to the northwest. To the southwest, the nearest sensitive receptor is Public School 32, located approximately 650 feet west of the southernmost limit of the proposed project area. The nearest sensitive receptors to the proposed staging/dewatering area are residential dwellings located approximately 400 feet to the north along 4th Street.

Best management practices would be incorporated into the work to minimize any effects on sensitive receptors. The proposed project would create a temporary (during construction only) increase in stationary and mobile combustion sources. To verify the air quality in the surrounding community, DEP would implement a community air monitoring program for VOCs and particulates during the proposed project.

The proposed project would not be anticipated to result in mobile or stationary emission sources above *CEQR Technical Manual* thresholds. The use of ultra-low sulfur diesel fuel BAT and best management practices by the contractor would minimize potential mobile and stationary sources of emissions during construction. In total, all construction from mobilization to de-mobilization would last approximately 24 months and is temporary and short in duration. Therefore, the proposed project is not expected to result in potential significant adverse impacts to air quality during construction.

Table T-1. Anticipated Diesel-Powered Equipment for Construction Activities

Mechanical Dredging	Excavator – Cat 375 (400 horsepower) Shuttle Tugboats (175 horsepower) Tender Tugboat (700 horsepower) Tugboat (1,900 horsepower)
Decanting (Mechanical)	Generator (100 kw) Welder Pump – 6 inch Deck Barge 120 ton Crane Combo
Hydraulic Dredging	Cutter Head Hydraulic Dredge (600 horsepower) Push Boat (175 horsepower) Tender Tugboat (700 horsepower) Tugboat (2,000 horsepower) Tugboat (250 horsepower)
Dewatering (Hydraulic)	Generator – (2 at 10 kw each) Deck Barge 120 ton Crane Combo Return Water Pump Filter Press Sand Separator Unit Clarifier/Thickener Fast Fill Pumps Mix Tank Press Pre-Coat Mix Tank Odor Control Foam Pump Unit Light Tower Crew Boat/Skiff
Capping (Mechanical and Hydraulic)	Excavator Tender Tugboat (700 horsepower) Deck Barge 120 ton Crane Combo Generator (100 kw) Pump – 6 inch Tugboat (175 horsepower)
Scour Protection (Mechanical and Hydraulic)	Excavator Tender Tugboat (700 horsepower) Deck Barge 120 ton Crane Combo Generator (100 kw) Pump – 6 inch Tugboat (175 horsepower)

Odors

Currently, nuisance odors occur in the proposed project area when accumulated sediment mounds are exposed at low tide. A temporary increase in odors would likely result during dredging activities. The increase in odors would result when the sediments are disturbed and exposed to the air. Under the mechanical dredge method, dredged material would be placed within micro-scows for transport to the staging/dewatering area located at the 6th Street Basin. Materials would then be placed within hopper barges for transport to an off-site disposal facility in accordance with federal, state and local regulations. For hydraulic dredging, sediments would not be exposed to the air during dredging, as they would be removed from the head end of the Canal via a pipeline. Under this method, the sediments would only be exposed once they reach the staging/dewatering area where they would be dewatered, then transported to an off-site facility for disposal in accordance with federal, state and local regulations. As a result, potential odors associated with hydraulic dredging would be expected to be less.

Odor control would be implemented during dredging, loading and processing activities for both methods, as appropriate, to minimize odors and would generally consist of applying a deodorizing agent to the barges. Under mechanical dredging, odor control would be implemented within the limits of the proposed dredge area, as well as at the staging/dewatering area when sediments are being loaded or transferred into barges. For hydraulic dredging, odor control would be implemented at the staging/dewatering area during dewatering and loading activities. Odor control may include the use of a foaming agent that is applied directly to the material or an odor neutralizer that is sprayed into the air through a fogging process. If an odor neutralizing product is used, the chemicals would be non-toxic, non-hazardous and would not contain surfactants, petroleum distillates or chlorinated solvents. The fogging process would be accomplished through the use of a wet fogger that would be used to apply light-to-heavy amounts of water-based deodorizing treatments to the air, which would then cover the dredged materials. The frequency of application of odor control products would depend on the product selected, as alternative products may require different application procedures and would also be based on the level of odors that may be encountered.

Weather and related temperature conditions would be considered to avoid exacerbation of odors during construction to the extent possible. In addition, a community air monitoring program for odors would be implemented during construction activities. In total, all construction from mobilization to de-mobilization would last approximately 24 months. Due to the relatively short duration of dredging activities and the application of odor control agents, the proposed project would not result in significant adverse impacts from odors during construction.

NOISE

Noise levels in the vicinity of the proposed project area and staging/dewatering area would temporarily increase during construction activities. Noise levels would vary depending on the method of dredging and the specific equipment chosen by the contractor. The proposed staging/dewatering area would be located at a site away from the proposed dredge area and, therefore, cumulative noise effects, such as concurrent hydraulic dredging and dewatering activities, would not result in potential significant adverse noise impacts. In addition, land uses immediately adjacent to the proposed dredging and staging/dewatering areas are largely dominated by industrial and manufacturing uses, and the current zoning at the shoreline of Gowanus Canal at these two locations is for manufacturing uses.

The contractor would be required to comply with Local Law 113 of 2005 and the revised New York City Noise Control Code. Under the Noise Control Code, the contractor would be required to develop a Construction Noise Mitigation Plan prior to the start of work. This plan would include noise mitigation strategies, methods, procedures and technologies for each piece of equipment or activity performed at the site during construction. In addition, the contractor would be required to adhere to daily work restrictions defined in the City Code that limit construction to weekdays between 7 AM and 6 PM.

The proposed project would be within an industrial area and construction activities would be temporary and of short duration. In total, all construction from mobilization to de-mobilization would last approximately 24 months. In addition, the contractor would develop a noise mitigation plan for the duration of construction activities. Therefore, the proposed project is not expected to result in potential significant adverse impacts from noise during construction.

Conclusion

As discussed previously, construction of the proposed project would be temporary and short in duration and would include best management practices and measures to ensure no potential significant adverse impacts to Natural Resources, Hazardous Materials, Energy, Transportation, Air Quality and Noise during construction activities. All construction related activities would be performed in accordance with federal, state and local approvals and regulations. Therefore, construction of the proposed project would not result in potential significant adverse impacts to the resources assessed in this document.

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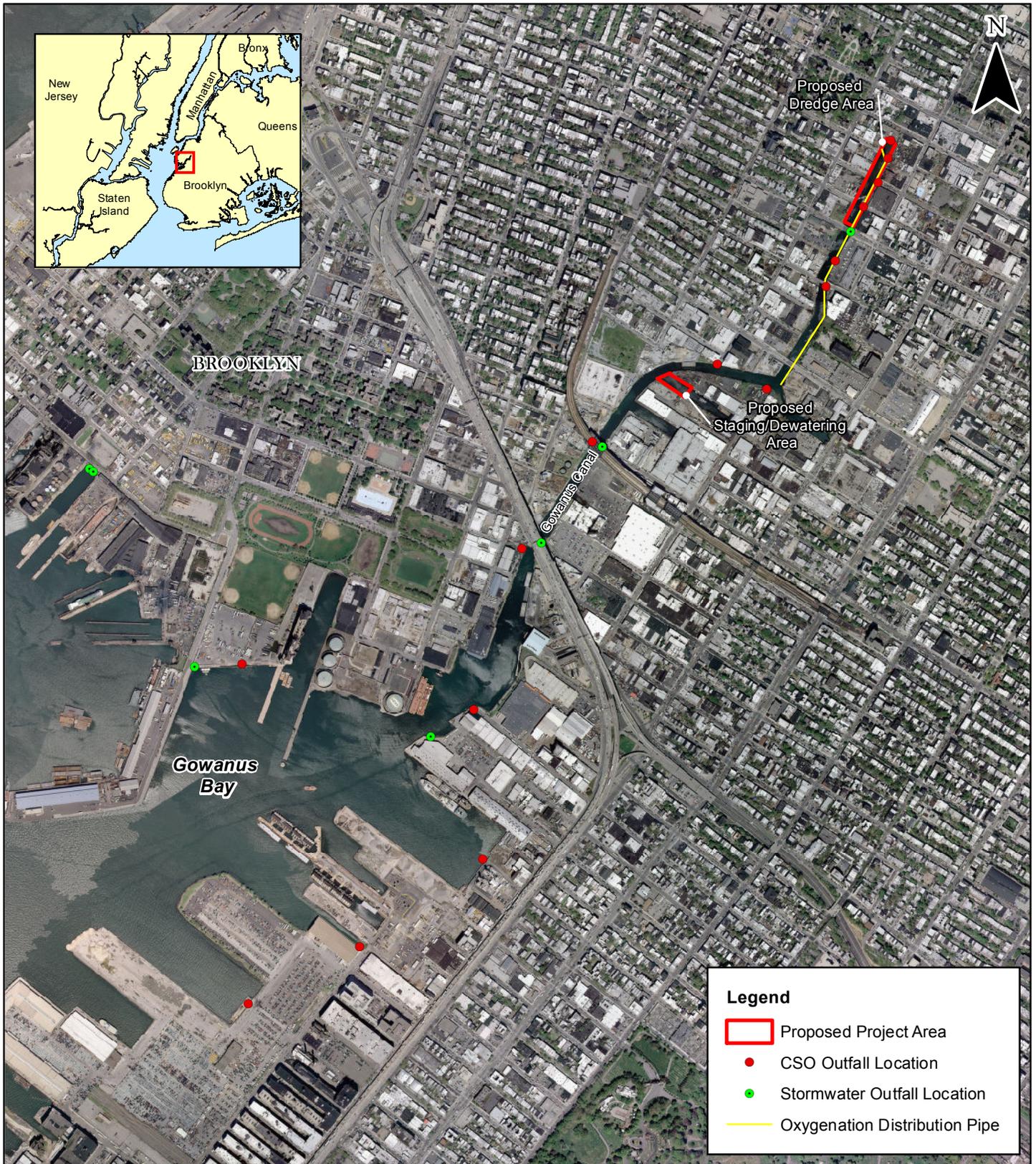
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ATTACHMENT B

FIGURES AND SITE PHOTOGRAPHS



Site delineations are approximate.
 Base Map Source: NYC Dept. of Information Technology & Telecommunications, 2004

0 375 750 1,500
 Feet

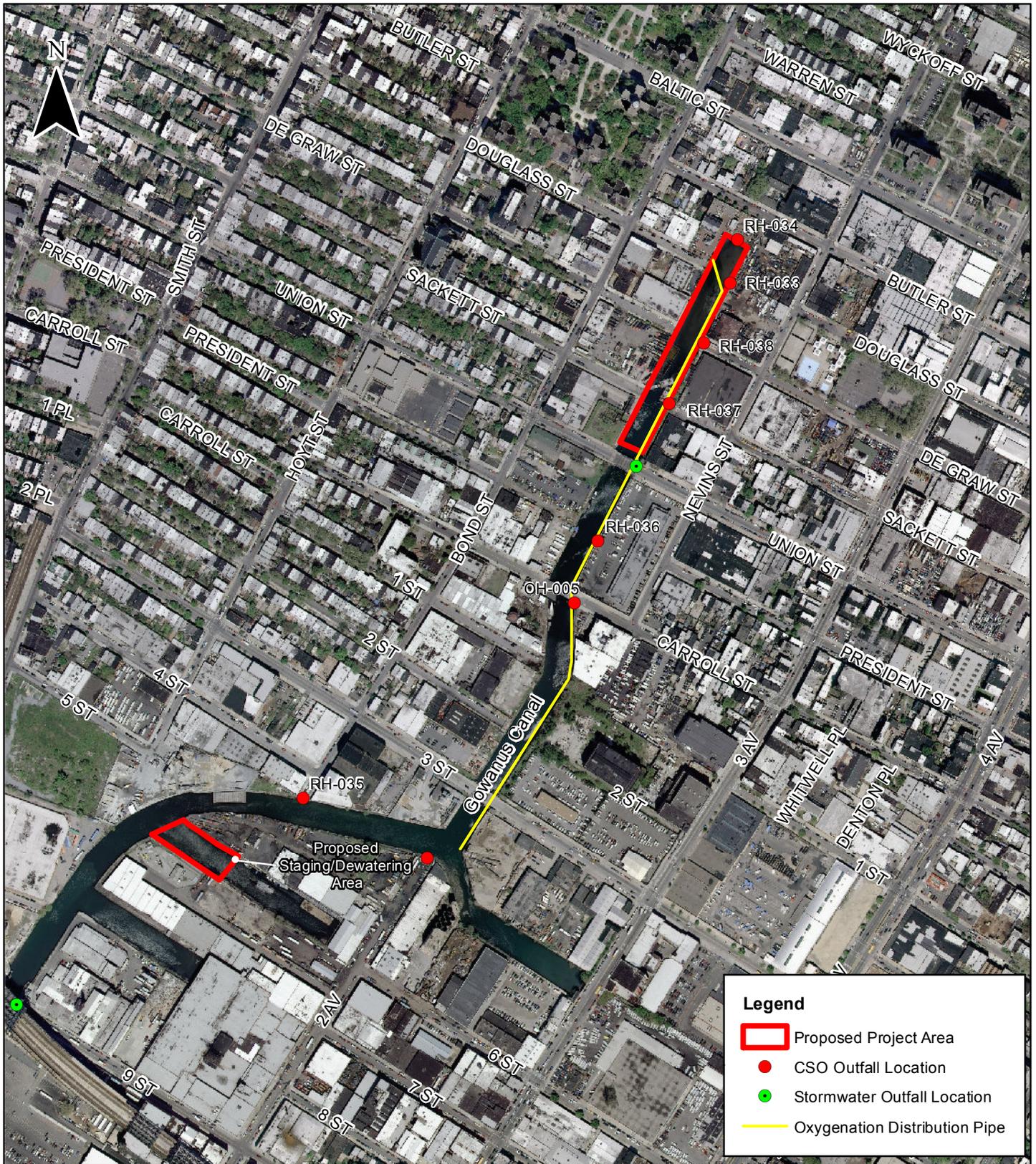
Legend

- Proposed Project Area
- CSO Outfall Location
- Stormwater Outfall Location
- Oxygenation Distribution Pipe



Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-1
 Site Location



Site delineations are approximate.
 Base Map Source: NYC Dept. of Information Technology & Telecommunications, 2004

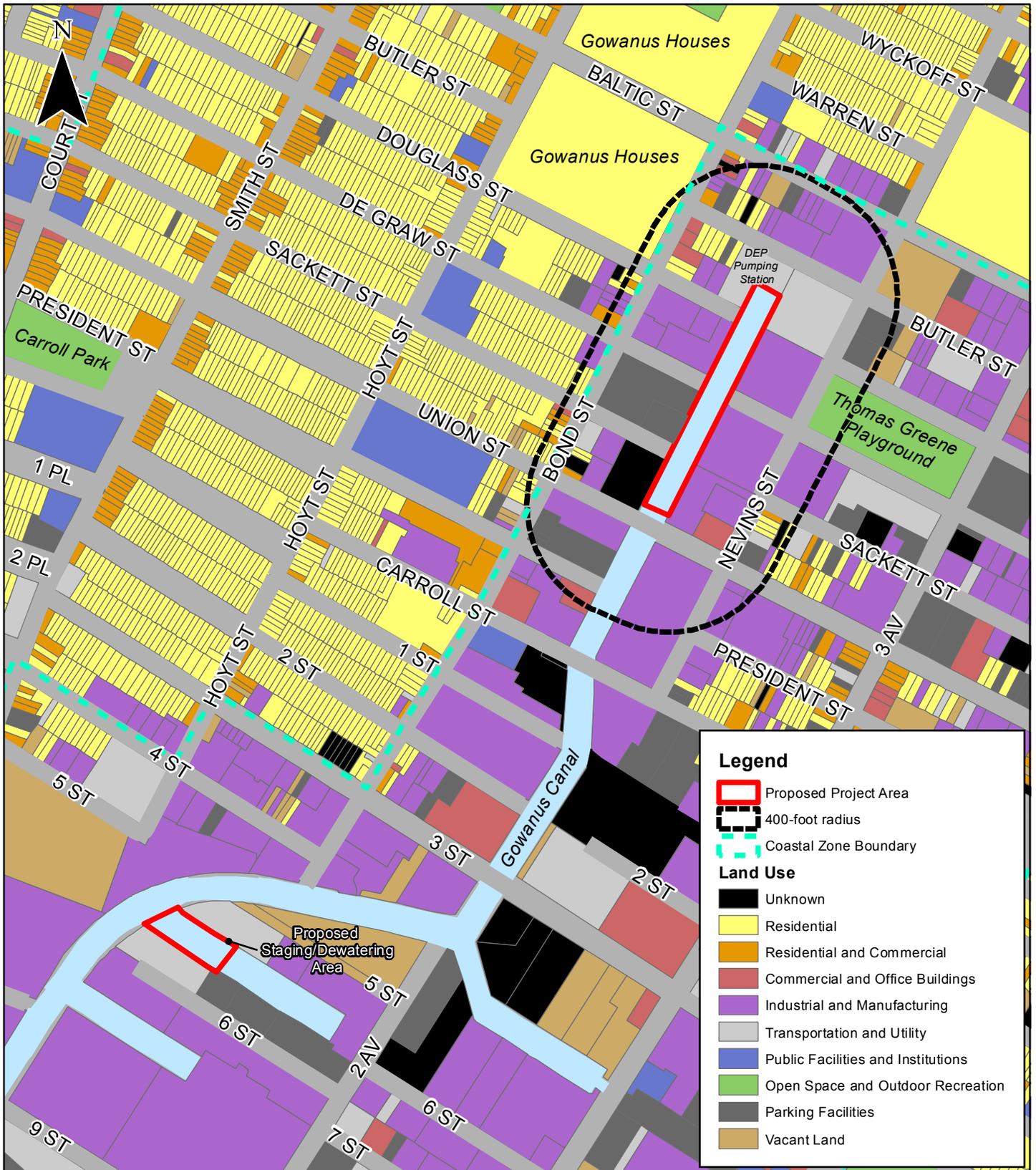
Legend

- Proposed Project Area
- CSO Outfall Location
- Stormwater Outfall Location
- Oxygenation Distribution Pipe



Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-2
 Proposed Project
 Locations



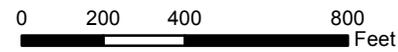
Legend

- Proposed Project Area
- 400-foot radius
- Coastal Zone Boundary

Land Use

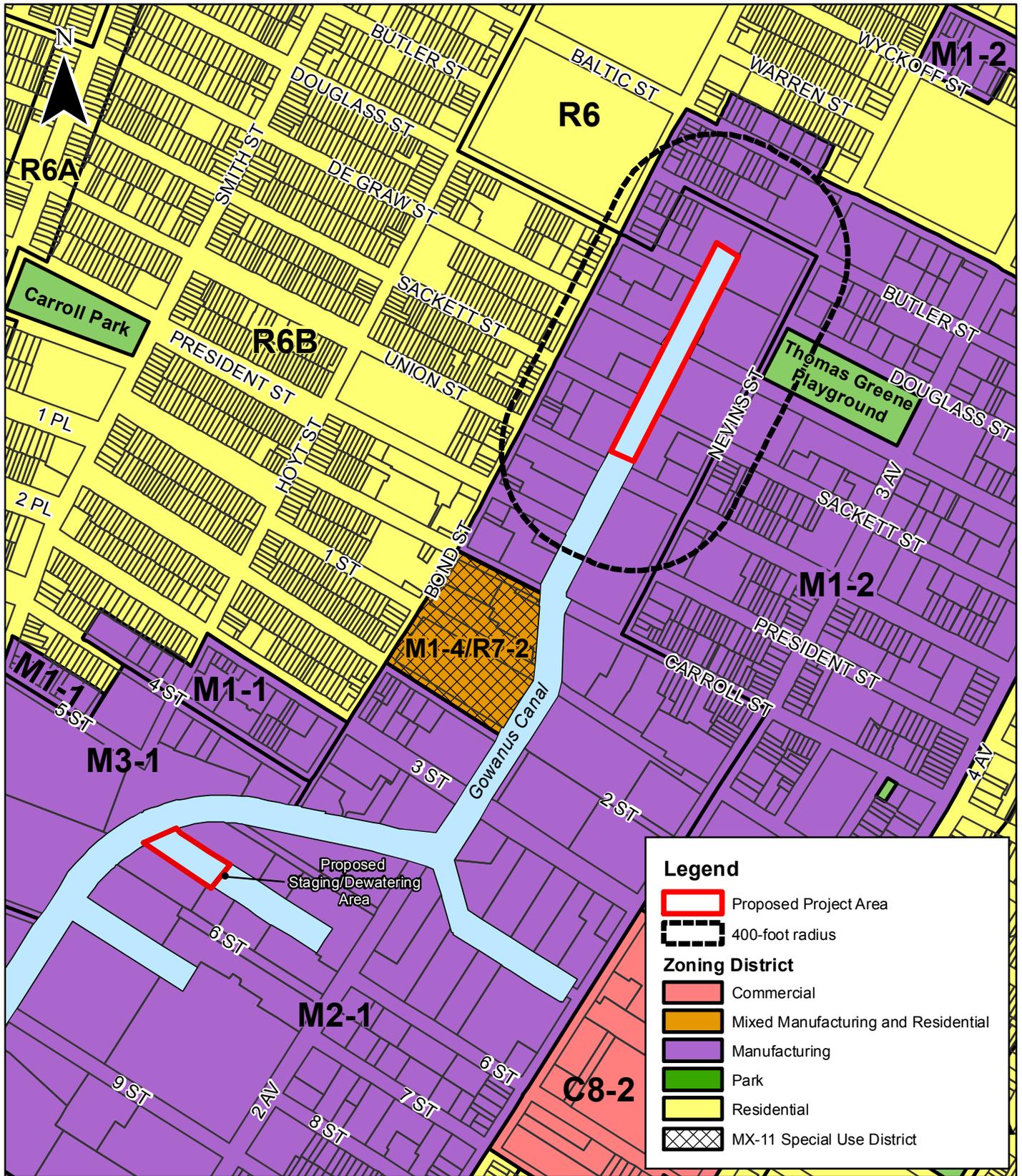
- Unknown
- Residential
- Residential and Commercial
- Commercial and Office Buildings
- Industrial and Manufacturing
- Transportation and Utility
- Public Facilities and Institutions
- Open Space and Outdoor Recreation
- Parking Facilities
- Vacant Land

Base Map Source: NYC DOITT and NYDCDP, 2010
 Landuse in the vicinity of the project site was confirmed by HDR personnel
 and modified accordingly based upon a site reconnaissance field survey performed on 10/25/2011



Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-3
 Land Use Map



Site delineations are approximate.
 Base Map Source: NYCDP, 2010

0 200 400 800
 Feet



Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-4
 Zoning Map



Site delineations are approximate.

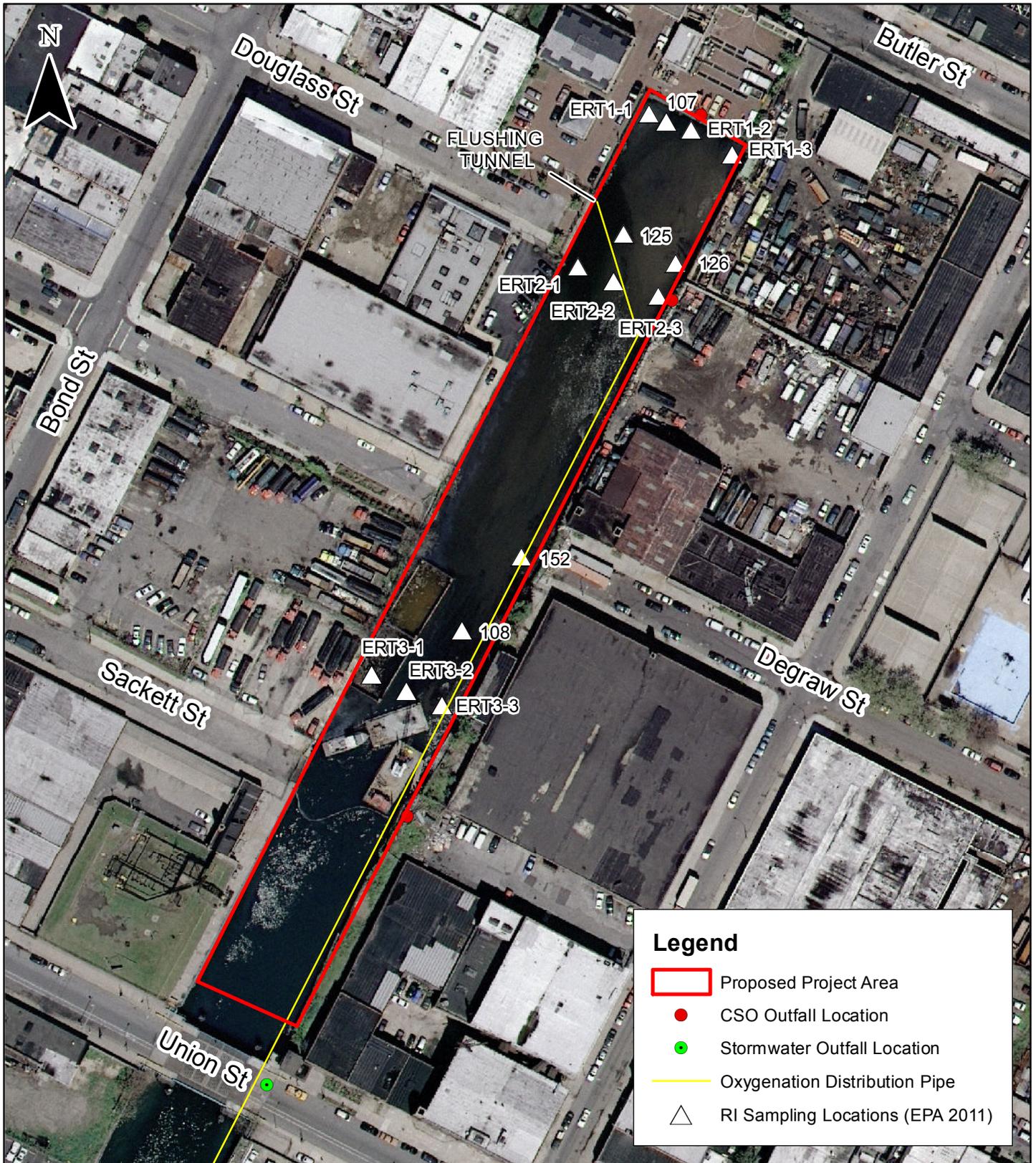
Base Map Source: NYC Dept. of Information Technology & Telecommunications, 2010.

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Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-5
 Tax Map

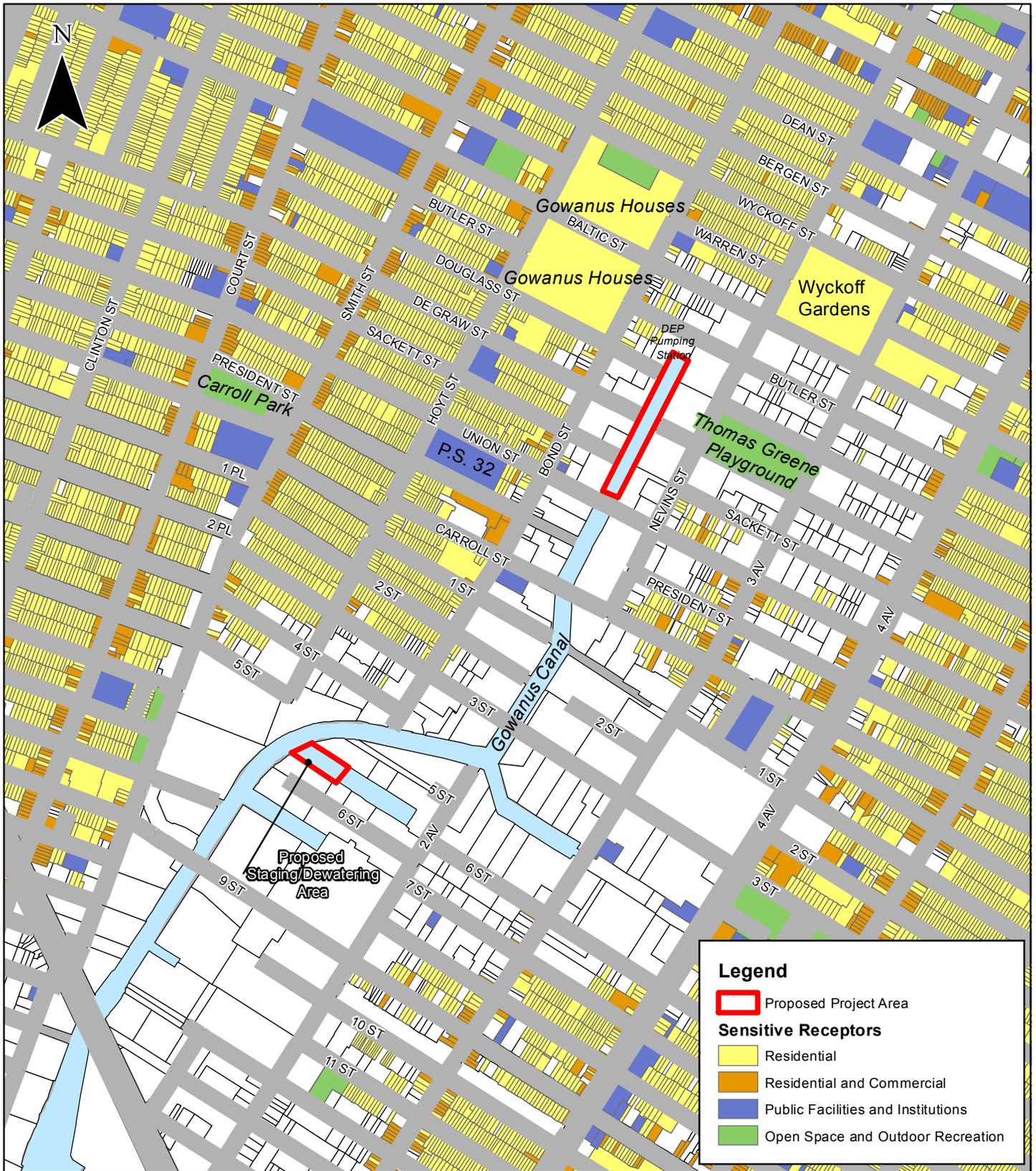


Copyright: NYC Dept. of Information Technology & Telecommunications, 2004
 Outfall Source: I&I maps, shoreline surveys, field investigations and Regulator Improvement Program projects, HydroQual Environmental Engineers & Scientists, P.C., 2005
 Note: Station locations and site delineation are approximate



Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-6
 Remedial Investigation
 Sediment Sampling
 Locations

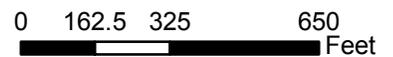
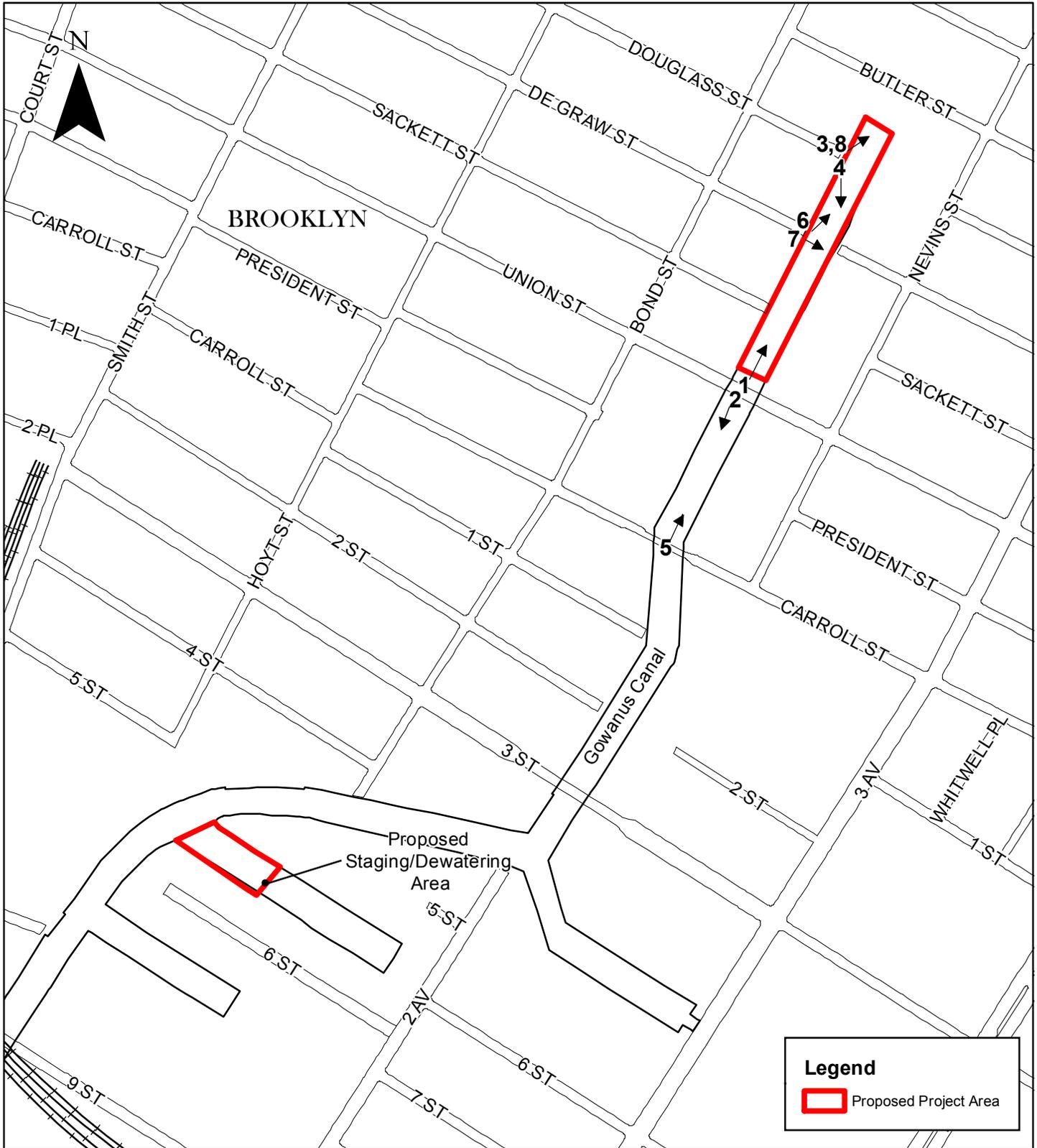


Base Map Source: NYC DOITT and NYDCDP, 2010
 Landuse in the vicinity of the project site was confirmed by HDR personnel
 and modified accordingly based upon a site reconnaissance field survey performed on 10/25/2011



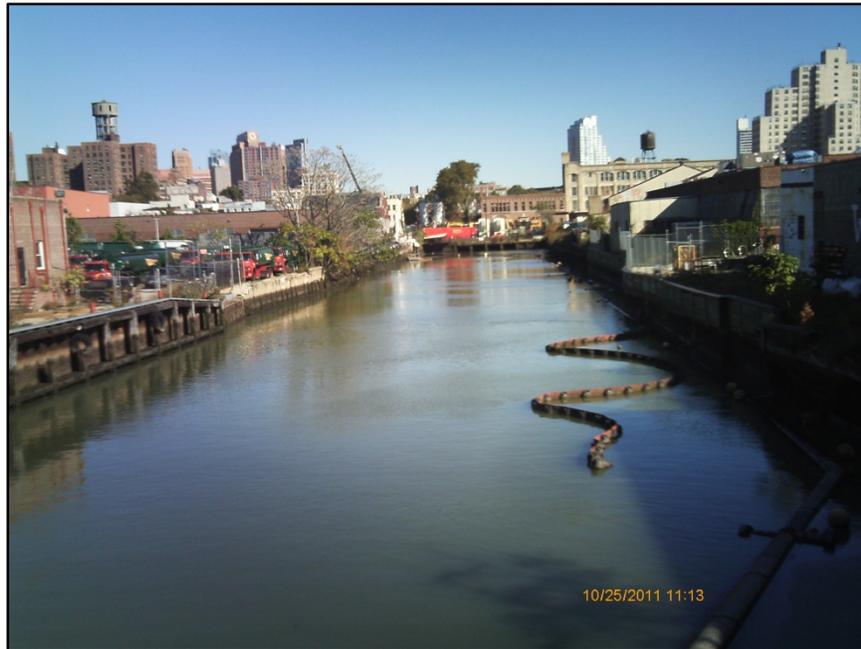
Capital Project WP-169
 Citywide Dredging Engineering Design Contract Services
 Contract CSO - DRDG
 Environmental Dredging of Gowanus Canal

Figure B-7
 Sensitive Receptors

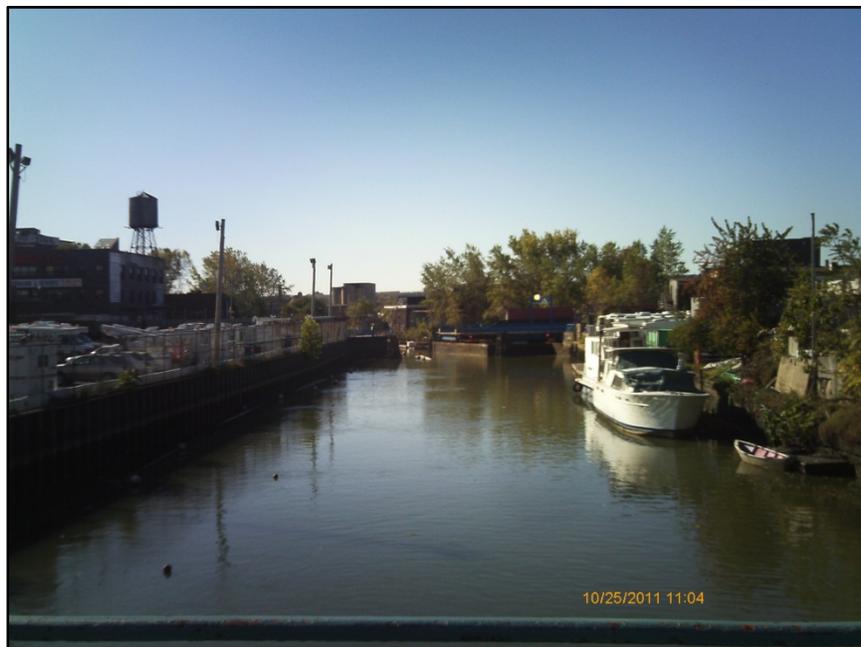


Capital Project WP-169
 Citywide Dredging Contract Services
 Contract CSO-DRDG
 Environmental Dredging of Gowanus Canal

Photo Locator



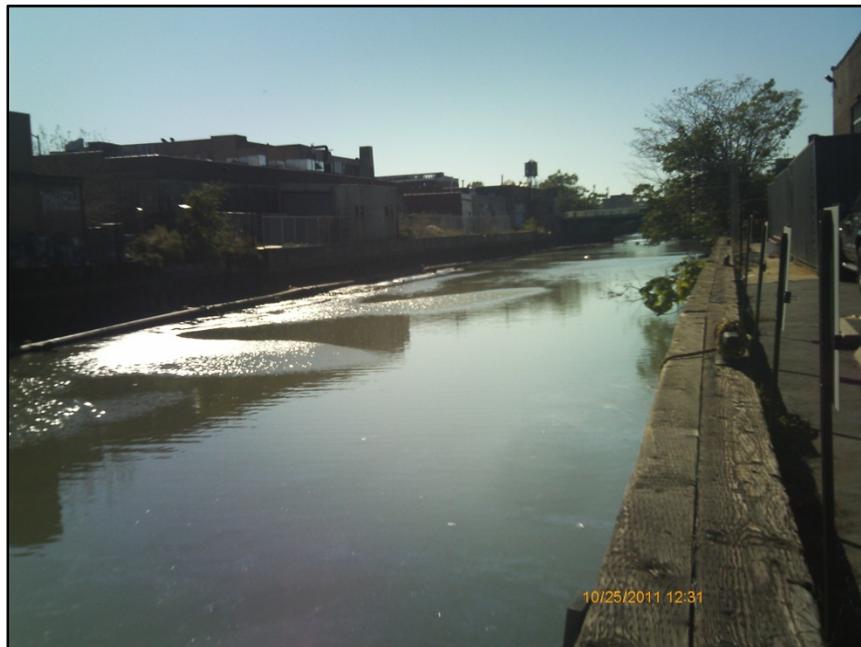
Photograph 1. Looking north from the Union Street Bridge toward the head end of the Gowanus Canal at the proposed dredging location. Taken at ebb tide.



Photograph 2. Looking south from the Union Street Bridge towards the Carroll Street Bridge. Taken at ebb tide.



Photograph 3. Looking north from the terminus of Douglass Street showing existing conditions at the head end of Gowanus Canal.



Photograph 4. Looking south from the terminus of Douglass Street at the Gowanus Canal and the Union Street Bridge. Taken at ebb tide.



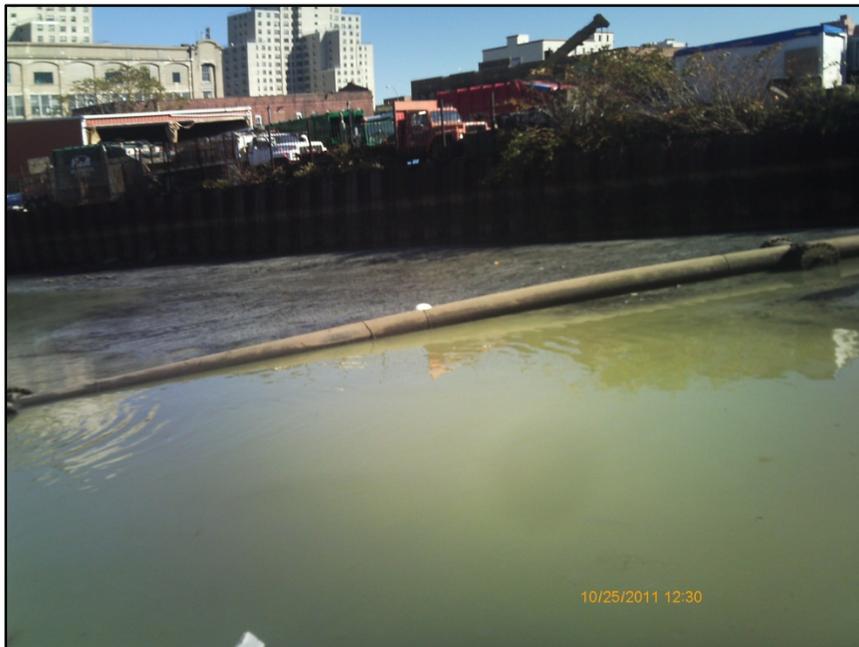
Photograph 5. Looking northeast toward the head end of the Gowanus Canal from the terminus of DeGraw Street. Taken at low tide.



Photograph 6. Looking north from the Carroll Street Bridge at the Gowanus Canal and the Union Street Bridge. Taken at low tide.



Photograph 7. Looking east at an existing CSO outfall located on the eastern shoreline of the Gowanus Canal at the terminus of DeGraw Street. Taken at ebb tide.



Photograph 8. Looking northeast towards the head end of the Canal showing exposed sediments within the proposed dredge area. Taken at low tide.

ATTACHMENT C

WATERFRONT REVITALIZATION PROGRAM

For Internal Use Only:

WRP no. _____

Date Received: _____

DOS no. _____

NEW YORK CITY WATERFRONT REVITALIZATION PROGRAM Consistency Assessment Form

Proposed actions that are subject to CEQR, ULURP or other local, state or federal discretionary review procedures, and that are within New York City's designated coastal zone, must be reviewed and assessed for their consistency with the New York City Waterfront Revitalization Program (WRP). The WRP was adopted as a 197-a Plan by the Council of the City of New York on October 13, 1999, and subsequently approved by the New York State Department of State with the concurrence of the United States Department of Commerce pursuant to applicable state and federal law, including the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. As a result of these approvals, state and federal discretionary actions within the city's coastal zone must be consistent to the maximum extent practicable with the WRP policies and the city must be given the opportunity to comment on all state and federal projects within its coastal zone.

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

A. APPLICANT

- Name: Ms. Kathryn Mallon, Deputy Commissioner, NYC Department of Environmental Protection
- Address: 96-05 Horace Harding Expressway, 4th Floor Low Rise, Corona, NY 11373
- Telephone: (718) 595-6183 Fax: 718-595-5999 E-mail: KMallon@dep.nyc.gov
- Project site owner: City of New York

B. PROPOSED ACTIVITY

- Brief description of activity:

The New York City Department of Environmental Protection (DEP) proposes to dredge an area of approximately 825 feet at the head of Gowanus Canal. The environmental dredging is a requirement of an Administrative Order of Consent (CO2-20000107-8) between DEP and the NYS Department of Environmental Conservation.

- Purpose of activity:

To perform environmental dredging and eliminate accumulated sediment mounds at the head end of the Canal and the associated odors, improve the visual aesthetics of the waterbody, and improve substrate for benthic habitat.

- Location of activity: (street address/borough or site description):

Gowanus Canal in Brooklyn, New York. The proposed dredge area would extend approximately 825 feet from the head end of the Canal near Butler Street to the Union Street Bridge.

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:

USACE: Section 404 (Clean Water Act) and Section 10 (Rivers and Harbors Act)
 NYSDEC: Section 401 Water Quality Certification, Protection of Waters - Excavation and Fill, Tidal Wetlands
 NYS Department of State: Federal Consistency Assessment Approval

5. Is federal or state funding being used to finance the project? If so, please identify the funding source(s).
 Not applicable.

6. Will the proposed project require the preparation of an environmental impact statement?
 Yes _____ No If yes, identify Lead Agency:

An Environmental Assessment Statement is being prepared pursuant to CEQR with DEP as the lead agency.

7. Identify **city** discretionary actions, such as a zoning amendment or adoption of an urban renewal plan, required for the proposed project.
 Not applicable.

C. COASTAL ASSESSMENT

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	Yes	No

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

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

4. Will the proposed project result in revitalization or redevelopment of a deteriorated or under-used waterfront site? (1)	<input checked="" type="checkbox"/>	<input 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"/>

Policy Questions cont'd

	Yes	No
7. Will the proposed activity require provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (1.3)	_____	✓ _____
8. Is the action located in one of the designated Significant Maritime and Industrial Areas (SMIA): South Bronx, Newtown Creek, Brooklyn Navy Yard, Red Hook, Sunset Park, or Staten Island? (2)	_____	✓ _____
9. Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)	✓ _____	_____
10. Would the action involve the siting or construction of a facility essential to the generation or transmission of energy, or a natural gas facility, or would it develop new energy resources? (2.1)	_____	✓ _____
11. Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)	_____	✓ _____
12. Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)	✓ _____	_____
13. Would the action involve mining, dredging, or dredge disposal, or placement of dredged or fill materials in coastal waters? (2.3, 3.1, 4, 5.3, 6.3)	✓ _____	_____
14. Would the action be located in a commercial or recreational boating center, such as City Island, Sheepshead Bay or Great Kills or an area devoted to water-dependent transportation? (3)	_____	✓ _____
15. Would the proposed project have an adverse effect upon the land or water uses within a commercial or recreation boating center or water-dependent transportation center? (3.1)	_____	✓ _____
16. Would the proposed project create any conflicts between commercial and recreational boating? (3.2)	_____	✓ _____
17. Does the proposed project involve any boating activity that would have an impact on the aquatic environment or surrounding land and water uses? (3.3)	_____	✓ _____
18. Is the action located in one of the designated Special Natural Waterfront Areas (SNWA): Long Island Sound- East River, Jamaica Bay, or Northwest Staten Island? (4 and 9.2)	_____	✓ _____
19. Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitat? (4.1)	_____	✓ _____
20. Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1and 9.2)	_____	✓ _____
21. Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)	✓ _____	_____
22. Does the project site contain a rare ecological community or would the proposed project affect a vulnerable plant, fish, or wildlife species? (4.3)	_____	✓ _____
23. Would the action have any effects on commercial or recreational use of fish resources? (4.4)	_____	✓ _____
24. Would the proposed project in any way affect the water quality classification of nearby waters or be unable to be consistent with that classification? (5)	_____	✓ _____
25. Would the action result in any direct or indirect discharges, including toxins, hazardous substances, or other pollutants, effluent, or waste, into any waterbody? (5.1)	✓ _____	_____
26. Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)	_____	✓ _____
27. Will any activity associated with the project generate nonpoint source pollution? (5.2)	_____	✓ _____
28. Would the action cause violations of the National or State air quality standards? (5.2)	_____	✓ _____

Policy Questions cont'd

	Yes	No
29. Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)	_____	_____✓
30. Will the project involve the excavation or placing of fill in or near navigable waters, marshes, estuaries, tidal marshes or other wetlands? (5.3)	_____✓	_____
31. Would the proposed action have any effects on surface or ground water supplies? (5.4)	_____	_____✓
32. Would the action result in any activities within a federally designated flood hazard area or state-designated erosion hazards area? (6)	_____	_____✓
33. Would the action result in any construction activities that would lead to erosion? (6)	_____	_____✓
34. Would the action involve construction or reconstruction of a flood or erosion control structure? (6.1)	_____✓	_____
35. Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)	_____	_____✓
36. Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)	_____	_____✓
37. Would the proposed project affect a non-renewable source of sand ? (6.3)	_____	_____✓
38. Would the action result in shipping, handling, or storing of solid wastes, hazardous materials, or other pollutants? (7)	_____✓	_____
39. Would the action affect any sites that have been used as landfills? (7.1)	_____	_____✓
40. Would the action result in development of a site that may contain contamination or that has a history of underground fuel tanks, oil spills, or other form or petroleum product use or storage? (7.2)	_____	_____✓
41. Will the proposed activity result in any transport, storage, treatment, or disposal of solid wastes or hazardous materials, or the siting of a solid or hazardous waste facility? (7.3)	_____✓	_____
42. Would the action result in a reduction of existing or required access to or along coastal waters, public access areas, or public parks or open spaces? (8)	_____	_____✓
43. Will the proposed project affect or be located in, on, or adjacent to any federal, state, or city park or other land in public ownership protected for open space preservation? (8)	_____	_____✓
44. Would the action result in the provision of open space without provision for its maintenance? (8.1)	_____	_____✓
45. Would the action result in any development along the shoreline but NOT include new water-enhanced or water-dependent recreational space? (8.2)	_____	_____✓
46. Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)	_____	_____✓
47. Does the proposed project involve publicly owned or acquired land that could accommodate waterfront open space or recreation? (8.4)	_____	_____✓
48. Does the project site involve lands or waters held in public trust by the state or city? (8.5)	_____✓	_____
49. Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)	_____	_____✓
50. Does the site currently include elements that degrade the area's scenic quality or block views to the water? (9.1)	_____	_____✓

Policy Questions cont'd

Yes No

51. Would the proposed action have a significant adverse impact on historic, archeological, or cultural resources? (10)

_____ ✓

52. Will the proposed activity affect or be located in, on, or adjacent to an historic resource listed on the National or State Register of Historic Places, or designated as a landmark by the City of New York? (10)

✓ _____

D. CERTIFICATION

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

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

Applicant/Agent Name: Angela Licata, Deputy Commissioner, NYC Department of Environmental Protection

Address: 59-17 Junction Blvd, 11th Floor, Flushing, NY 11371

Telephone (718) 595-4352

Applicant/Agent Signature: 

Date: 2/24/12

INTRODUCTION

The New York City Waterfront Revitalization Program (WRP) was adopted by the City of New York in 1999, and subsequently approved by the New York State Department of State with the concurrence of the United States Department of Commerce pursuant to applicable state and federal law, including the Waterfront Revitalization of Coastal Areas and Inland Waterways Act. The WRP establishes the City's Coastal Zone and includes 10 policies dealing with: (1) residential and commercial redevelopment; (2) water-dependent and industrial uses; (3) commercial and recreational boating; (4) coastal ecological systems; (5) water quality; (6) flooding and erosion; (7) solid waste and hazardous substances; (8) public access; (9) scenic resources; and (10) historical and cultural resources.

Under the WRP, federal, state and local discretionary actions within the coastal zone are reviewed to ensure their consistency with the WRP policies. This provides the city with the opportunity to comment on any development that occurs within its coastal zone. The proposed project would be within the City's coastal zone boundary and is therefore subject to review for consistency with the WRP's policies.

The proposed environmental dredging of Gowanus Canal ("proposed project") (see "Project Description, Attachment A) was reviewed to determine its general consistency with each of these policies and subpolicies. This review identified several subpolicies that were not applicable, which included subpolicies 1.1, 2.1, 2.3, 3.3, 4.1, 5.2, 6.2, 6.3, 8.2, 8.3 and 10.2. In instances where a component of the proposed project required clarification or was potentially inconsistent with a specific policy or subpolicy, further discussion is provided below.

CONSISTENCY ASSESSMENT

Policy 1: Support and facilitate commercial and residential development in areas well-suited to such development.

1.1 Encourage commercial and residential redevelopment in appropriate coastal zone areas.

As the proposed project would involve the dredging of a portion of Gowanus Canal and would not involve any commercial or residential development, this policy is not applicable.

1.2 Encourage non-industrial development that enlivens the waterfront and attracts the public.

The proposed project would involve the dredging of accumulated sediment mounds near the head end of Gowanus Canal. The purpose of the proposed project would be to eliminate exposed sediments and the associated odors, improve visual aesthetics of the waterbody and improve substrate for benthic habitat. The proposed project would improve the aesthetics of the Canal in the vicinity of the project site. The proposed project would be consistent with this subpolicy.

1.3 Encourage redevelopment in the coastal area where public facilities and infrastructure are adequate or will be developed.

The proposed project would consist of dredging and capping activities within Gowanus Canal and would not result in new development that would require the use of existing public facilities or infrastructure. The proposed project would be consistent with this subpolicy.

Policy 2: Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation.

2.1 Promote water-dependent and industrial uses in Significant Maritime and Industrial Areas.

Although the mouth of Gowanus Canal is located with the Sunset Park Significant Maritime and Industrial Area (SMIA), the proposed project is not located within a SMIA; therefore, this subpolicy does not apply.

2.2 Encourage working waterfront uses at appropriate sites outside the Significant Maritime and Industrial Areas.

The proposed project would involve environmental dredging outside of a SMIA. The proposed project would improve odors and aesthetics for working waterfront uses surrounding the Canal.

2.3. *Provide infrastructure improvements necessary to support working waterfront areas.*

Infrastructure improvements are not an element of the proposed project; therefore this subpolicy is not applicable.

Policy 3: Promote use of New York City's waterways for commercial and recreational boating and water-dependent transportation centers.

3.1 *Support and encourage recreational and commercial boating in New York City's marine centers.*

The proposed project would be beneficial to residents and workers by eliminating accumulated sediment mounds at the head end of the Canal and the associated odors, and by improving the visual aesthetics of the waterbody. The proposed project would be consistent with this subpolicy.

3.2 *Minimize conflicts between recreational, commercial, and ocean-going freight vessels.*

The proposed project would not result in conflicts with recreational, commercial or ocean-going freight vessels. Current vessel traffic at the head end of the Canal is limited. The proposed project would increase water depths upstream of the Union Street Bridge and would be coordinated with the U.S. Coast Guard or other jurisdictional authorities to minimize potential conflicts with marine navigation. During construction activities, access to the project site would be temporarily restricted. However, construction activities would be short-term and would not present a significant adverse impact to existing vessel traffic. In addition, the proposed project would not include the addition of any structures or vessels within the Canal. The proposed project would be consistent with this subpolicy.

3.3 *Minimize impact of commercial and recreational boating activities on the aquatic environment and surrounding land and water uses.*

The proposed project would not involve commercial or recreational boating activities; therefore, this subpolicy is not applicable.

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

4.1 Protect and restore the ecological quality and component habitats and resources within the Special Natural Waterfront Areas, Recognized Ecological Complexes, and Significant Coastal Fish and Wildlife Habitats.

This subpolicy is not applicable.

4.2 Protect and restore tidal and freshwater wetlands.

A review of the New York State Department of Environmental Conservation (NYSDEC) Tidal Wetlands and the United States Fish & Wildlife Services (USFWS) National Wetland Inventory (NWI) maps was conducted to determine the presence of wetlands within the project area. The Gowanus Canal is a NYSDEC-designated littoral zone wetland. Littoral zones exist within waters that are less than six feet deep at mean low water (MLW). No mapped freshwater wetlands exist at or in the vicinity of the proposed project area. Although it is a NYSDEC-designated wetland, the proposed project area has been significantly altered through the channelization of the Canal and impacted by poor water quality caused by current and past industrial uses along the Canal, and input from CSO and stormwater discharges. The proposed project would result in the removal of accumulated sediment mounds to a depth of five feet below mean lower low water (MLLW) and then the placement of a two foot sand cap resulting in a final depth of three feet below MLLW. As a result, the proposed project would impact the currently mapped littoral zone wetlands; however, the nature of the proposed project would likely result in an overall improvement in the habitat value of this portion of the Canal. Temporary disturbance to sediments would occur during project activities, but a turbidity curtain would be used during construction activities in order to reduce impacts to the currently mapped littoral zone wetlands during construction. Scour protection would also be required at several locations within the proposed project area as post-construction controls. The proposed project would therefore be consistent with this subpolicy.

- 4.3. *Protect vulnerable plant, fish and wildlife species, and rare ecological communities. Design and develop land and water uses to maximize their integration or compatibility with the identified ecological community.*

A review of the NYSDEC Natural Heritage Program database did not indicate the presence of any threatened, endangered or species of special concern within this portion of Gowanus Canal. No significant upland work would occur as part of the proposed project. In addition, an Essential Fish Habitat (EFH) analysis of the proposed project resulted in the identification of four EFH-designated species (winter flounder, windowpane flounder, summer flounder and black sea bass) that would have the potential to be impacted by the proposed project. Impacts on these species would be temporary and short in duration, would not be significant and, upon completion of dredging and capping, the potential habitat value of this portion of Gowanus Canal would be improved. The proposed project would therefore be consistent with this subpolicy.

- 4.4 *Maintain and protect living aquatic resources.*

See responses to subpolicies 4.2 and 4.3.

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

- 5.1 *Manage direct or indirect discharges to waterbodies.*

The proposed project would remove accumulated sediment mounds from Gowanus Canal. Scour protection would be required at several high energy locations within the proposed project area, particularly at the head end of the Canal at the discharge locations of large CSOs and the Gowanus Flushing Tunnel outlet. The proposed project would improve water quality and overall habitat potential, increase water depths and tidal flushing, and improve the substrate for benthic habitat. The proposed project would be consistent with this subpolicy.

- 5.2 *Protect the quality of New York City's waters by managing activities that generate nonpoint source pollution.*

The proposed project would not generate any pollutants or contribute nonpoint source pollution. Therefore, this subpolicy does not apply.

5.3 Protect water quality when excavating or placing fill in navigable waters and in or near marshes, estuaries, tidal marshes, and wetlands.

During construction, a turbidity curtain would be installed around the proposed project area to minimize potential impacts to water quality from the resuspension of sediments. In addition, filtrate water would be discharged upstream of the turbidity curtain. Upon completion of dredging activities, a subaqueous sand cap would be placed over the newly exposed sediments. In addition, proposed scour protection at the head of the Canal would minimize further disturbance of sediments in these areas at discharge locations of large CSOs and the Gowanus Flushing Tunnel outlet. Design would determine the type and placement of cap materials necessary to provide this protection and prevent scouring. Therefore, the proposed project would be consistent with this subpolicy.

5.4 Protect the quality and quantity of groundwater, streams, and the sources of water for wetlands.

No surface or groundwaters located at the site constitute a primary source of water supply and no adverse impacts on these resources would occur from the proposed project. The removal of accumulated sediment mounds and placement of a sand cap would eliminate sediments exposed at low tide and their associated odors, improve visual aesthetics of the waterbody and improve substrate for benthic habitat. Therefore, the proposed project would be consistent with this subpolicy.

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

6.1 Minimize losses from flooding and erosion by employing non-structural and structural management measures appropriate to the condition and use of the property to be protected and the surrounding area.

Scour protection would be required at several high energy locations within the proposed project area, particularly at the head of the Canal at the discharge locations of large CSOs outfalls (e.g. Outfall RH-034) and the Gowanus Flushing Tunnel outlet. Scour protection may be comprised of a cabled concrete block mat system, or equivalent that would cover the area within 200-feet of the head of the

Canal for a total of approximately 20,000 sf. The scour protection would be placed on top of the cap. The proposed project would minimize the further erosion of sediments that occur at these locations during high velocity discharge events and would be consistent with this subpolicy.

6.2 *Direct public funding for flood prevention or erosion control measures to those locations where the investment will yield significant public benefit.*

This subpolicy is not applicable.

6.3 *Protect and preserve non-renewable sources of sand for beach nourishment.*

This subpolicy is not applicable.

Policy 7: Minimize environmental degradation from solid waste and hazardous substances.

7.1 *Manage solid waste material, hazardous wastes, toxic pollutants, and substances hazardous to the environment to protect public health, control pollution and prevent degradation of coastal ecosystems.*

Dewatered or stabilized dredged materials from the proposed project area would be considered a regulated solid waste requiring upland disposal at a licensed facility. Management of all dredged materials would be conducted in accordance with federal, state and local rules and regulations for the transport, treatment and disposal of these materials. Therefore, the proposed project would not result in impacts to the environment and would be consistent with this subpolicy.

7.2 *Prevent and remediate discharge of petroleum products.*

The United States Environmental Protection Agency (USEPA) placed the Gowanus Canal (USEPA ID#: NYN000206222) on its National Priorities List of hazardous waste sites requiring further evaluation on March 2, 2010. As the proposed project was initiated prior to USEPA's 2010 listing of the Canal as a "Superfund" site and following DEC's 2009 approval of the Gowanus Canal Waterbody/Watershed Facility Plan (WWFP), this environmental review and related permit applications have been developed to meet the obligations of the CSO Consent Order between DEP and NYSDEC. On December 29, 2011,

USEPA released a draft Feasibility Study (FS) for the Canal. The draft FS contained remedial alternatives which included dredging as part of the overall remedy for the Canal. As such, DEP will continue to coordinate with NYSDEC and USEPA to ensure that the proposed project design meets the milestones required by the CSO Consent Order and is aligned with USEPA's overall clean-up program. The proposed project would, therefore, be consistent with this subpolicy.

7.3 Transport solid waste and hazardous substances and site solid and hazardous waste facilities in a manner that minimizes potential degradation of coastal resources.

See response to Subpolicies 7.1 and 7.2.

Policy 8: Provide public access to and along New York City's coastal waters.

8.1 Preserve, protect and maintain existing physical, visual and recreational access to the waterfront.

The proposed project would not affect existing access to the waterfront, nor preclude future public access, and would improve odors and aesthetics within and adjacent to the Canal. The proposed project would be consistent with this subpolicy.

8.2 Incorporate public access into new public and private development where compatible with proposed land use and coastal location.

The proposed project would not involve new upland development or preclude future development that may incorporate public access. Therefore, this subpolicy is not applicable.

8.3 Provide visual access to coastal lands, waters and open space where physically practical.

The proposed project would not affect the visual access to coastal lands, waters and open space. Therefore this subpolicy is not applicable.

8.4 *Preserve and develop waterfront open space and recreation on publicly owned land at suitable locations.*

See response to subpolicy 8.1.

8.5 *Preserve the public interest and use of lands and waters held in public trust by the state and city.*

See response to subpolicies 8.1 and 8.4.

Policy 9: Protect scenic resources that contribute to the visual quality of the New York City coastal area.

9.1 *Protect and improve visual quality associated with New York City's urban context and the historic working waterfront.*

The proposed dredging at the head of the Canal would remove accumulated sediment mounds that are currently exposed at low tide and would improve the visual aesthetic of the waterbody in this area. The proposed project would be consistent with this subpolicy.

9.2 *Protect scenic values associated with natural resources.*

See response to subpolicy 9.1.

Policy 10: Protect, preserve and enhance resources significant to the historical, archaeological, and cultural legacy of the New York City coastal area.

10.1 *Retain and preserve designated historic resources and enhance resources significant to the coastal culture of New York City.*

The proposed project would not involve any physical alteration or contact with State or National Register listed or eligible resources of historic or archeological significance surrounding or adjacent to the Canal such as the Gowanus Canal Flushing Tunnel and system building, Gowanus Facilities gate house, two street-level bridges (Carroll Street and 3rd Avenue) and five buildings adjacent to the Canal. The proposed project would not involve any direct or indirect impacts that would affect these eligible resources. Therefore, the proposed project would be consistent with this subpolicy.

10.2 Protect and preserve archaeological resources and artifacts.

A review of the Landmark Preservation Commission (LPC) database indicated no known archaeological resources in the Canal or within 400 feet of the proposed project area. Therefore, this subpolicy does not apply.

ATTACHMENT D

ESSENTIAL FISH HABITAT ASSESSMENT



New York City
Department of Environmental Protection

**ESSENTIAL FISH HABITAT ASSESSMENT
CITYWIDE DREDGING ENGINEERING
DESIGN CONTRACT SERVICES**

**ENVIRONMENTAL DREDGING
OF
GOWANUS CANAL
BROOKLYN, NEW YORK**

**WP-169
CONTRACT REG NO. 826 20111402281**

Prepared by:

**AECOM/HydroQual, a Joint Venture
605 3rd Avenue, New York, NY 10158**

February 2012

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 PROJECT SCOPE	3
3.0 EXISTING CONDITIONS.....	3
3.1 Physical Site Description	3
3.2 Habitat Characteristics	5
3.2.1 Water Quality.....	6
3.2.2 Submerged Aquatic Vegetation	6
3.2.3 Substrate.....	7
3.2.4 Benthic Communities.....	7
3.2.5 Epibenthic Communities.....	7
3.2.6 Ichthyoplankton	8
3.2.7 Adult Finfish.....	8
4.0 ESSENTIAL FISH HABITAT ASSESSMENT	9
4.1 EFH-Designated Species.....	9
4.2 Analysis of Effect to EFH-Designated Species.....	9
4.2.1 Summary	15
4.3 Threatened and Endangered Species.....	16
4.3.1 Fish Species	16
4.3.2 Sea Turtle Species.....	17
5.0 CONCLUSIONS.....	17
6.0 BIBLIOGRAPHY	19

LIST OF FIGURES

	<u>Page</u>
Figure 1-1. Gowanus Canal Site Location.....	2
Figure 2-1. Project Site	4

LIST OF TABLES

	<u>Page</u>
Table 4-1. Species and Life Stages of EFH-Designated Species Expected in the Project Area	9
Table 4-2. Species and Life Stages of EFH-Designated Species Potentially Located In the Proposed Project Area	16

LIST OF ACRONYMS

CMP	Coastal Management Program
CSO	Combined Sewer Overflow
DEP	New York City Department of Environmental Protection
DO	Dissolved Oxygen
DOS	Department of State
EFH	Essential Fish Habitat
ESA	Endangered Species Act
HAPC	Habitat Area of Particular Concern
MAFMC	Mid-Atlantic Fishery Management Council
MLW	Mean Low Water
MLLW	Mean Lower Low Water
NMFS	National Marine Fisheries Service
NWI	National Wetlands Inventory
NOAA	National Oceanic and Atmospheric Association
NYCDPR	New York City Department of Parks & Recreation
NYSDEC	New York State Department of Environmental Conservation
PPT	Parts Per Thousand
USACE	United States Army Corps of Engineers
USDOC	United States Department of Commerce
USEPA	United State Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
WWFP	Waterbody/Watershed Facility Plan

ESSENTIAL FISH HABITAT ASSESSMENT CITYWIDE DREDGING ENGINEERING DESIGN CONTRACT SERVICES

1.0 INTRODUCTION

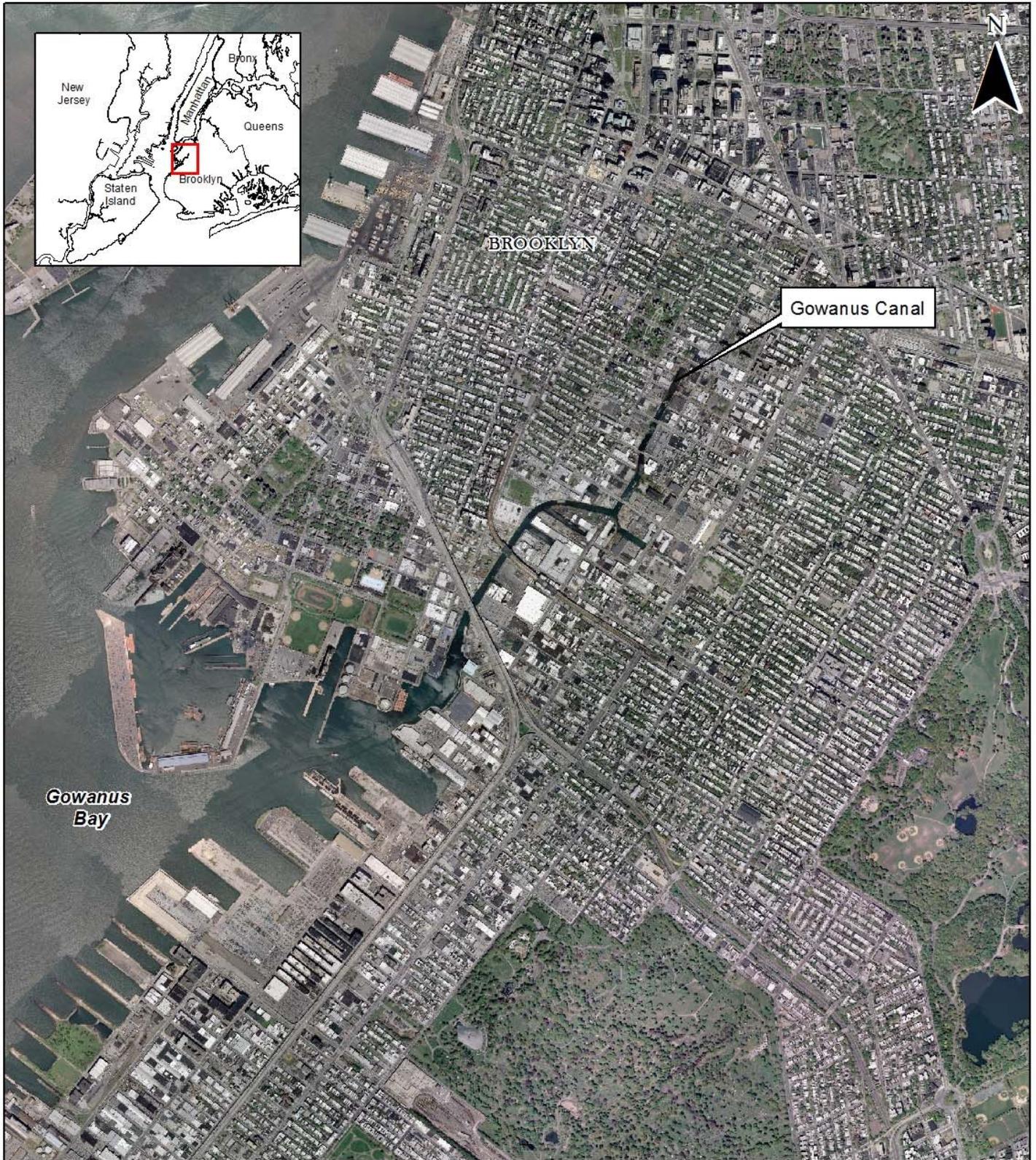
The New York City Department of Environmental Protection (DEP) is required to conduct environmental dredging at several tributaries within the City of New York to remove combined sewer overflow (CSO) mounds that contribute to nuisance odors and dissolved oxygen deficits at the head end of these tributaries. This is required by an Administrative Order on Consent between the DEP and the New York State Department of Environmental Conservation (NYSDEC), otherwise identified as NYSDEC Case #CO2-20000107-8 (also known as the CSO Consent Order). As part of the Consent Order, the DEP is required to prepare Waterbody/Watershed Facility Plans (WWFP) for numerous CSO-impacted tributaries. These WWFPs lay out the specific actions to be undertaken to address CSO issues and improve water quality in each waterbody and a schedule for the implementation of these actions. Upon approval of the plans by the NYSDEC, the schedules serve as a compliance schedule and an appendix to the Consent Order. Eight CSO-impacted waterbodies have initially been identified that will include dredging as part of their respective plans, including: Gowanus Canal.

This report provides an Essential Fish Habitat (EFH) Assessment for Gowanus Canal, with a focus on the proposed dredging and capping at the head of the Canal (Figure 1-1). Gowanus Canal is located in Brooklyn, New York. The Canal extends from approximately Butler Street, towards the southwest where it empties into Gowanus Bay. CSOs exist throughout the Canal and are a primary source of sediment input to the Canal. In certain areas of the Canal at low tide, these sediments are exposed to air and produce nuisance odors. The DEP has proposed dredging of sediments within an approximately 825 foot long area that extends from the head of the Canal to approximately the Union Street Bridge. Dredging and capping of this portion of Gowanus Canal is intended to reduce nuisance odors, improve aesthetics and improve the substrate for benthic habitat .

In compliance with the Magnuson-Stevens Fishery Conservation and Management Act, as amended in 1996 by the Sustainable Fisheries Act, a consultation with the National Marine Fisheries Service (NMFS) is required for federally permitted activities that may impact EFH. EFH consists of the waters and substrate that are required by fish for spawning, breeding, feeding or growth to maturity. The Sustainable Fisheries Act requires that Federal agencies work with NMFS to minimize damage to EFH when funding or approving activities that “may adversely affect” EFH. An “adverse effect” is defined as any impact that reduces the quality and/or quantity of EFH. The assessment must evaluate potential impacts on those species and life stages for which a designated EFH has been identified in the vicinity of a proposed project.

The proposed dredging and capping of the Gowanus Canal could result in potential effects to aquatic species. This assessment evaluates potential impacts on those species and life stages for which a designated EFH has been identified in the vicinity of the proposed project. This assessment includes a project description, a description of the habitat characteristics of the project area, the identification of species of concern potentially located in the project area,

*Environmental Dredging of Gowanus Canal
Gowanus Canal, Kings County, New York*



Site delineations are approximate.
Base Map Source: NYC Dept. of Information Technology & Telecommunications, 2004

0 625 1,250 2,500 Feet



Capital Project WP-169
Citywide Dredging Engineering Design Contract Services
Contract CSO - DRDG
Environmental Dredging of Gowanus Canal

Figure 1-1
Site Location

potential impacts to habitat and species of concern that may occur as a result of the proposed project on identified EFH. A review of prior studies in Gowanus Canal, as applicable and appropriate, is also provided.

2.0 PROJECT SCOPE

As part of the 2008 NYSDEC-approved WWFP for Gowanus Canal, the DEP proposed the dredging of Gowanus Canal within an area generally extending approximately 825 feet from head end of the Canal to approximately the Union Street Bridge (Figure 2-1). Dredging would be conducted to a depth of five feet below mean lower low water (MLLW), and then a two foot sand cap would be placed resulting in a final water depth of three feet below MLLW. Existing water depths within the proposed dredging area are shallow, less than one foot at MLW in many areas, and in some locations CSO sediments can be exposed at low tide resulting in odors. The proposed dredging would therefore eliminate exposed accumulated sediment mounds. The removal of these accumulated sediment mounds will improve the aesthetic conditions of the Canal. Following the removal of these sediments, the placement of the two-foot thick sand cap on top of the newly exposed sediments will provide a clean substrate.

3.0 EXISTING CONDITIONS

3.1 Physical Site Description

The Gowanus Canal is a fully developed brackish tidal canal located in Kings County, New York that begins at Butler Street and runs approximately 1.8 miles southwest until emptying into Gowanus Bay and Upper New York Bay. The Canal is classified as a saline tributary to Upper New York Bay and is designated as a Class SD waterbody by the New York State Department of Environmental Conservation (NYSDEC). The entire Canal has been previously channelized and the shoreline of the Canal is mostly bulkheaded, with few areas that are rip-rap. There are very limited natural shoreline or upland areas adjacent to the Canal. As a result of its narrow width, limited freshwater input and enclosed head end, the Canal has low current speeds and experiences limited tidal exchange with Gowanus Bay. The only freshwater inflows to the Canal are due to wet-weather CSO and stormwater discharges.

There are numerous CSO discharge locations within the Canal with four of these located north of the Union Street Bridge (USEPA, 2011). In addition the Gowanus Flushing Tunnel is also located north of Union Street near the head of the Canal at the terminus of Douglass Street on the western shoreline, just south of the DEP Gowanus Pump Station. The tunnel is currently being rehabilitated and was originally constructed in the early 1900's. The purpose of the tunnel was to supplement the limited flushing that occurs within the head end of Gowanus Canal and provide more oxygenated water from the East River. Current repairs to the Flushing Tunnel are expected to be completed in 2014 and in the interim the DEP has installed a temporary oxygenation system that generally extends along the eastern side of the Canal in this location.

The Canal experiences a semidiurnal tidal cycle with a vertical tidal range of approximately 4.7 to 5.7 feet. The bottom of the Canal is covered with a layer of sediments with a high water content, consisting of very soft, dark gray to black, highly plastic clay, often with a

*Environmental Dredging of Gowanus Canal
Gowanus Canal, Kings County, New York*



Site delineations are approximate.
Base Map Source: NYC Dept. of Information Technology & Telecommunications, 2004



Capital Project WP-169
Citywide Dredging Engineering Design Contract Services
Contract CSO - DRDG
Environmental Dredging of Gowanus Canal

Figure 2-1
Project Site

trace of sand and some occasional gravel (USACE, 2003). Sediment within the overall Canal has generally been noted to consist of two distinct layers. The upper layer consists of soft sediments that have accumulated since the Canal was originally constructed and vary in thickness. These soft sediments are then underlain by the alluvial and marsh-deposits associated with the original Gowanus Creek and salt marsh complex that consisted of several streams and ponds prior to its redevelopment and channelization. Water depths vary over the length of the Canal, but water depths at the head end of the Canal, upstream of the Union Street Bridge, are very shallow, less than one foot at mean low water (MLW) in many locations and as a result sediments are exposed at low tides.

Prior sampling events have shown the sediments in the Gowanus Canal to be contaminated with a variety of pollutants, including polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), coal tar wastes, pesticides and metals (USEPA, 2011). Many of these detected contaminants are known carcinogens. On March 2, 2010, the Canal was added to the Superfund National Priority List by the U.S. Environmental Protection Agency (USEPA).

3.2 Habitat Characteristics

The project area is located in the western portion of Brooklyn, New York, specifically at the head end of Gowanus Canal, north of and upstream of the Union Street Bridge. The shoreline of the Gowanus Canal is entirely altered and is dominated by bulkheads with small areas of riprap or piers. The Gowanus Canal is classified as a saline tributary to the Upper New York Bay and is designated as a Class SD waterbody by the NYSDEC with a best use of fishing and waters shall be suitable for fish, shellfish, and wildlife survival. This classification may be given to those waters that, because of natural or man-made conditions, cannot meet the requirements for primary and secondary contact recreation and fish propagation. The Upper New York Bay is connected to several waterbodies including the Hudson River, Lower New York Bay, East River and the Kill Van Kull. Gowanus Canal is located within the Hudson River Estuary EFH. The water depths in the proposed dredge area range from 0 to 9 feet MLLW with areas in the vicinity of existing outfall locations exposed at low tide. Review of NYSDEC tidal wetland maps indicates that the project site is within designated littoral zone wetlands which include all land under tidal waters shallower than six feet at MLW. No mapped vegetated wetlands are located at or in close proximity to the proposed site. The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps classify Gowanus Canal as an “estuarine, subtidal, open water, excavated” waterbody.

Several reports and available databases were reviewed to collect information on the ecological state of Gowanus Canal to determine whether or not the potential exists for certain EFH designated species to be located or supported at the project site.

The following reports were reviewed for existing data on the Gowanus Canal, as a whole and for information specific to the proposed dredging location, if available:

- *Gowanus Canal Remedial Investigation Report* prepared by the United States Environmental Protection Agency in 2011.

- *City-Wide Long Term CSO Control Planning Project: Gowanus Canal Waterbody/Watershed Facility Plan Report* prepared by HydroQual Inc, in 2008 for the DEP.
- *The Gowanus Bay and Canal Ecosystem Restoration Studies, Fish and Epibenthic Invertebrate Sampling Program, Final Report*, prepared in 2004 by Lawler, Matusky and Skelly Engineers, LLP for U.S. Army Corps of Engineers.

3.2.1 Site Investigation Gowanus Bay and Gowanus Canal Kings County, NY, Final Report Volume 1 and Gowanus Canal Benthic Sampling Data Documentation: prepared in 2003 by the U.S. Water Quality

The NYSDEC classifies Gowanus Canal as Class SD – saline surface waters. This classification indicates a best usage for fishing. These waters shall be suitable for fish propagation, however because of man-made conditions, cannot meet the requirements for primary or secondary contact recreation or fish propagation. Several CSOs flow into the Gowanus Canal at the head and these in addition to the long term industrial nature of the Canal and surrounding area have adversely impacted the water quality within the Canal.

The primary sources of pollution to the Canal include direct discharges from historic industrial activities, including historical contributions from CSO and stormwater discharges and discharges from outfalls other than CSO or stormwater outfalls. In addition there are known and potential discharges from contaminated sites adjacent to the Canal, including transport of contaminants in groundwaters discharging to the Canal (USEPA 2011).

The DEP Harbor Survey Program maintains several water quality data stations within Gowanus Canal. Station GC3 is located nearest to the project site, at the Union Street Bridge. Based on 2010 data, average salinity levels for surface and bottom waters were 22.86 and 24.04 practical salinity units (psu), respectively. Average water temperatures in this section of Gowanus Canal were 18.12 degrees Celsius (°C) for surface waters, and 16.48°C for bottom waters. Dissolved oxygen (DO) levels for surface and bottom waters averaged 7.93 and 8.69 milligrams per liter (mg/L), respectively. The high average in DO levels for 2010 is a result of spikes in DO for this location following the DEP's installation and activation of a temporary oxygenation system. This temporary oxygenation system extends from the 4th Street turning basin, north to the head end of the Canal and is in place to allow for the deactivation of the flushing tunnel for construction and repairs of both the tunnel and associated facilities. The temporary aeration system was activated on July 14, 2010, five days later; the flushing tunnel was deactivated to allow for construction activities to begin. The temporary aeration system will remain in use until the reactivation of the flushing tunnel, expected to be in 2013. In 2009, when only the flushing tunnel was in operation, DO levels for surface and bottom waters averaged 4.69 and 4.08 mg/L, respectively, with levels measured as low as 2.31 mg/L.

3.2.2 Submerged Aquatic Vegetation

Based upon NYSDEC and NWI maps, there are no colonies of rooted aquatic vegetation within Gowanus Canal. The NYSDEC designated the entire Canal as littoral zone, defined as a shallow water habitat of less than six feet MLW that does not include coastal fresh marsh,

intertidal marsh or other vegetated wetlands. Additionally the NWI maps classify the Canal as “estuarine, subtidal, open water excavated.” This designation does not suggest the presence of vegetation. Areas of sea lettuce (*Ulva* sp.) and other macroalgae that drift with the currents may be present on the bottom occasionally, but submerged aquatic vegetation such as eelgrass (*Zostera marina*) were not identified and it is not likely to exist within Gowanus Canal or Bay (DEP, 2008).

3.2.3 Substrate

The bottom of the Canal is covered with a layer of high water content, very soft, dark gray to black, highly plastic clay, often with a trace of sand and some occasional gravel (USACE, 2003). Upstream of Hamilton Avenue, the bottom of the Canal is covered predominantly with “black mayonnaise”, a dark black material containing large amounts of organic matter and a low percentage of solids (DEP, 2008). Sediment within the overall Canal has generally been noted to consist of two distinct layers. The upper layer consists of soft sediments that have accumulated since the Canal was originally constructed and vary in thickness. These soft sediments are then underlain by the alluvial and marsh-deposits associated with the original Gowanus Creek and salt marsh complex that consisted of several streams and ponds prior to its redevelopment and channelization. The presence of debris such as tires, sunken barges, concrete rubble, timbers, gravel and general trash are widespread throughout the Canal and were noted during recent bathymetry studies (USEPA, 2011). A wide range of contaminants including volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), pesticides, polychlorinated biphenyls (PCB) and metals have been previously detected in subsurface sediments (USEPA, 2011).

3.2.4 Benthic Communities

In all of the reports reviewed, the benthic invertebrate community was dominated by annelid worms (polychaetes and oligochaetes) and amphipods. Polychaete species dominated the annelids; specifically the species *Streblospio benedicti*, *Polydora* sp. and *Capitella* sp. The species *Polydora* sp. and *Capitella* sp. are known to be among the most pollutant-tolerant benthic invertebrates. *Capitella* sp. and *Streblospio benedicti* are also often found in sediments associated with high organic matter, petroleum, sewage and low oxygen levels. In addition, high densities of *Nematoda* sp. were found in the ACE 2003 sampling events, which included sampling locations at the head of the Canal. Nematodes are likewise considered to be tolerant of habitat degradation and may predominate locally in an area of exceptional degradation (DEP, 2008). Additional species that are considered to be pollutant tolerant that were also identified within the project area were the polychaete worm *Nereis* sp., *Mytilus edulis*, a species of mollusk and unidentified species in the Oligochaeta class of annelid worms.

3.2.5 Epibenthic Communities

Hester-Dendy Settlement plates were deployed from October 2003 to June 2004 as part of the Gowanus Bay and Canal Ecosystem Restoration Studies, Fish and Epibenthic Invertebrate Sampling Program at five locations throughout the Canal (LMS, 2004). Polychaete worms and amphipods made up the majority of the invertebrates identified. An unidentified species of the Corophidae family, was the dominant amphipod found.

Polychaete worms were dominated by the species *Fabricia sabella*. *Polydora* sp, *Capitella* sp, and *Streblospio benedicti* were also identified as part of the epibenthic community. As noted earlier, most of these species are associated with locations that have been impacted by pollutants or high concentration of organic material. Additional epibenthic organisms that were identified included: nematodes (*Nematoda* sp.), flatworms (*Platyhelminthes* sp.) and blue mussels (*Mytilus edulis*).

3.2.6 Ichthyoplankton

Ichthyoplankton data was collected four times during the 2004 LMS studies. A low number and low diversity of adults, fish eggs and post-yolk larvae were found in the vicinity of the proposed project site. Eggs were identified from two species; Atlantic menhaden (*Brevoortia tyrannus*) and bay anchovy (*Anchoa mitchelli*) and were only collected during the June sampling event. There were no yolk-sac larvae collected in the proposed project area of the Canal, and overall these were found in extremely low numbers throughout the entire Canal, accounting for less than 1% of all ichthyoplankton collected. The species of post-yolk sac larvae that were identified at the proposed project site were dominated by winter flounder (*Pseudopleuronectes americanus*) followed by grubby larvae (*Myoxocephalus aeneus*). Additional post-yolk larval species found include the bay anchovy (*Anchoa mitchelli*) and Atlantic croaker (*Micropogonias undulatus*). Each of these the four species of post-yolk sac larvae were identified during only one of four sampling events. Atlantic croaker was found in low densities during the December 2003 sampling event. Bay anchovy were identified in limited numbers during the June sampling event and grubby post-yolk sac larvae were identified

The results of this sampling did not indicate that significant fish spawning was occurring in Gowanus Canal, but that some spawning likely occurs in Gowanus Bay which is approximately 1.5 miles from the downstream limit of DEP's proposed dredging area. The eggs were mostly from pelagic species of fish whose eggs may drift. The number of eggs and ichthyoplankton found suggest that they may be drawn into the Canal from Buttermilk Channel through the Gowanus Flushing Tunnel (which was operating at the time of the LMS study) or from Gowanus Bay via the incoming tide, but are not being laid or hatched there.

3.2.7 Adult Finfish

Adult finfish surveys were conducted four times throughout 2004 as part of the LMS study. "Reach 1" of this sampling effort was located within the proposed DEP dredging area for Gowanus Canal. Adult finish collected at the head of the Canal included: American eel (*Anguilla rostrata*), Atlantic silverside (*Menidia menidia*), black sea bass (*Centropristis striata*), cunner (*Tautoglabrus adspersus*), mummichog (*Fundulus heteroclitus*), striped bass (*Morone saxatilis*) and white perch (*Morone americana*). Species were generally caught in low numbers, except for the striped bass, which were collected in higher densities in October 2003. Of the adult species collected, black sea bass was the only fish with an EFH designation. All of the identified species were collected during the October sampling event, with the exception of mummichog, which was collected in June. Sampling events in March and December did not produce any adult finfish in this portion of the Canal. In addition to adult finfish, two species of crabs were also collected; say mud crab (*Dyspanopeus sayi*) and the non-native Asian shore crab (*Hemigrapsus sanguineus*).

A low number and diversity of adult finfish were observed during these sampling events. In the sections of the Canal further south from the proposed dredging area, the same species were found as at the head of the Canal, but in varying densities. Population and diversity increased in the sampling reaches that were located within Gowanus Bay where conditions were more favorable for many species. Adult species identified in these reaches of Gowanus Bay included: Atlantic tomcod (*Microgadus tomcod*), winter flounder, bay anchovy, and spotted hake (*Urophycis regia*).

4.0 ESSENTIAL FISH HABITAT ASSESSMENT

4.1 EFH-Designated Species

Essential fish habitat has been designated for the various life stages of 17 managed species in the vicinity of the project area based upon the NMFS 10 x 10 minute quadrant areas that encompass Gowanus Canal (Table 4-1).

**Table 4-1. Species and Life Stages of EFH-Designated Species
Potentially Expected in the Project Area**

Species	Life Stages			
	Eggs	Larvae	Juveniles	Adults
Pollock (<i>Pollachius virens</i>)			X ²	X ²
Red Hake (<i>Urophycis chuss</i>)	X ¹	X	X	X ²
Winter Flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
Windowpane Flounder (<i>Scophthalmus aquosus</i>)	X	X	X	X
Atlantic Sea Herring (<i>Clupea harengus</i>)		X	X	X
Bluefish (<i>Pomatomus salatrix</i>)			X	X
Atlantic Butterfish (<i>Peprilus triacanthus</i>)		X	X	X
Atlantic Mackerel (<i>Scomber scombrus</i>)			X	X
Summer Flounder (<i>Paralichthys dentatus</i>)		X	X	X
Scup (<i>Stenotomus chrysops</i>)	X	X	X	X
Black Sea Bass (<i>Centropristus striata</i>)			X	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
Sand Tiger Shark (<i>Odontaspis taurus</i>)		X		
Dusky Shark (<i>Charcharinus obscurus</i>)		X	X ¹	
Sandbar Shark (<i>Charcharinus plumbeus</i>)		X		X
Notes: ¹ The occurrence of this life stage is only identified in the 10' x 10' square at 40° 40' 74.00"				
² The occurrence of this life stage is only identified in the 10' x 10' square at 40° 40' 73.5"				
These quadrangles, as identified by NOAA, generally encompass the Gowanus Canal and surrounding area. Each EFH quadrangle information is a ten minute square grid, information on each identified quadrangle can be located at the links below.				
Source: National Marine Fisheries Service. "Summary of Essential Fish Habitat (EFH) Designation" found at: http://www.nero.noaa.gov/hcd/STATES4/new_jersey/40407400.html and http://www.nero.noaa.gov/hcd/STATES4/conn_li_ny/40407350.html				

4.2 Analysis of Effect to EFH-Designated Species

For each species and designated life stage listed in Table 4-1, an EFH analysis of the potential project impacts was conducted. Potential direct, indirect and cumulative impacts were

assessed in terms of the seasonal distribution, relative abundance, and habitat requirements of each species within the proposed project area.

Pollock

The project site is designated as EFH for juvenile and adult pollock (*Pollachius virens*). Small juveniles are also known as “harbor pollock”, as these juveniles migrate inshore at about three to four month where they inhabit rocky subtidal and intertidal zones. They undergo a series of inshore-offshore movements linked to temperature until near the end of their second year. At this point the juveniles move offshore, where they remain through their adult stage. Juveniles utilize a wide variety of substrates, including sand, mud, rocky bottom and vegetation. Juveniles are found at temperatures from 0-16°C and prefer salinities around 31.5 ppt. Adult pollock have little preference for substrate type. They are found at high salinities, inhabit a wide range of depths and prefer water temperatures from 0-14°C. Adults tend to inhabit deeper waters in the spring and summer than in the winter and they are typically found further offshore than juveniles. Pollock are a schooling species that are found through the water column. Pollock in the northwest Atlantic are distributed from the Delmarva Peninsula north to the Gulf of St. Lawrence and Grand Banks, however, with the exception of short migrations due to temperature changes and north-south movements for spawning, pollock are fairly stationary in the Gulf of Maine and along the Nova Scotia coast. Due to the shallow depths and estuarine salinity levels within Gowanus Canal, this species would not be expected to utilize the project site and therefore no short-term or long-term impacts to Pollock are expected within the proposed project area.

Red Hake

The area of Brooklyn where Gowanus Canal is located is designated as EFH for eggs, larvae, juveniles and adults of red hake (*Urophycis chuss*). Red hake typically spawn in the Middle Atlantic Bight between April and October. They are found on soft mud, silt or sand bottoms, but can also be found on rocky bottoms where water temperatures are below 13°C. Eggs have been found in conditions where sea surface temperatures are below 10°C, with a salinity less than 25 ppt. Larvae occur between May and December, with peaks in September and October. Eggs and larvae are more restricted to larger systems east and north of the Hudson River. Larvae are found in depths less than 200 meters and in areas where sea surface temperatures are below 19°C, with a salinity greater than 0.5 ppt. Red hake juveniles are most commonly found in depths of less than 100 meters, with water temperatures below 16°C and salinity between 31 to 33 ppt. Juveniles are sensitive to low DO levels less than 4.2 mg/L and would likely not tolerate the anoxic conditions in upper reaches of Gowanus Canal. In addition, the substrate in the Canal is typically a soft silt, not the shelly substrate that juvenile red hake prefer. Therefore this species is not expected to be found in the project site.

Winter Flounder

The project site is designated as EFH for eggs, larvae, juveniles and adult winter flounder (*Pleuronectes americanus*). Winter flounder typically occur in estuarine and continental shelf habitats. Spawning adults and eggs are observed in estuaries from January to March, and larvae are observed from March to June. Eggs are demersal and found in depths less than five meters deep, with water temperatures below 10°C and salinity between 10 and 30 ppt. Larvae are most

abundant in the spring and subsequently as juveniles in the summer. Winter flounder prefer bottom habitats of mud or fine-grained sand, with larvae found in both bottom habitats and in the water column.

Although the proposed project site is located in a highly degraded aquatic habitat, winter flounder may use the area for spawning. Winter flounder spawn during winter at seasonal low water temperatures which correspond to seasonal high dissolved oxygen conditions. While eggs would experience relatively high DO for Gowanus Canal, larvae and juveniles produced from local spawning would be exposed to increasing water temperatures and decreasing DO through spring. The existing aeration system may have little effect on DO at the land-water interface where early larvae and early juveniles would be found. In addition, all early life stages would be exposed to potentially harmful contaminants in the substrate.

The head-end of Gowanus Canal in the project area represents a very small area of potential reproductive habitat for winter flounder in the Harbor. Under existing conditions the project area could provide only a small contribution to annual recruitment under the best of conditions in the Canal. Following dredging and the creation of enhanced substrate conditions, the project area may provide increased recruitment to the local winter flounder population compared to existing conditions.

The proposed project would result in the removal of degraded sediments, an increase in water depths and the creation of enhanced substrate conditions through the placement of a sand cap. Dredging and capping activities in the project area would disturb the substrate such that any eggs and larvae present at the time of dredging would be lost to the local population. This loss of potential recruitment would be limited to one spawning cycle, followed by the potential for increased spawning and recruitment in subsequent years and would therefore not present a significant impact to the EFH for this species.

Windowpane Flounder

Gowanus Canal is designated EFH for eggs, larvae, juvenile and adult windowpane flounder (*Scophthalmus aquosus*). This species is typically found in shallow, sandy to sand/silt or mud substrates in waters less than 56 meters deep. Spawning occurs in inner shelf waters beginning in February or March and reaches a peak in May. Windowpane eggs and larvae are pelagic and therefore direct impacts would be expected to be minimal. Potential direct and indirect impacts to juvenile and adult windowpane flounder would include the temporary disruption of bottom habitat and the short-term loss of forage organisms in the immediate vicinity of the project area. However, both juveniles and adults would be able to avoid the short-term construction and find comparable habitat and feeding areas nearby in the Canal. In addition, it is anticipated that given the common occurrence of the benthic species identified at the head end of the Canal, that recovery of the benthic community would occur quickly and that the short term loss of foraging habitat to the proposed dredging activities would not be a significant adverse impact to EFH. Therefore, the proposed project would not have a significant impact to the EFH for this species.

Atlantic Sea Herring

Gowanus Canal is also designated as EFH for larvae, juvenile and adult Atlantic sea herring (*Clupea harengus*). This species typically overwinters in the New York Bight between December and April and then moves north during the spring and summer. Larvae are observed at depths ranging from 10 to 90 meters, with temperatures below 16°C and at a salinity of approximately 32 ppt. Larvae would not be expected in the shallow depths of the Canal. Juveniles and adults prefer depths of 15 to 135 meters and 10 to 130 meters, respectively, with water temperatures below 10°C and salinity ranges greater than 26 ppt. Because Atlantic sea herring is predominately a pelagic species occurring in higher salinities than typically found within the Gowanus Canal, minimal direct and indirect impacts to this species within the project area are not anticipated.

Bluefish

The proposed project area is designated as EFH for juvenile and adult bluefish (*Pomatomus saltatrix*). Juvenile and adults are pelagic and are common in estuaries from May through October and April through October respectively. Juveniles occur in estuaries, bays and coastal ocean areas. They depart these habitats in October to migrate south to warmer waters. Adult bluefish are found in the open ocean, large embayments and estuarine and estuarine systems. Adults migrate south when water temperatures drop below 14 to 16°C. Bluefish normally travel in large schools which may contain up to several thousand individuals. Larger fish initially inhabit deeper water, but move progressively shoreward into shallow areas as the summer progresses. Because bluefish is predominately a pelagic species occurring in higher salinities than typically found within the Gowanus Canal, minimal direct and indirect impacts are anticipated to this species within the project area

Atlantic Butterfish

Gowanus Canal is also a designated EFH for larvae, juvenile and adult Atlantic butterfish (*Peprilus triacanthus*). During summer, Atlantic butterfish move northward and inshore to feed and spawn, then move southward and offshore to warmer waters during winter. Butterfish are found over sand, mud and mixed substrates in water temperatures of 4.4 to 29.7°C. Larvae are typically observed in depths of 10-120 meters, with water temperatures of 7 – 26°C. Juvenile and adults are typically found in depths of 3-23 meters deep, with salinities between 19 and 32 ppt. Because Atlantic butterfish is predominately a pelagic species occurring in higher salinities and at greater depths than typically found within the Gowanus Canal, minimal direct and indirect impacts are anticipated to this species within the project area.

Atlantic Mackerel

Gowanus Canal is designated EFH for juvenile and adult Atlantic mackerel (*Scomber scombrus*). Juveniles and adults are typically found in depths up to 350 and 415 meters, respectively. Juveniles prefer salinities of 26.1 to 28.9 ppt, and DO from 7.3 to 8.0 mg/L. Adults prefer water temperatures between 6 and 16°C. Because of these habitat requirements and the existing environmental conditions within the Canal, Atlantic mackerel is not expected to occur within the project area and therefore no direct or indirect impacts are anticipated.

Summer Flounder

The project area is designated as EFH for larvae, juvenile and adult summer flounder (*Paralichthys dentatus*). This species prefers habitats over sand, mud and vegetated substrate. Spawning occurs on the continental shelf from September through January, with peaks in October and November. Spawning adults and eggs are, therefore, not expected in the project area. Larvae are most abundant from September to February at approximately 12 to 50 miles from shore at depths of 10 to 76 meters deep. Based on the distance from shore and depth preferences, it is unlikely that summer flounder larvae would be present in the Canal. Juveniles are typically found in estuaries, including mud flats where water temperatures are greater than 22°C with salinities of 10 to 30 ppt. During the summer months, adult summer flounder migrate from offshore waters to shallow coastal and estuarine environments. Although this species was not collected during the 2004 aquatic surveys, a few juvenile and adult summer flounder may be present in the vicinity of the project area during a limited period in the late spring and summer months. Potential direct and indirect impacts to juvenile and adult summer flounder would include the temporary disruption of bottom habitat and the short-term loss of forage organisms in the immediate vicinity of the project area. However, both juveniles and adults would be able to avoid the short-term construction and find comparable habitat and feeding areas nearby in the Canal. Subsequent to the completion of the proposed project, the species would be able to return and re-establish in the project site. In addition, it is anticipated that given the common occurrence of the benthic species identified at the head end of the Canal, that recovery of the benthic community would occur quickly and that the short term loss of foraging habitat to the proposed dredging activities would not be a significant adverse impact to EFH. Therefore, the proposed project would not have a significant impact to EFH for this species.

Scup

Gowanus Canal is designated as EFH for eggs, larvae, juveniles and adult scup (*Stenotomus chrysops*). Scup move inshore during April and May and spend the summer in bays and coastal waters within 10 km of the coast, where they prefer sandy bottoms and structured habitats. All life stages species are found in estuaries during the spring and summer. Spawning adults and eggs are typically found in larger bodies of water over sandy or weed-covered bottoms. Spawning occurs between May and August and peaks during June. Eggs and larvae are pelagic and are found in large bodies of waters, such as bays and sounds. Eggs and larvae are observed in area where water temperatures are between 12.8 and 22.8°C. Juveniles are most commonly observed at depths between 5 and 12 meters, with water temperatures ranging from 9 to 26°C and at DO levels greater than 4.0 mg/L. Juvenile scup, however, may not tolerate the summer DO minima observed in the vicinity of the project area. Similar to juveniles, adult scup prefer sandy bottoms and structured habitats, such as artificial reefs, rocky ledges or wrecks. Adults are commonly observed in salinities ranging from 20 to 31 ppt with DO values greater than or equal to 4.0 mg/L. Because eggs and larvae are pelagic and because the existing DO and salinity conditions within the canal are near the acceptable thresholds for juvenile and adult scup, the occurrence of this species within the project area is expected to be unlikely. Potential direct and indirect impacts would therefore be minimal with juveniles and adults preferring more suitable habitat conditions in nearby areas.

Black Sea Bass

The project area is designated as EFH for juvenile and adult black sea bass (*Centropristus striata*). This species is usually associated with warm temperatures and with structured habitats, such as reefs and shipwrecks, on the continental shelf. During warmer months juveniles are found in estuaries and coastal areas, often near shelter. Adults are found slightly deeper than juveniles and summer in coastal areas, usually near structured habitat, from the Middle Atlantic Bight into the Gulf of Maine. The black sea bass moves to warmer waters south of New Jersey in the fall and returns to the north in the spring, when southern water temperatures begin to rise above 7°C. The populations migrate inshore into coastal areas and bays in southern New England and the Middle Atlantic Bight. Both juveniles and adults use structured habitats for shelter such as eelgrass, oyster beds, rocky reefs, exposed stiff clay, shipwrecks, bridge abutments, submerged pipes and culverts, rip-rap barriers and rough bottoms along the sides of navigational channels. Adults are usually found in deeper bays and coastal waters than juveniles. Juveniles occur in the high salinity areas of many estuaries along the coast from North Carolina to Cape Cod. Adult fish were found in limited amounts at the project site during the October 2003 sampling event only. Although this species has been identified at the project site, the low DO levels and shallow water depths that exist within the proposed dredge area would likely cause adults to seek out deeper waters of the Canal. Therefore, the potential direct and indirect impacts to black sea bass would be minimal.

King Mackerel

The project area is designated as EFH for eggs, larvae, juvenile and adult king mackerel (*Scomberomorus cavella*). This species is a coastal migratory pelagic species. The EFH for king mackerel includes rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone, sandy shoals of capes and offshore bars. This species would, therefore, not be expected in the shallow depths of Gowanus Canal.

Spanish Mackerel

Gowanus Canal is within the greater New York/New Jersey Harbor estuary and is therefore, considered EFH for eggs, larvae, juvenile and adult Spanish mackerel (*Scomberomorus maculatus*). However, similar to the king mackerel, the typical EFH for this species includes sandy shoals of capes and offshore bars, rocky bottoms and barrier island ocean-side waters from the surf to the shelf break zone. Likewise, the Spanish mackerel is considered a coastal migratory pelagic species and would not be expected to occur in the shallow depths of the proposed project site.

Cobia

The proposed project site is also designated as EFH for eggs, larvae, juvenile and adult cobia (*Rachycentron canadum*). This species is associated with high salinity bays, estuaries and eel grass beds, as well as sandy shoals of capes and offshore sand bars, rocky bottom and barrier island ocean side water. Cobia are considered a coastal migratory pelagic species. Due to the shallow depths of the Canal, this species would not be expected to be found in the project area.

Sand Tiger Shark

Gowanus Canal is located within an area that is designated as EFH for early juvenile sand tiger sharks (*Odontaspis taurus*). Sand tiger sharks are mainly found in temperate and tropical waters in shallow bays and sandy coastal waters and on rocky or coral reefs. Juvenile sand tiger sharks are normally found in estuaries of the eastern U.S. Sand tiger sharks inhabit shallow coastal waters from the surf zone to a depth of 60 meters. This species is usually found near caves and ledges. Considering the shallow, estuarine habitat of the Canal, juvenile sand tiger sharks would not be expected to occur within the proposed project area.

Dusky Shark

The project site is also located within an area that is designated as EFH for early juvenile dusky sharks (*Charcharinus obscurus*). This species prefers warm temperate to tropical waters. The dusk shark occurs in both inshore and offshore waters from the surface to depths of 400 meters, with juvenile preferring shallower depths than adults. The dusky shark is not commonly found in estuaries due to its avoidance of low salinity, including juveniles who utilize coastal nursery grounds. Considering the shallow, estuarine habitat of the Canal, juvenile dusky sharks would not be expected to occur within the project area.

Sandbar Shark

Gowanus Canal is located within an area that is designated as EFH for early juvenile and adult sandbar sharks (*Carcharhinus plumbeus*). Early juvenile and adult sandbar sharks can be found in shallow coastal waters with depths up to 25 to 50 meters, respectively. Juveniles prefer water temperatures greater than 21°C. Nursery areas for juvenile sandbar sharks are found from Great Bay, New Jersey to Cape Canaveral, Florida. Adults prefer shallow coastal areas from the coast to the 50 meter isobaths. This species is highly migratory and are seldom found in estuaries. Considering the shallow, estuarine habitat of the project site, juvenile and adult sandbar sharks would not be expected to occur in the project area.

4.2.1 Summary

Although 17 species have been designated as having EFH within the project area, the potential impacts of the dredging project would be primarily limited to a small number of species and life stages that may find usable habitat in the degraded conditions of the project area. As outlined in Table 4-2, the species and life stages with an EFH designation that may be expected to occur and utilize Gowanus Canal are winter flounder (eggs, larvae, juveniles and adults), windowpane flounder (juveniles and adults), summer flounder (juveniles and adults), and black sea bass (juveniles and adults).

**Table 4-2. Species and Life Stages of EFH-Designated Species
Potentially Located in the Proposed Project Area**

<u>Species</u>	<u>Life Stages</u>			
	<i>Egg</i>	<i>Larvae</i>	<i>Juvenile</i>	<i>Adult</i>
Winter Flounder (<i>Pleuronectes americanus</i>)	X	X	X	X
Windowpane Flounder (<i>Scophthalmus aquosus</i>)			X	X
Summer Flounder (<i>Paralichthys dentatus</i>)			X	X
Black Sea Bass (<i>Centropristus striata</i>)			X	X

4.3 Threatened and Endangered Species

A review of information from the USFWS and the DEC was conducted to determine if the presence of any rare, threatened, and/or endangered species would be expected within or in proximity to the proposed dredging area in Gowanus Canal. Based upon this review, there are two fish species and four sea turtle species identified for Kings County, New York. A more detailed description of each species is provided below.

4.3.1 Fish Species

In addition to the EFH species previously discussed, there are two fish species that have been identified as endangered or as a species of special concern that may occur in Upper New York Bay, the Hudson River and other areas within the New York metropolitan region. The Atlantic sturgeon (*Acipenser oxyrinchus*) is currently listed as a species of concern throughout the North American Atlantic coastal waters. The species has been in decline due to habitat degradation, ship strikes, and barriers to migration. The potential exists for the designation of this species to be changed in the future to threatened or endangered if the existing declines continue. The species may be potentially found in proximity to the proposed project site.

Atlantic sturgeon is a species of fish that is of potential concern within the Hudson River. Gowanus Canal opens into Gowanus Bay which is bordered by Upper New York Bay and is connected to the Hudson River. Atlantic sturgeons are anadromous and enter river systems during the spring months to spawn. They migrate up river during April and May. Adults prefer to spawn in flowing water, over rocky substrates with hard complex bottoms at depths ranging from 36-88 feet. The rocky habitats provide the newly hatched young with cover from predators among the interstitial spacing. Atlantic sturgeon would be expected to potentially occur further west of the site, within the waters of the Hudson River, on its way north to freshwater spawning areas. As a result, it is not anticipated that this species would be impacted by the proposed dredging activities.

The shortnose sturgeon (*Acipser brevirostrum*) is a federally-designated endangered species under the Endangered Species Act (ESA). This species has been in decline due to the construction of dams and locks, ship strikes, bycatch, pollution, habitat alteration, dredging and commercial exploitation. The species may also be found in proximity to the proposed project site.

Shortnose sturgeons are anadromous and enter the rivers during the spring to spawn. The adults prefer to spawn over hard complex bottoms such as gravel or cobble while the young prefer interstitial spaces as cover from predators. Shortnose sturgeons are generally found from the southern tip of Manhattan north to the Federal dam at Troy. However, the sturgeon is typically a transient species that utilizes the Hudson River on its way north to freshwater spawning areas. This species would also be expected to occur further west of the proposed site within the waters of the Upper Bay and would not be expected to be found within Gowanus Bay or Canal. As a result, it is not anticipated that this species would be impacted by the proposed dredging activities.

4.3.2 Sea Turtle Species

There are five species of marine turtles that occur in the northwest Atlantic region, four of these species were identified by the USFWS as potentially occurring in Kings County, New York. These include the Atlantic green turtle (*Chelonia mydas*), loggerhead turtle (*Caretta caretta*), leatherback turtle (*Dermochelys coriacea*) and the hawksbill turtle (*Eretmochelys imbricate*). The Kemp's (Atlantic) Ridley turtle (*Lepidochelys kempii*) was not identified for Kings County. All are listed as endangered or threatened under the ESA.

Analysis of the potential impact of proposed dredging activities upon the turtle species noted above was conducted. The presence of these species at the project site is highly unlikely due to the existing habitat conditions at the site and the lack of their preferred habitat characteristics, which typically consists of warm, coastal waters less than 50 feet deep with abundant submerged aquatic vegetation. Coral reefs, lagoons, inlets, marshes, open water and/or bays are their ideal habitats (NOAA, 2011). The shallow depths, lack of submerged aquatic vegetation, poor water quality and industrial nature of the project site would not provide habitat for any of these species. Therefore these species would not be expected in or near the proposed project site and would therefore not be at risk for adverse impacts from the proposed dredging activities.

5.0 CONCLUSIONS

This assessment is primarily based on sediment, water quality data and fish and ichthyoplankton studies conducted previously at or near the proposed project site. The results of these studies have been discussed in the previous sections and used to determine the EFH species and life stages that may utilize the project area. The Gowanus Canal is a degraded habitat with organically enriched sediment loads, low DO levels, restricted tidal exchange and toxic sediment accumulations. As a result of the existing water quality conditions and/or the physical characteristics of the waterbodies in the vicinity of the proposed project, many of the species of concern identified in Table 4-1 would not be expected to occur in high densities at the proposed project site. In addition, the highly modified shoreline in the project area is a further limiting factor for some of the EFH species because of a lack of basic habitat needs. The majority of species that would be expected to utilize the Canal are either juvenile or adults (winter flounder, summer flounder, windowpane flounder and black sea bass). Winter flounder larvae were collected within the project area and both eggs and larvae might be expected to occur in limited densities within a short window primarily from December to April. However, given the existing

degraded water quality and sediment conditions, particularly at the head of the Canal within the project area, the conditions do not present optimal habitat characteristics for the EFH species.

Species that utilize the estuarine waters during the winter months (e.g., winter flounder) would likely seek out deeper waters than those found in the shallow water habitat located within the head end of the Canal. The summer and windowpane flounder migrate to warmer waters during the winter months and would be expected to occur near the site only in the spring and summer months.

In addition to the species identified in Table 4-1, the Atlantic sturgeon and the shortnose sturgeon are species of concern or threatened species, respectively, that may be found in proximity to the site. These species are identified as NOAA-trust resources. However, both species prefer to spawn in moving, rocky, freshwater. The Atlantic sturgeon prefers water at depths ranging from approximately 36-88 feet deep. Both species of sturgeon are transient fish and overwinter in the mid-Hudson River area, north of the proposed site, which extends from Stony Point north to Poughkeepsie. They then move further north into the freshwater areas of the river to spawn, during the April to May spawning season. Both species would therefore not be expected to be found in or near Gowanus Canal as they would be traveling in the waters of the Hudson River, further west of the site.

Likewise four species of marine turtles were identified by the USFWS as potentially occurring in Kings County, New York. Atlantic green turtle, loggerhead turtle, leatherback turtle, and the hawksbill turtle are listed as endangered or threatened under the ESA. The presence of these species at the proposed project site is also highly unlikely due to the existing habitat conditions at the site and the lack of their preferred habitat characteristics, which consists of warm, coastal waters less than 50 feet deep with abundant submerged aquatic vegetation.

Based upon the information provided within this EFH assessment, it is concluded that the proposed project would not result in significant impacts to designated EFH species. Although the potential for winter flounder, windowpane flounder, summer flounder, and black sea bass to be found in the proposed dredge area was identified, potential impacts to these species would be minimal. Potential impacts would be associated with a temporary increase in turbidity in the water column, a temporary loss of bottom habitat and benthic forage species caused by the dredging activities. The physical habitat after completion of the dredging activities is anticipated to improve, as the existing degraded sediments would be replaced with a clean sand material. It is anticipated that given the common occurrence of the benthic species identified at the head end of the Canal, that recovery of the benthic community would occur quickly and that the short term loss of the benthic community to the proposed dredging activities would not be a significant adverse impact to EFH. The current benthic community is dominated by species that are indicative of environmental stresses, these organisms (i.e., *Streblospio benedicti*, *Capitella* sp.) reproduce quickly and are expected to recolonize the project site within six months to a year. Following the recolonization of the sand cap by a benthic community, finfish that may utilize the area are expected to follow. The Gowanus Canal will, however, continue receiving discharges from CSOs and will likely remain an environmentally stressed area due to these discharges.

In addition, proposed environmental protective measures, such as the use of an environmental bucket for mechanical dredging or the installation of a turbidity curtain during dredging would significantly reduce the potential for impact on fish resources in the Canal.

Therefore, due to the existing degraded habitat conditions at the project site, the short-term duration and localized nature of the proposed project, adverse impacts to the aquatic resources in the project area would be considered negligible. Following construction activities, the aquatic community temporarily displaced or removed would be able to return and re-establish in the project site. The proposed project would remove existing CSO sediments that are contributing to shallow water depths and degraded sediments, which negatively impact the EFH. By removing these sediments, the proposed project would result in an improvement to the substrate followed by the potential for increased spawning and recruitment by select species in subsequent years and would therefore not present a significant impact to the EFH. within the Canal and thereby present a benefit to the characteristics of the EFH.

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