

# **New York City Department of Correction**

## ***Full Environmental Assessment Form with Supplemental Studies***

### **Rikers Island Cogeneration Plant**

Lead Agency:

New York Power Authority  
123 Main Street  
White Plains, NY 10601

Prepared by:

AKRF, Inc.  
440 Park Avenue South, 7th Floor  
New York, NY 10016

July 2011

State Environmental Quality Review  
FULL ENVIRONMENTAL ASSESSMENT FORM

**Purpose:** The full EAF is designed to help applicants and agencies determine, in an orderly manner, whether a project or action may be significant. The question of whether an action may be significant is not always easy to answer. Frequently, there are aspects of a project that are subjective or unmeasurable. It is also understood that those who determine significance may have little or no formal knowledge of the environment or may not be technically expert in environmental analysis. In addition, many who have knowledge in one particular area may not be aware of the broader concerns affecting the question of significance.

The full EAF is intended to provide a method whereby applicants and agencies can be assured that the determination process has been orderly, comprehensive in nature, yet flexible enough to allow introduction of information to fit a project or action.

**Full EAF Components:** The full EAF is comprised of three parts:

- Part 1:** Provides objective data and information about a given project and its site. By identifying basic project data, it assists a reviewer in the analysis that takes place in Parts 2 and 3.
- Part 2:** Focuses on identifying the range of possible impacts that may occur from a project or action. It provides guidance as to whether an impact is likely to be considered small to moderate or whether it is a potentially-large impact. The form also identifies whether an impact can be mitigated or reduced.
- Part 3:** If any impact in Part 2 is identified as potentially-large, then Part 3 is used to evaluate whether or not the impact is actually important.

**DETERMINATION OF SIGNIFICANCE — Type 1 and Unlisted Actions**

Identify the Portions of EAF completed for this project:  Part 1  Part 2  Part 3

Upon review of the information recorded on this EAF (Parts 1 and 2 and 3 if appropriate), and any other supporting information, and considering both the magnitude and importance of each impact, it is reasonably determined by the lead agency that:

- A. The project will not result in any large and important impact(s) and, therefore, is one which will not have a significant impact on the environment; therefore a negative declaration will be prepared.
- B. Although the project could have a significant effect on the environment, there will not be a significant effect for this Unlisted Action because the mitigation measures described in PART 3 have been required, therefore a **CONDITIONED** negative declaration will be prepared.\*
- C. The project may result in one or more large and important impacts that may have a significant impact on the environment, therefore a positive declaration will be prepared.

\* A Conditioned Negative Declaration is only valid for Unlisted Actions.

Rikers Island Cogeneration Plant

Name of Action

New York Power Authority

Name of Lead Agency

John M. Kahabka

Print or Type Name of Responsible Officer in Lead Agency

Vice President, Environment, Health and Safety

Title of Responsible Officer

Signature of Responsible Officer in Lead Agency

Signature of Preparer (if different from responsible officer)

April 7, 2010  
Date

**PART I — PROJECT INFORMATION**

Prepared by Project Sponsor

NOTICE: This document is designed to assist in determining whether the action proposed may have a significant effect on the environment. Please complete the entire form, Parts A through E. Answers to these questions will be considered as part of the application for approval and may be subject to further verification and public review. Provide any additional information you believe will be needed to complete Parts 2 and 3.

It is expected that completion of the full EAF will be dependent on information currently available and will not involve new studies, research or investigation. If information requiring such additional work is unavailable, so indicate and specify each instance.

|  |                    |   |
|--|--------------------|---|
| NAME OF ACTION<br><b>Rikers Island Cogeneration Plant</b>  |                    |   |
| LOCATION OF ACTION (INCLUDE STREET ADDRESS, MUNICIPALITY AND COUNTY)<br><b>Hazen Street, Rikers Island, Bronx (see Figure 1)</b>   |                    |   |
| NAME OF APPLICANT/SPONSOR<br><b>John M. Kahabka/New York Power Authority</b>   |                    | BUSINESS TELEPHONE<br><b>(914) 681-6308</b> |
| ADDRESS<br><b>123 Main Street</b>  |                    |   |
| CITY/PO<br><b>White Plains</b>   | STATE<br><b>NY</b> | ZIP CODE<br><b>10601</b>                    |
| NAME OF OWNER (IF DIFFERENT)<br><b>New York City Department of Correction/Warden McLaughlin</b>  |                    | BUSINESS TELEPHONE<br><b>(212) 266-1825</b> |
| ADDRESS<br><b>60 Hudson Street, 7th Floor</b>  |                    |   |
| CITY/PO<br><b>New York</b>   | STATE<br><b>NY</b> | ZIP CODE<br><b>10013</b>                    |
| DESCRIPTION OF ACTION<br><b>The New York City Department of Correction (NYCDOC) is proposing to construct and operate a new cogeneration plant and feeder lines on Rikers Island (the proposed project). NYCDOC owns Rikers Island and operates the correctional facility located there. The New York Power Authority (NYPA) will provide initial funding for the project (see Attachment A, "Project Description").</b> |                    |   |

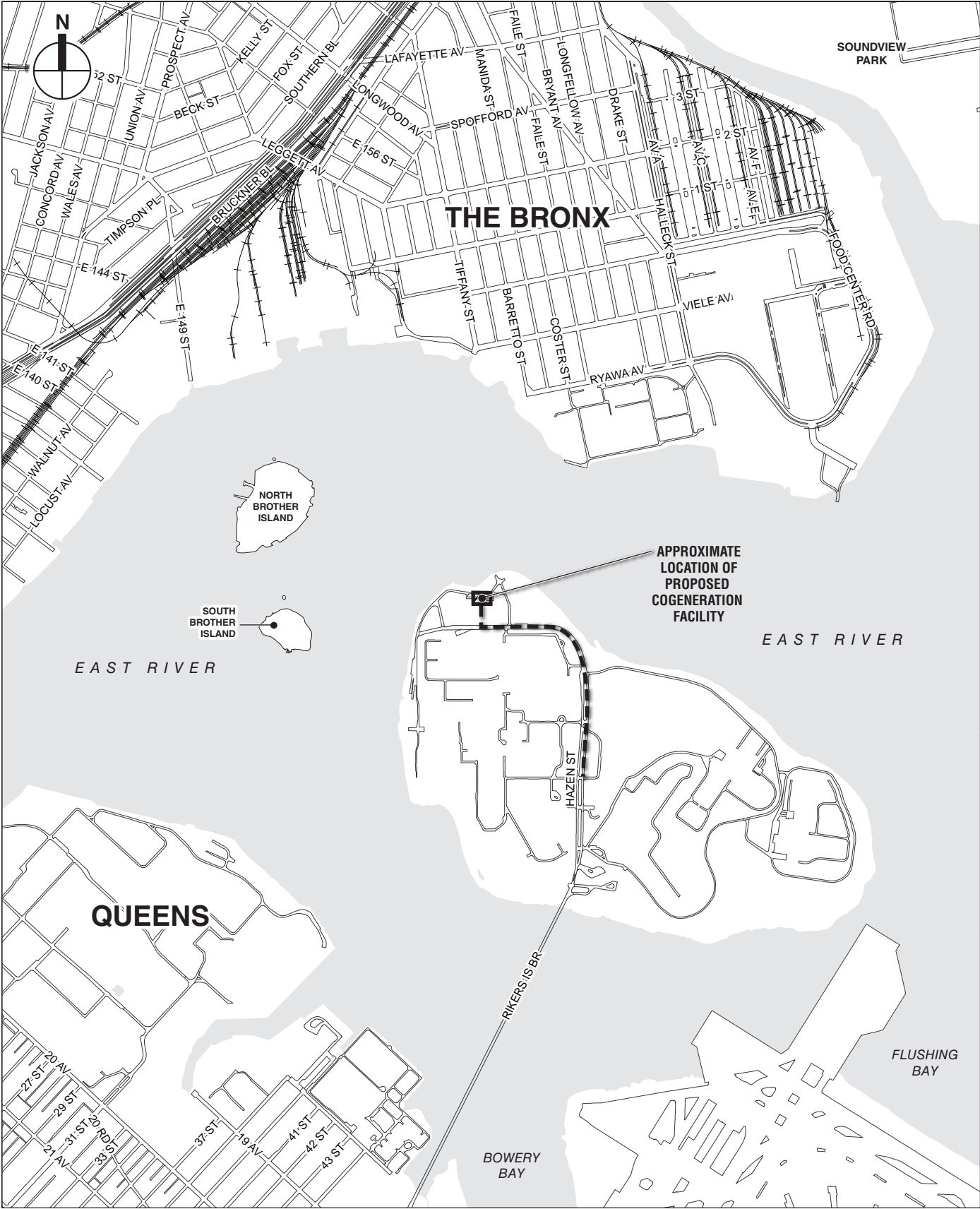
Please Complete Each Question—Indicate N.A. if not applicable

**A. Site Description**

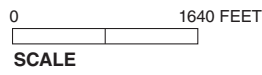
Physical setting of overall project, both developed and undeveloped areas.

1. Present Land Use:  Urban     Industrial     Commercial     Residential (suburban)     Rural (non-farm)  
 Forest     Agriculture     Other    **Institutional/Detention Center**
  
2. Total acreage of project area:    **Approx. 1.39**    acres.    PRESENTLY    AFTER COMPLETION  
APPROXIMATE ACREAGE  
Meadow or Brushland (Non-agricultural)    \_\_\_\_\_ acres    \_\_\_\_\_ acres  
Forested    \_\_\_\_\_ acres    \_\_\_\_\_ acres  
Agricultural (Includes orchards, cropland, pasture, etc.)    \_\_\_\_\_ acres    \_\_\_\_\_ acres  
Wetland (Freshwater or tidal as per Articles 24, 25 of ECL)    \_\_\_\_\_ acres    \_\_\_\_\_ acres  
Water Surface Area    \_\_\_\_\_ acres    \_\_\_\_\_ acres  
Unvegetated (Rock, earth or fill)    \_\_\_\_\_ acres    \_\_\_\_\_ acres  
Roads, buildings and other paved surfaces    **Approx. 1.39** acres    **Approx. 1.39** acres  
Other (Indicate type)    \_\_\_\_\_ acres    \_\_\_\_\_ acres
  
3. What is predominant soil type(s) on the project site?    **Fill**  
a. Soil drainage:     Well drained    **100** % of site     Moderately well drained    \_\_\_\_\_ % of site.  
 Poorly drained    \_\_\_\_\_ % of site  
b. If any agricultural land is involved, how many acres of soil are classified within soil group 1 through 4 of the NYS Land Classification System?    **NA** Acres (see 1NYCRR 370)
  
4. Are there bedrock outcroppings on project site?     Yes     No  
What is the depth to bedrock? (in feet)    **Approx. 70 feet**
  
5. Approximate percentage of proposed project site with slopes:     0-10%    **100** %     10-15%    \_\_\_\_\_ %  
 15% or greater    \_\_\_\_\_ %
  
6. Is project substantially contiguous to, or contain a building, site, or district, listed on the State or National Registers of Historic Places?     Yes     No

7.18.11



-  Project Site Area
-  Proposed Feeder Lines Route



**RIKERS ISLAND  
COGENERATION PLANT**

**Project Location  
Figure 1**

7. Is project substantially contiguous to a site listed on the Register of National Natural Landmarks?  Yes  No
8. What is the depth of the water table? 10 (in feet)
9. Is site located over a primary, principal, or sole source aquifer?  Yes  No
10. Do hunting, fishing or shell fishing opportunities presently exist in the project area?  Yes  No
11. Does project site contain any species of plant or animal life that is identified as threatened or endangered?  Yes  No

According to: New York Natural Heritage Program (NYNHP), US Fish and Wildlife Service

Identify each species: \_\_\_\_\_

12. Are there any unique or unusual land forms on the project site? (i.e., cliffs, dunes or other geological formations)  Yes  No

Describe: \_\_\_\_\_

13. Is the project site presently used by the community or neighborhood as an open space or recreation area?  Yes  No

If yes, explain: \_\_\_\_\_

14. Does the present site include scenic views known to be important to the community?  Yes  No

15. Streams within or contiguous to project area? No, but the project site is close to the East River

a. Name of Stream and name of River to which it is tributary: \_\_\_\_\_

16. Lakes, ponds, wetland areas within or contiguous to project area: **No**

a. Name: \_\_\_\_\_

b. Size (in acres): \_\_\_\_\_

17. Is the site served by existing public utilities?  Yes  No

a. If YES, does sufficient capacity exist to allow connection?  Yes  No

b. If YES, will improvements be necessary to allow connection?  Yes  No

18. Is the site located in an agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304?  Yes  No

19. Is the site located in or substantially contiguous to a Critical Environmental Area designated pursuant to Article 8 of the ECL, and 6 NYCRR 617?  Yes  No

20. Has the site ever been used for the disposal of solid or hazardous waste?  Yes  No

**There is a regulatory listing of Rikers Island as a Hazardous Substance Waste Disposal Site.**

## B. Project Description

1. Physical dimensions and scale of project (fill in dimensions as appropriate).

**One cogeneration plant approximately 10,000 square feet (SF) in size and feeder lines approximately 0.60 miles in length to connect to existing electrical distribution infrastructure.**

a. Total contiguous acreage owned or controlled by project sponsor 0<sup>1</sup> acres.

b. Project acreage to be developed: 1.39 acres initially; 1.39 acres ultimately.

c. Project acreage to remain undeveloped N/A acres.

d. Length of project, in miles: N/A (If appropriate)

e. If the project is an expansion, indicate percent of expansion proposed N/A %

f. Number of off-street parking spaces existing Approx. 45\*; proposed 0

**\* The proposed project would displace approximately 15 spaces from the site of the proposed cogeneration facility.**

g. Maximum vehicular trips generated per hour 0 (upon completion of project)?

h. If residential: Number and type of housing units? N/A

|            | One Family | Two Family | Multiple Family | Condominium |
|------------|------------|------------|-----------------|-------------|
| Initially  | _____      | _____      | _____           | _____       |
| Ultimately | _____      | _____      | _____           | _____       |

i. Dimensions (in feet) of largest proposed structure ±40 feet, with two 150 foot exhaust stacks height; ±60 feet width; ±160 feet length.

j. Linear feet of frontage along a public thoroughfare project will occupy is? 0 ft.

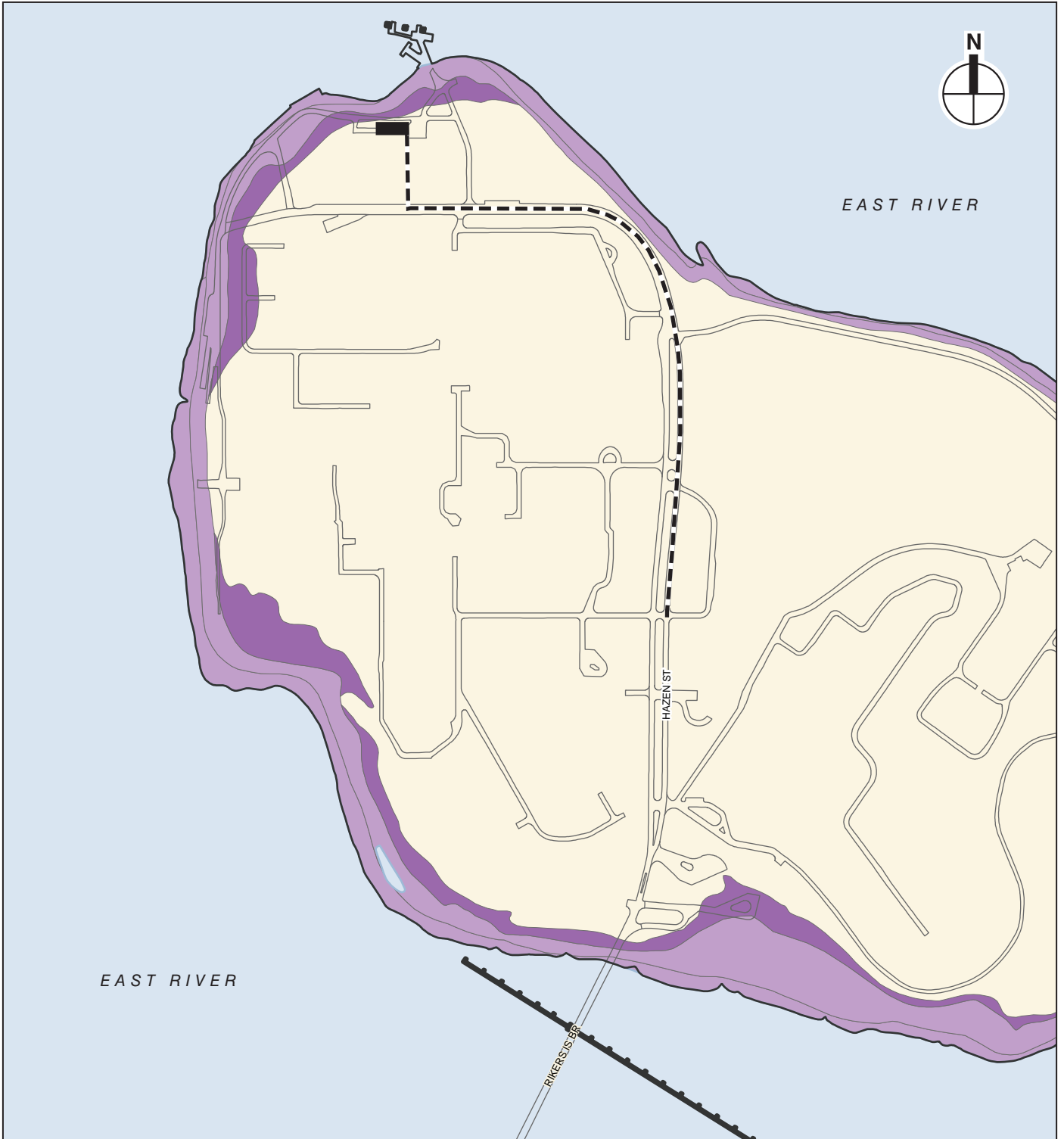
2. How much natural material (i.e., rock, earth, etc.) will be removed from the site? 0 tons/cubic yards.





<sup>1</sup> The project site is owned and controlled by the New York City Department of Correction. The New York Power Authority is sponsoring the project.

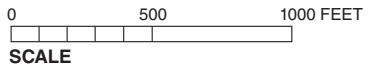
3. Will disturbed areas be reclaimed?  N/A  Yes  No
- a. If yes, for what intended purpose is the site being reclaimed? \_\_\_\_\_
- b. Will topsoil be stockpiled for reclamation?  Yes  No
- c. Will upper subsoil be stockpiled for reclamation?  Yes  No
4. How many acres of vegetation (trees, shrubs, ground covers) will be removed from site? 0\* acres.  
**\* A small number of trees would be removed from the site of the proposed cogeneration facility.**
5. Will any mature forest (over 100 years old) or other locally-important vegetation be removed by this project?  Yes  No
6. If single phase project: Anticipated period of construction approx. 24-30 months, (including demolition)
7. If multi-phased:
- a. Total number of phases anticipated \_\_\_\_\_ (number)
- b. Anticipated date of commencement phase 1 \_\_\_\_\_ month \_\_\_\_\_ year, including (demolition)
- c. Approximate completion date of final phase \_\_\_\_\_ month \_\_\_\_\_ year.
- d. Is phase 1 functionally dependent of subsequent phases?  Yes  No
8. Will blasting occur during construction?  Yes  No
9. Number of jobs generated: during construction 150 ; after project is complete 0
10. Number of jobs eliminated by this project 0
11. Will project require relocation of any projects or facilities?  Yes  No  
 If yes, explain: The proposed project would displace approximately 15 spaces from the site of the proposed cogeneration facility.
- 
12. Is surface liquid waste disposal involved?  Yes  No
- a. If yes, indicate type of waste (sewage, industrial, etc) and amount \_\_\_\_\_
- b. Name of water body into which effluent will be discharged \_\_\_\_\_
13. Is subsurface liquid waste disposal involved? Type \_\_\_\_\_  Yes  No
14. Will surface area of an existing water body increase or decrease by proposal?  Yes  No  
 If yes, explain: \_\_\_\_\_
15. Is project or any portion of project located in a 100 year flood plain? **See Figure 2**  Yes  No
16. Will the project generate solid waste?<sup>1</sup>  Yes  No
- a. If yes, what is the amount per month? \_\_\_\_\_ tons
- b. If yes, will an existing solid waste facility be used?  Yes  No
- c. If yes, give name \_\_\_\_\_ ; location \_\_\_\_\_
- d. Will any wastes not go into a sewage disposal system or into a sanitary landfill?  Yes  No
- e. If yes, explain: \_\_\_\_\_
17. Will the project involve the disposal of solid waste?  Yes  No
- a. If yes, what is the anticipated rate of disposal? \_\_\_\_\_ tons/month
- b. If yes, what is the anticipated site life? \_\_\_\_\_ years
18. Will project use herbicides or pesticides?  Yes  No
19. Will project routinely produce odors (more than one hour per day)?  Yes  No
20. Will project produce operating noise exceeding the local ambient noise levels?  Yes  No
21. Will project result in an increase in energy use?  Yes  No  
 If yes, indicate type(s): Natural gas
22. If water supply is from wells, indicate pumping capacity NA gallons/minute
23. Total anticipated water usage per day 6,000<sup>2</sup> gallons/day

<sup>1</sup> Operation of the proposed cogeneration facility would not generate any solid waste. The proposed project would generate small quantities of waste materials, such as waste oil, from equipment maintenance activities. However, these wastes are already produced by the existing boilers, and thus the proposed project would not generate any new solid waste.

<sup>2</sup> During the summer months (approximately 80 days) up to 30,000 gallons of water per day would be used.



-  Project Site Area
-  Proposed Feeder Lines Route
-  100-year Floodplain
-  500-year Floodplain



24. Does project involve Local, State, or Federal funding?  Yes  No

If yes, explain: **NYPA will initially fund the project, NYCDOC will repay NYPA through energy savings.**

25. Approvals Required:

|                                    | Yes                                 | No                                  | Type                                      | Submittal Date |
|------------------------------------|-------------------------------------|-------------------------------------|---|----------------|
| City, Town, Village Board          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | _____                                     | _____          |
| City, Town, Village Planning Board | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | _____                                     | _____          |
| City, Town, Village Zoning Board   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | _____                                     | _____          |
| City, County Health Department     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | _____                                     | _____          |
| Other Local Agencies               | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <b>NYCDEP Air Permit</b>                  | _____          |
| Other Regional Agencies            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | _____                                     | _____          |
| State Agencies                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <b>NYSDEC Title V Facility Air Permit</b> | _____          |
| Federal Agencies                   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | _____                                     | _____          |

**C. Zoning and Planning Information**

1. Does proposed action involve a planning or zoning decision?  Yes  No

If Yes, indicate decision required:

- Zoning amendment   
  Zoning variance   
  New/revision of master plan   
  Subdivision  
 Site plan   
  Special use permit   
  Resource management plan   
  Other \_\_\_\_\_

2. What is the zoning classification(s) of the site? **C8-2**

3. What is the maximum potential development of the site if developed as permitted by the present zoning?  
**N/A – The project site is part of a prison complex.**

4. What is the proposed zoning of the site? **There is no proposed change to zoning.**

5. What is the maximum potential development of the site if developed as permitted by the proposed zoning?  
**There is no proposed change to zoning.**

6. Is the proposed action consistent with the recommended uses in adopted local land use plans?  Yes  No

7. What are the predominant land use(s) and zoning classifications within a ¼-mile radius of proposed action?  
**C8-2, Institutional: Rikers Island Prison Facility**

8. Is the proposed action compatible with adjoining/surrounding land uses with a ¼ mile?  Yes  No

9. If the proposed action is the subdivision of land, how many lots are proposed? **N/A**  
 a. What is the minimum lot size proposed? \_\_\_\_\_

10. Will the proposed action require authorization(s) for the formation of sewer or water districts?  Yes  No

11. Will the proposed action create a demand for any community provided services (recreation, education, police, fire protection)?  Yes  No

a. If yes, is existing capacity sufficient to handle projected demand?  Yes  No

12. Will the proposed action result in the generation of traffic significantly above present levels?  Yes  No

a. If yes, is the existing road network adequate to handle the additional traffic?  Yes  No

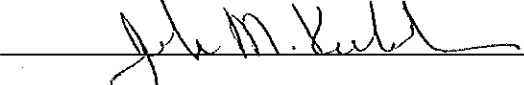


## D. Informational Details

Attach any additional information as may be needed to clarify your project. If there are or may be an adverse impacts associated with your proposal, please discuss such impacts and the measures which you proposed to mitigate or avoid them.

## E. Verification

I certify that the information provided above is true to the best of my knowledge.

Applicant/Sponsor Name John M. Kahabka Date April 7, 2010  
Signature  Title Vice President, Environment, Health and Safety

If the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding with this assessment.

The project site is located within the coastal zone. A New York State Department of State Coastal Management Program Coastal Assessment Form and a New York City Department of City Planning Waterfront Revitalization Program Consistency Assessment Form are included in Appendix 3.

## Part 2 - PROJECT IMPACTS AND THEIR MAGNITUDE

### Responsibility of Lead Agency

**General Information** (Read Carefully)

In completing the form the reviewer should be guided by the question: Have my responses and determinations been **reasonable**? The reviewer is not expected to be an expert environmental analyst.

The **Examples** provided are to assist the reviewer by showing types of impacts and wherever possible the threshold of magnitude that would trigger a response in column 2. The examples are generally applicable throughout the State and for most situations. But, for any specific project or site other examples and/or lower thresholds may be appropriate for a Potential Large Impact response, thus requiring evaluation in Part 3.

The impacts of each project, on each site, in each locality, will vary. Therefore, the examples are illustrative and have been offered as guidance. They do not constitute an exhaustive list of impacts and thresholds to answer each question.

The number of examples per question does not indicate the importance of each question.

In identifying impacts, consider long term, short term and cumulative effects.

**Instructions** (Read Carefully)

- a. Answer each of the 20 questions in PART 2. Answer **Yes** if there will be **any** impact.
- b. **Maybe** answers should be considered as **Yes** answers.
- c. If answering **Yes** to a question, then check the appropriate box (column 1 or 2) to indicate the potential size of the impact. If impact threshold equals or exceeds any example provided, check column 2. If impact will occur but threshold is lower than example, check column 1.
- d. Identifying that an Impact will be potentially large (column 2) does not mean that it is also necessarily **significant**. Any large impact must be evaluated in PART 3 to determine significance. Identifying an impact in column 2 simply asks that it be looked at further.
- e. If a reviewer has doubt about size of the impact then consider the impact as potentially large and proceed to PART 3.
- f. If a potentially large impact checked in column 2 can be mitigated by change(s) in the project to a small to moderate impact, also check the **Yes** box in column 3. A **No** response indicates that such a reduction is not possible. This must be explained in PART 3.

**See supplemental analyses in Attachment B "Environmental Screening Analyses."**

**IMPACT ON LAND**

1. Will the Proposed Action result in a physical change to the project site?  NO  YES

**Examples** that would apply to column 2

Any construction on slopes of 15% or greater, (15 foot rise per 100 foot of length), or where the general slopes in the project area exceed 10%.

Construction on land where the depth to the water table is less than 3 feet.

Construction of paved parking area for 1,000 or more vehicles.

Construction on land where bedrock is exposed or generally within 3 feet of existing ground surface.

Construction that will continue for more than 1 year or involve more than one phase or stage. **24-30 month construction period**

Excavation for mining purposes that would remove more than 1,000 tons of natural material (i.e., rock or soil) per year.

Construction or expansion of a sanitary landfill.

Construction in a designated floodway.

Other impacts: \_\_\_\_\_

2. Will there be an effect to any unique or unusual land forms found on the site? (i.e., cliffs, dunes, geological)  NO  YES

Other impacts: \_\_\_\_\_

|                                     | 1<br>Small to<br>Moderate<br>Impact | 2<br>Potential<br>Large<br>Impact | 3<br>Can Impact be<br>Mitigated by Project<br>Change                |
|-------------------------------------|-------------------------------------|-----------------------------------|---|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>          | <input type="checkbox"/> YES <input type="checkbox"/> NO            |

### IMPACT ON WATER

|  | 1<br>Small to<br>Moderate<br>Impact   | 2<br>Potential<br>Large<br>Impact  | 3<br>Can Impact be<br>Mitigated by Project<br>Change  |
|--|---|--|---|
| <p><b>3. Will Proposed Action affect any water body designated? (Under Articles 15, 24, 25 of the Environmental Conservation Law, ECL)</b>      <input checked="" type="checkbox"/> <b>NO</b>    <input type="checkbox"/> <b>YES</b></p> <p><b>Examples</b> that would apply to column 2<br/>                     Developable area of site contains a protected water body.<br/>                     Dredging more than 100 cubic yards of material from channel of a protected stream.<br/>                     Extension of utility distribution facilities through a protected water body.<br/>                     Construction in a designated freshwater or tidal wetland.</p> <p>Other impacts _____</p>  | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>  | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>   | <input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b>  |
| <p><b>4. Will Proposed Action affect any non-protected existing or new body of water?</b>      <input checked="" type="checkbox"/> <b>NO</b>    <input type="checkbox"/> <b>YES</b></p> <p><b>Examples</b> that would apply to column 2<br/>                     A 10% increase or decrease in the surface area of any body of water or more than a 10-acre increase or decrease.<br/>                     Construction of a body of water that exceeds 10 acres of surface area.</p> <p>Other impacts _____</p>   | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>  | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/>   | <input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b>  |
| <p><b>5. Will Proposed Action affect surface or ground water quality or quantity?</b>      <input type="checkbox"/> <b>NO</b>    <input checked="" type="checkbox"/> <b>YES</b></p> <p><b>Examples</b> that would apply to column 2<br/>                     Proposed Action will require a discharge permit.<br/>                     Proposed Action requires use of a source of water that does not have approval to serve proposed (project) action.<br/>                     Proposed Action requires water supply from wells with greater than 45 gallons per minute pumping capacity.<br/>                     Construction or operation causing any contamination of a water supply system.<br/>                     Proposed Action will adversely affect groundwater.<br/>                     Liquid effluent will be conveyed off the site to facilities which presently do not exist or have inadequate capacity.<br/>                     Proposed Action would use water in excess of 20,000 gallons per day.<br/> <b>During the summer months (approximately 80 days) up to 30,000 gallons of water per day would be used. Approximately 6,000 gallons of water per day would be used during the remainder of the year.</b><br/>                     Proposed Action will likely cause siltation or other discharge into an existing body of water to the extent that there will be an obvious visual contrast to natural conditions.<br/>                     Proposed Action will require the storage of petroleum or chemical products greater than 1,100 gallons.<br/>                     Proposed Action will allow residential uses in areas without water and/or sewer services.<br/>                     Proposed Action locates commercial and/or industrial uses which may require new or expansion of existing waste treatment and/or storage facilities.</p> <p>Other impacts _____</p> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input checked="" type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input checked="" type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b><br><input type="checkbox"/> <b>YES</b> <input type="checkbox"/> <b>NO</b> |



| <b>IMPACT ON AESTHETIC RESOURCES</b>   |  |  |  | 1                        | 2                        | 3  |
|--|--|--|--|--------------------------|--------------------------|--|
| 11. Will Proposed Action affect aesthetic resources? (If necessary, use the Visual EAR Addendum Section 617.20, Appendix B.) <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES |  |  |  | Small to Moderate Impact | Potential Large Impact   | Can Impact be Mitigated by Project Change                |
| <b>Examples</b> that would apply to column 2   |  |  |  |                          |                          |  |
| Proposed land uses, or project components obviously different from or in sharp contrast to current surrounding land use patterns, whether man-made or natural.                                   |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Proposed land uses, project components visible to users of aesthetic resources which will eliminate or significantly reduce their enjoyment of the aesthetic qualities of that resource.         |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Project components that will result in the elimination or significant screening of scenic views known to be important to the area.   |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Other impacts _____  |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| <b>IMPACT ON HISTORIC AND ARCHEOLOGICAL RESOURCES</b>  |  |  |  |                          |                          |  |
| 12. Will Proposed Action impact any site or structure of historic, prehistoric or paleontological importance? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES                |  |  |  |                          |                          |  |
| <b>Examples</b> that would apply to column 2   |  |  |  |                          |                          |  |
| Proposed Action occurring wholly or partially within or substantially contiguous to any facility or site listed on the State or National Register of Historic places.                            |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Any impact to an archeological site or fossil bed located within the project site.   |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Proposed Action will occur in an area designated as sensitive for archeological sites on the NYS Site Inventory.   |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Other impacts _____  |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| <b>IMPACT ON OPEN SPACE AND RECREATION</b>   |  |  |  |                          |                          |  |
| 13. Will Proposed Action affect the quantity or quality of existing or future open spaces or recreational opportunities? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES     |  |  |  |                          |                          |  |
| <b>Examples</b> that would apply to column 2   |  |  |  |                          |                          |  |
| The permanent foreclosure of a future recreational opportunity.  |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| A major reduction of an open space important to the community.   |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |
| Other impacts _____  |  |  |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> YES <input type="checkbox"/> NO |

| <b>IMPACT ON CRITICAL ENVIRONMENTAL AREAS</b>  |  |  |  |
|--|--|--|--|
| <p><b>14.</b> Will Proposed Action impact the exceptional or unique characteristics of a critical environmental area (CEA) established pursuant to subdivision 6NYCRR 617.14(g)? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES</p> <p>List the environmental characteristics that caused the designation of the CEA</p> <p><b>Examples</b> that would apply to column 2</p> <p>Proposed Action to locate within the CEA? <input type="checkbox"/></p> <p>Proposed Action will result in a reduction in the quantity of the resource? <input type="checkbox"/></p> <p>Proposed Action will result in a reduction in the quality of the resource? <input type="checkbox"/></p> <p>Proposed Action will impact the use, function or enjoyment of the resource? <input type="checkbox"/></p> <p>Other impacts _____ <input type="checkbox"/></p> |  |  |  |
| <b>IMPACT ON TRANSPORTATION</b>  |  |  |  |
| <p><b>15.</b> Will there be an effect to existing transportation systems? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES</p> <p><b>Examples</b> that would apply to column 2</p> <p>Alteration of present patterns of movement of people and/or goods. <input type="checkbox"/></p> <p>Proposed Action would result in major traffic problems. <input type="checkbox"/></p> <p>Other impacts _____ <input type="checkbox"/></p>   |  |  | <input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO   |
| <b>IMPACT ON ENERGY</b>  |  |  |  |
| <p><b>16.</b> Will Proposed Action affect the community's sources of fuel or energy supply? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES</p> <p><b>Examples</b> that would apply to column 2</p> <p>Proposed Action will cause a greater than 5% increase in the use of any form of energy in the municipality. <input type="checkbox"/></p> <p>Proposed Action will require the creation or extension of an energy transmission or supply system to serve more than 50 single or two family residences or to serve a major commercial or industrial use. <input type="checkbox"/></p> <p>Other impacts: <b>The proposed project would result in the construction and operation of a new cogeneration facility and feeder lines that would serve the Rikers Island facility.</b> <input type="checkbox"/></p>                               |  |  | <input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO   |
| <b>NOISE AND ODOR IMPACT</b>   |  |  |  |
| <p><b>17.</b> Will there be objectionable odors, noise, or vibration as a result of the Proposed Action? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES</p> <p><b>Examples</b> that would apply to column 2</p> <p>Blasting within 1,500 feet of a hospital, school or other sensitive facility. <input type="checkbox"/></p> <p>Odors will occur routinely (more than one hour per day). <input type="checkbox"/></p> <p>Proposed Action will produce operating noise exceeding the local ambient noise levels for noise outside of structures. <input type="checkbox"/></p> <p>Proposed Action will remove natural barriers that would act as a noise screen. <input type="checkbox"/></p> <p>Other impacts _____ <input type="checkbox"/></p>  |  |  | <input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO<br><input type="checkbox"/> YES <input type="checkbox"/> NO |



**A. INTRODUCTION**

The New York City Department of Correction (NYCDOC) is proposing to construct and operate a new cogeneration facility and feeder lines on Rikers Island (the proposed project). NYCDOC owns Rikers Island and operates the correctional facility located there. The New York Power Authority (NYPA) will provide initial funding for the project and will serve as lead agency for environmental review. NYCDOC will repay NYPA through their capital budget. The proposed cogeneration facility would generate electrical power and capture by-product heat for conversion to steam power. Upon completion, the proposed cogeneration facility would provide a portion of both the electric power and steam power needs of Rikers Island.

Rikers Island is a 413-acre site surrounded on all sides by the East River near both the boroughs of Queens and the Bronx. It is a prison complex that holds approximately 16,000 prisoners in 10 detention centers. The prison facility is managed as a separate complex from all other surrounding land uses. At the current time, electric power to Rikers Island is provided by Con Edison, the local utility, via two underwater cables and two above ground cables. In addition, the New York City Department of Correction currently operates a number of boilers and generators on the site under the terms of a Title V permit issued by the New York State Department of Environmental Conservation (NYSDEC). Specifically, the prison facility currently operates eight 96 million British Thermal Units per hour (mmBTU/hr) boilers firing natural gas and distillate fuel oil as backup. These boilers are located in the existing powerhouse and provide steam for the prison complex. In addition to the eight existing boilers, there are 70 operable emergency generators scattered throughout the 413-acre island which provide emergency electrical power. Fifty-one out of the 70 emergency generators are used only for emergencies and are operated for maintenance and testing purposes (and are therefore exempt from NYSDEC Title V permitting requirements). The remaining 19 of the 70 emergency generators are operated in a Peak Load Management (PLM) program with Con Edison, which involves the use of these generators to provide power to the Con Edison electrical grid during periods of high energy demand in the summer season.

An Environmental Assessment Form (EAF) with supplemental studies has been prepared to provide a comprehensive description of the proposed project and to present an analysis of the project's potential environmental impacts. The analysis is consistent with the guidelines of the 2010 *City Environmental Quality Review (CEQR) Technical Manual*.

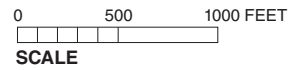
**B. PROJECT DESCRIPTION**

The proposed project would consist of a new cogeneration plant and new feeder lines to connect the new cogeneration facility to existing electrical infrastructure (see Figure 1 in EAF Form Part I). The new cogeneration plant would be located in the northwest portion of Rikers Island and the new feeder lines would run either below Hazen Street or below a grassy area east of Hazen Street (see Figure A-1).





-  Project Site Area
-  Proposed Feeder Lines Route



## **Rikers Island Cogeneration Plant**

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The proposed cogeneration plant would replace the existing steam power on Rikers Island and would be located in close proximity to the existing powerhouse (see Figure A-2). The proposed cogeneration plant would consist of two 7.5 megawatt (MW) (15 MW maximum) natural gas-fired simple cycle combustion gas turbines (CGTs) equipped with duct firing heat recovery steam generators (HRSGs). The turbines would be housed in a new building approximately 40 feet in height, with two main exhaust stacks approximately 150 feet in height. The water used by the proposed project would be used for steam production. The existing boilers would remain on-site but would provide back-up steam generating capability with limited operation.

The new feeder lines, approximately 0.60 miles in length, would connect the proposed cogeneration plant with existing electrical infrastructure. The proposed feeder lines would run either below Hazen Street or below a grassy area east of Hazen Street.

Upon completion of the proposed cogeneration facility, it is anticipated that the eight existing boilers and the 19 PLM emergency generators would be maintained at the site for future operation when the proposed cogeneration plant is inoperable due to maintenance and/or repairs. However, the operation of the existing boilers would be significantly reduced once the cogeneration units are installed. Overall, the proposed cogeneration facility would replace approximately 90 percent of the steam power generated by the existing boilers. In addition, the proposed cogeneration plant would provide a portion of the electrical power needs of Rikers Island, with the remaining portion continuing to be provided by Con Edison.

### **C. PURPOSE AND NEED**

The Rikers Island prison complex has experienced several power outages in the past few years. These recurring power outages have led to the installation and operation of numerous back-up diesel-fueled generators for extended periods of time. While these units are adequate for emergency situations, the generators are not configured to provide 100 percent redundancy. Therefore, the NYCDOC is seeking to construct an additional and reliable on-site source of power to reduce the need for off-site power to a minimum. An on-site source of power will help to reduce operating costs and to improve reliability of service.

In April 2007, a feasibility study was prepared that looked at several different cogeneration configurations. The study determined that the best configuration included two 7.5 MW nominal gas turbines with sufficient thermal chilling to utilize recovered heat, in the form of steam, in the summer months to drive air conditioning compressors. The two turbines will provide the majority of the electrical power to Rikers Island.

### **D. SITE SELECTION**

The feasibility study evaluated three options for the location of the proposed cogeneration plant. Three options included in the study were: a site in close proximity to the existing power house, a site on the southeast side of the island, and distribution of the system in several locations across Rikers Island. The study determined that the best option would be to locate the new cogeneration facility in close proximity to the existing power house. This would leave room for future expansion plans in the southeast portion of the island and eliminate the need for additional operations personnel. Further, this location would reduce the need for additional infrastructure that would need to be installed with the two other options including water treatment, thermal (steam and condensate) interconnections, and fuel supply logistics.



EAST RIVER

APPROXIMATE  
LOCATION OF  
PROPOSED  
COGENERATION  
FACILITY

EXISTING  
POWERHOUSE



*Project Site Area*



*Proposed Feeder Lines Route*

0 200 FEET

SCALE

## **E. APPROVALS AND PERMITS**

The existing powerhouse on Rikers Island currently operates pursuant to a Title V facility operating permit from the NYSDEC. The new cogeneration plant would require modification of the current Title V permit, which will involve reviews for applicability and compliance with Prevention of Significant Deterioration (PSD), Nonattainment New Source Review (NANSR), New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), as well as other federal and state air quality regulations. The modified Title V permit will apply to the installation of the new gas turbines and ancillary equipment, as well as the reduced future operations of the existing boilers. It is anticipated that emission caps will be established to maintain the future increases in emissions under the new source review thresholds. The proposed project would require also air permits (Permits to Construct/Certificates to Operate) from the New York City Department of Environmental Protection (NYCDEP). \*

**A. INTRODUCTION**

The following screening analyses supplement the information provided in the EAF and describe the potential environmental impacts of the proposed project based on methodology presented in the *New York City Environmental Quality Review (CEQR) Technical Manual*.

**B. ENVIRONMENTAL SCREENING ANALYSES****LAND USE, ZONING, AND PUBLIC POLICY**

The proposed project would be located on Rikers Island, a 413-acre site surrounded on all sides by the East River near the boroughs of Queens and the Bronx. The new cogeneration plant would be located in the northwest portion of Rikers Island and the new feeder lines would either run below Hazen Street or below a grassy area east of Hazen Street. The site of the new cogeneration plant is currently used as a roadway and parking and has a small unpaved area planted with trees.

The Rikers Island prison complex, an institutional use, occupies all of Rikers Island and is the only land use within the immediate vicinity and is isolated from other uses by the East River (see Figure B-1). The proposed project would provide a reliable on-site source of power generation, which would benefit the Rikers Island prison complex. As discussed in Attachment D, “Air Quality,” and Attachment F, “Noise,” the proposed project would not result in any significant adverse impacts related to air quality or noise; therefore, it would not conflict with the institutional use located on Rikers Island.






The project site is zoned C8-2. C8 districts bridge commercial and manufacturing uses and provide for automotive and other heavy commercial services that typically require large amounts of land. There are no other zoning districts within the 400-foot study area. The proposed project would involve the construction of a new accessory cogeneration facility and feeder lines and would not change the principal use of the site or the underlying zoning. Furthermore, the proposed project would operate pursuant to a modified title V permit and would be reviewed for applicability and compliance with all federal and state air quality regulations. Therefore, the proposed project would be compatible with zoning in the study area.

The only relevant public policy that applies to the project site and study area is PlaNYC. PlaNYC is a public policy initiative designed to address three key challenges that the City faces over the next twenty years: (1) population growth; (2) aging infrastructure; and (3) global climate change. Elements of the plan are organized into six categories—land, water, transportation, energy, air quality, and climate change—with corresponding goals and initiatives for each category. Many of the PlaNYC goals and objectives—such as those related to housing, open space, brownfields, water quality, etc.—are not directly applicable to the proposed project. However, the energy goals of PlaNYC are directly applicable to the proposed project. One of

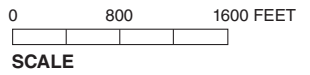


7.18.11



-  *Project Site Area*
-  *Proposed Feeder Lines Route*
-  *Study Area Boundary (400-Foot Perimeter)*
-  *Residential*
-  *Commercial and Office Buildings*

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



## **Rikers Island Cogeneration Plant**

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PlaNYC's energy goals is to expand the use of Clean Distributed Generation (CDG) and Combined Heat and Power (CHP) facilities. The proposed project would result in the construction and operation of a cogeneration facility, which would function as a CDG facility and would utilize CHP. Therefore, the proposed project would be consistent with PlaNYC.

For the reasons described above, the proposed project would not result in any significant adverse impacts to land use, zoning, or public policy in the surrounding study area, and no further analysis is required.

### **SOCIOECONOMIC CONDITIONS**

The proposed project would not result in the direct or indirect displacement of residences or businesses, nor would it result in any new development that is markedly different from existing uses, development, and activities within the neighborhood. The project would not generate new employees, or new residential or commercial uses. Therefore, no further analysis is required, and the proposed project would not result in significant adverse impacts on socioeconomic conditions.

### **COMMUNITY FACILITIES AND SERVICES**

As recommended in the *CEQR Technical Manual*, a community facilities assessment is typically conducted if the proposed project would physically alter or displace an existing community facility, or if it would introduce a substantial new population (more than 100 housing units) that could affect the service delivery of a community facility. The proposed project would not physically alter or displace any existing community facilities. Further, the proposed project would not introduce any housing units, and therefore would not introduce a substantial new population that could affect the service delivery of a community facility. Therefore, the proposed project would not result in any significant adverse impacts to community facilities, and no further analysis is necessary.

### **OPEN SPACE**

As recommended in the *CEQR Technical Manual*, an open space assessment is typically conducted if the proposed project would directly affect an existing open space or introduce a substantial new user population (greater than 200 residents or 500 workers) that would create or exacerbate an overutilization of open space resources.

The proposed project would not directly affect any open space resources, nor would it introduce any new residents or employees to the project site. As a result, the proposed project would not place any additional demand on the area's open space resources. Consequently, the proposed project would have no potential for significant adverse open space impacts, and no further analysis is required.

### **SHADOWS**

A shadow assessment considers projects that result in new shadows long enough to reach a publicly accessible open space or historic resource. For projects resulting in structures less than 50 feet high, a shadow assessment is generally not necessary unless the site is adjacent to a park, historic resource, or important natural feature (if the features that make the structure significant depend on sunlight). The proposed project would result in a new building approximately 40 feet in height, with two main exhaust stacks approximately 150 feet in height. Only the exhaust

stacks would exceed the 50-foot threshold for a shadows assessment. However, the exhaust stacks would be tall and narrow structures. As a result, the shadows cast by them would be small in extent and of short duration and would therefore not have the potential to significant adverse impacts due to shadows. Furthermore, the proposed project would not be located adjacent to a park or historic resource. Therefore, no significant adverse shadow impacts would result from the proposed project, and no further analysis is necessary.

### **HISTORIC PROPERTIES**

As defined in Section 14.09 of the New York State Historic Preservation Act of 1980, historic properties may be districts, sites, buildings, structures, areas, or objects and include both archaeological and architectural resources. The area of potential effect for archaeological resources would be the area disturbed for project construction, i.e., the project site itself. For architectural resources, the area of potential effect is defined as being within an approximately 90-foot radius of the project site. Within that area, architectural resources analyzed include properties listed on the State and/or National Registers of Historic Places (S/NR) or properties determined eligible for S/NR listing, National Historic Landmarks, designated New York City Landmarks (NYCLs) and Historic Districts or properties determined eligible for NYCL status, and properties that appear to meet the eligibility criteria for S/NR listing or NYCL designation.

### *ARCHAEOLOGICAL RESOURCES*

The landscape of Rikers Island has been substantially altered and heavily developed over time. Beginning in the late-19th century, landfill was used to expand the island's shoreline by several hundred acres, with much of the fill material composed of refuse collected elsewhere in the city. Based on a review of historic maps, the proposed cogeneration facility appears to be located in an area of landfill and the proposed feeder lines appear to be located in areas composed of landfill and original land.

The New York City Landmarks Preservation Commission (LPC) and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) were contacted for their initial assessments regarding any archaeological concerns for the project site. In an Environmental Review letter dated October 20, 2009, LPC determined that the project site has no archaeological significance. In a letter dated November 17, 2009, OPRHP determined that the project will have No Impact upon properties listed on or eligible for inclusion on the State and National Registers of Historic Places. The LPC and OPRHP correspondence is provided in Appendix 1, "Cultural Resources." Therefore, no further consideration of archaeological resources is warranted.

### *ARCHITECTURAL RESOURCES*

On Rikers Island, there are no properties that are either S/NR-listed or determined eligible for inclusion on the Registers. The majority of buildings on Rikers Island are less than 50 years of age (rendering them ineligible for S/NR listing as none have exceptional historical or architectural importance), having been constructed since 1964 with most built in the 1970s and 1980s. Four buildings that are older than 50 years of age are the former House of Detention of Men (now the James A. Thomas Center) built in 1933 at 14-14 Hazen Street, the former Rikers Island Hospital (now the North Infirmary Command) built in 1932 at 15-00 Hazen Street, a powerhouse at the northwest portion of the island that also appears to date to the 1930s, and a storage building near the powerhouse that dates to sometime before 1955. The former House of



## **Rikers Island Cogeneration Plant**

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Detention of Men and Rikers Island Hospital are adjacent to the proposed site of the feeder lines, and the powerhouse and storage building are adjacent to the proposed site of the cogeneration plant.

Located toward the northern end of the island on Hazen Street, the former House of Detention of Men is a brick and concrete Art Deco building designed by Sloan & Robertson. The original portion of the facility consists of a three-story entrance building and ten two- and three-story rectangular blocks located along a central spine with some additional structures at the western end of the spine. The entrance building contains a one-story pavilion with a recessed doorway ornamented with a stylized keystone and infilled with a metal entrance surround detailed with geometric patterns. Art Deco motifs on the rest of the facility consist of decorative bands on the brick window panels and the concrete parapet. The former hospital is located just north of the former House of Detention of Men and is a six-story brick and concrete, rectangular building detailed similarly to the adjacent prison facility. Each facility has been enlarged over time with multiple additions that have changed the original building plan.

The powerhouse is also faced in brick with a concrete parapet and purportedly also dates to the 1930s. It basically has a rectangular footprint with three sections of three and four stories and is unornamented except for some decorative brickwork. The southern end is mostly windowless and has a peaked roof. There are additions on the east side of the building and three tall stacks are located on the west side of the powerhouse. The storage building is located immediately west of the powerhouse. It is an unornamented one-story building with a large, square footprint and a central, paved courtyard. Heavily deteriorated, it is clad in brick with a concrete parapet and a peaked roof. The interior facades facing the courtyard contain long bays of loading docks. A small, one story building—also clad in brick and concrete and with a peaked roof—is located between the storage building and the powerhouse.

Construction of the cogeneration plant would not directly affect any existing buildings through alteration or demolition. While construction of the cogeneration plant would occur close enough (within 90 feet) to the adjacent storage building to potentially cause inadvertent construction-related damage from ground-borne construction-period vibrations or other accidental construction damage, project construction would follow New York City Building Code Section 27-166 (C26-112.4) that serves to protect buildings by requiring that all lots, buildings, and service facilities adjacent to foundation and earthwork areas be protected and supported in accordance with the requirements of Building Construction Subchapter 7 and Building Code Subchapters 11 and 19. The existing powerhouse is located more than 100 feet from the site of the cogeneration plant and would not be expected to potentially experience inadvertent construction damage. In addition, construction of the cogeneration plant would not be expected to substantially affect the visual settings of any existing buildings on Rikers Island, because the island is densely developed with prison facilities and the cogeneration plant would be constructed adjacent to an existing powerhouse with tall stacks.

Construction of the below-grade feeder lines would not directly affect the former House of Detention of Men or the Rikers Island Hospital, or any other building located along Hazen Street. Although the two 1930s buildings are located adjacent to the proposed route of the feeder lines, construction would consist of laying concrete-encased conduits in relatively shallow trenches, with minimum depths below grade of around 3 feet. Following completion of construction, all disturbed areas would be returned to their original condition—Hazen Street would be repaired and/or grass areas would be replanted. This construction effort would not be expected to physically affect buildings within 90 feet through construction-period vibrations,

subsidence, or other inadvertent damage. Construction of the feeder lines would, however, remove the one-story non-descript building located between the storage building and the powerhouse, as it is located on the proposed route of the feeder lines.

In accordance with Section 14.09 of the New York State Historic Preservation Act of 1980, OPRHP was contacted regarding the potential for impacts to historic properties from the project. In a letter dated November 17, 2009, OPRHP determined that the proposed project will have No Impact on properties listed on or eligible for inclusion on the State and National Registers of Historic Places. Therefore, no further analysis of architectural resources is warranted.

### **URBAN DESIGN AND VISUAL RESOURCES**

According to the *CEQR Technical Manual*, an assessment of urban design and visual resources considers whether and how a project may change the experience of a pedestrian in the project area, and focuses on the components of a proposed project that may have the potential to alter the arrangement, appearance, and functionality of the built environment.

The proposed project would involve the construction of a new cogeneration facility to be housed in a new building approximately 40 feet in height, with two main exhaust stacks approximately 150 feet in height. The proposed project would be located in close proximity to the existing powerhouse, which is of a similar height and has exhaust stacks 180 feet in height. Therefore, the proposed project would not introduce structures of height, bulk, form, or use substantially different from nearby structures. The proposed feeder lines would run below ground and would not have the potential to affect urban design. Furthermore, there are few pedestrians in the project area, and therefore the proposed project would have limited potential to affect the pedestrian experience. Overall, the proposed project would not result in any significant adverse impacts on urban design and visual resources, and no further analysis is warranted.

### **NEIGHBORHOOD CHARACTER**

The character of a neighborhood is established by numerous factors, including land use patterns, the scale of its development, the design of its buildings, the presence of notable landmarks, and a variety of other features. According to the *CEQR Technical Manual*, a neighborhood character assessment may be appropriate if an action would affect the areas of land use, urban design, visual resources, historic resources, socioeconomics, traffic, and noise.

The Rikers Island prison complex is managed as a separate complex from all other surrounding land uses and is separated from the neighborhoods of Queens and the Bronx by the East River. Therefore, the project site does not function as part of a broader neighborhood, and there is no potential for neighborhood character impacts. Furthermore, the proposed project would not result in significant adverse impacts to land use, urban design, visual resources, historic resources, open space, or other environmental areas such as noise and traffic. Therefore, the proposed project would not result in any significant adverse neighborhood character impacts, and no further analysis is required.

## NATURAL RESOURCES

### PROJECT SITE

The project site consists of a mowed lawn with trees<sup>1</sup>, a paved parking lot, and a paved road<sup>2</sup> (i.e., Hazen Street). These habitat communities would be classified as “terrestrial cultural”<sup>3</sup> in accordance with Edinger et al. (2002). Wildlife expected to occur within these human-dominated communities include common species such as the eastern gray squirrel (*Sciurus carolinensis*) and American robin (*Turdus migratorius*). Due to the open character of the site, roosting species such as gulls, geese, and certain shorebird species may congregate during portions of the year (e.g., migration, post-breeding), absent any management program to deter their presence. Long-legged wading birds (i.e., herons, egrets and ibis), cormorants, and gulls would be expected to forage around the shoreline adjacent to the site, as a large breeding colony for these species (i.e., South Brother Island) is present within a half-mile west of the project site.

### SURROUNDING NATURAL AREAS

Natural areas surrounding the project site include New York City Department of Parks and Recreation (NYCDPR) properties of North and South Brother Islands Harbor Herons Preserve (the Preserve) and Soundview Park (see Figure 1 of the EAF form). The Preserve is part of the Harbor Herons Region—a nationally recognized complex of shorebird habitat consisting of uninhabited islands and expansive marshes (NYCDPR undated). The Preserve, spread between two islands, consists of approximately 26 acres located one-quarter mile west of Rikers Island. New York Natural Heritage Program (NYNHP) database records identify the Preserve as a colonial waterbird nesting area that supports breeding activity by great egret (*Ardea alba*), cattle egret (*Bubulcus ibis*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), black-crowned night-heron (*Nycticorax nycticorax*), yellow-crowned night-heron (*Nyctanassa violacea*), and glossy ibis (*Plegadis falcinellus*) (Salerno 2009). Surveys conducted in 2008 indicate that South Brother Island had the largest wading bird colony in the city (462 nests) and second largest double-crested cormorant colony (297 nests) (Bernick and Craig 2008). Breeding barn owls (*Tyto alba*) and great-horned owls have been observed on both North and South Brother Islands (Salerno 2009; Bernick and Craig 2008). The Preserve is identified by the New York State Department of State (NYS DOS) as a Significant Coastal Fish and Wildlife Habitat and activities that could impact these islands would be subject to the policies established by the New York City’s Waterfront Revitalization Program (WRP) (NYS DOS 1992).

NYCDPR’s Soundview Park is situated at the mouth of the Bronx River where it converges with the brackish waters of the East River just northeast of Rikers Island. The 205-acre park contains forested, scrub/shrub, herbaceous, salt marsh, and open-water communities that provide

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<sup>1</sup> “Residential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and forbs, and it is shaded by at least 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover (Edinger et al. 2002).”

<sup>2</sup> A paved road/path community is a community that is paved with asphalt, concrete, brick or stone where sparse vegetation may be present along the edges and cracks of the paved surfaces (Edinger et al. 2002).

<sup>3</sup> “Created and maintained by human activities, or are modified by human influence to such a degree that the physical conformation of the substrate, or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence (Edinger et al. 2002).”

important habitat for winter waterfowl in the region. Bird species observed within the park include canvasback (*Aythya valisineria*), ruddy duck (*Oxyura jamaicensis*), and scaup (*Aythya marila*). Shorebirds such as the great blue heron (*Ardea herodias*), snowy egret, great egret, and ring-billed gulls (*Larus delawarensis*) are also common sights in this portion of the estuary. Oysters are also being reintroduced into the waters of the Bronx River at Soundview Park (NYCDPR undated).

#### *POTENTIAL IMPACTS*

The construction of the proposed project would involve the removal of the “terrestrial cultural” communities described above within the project site. These communities would not be expected to provide a sole source of food, shelter, or nesting habitat to wildlife. As wildlife expected to occur on the project site throughout the year would principally be those common to urban areas, loss of this habitat at the project site would not result in a significant adverse impact to populations of these species within the New York metropolitan area. NYNHP reports a number of breeding bird species occurring at the Preserve and identifies it as a colonial waterbird nesting area. However, none of these species are federal- or state-listed threatened or endangered species (NYNHP 2009). The state-listed endangered peregrine falcon has been observed foraging within one mile of the project site, but breeding has not been documented within the vicinity of the project site. For these reasons, the loss of the “terrestrial cultural” communities as a result of the proposed project would not be expected to result in a substantial loss of habitat to wildlife of the region, and no significant adverse impacts to terrestrial resources are expected as a result of the proposed project.

As determined in Attachment D, “Air Quality,” the proposed project would not result in any significant adverse air quality impacts. In addition, because the cogeneration plant would be fueled by natural gas, the proposed project would not result in additional lead emissions. Therefore, incremental increases in pollutant concentrations as a result of the proposed project would not be expected to have significant adverse impacts on wildlife in the area.

As stated below in “Infrastructure,” the proposed project would result in a negligible increase in the amount of impervious surface on the project site. The proposed project would not generate a substantial increase in stormwater discharge nor would it involve separate sewer or stormwater systems or the construction of a new stormwater outfall. Therefore, stormwater runoff generated within the project site would not result in any significant adverse impacts to water quality of the East River.

Based on the analyses presented in the “Noise” attachment, the operation of the proposed project would not result in predicted exceedances of the octave band limits in the New York City Noise Code or any exceedances of the CEQR or NYSDEC noise impact criteria. The largest increases in noise levels as a result of the operation of the proposed project would be 1.3 dBA which would not be significant according to CEQR impact criteria. Although NYSDEC guidelines state that increases of 3-6 dBA may have the potential for adverse impacts on humans, this is only in cases where the most sensitive (i.e., residential areas) of receptors are present. With respect to wildlife and natural areas, the operation noise associated with the proposed project would not be expected to have significant adverse impacts on surrounding natural areas (i.e., the Preserve and Soundview Park) and wildlife, as these areas are presently subjected to regular noise events, particularly aircraft flyovers from flights to and from LaGuardia Airport. Therefore, noise associated with the proposed project would not be expected to result in any significant adverse impacts to surrounding natural areas.

## **Rikers Island Cogeneration Plant**

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- Salerno, Tara. Correspondence dated October 28, 2009 from Ms. Tara Salerno, New York State Department of Environmental Conservation Division of Fish and Wildlife & Marine Resources, New York Natural Heritage Program, to Connor Lacefield, AKRF, Inc.

### **HAZARDOUS MATERIALS**

A Phase I Environmental Site Assessment (ESA) was conducted for the project site to assess the potential for the presence of hazardous materials resulting from previous and existing uses on the site and adjacent areas. The assessment was intended to ascertain the potential for adverse impacts from the proposed project with respect to any such hazardous materials. A copy of the Phase I ESA is provided in Appendix 2.

Based on U.S. Geological Survey (Central Park, NY Quadrangle) mapping, the property lies at an elevation of approximately 20 feet above sea level). Bedrock at the site is approximately 70 feet below grade and groundwater is first encountered at approximately 9 to 14 feet below grade. Based on area topography, groundwater at the power plant most likely flows in a northwesterly direction toward the East River, located approximately 100 feet away. However, actual groundwater depth and flow direction are likely highly variable and may be affected by many factors including past filling activities, tidal cycles, and underground utilities and other subsurface openings or obstructions such as basements and other factors beyond the scope of this assessment.

The approximately 10,000 sf site of the proposed cogeneration facility is near the existing Rikers Island powerhouse and includes roadway, parking, and a small unpaved area planted with trees. According to facility personnel, the power plant was constructed in the 1930s with various additions constructed between the 1930s and the 1970s. Surrounding properties changed from primarily undeveloped land in the mid 1950s to the current inmate housing structures for the Rikers Island prison.

Recognized environmental conditions identified in connection with the property include: known petroleum contamination and reported spills; the presence of underground and aboveground storage tanks; the past use of oils and solvents; the regulatory listing of Rikers Island as a Hazardous Substance Waste Disposal Site (SHSWDS) and CERCLIS site; and a history of hazardous materials use on surrounding properties. Based on the results of the Phase I ESA, a Phase II Investigation was conducted. A copy of the Phase II Investigation report is provided in Appendix 2.

The Phase II Investigation included the advancement of 22 borings with the collection of 47 grab soil samples and 8 composite soil samples, and the installation of 11 vapor probes with 6 soil vapor samples sent for laboratory analysis. Soil encountered in the borings included historic urban fill material, such as sand, silt and gravel with coal, brick, glass and wood. Petroleum odors and staining were noted at one sampling location.

Analytical results of the grab soil samples identified levels of organic compounds and metals in the samples, in some cases above regulatory criteria. A Resource Conservation and Recovery Act (RCRA) hazardous level of lead was detected in one composite soil sample collected from the southern switchyard. Soil vapor analytical results identified volatile organic compounds in all 6 samples and methane in 2 samples. The methane level in one of the samples was above the respective lower explosive limit (LEL).

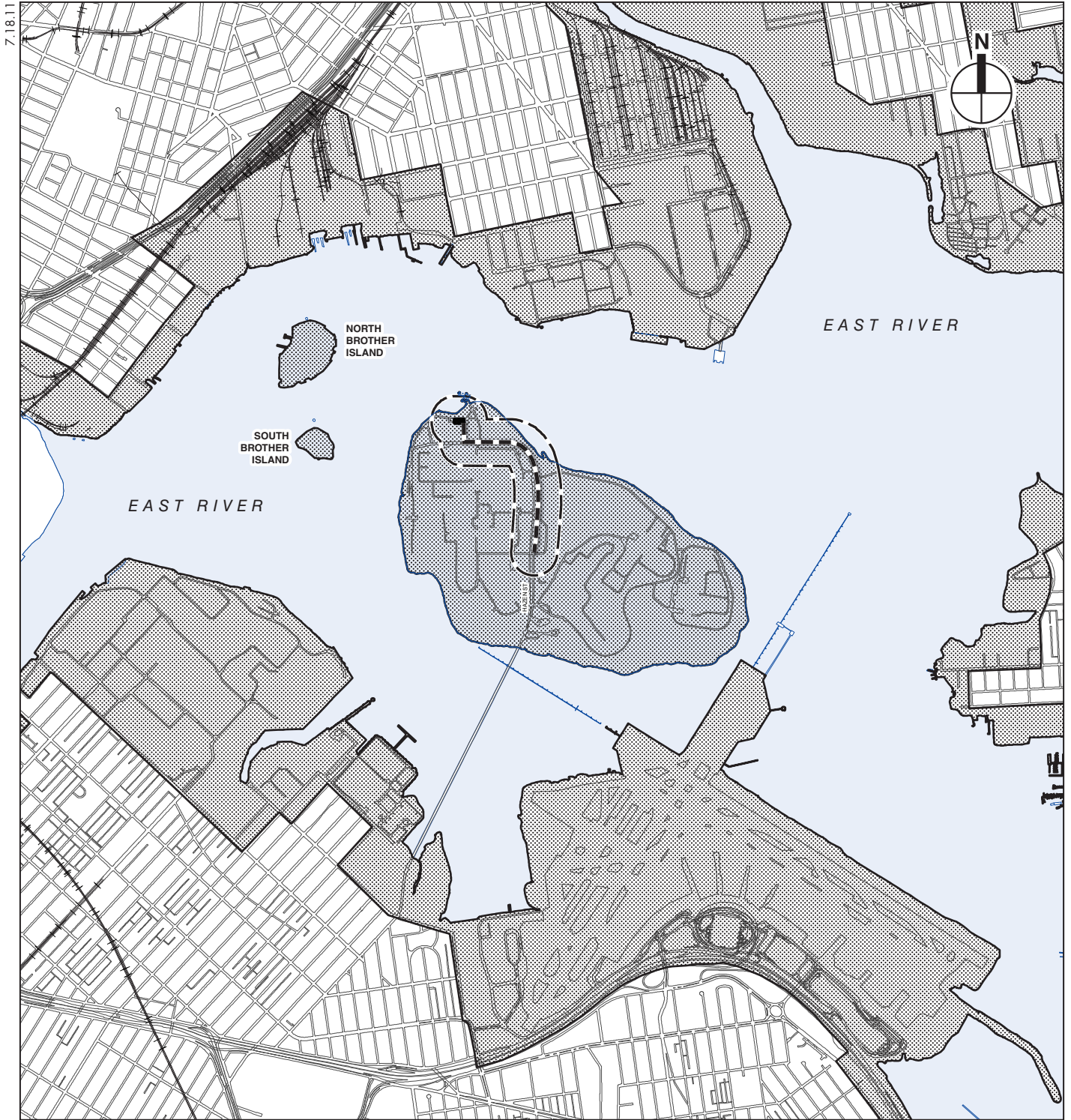
The development of the site would involve the disturbance of the existing soil and potentially groundwater. No demolition or renovation of existing structures is anticipated. Subsurface construction activities may result in temporary increases in exposure pathways for construction workers and workers on nearby sites to subsurface contaminants. To avoid the potential for significant adverse impacts, the following protocols would be implemented:

- All construction work involving subsurface disturbance would be performed under a site-specific environmental Health and Safety Plan (HASP). The HASP would specify appropriate testing and/or monitoring, and detail appropriate measures to be implemented (including notification of regulatory agencies) if underground storage tanks, soil and groundwater contamination, or other unforeseen environmental conditions are encountered.
- All soil excavated as part of the proposed project would be managed in accordance with all applicable regulatory requirements (including the soil in the area of the southern switchyard that exceeded lead hazardous waste thresholds). Soil intended for off-site disposal would be tested in accordance with the requirements of the receiving facility. Transportation of material leaving the site for off-site disposal would be in accordance with federal, state and local requirements covering licensing of haulers and trucks, placarding, truck routes, and manifesting.
- If dewatering is necessary for construction of the proposed project, regulatory protocols may require treatment of pumped groundwater prior to discharge into the municipal sewer system, the East River or Rikers Island Channel. Prior to initiating any dewatering activities, a groundwater sample would be analyzed to ensure that it meets NYCDEP criteria for effluent to municipal sewers. A proper permit to discharge the pumped groundwater should also be obtained from the NYCDEP and/or NYSDEC for discharge to water.

With these measures, no significant adverse impacts related to hazardous materials would be expected to occur as a result of the construction associated with the proposed project. Once operational, there would be no potential for the proposed project to have significant adverse impacts.

#### **WATERFRONT REVITALIZATION PROGRAM**

The proposed project is located within the designated boundaries of New York City's Coastal Zone (see Figure B-2). Activities conducted within the City's coastal zone should be consistent with the City's local waterfront revitalization policies, which encompass a range of coastal issues, including public access, recreation, development, flood and erosion hazards and scenic quality. A consistency analysis for the proposed project is provided in Attachment C, "Waterfront Revitalization Program."



- *Project Site Area*
- - - *Proposed Feeders Line Route*
- · - · *400-foot Study Area Boundary*
- ▨ *Coastal Zone Boundary*

## **INFRASTRUCTURE**

### *WATER SUPPLY*

As stated in the *CEQR Technical Manual*, the City is committed to maintaining adequate water supply and pressure for all users. An assessment of a project's effects on the City's water supply is necessary only for projects that would have an exceptionally large demand for water, such as power plants, very large cooling systems, or other large developments that would use more than 1 million gallons of water per day (mgd). The proposed project would use water for steam production. For most of the year, the proposed project would use approximately 6,000 gallons per day (gpd) of water. During the summer months, up to 30,000 gallons of water per day would be used by the proposed project. This usage would represent a very small addition to the approximately 1.1 billion gpd of water consumed Citywide. Therefore, the proposed project would not result in any significant adverse impacts to the City's water supply, and no further analysis is necessary.

In addition, the proposed project would not have any effect on storm water management. The proposed project would result in a negligible increase in the amount of impervious surface on the project site. Further, the proposed project would not involve any industrial activities that would have stormwater discharges, nor would it involve separate sewer or stormwater systems or the construction of a new stormwater outfall. Therefore, the proposed project would not result in any significant adverse impacts due to stormwater flows, and no further analysis is warranted.

### *WASTEWATER TREATMENT*

As stated in the *CEQR Technical Manual*, the City is committed to adequately treating all wastewater generated in the City and to maintaining its wastewater treatment plants at or below the capacity permitted by applicable state and federal permits. Therefore, only unusual actions with very large flows could have the potential for significant adverse impacts on sewage treatment.

The site of the proposed cogeneration facility is located on the boundary between the Hunt's Point and Bowery Bay Water Pollution Control Plants (WPCP) and could therefore be served by either facility. The Hunt's Point WPCP has a permitted dry weather capacity of 200 million gpd and the Bowery Bay WPCP has a permitted dry weather capacity of 150 million gpd. However, the water used by the proposed project would be for steam production, and would not require treatment. Therefore, the proposed project would not result in significant adverse impacts to wastewater and sewage treatment, and no further analysis is necessary.

## **SOLID WASTE AND SANITATION SERVICES**

Operation of the proposed cogeneration facility would not produce any new solid waste. The proposed project would generate small quantities of waste materials, such as waste oil, from equipment maintenance activities. However, these wastes are already produced by the existing boilers, and thus the proposed project would not generate any new solid waste. Therefore, the proposed project would not result in any significant adverse impacts to solid waste and sanitation services.



## **ENERGY**

According to the *CEQR Technical Manual*, a detailed assessment of energy impacts should be limited to projects that could significantly affect the transmission or generation of energy or that generate substantial indirect consumption of energy (such as a new roadway). The proposed project is intended to provide a reliable on-site source of power generation for Rikers Island. As such, the proposed project would not adversely affect the transmission or generation of energy, nor would it generate new demand for energy. Therefore, the proposed project would not result in significant adverse impacts to the consumption or supply of energy, and no further analysis is required.

## **TRANSPORTATION**

The proposed project would be constructed in close proximity to the existing energy infrastructure on Rikers Island, which would eliminate the need for additional operations personnel. Therefore, the proposed project would not change the level of activity on the project site. The proposed project would displace approximately 15 parking spaces from the site of the proposed cogeneration facility, but this change would not affect parking in the area. Therefore, the proposed project would not add new vehicle, pedestrian, or transit trips to the area, and there would be no significant adverse impacts on traffic and parking or transit and pedestrians.

## **AIR QUALITY**

See Attachment D, “Air Quality.”

## **GREENHOUSE GAS EMISSIONS**

The buildings (prison complexes and offices) on Rikers Island have high year-round energy requirements and need highly reliable utilities. The proposed cogeneration plant would generate most of the electricity needed to serve Rikers Island, with a portion being purchased by the New York City Department of Correction from Con Edison. The proposed cogeneration system would increase reliability of electrical service and potentially decrease its cost. The cogeneration plant would be constructed to provide power as well as heating and cooling to the buildings on the Island. This would reduce operating costs by producing electrical power at a lower cost than purchased electricity from the local grid. The cogeneration plant would utilize waste heat for heating and cooling, which would reduce the amount of required fuel for steam generation from the existing plant boilers. Cogeneration systems are also an important component of energy and environmental design objectives.

With cogeneration, the thermal byproduct of electricity generation, which is typically not used, is captured and used to supply heat and hot water on-site. The efficiency and benefit of cogeneration is two-fold: First, on-site power reduces the electric load that is typically supplied by existing power plants, such as the NYPA Poletti power plant currently supplying the electric load to the Island, helping to manage the peak electricity usage, most notably during the summer months. This is an important consideration in that existing regional fossil fuel power plants serving New York City are 30 years old on average, and use 30 to 60 percent more fuel than newer plants to generate the same amount of electricity.<sup>1</sup> These older plants generally operate when electric loads are high, while renewable or non-fossil fuel facilities are used to meet energy demand during non-peak periods. Second, transmission and distribution of electricity over long distances results in

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<sup>1</sup> The City of New York, PlaNYC: A Greener, Greater New York, 2007.

## **Rikers Island Cogeneration Plant**

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measurable losses. The GHG inventory for New York City approximates the losses to be more than 5 percent.<sup>1</sup> The transmission losses are reduced when power is produced on-site. As a result of the energy savings achieved, cogeneration systems can lower operating costs and reduce regional criteria pollutant and greenhouse gas (GHG) emissions.

Baseline carbon dioxide equivalent (CO<sub>2</sub>e) emissions are approximately 131,372 tons CO<sub>2</sub>e from the existing on-site boilers and the use of purchased electricity from the local utility. The use of purchased electricity does not result in any on-site emissions. However, consumed electricity is associated with GHG emissions from power plants running on fossil fuels. Total future CO<sub>2</sub>e emissions are estimated as approximately 109,356 tons CO<sub>2</sub>e from the future cogeneration plant supplemented with a small portion of purchased electricity.

The proposed project would therefore reduce the existing GHG emissions by approximately 22,016 tons per year. This reduction is consistent with the various New York City and New York State policies and goals of improving energy efficiency and reducing GHG emissions.

### **ENVIRONMENTAL JUSTICE**

See Attachment E, “Environmental Justice.”

### **NOISE**

See Attachment F, “Noise.”

### **CONSTRUCTION**

The *CEQR Technical Manual* recommends that construction-related impacts be analyzed to determine if there would be any disruptive or noticeable effects resulting from the project. The construction of the proposed project would occur over a period of approximately 24–30 months. Because the proposed project would be located on Rikers Island, its construction would have very limited potential to affect the communities of the Bronx and Queens. Since the proposed project is located nearby LaGuardia Airport, the Federal Aviation Administration (FAA) has been notified of the proposed construction (see Appendix 3, “FAA Notice of Proposed Construction or Alteration”).

As with all construction projects, work at the project site would result in temporary disruptions to the surrounding area, temporary closures of sidewalks and curb lanes bordering the site, and occasional noise and dust. These effects would be short term and would not be considered significant. All appropriate fugitive dust control measures would be employed to reduce the generation and spread of dust.

Construction activities would also generate a nominal amount of construction worker and truck traffic. This construction-related traffic would be temporary and of short duration. Therefore, construction-related traffic would not result in any significant adverse impacts.

Increased noise levels created by the construction activities could also occur. Therefore, the project would be required to comply with applicable control measures for construction noise, which is regulated by the New York City Noise Control Code and by the Environmental Protection Agency noise emission standards for construction equipment. These federal and local requirements mandate that certain classifications of construction equipment and motor vehicles meet specified noise emissions standards. Except under exceptional circumstances, construction

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<sup>1</sup> The City of New York, Inventory of New York City Greenhouse Gas Emissions, September 17, 2008.

activities must be limited to weekdays between the hours of 7 AM and 6 PM. Therefore, no significant adverse impacts are expected to occur as a result of the construction of the proposed project, and no further analysis is required.

### **PUBLIC HEALTH**

According to the *CEQR Technical Manual*, public health involves the activities that society undertakes to create and maintain conditions in which people can be healthy. Public health may be jeopardized by poor air quality resulting from traffic or stationary sources, hazardous materials in soil or groundwater used for drinking water, significant adverse impacts related to noise or odors, solid waste management practices that attract vermin and pest populations, and actions that result in the exceedance of accepted federal, state, or local standards.

As discussed in Attachment D, “Air Quality,” and Attachment F, “Noise,” the proposed project would not result in any significant adverse impacts to air quality or noise. No exceedance of federal, state, or city standards would occur as a result of the proposed project. The proposed project would not result in any solid waste management practices that would attract vermin or pest populations, nor would they result in any new sources of odors. Therefore, the proposed project would not result in any significant adverse impacts to public health, and no further analysis is warranted. \*

**A. INTRODUCTION**

The proposed Rikers Island cogeneration facility and feeder lines would be located within New York City's Coastal Zone Boundary (see Figure B-2). This attachment examines the consistency of the proposed project with coastal zone policies.

The Coastal Zone Management (CZM) Act of 1972 was established to support and protect the distinctive character of the waterfront, and set forth standard policies for reviewing proposed development projects along coastlines. The program responded to local, state, and federal concerns about the deterioration and inappropriate use of the waterfront.

In response, New York State adopted its Coastal Management Program, designed to balance economic development and preservation by promoting waterfront revitalization and water-dependent uses while protecting fish and wildlife, open space and scenic areas, public access to the shoreline, and farmland; and to minimize the adverse changes to ecological systems as well as erosion and flood hazards. The program provides for local implementation when a municipality adopts a local waterfront revitalization program, as is the case in New York City.

The program encourages coordination among all levels of government to promote sound waterfront planning and requires consideration of the program's goals in making land use decisions. The New York State Department of State (NYS DOS) administers the program at the state level, and the New York City Department of City Planning (NYC DCP) administers it in the city.

This analysis is organized into two sections. Section B, "New York State Consistency Determination," addresses the proposed project's consistency with the State coastal policies of the New York State Coastal Management Program. Section C, "New York City Consistency Determination," addresses the proposed project's consistency with New York City's local waterfront revitalization program policies. Following the methodologies provided by NYSDOS for the New York State policies and by NYCDCP for the city policies, the evaluation of consistency with both the state and city waterfront programs begins with a checklist that highlights the potential for inconsistencies with coastal zone policies. For each such policy identified, more information is then provided about the project and its consistency with that policy.

**B. NEW YORK STATE CONSISTENCY DETERMINATION****COASTAL ASSESSMENT FORM**

The New York State Coastal Management Program includes 44 policy statements designed to promote the beneficial use of coastal resources, prevent their impairment, and deal with major activities that substantially affect numerous resources. The consistency determination begins with the completion of the Coastal Assessment Form (see Appendix 4, "Waterfront

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Revitalization Program” for the full, signed form). The form includes a series of questions intended to clarify whether a proposed project has the potential to affect the achievement of the State coastal policies contained in Article 42 of the Executive Law. When a question is answered “yes,” additional information is provided. Table C-1 shows the Coastal Assessment Form checklist and the appropriate responses for the proposed project. Following Table C-1 is further information for the policies that have been checked “yes.”

**Table C-1**  
**New York State Coastal Management Program**  
**Coastal Assessment Form**

| Question  | Yes | No |
|---|-----|----|
| <b>1. Will the proposed activity be located in, or contiguous to, or have a significant effect upon any of the resource areas identified on the coastal area map:</b> |     |    |
| (a) Significant fish or wildlife habitats?  | X   |    |
| (b) Scenic resources of statewide significance?   |     | X  |
| (c) Important agricultural lands?   |     | X  |
| <b>2. Will the proposed activity have a significant effect upon:</b>  |     |    |
| (a) Commercial or recreational use of fish and wildlife resources?  |     | X  |
| (b) Scenic quality of the coastal environment?  |     | X  |
| (c) Development of future, or existing water dependent uses?  |     | X  |
| (d) Operation of the State's major ports?   |     | X  |
| (e) Land and water uses within the State's small harbors?   |     | X  |
| (f) Existing or potential public recreation opportunities?  |     | X  |
| (g) Structures, sites or districts of historic, archeological or cultural significance to the State or nation?  |     | X  |
| <b>3. Will the proposed activity involve or result in any of the following:</b>   |     |    |
| (a) Physical alteration of two (2) acres or more of land along the shoreline, land under water or coastal waters?   |     | X  |
| (b) Physical alteration of five (5) acres or more of land located elsewhere in the coastal area?  |     | X  |
| (c) Expansion of existing public services of infrastructure in undeveloped or low density areas of the coastal area?  |     | X  |
| (d) Energy facility not subject to Article VII or VIII of the Public Service Law?   | X   |    |
| (e) Mining, excavation, filling or dredging in coastal waters?  |     | X  |
| (f) Reduction of existing or potential public access to or along the shore?   |     | X  |
| (g) Sale or change in use of state-owned lands located on the shoreline or under water?   |     | X  |
| (h) Development within a designated flood or erosion hazard area?   |     | X  |
| (i) Development on a beach, dune, barrier island or other natural feature that provides protection against flooding or erosion?                                       |     | X  |
| <b>4. Will the proposed action be located in or have a significant effect upon an area included in an approved Local Waterfront Revitalization Program?</b>           |     |    |
|   | X   |    |

**FURTHER INFORMATION**

For each “yes” response presented above, the following describes the applicable policy and further information with respect to the proposed project’s consistency with the policy.

**1a. Will the proposed activity be located in, or contiguous to, or have a significant effect upon any of the resource areas identified on the coastal area map: Significant fish or wildlife habitats?**

This question relates to NYS Coastal Policy 7, which states:

*Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

The proposed project is not located within a Significant Coastal Fish and Wildlife Habitat. However, the project site is located approximately 0.5 miles from North and South Brother Island, which have been designated as Significant Coastal Fish and Wildlife Habitats by NYSDOS and as a Special Natural Waterfront Area by the City of New York. As discussed in the Natural Resources section of Attachment B, “Environmental Screening Analyses,” the proposed project would not result in any significant adverse impacts to these habitats. Furthermore, the proposed project would not result in any in-water construction or dredging, and therefore it would not affect aquatic biota. The proposed project would be consistent with this policy.

**3d. Will the proposed activity involve or result in any of the following: Energy facility not subject to Article VII or VIII of the Public Service Law?**

This question relates to NYS Coastal Policy 27, which states:

*Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility’s need for a shorefront location.*

The proposed project would be consistent with the three criteria of this policy. First, the proposed project would meet a public energy need. As discussed in Attachment A, “Project Description,” the Rikers Island prison complex has experienced several power outages in the past few years, and the proposed project is needed to provide a reliable on-site source of power to reduce the need for off-site power to a minimum.

Second, as detailed throughout this document, the proposed project would not result in any significant adverse environmental impacts, and therefore would be compatible with the environment. Moreover, the project is consistent with the New York State Energy Plan of 2009, which identifies NYPA’s program to provide energy efficiency services as an important component of the state’s overall goal to reduce electricity use and implement energy efficiencies. The proposed project would allow Rikers Island to reduce its dependence on the grid and on back-up diesel generators for peak periods.

Third, a shorefront location is needed because all of Rikers Island is located within the designated Coastal Zone, so any new power facility that serves the island must be in the Coastal Zone. The proposed co-generation site is close to the waterfront so that it can be co-located with the existing powerhouse. This location would reduce the need for additional infrastructure and operations personnel, and it would leave room for future expansion plans in the southeast portion of the island. A feasibility study evaluated two other options for the location of the proposed cogeneration plant, and neither provided the same benefits as the proposed location.

Overall, the proposed project would be consistent with this policy.

**Rikers Island Cogeneration Plant**

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**4. Will the proposed action be located in or have a significant effect upon an area included in an approved Local Waterfront Revitalization Program?**

The proposed project would be located within the area governed by the New York City Waterfront Revitalization Program (WRP). A consistency determination for the New York City WRP is provided below.

**C. NEW YORK CITY CONSISTENCY DETERMINATION**

**CONSISTENCY ASSESSMENT FORM**

The New York City WRP is the city’s principal coastal zone management tool, outlining 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. The WRP’s 10 policies are designed to maximize the benefits derived from economic development, environmental preservation, and public use of the waterfront, while minimizing the conflicts among those objectives.

The consistency determination begins with the completion of a Consistency Assessment Form (see Appendix 4, “Waterfront Revitalization Program” for the full, signed form). The form includes a checklist for WRP policies, and when “yes” is checked, further information is provided. Table C-2 shows the Consistency Assessment Form checklist and the appropriate responses for the proposed project. Following Table C-2 is further information for the policies that have been checked “yes.”

**Table C-2**  
**New York City Coastal Zone Consistency Assessment Form**

| Question                  |   | Yes | No |
|---------------------------|---|-----|----|
| <b>Location Questions</b> |   |     |    |
| 1.                        | Is the project site on the waterfront or at the water’s edge?   | X   |    |
| 2.                        | Does the proposed project require a waterfront site?  |     | X  |
| 3.                        | Would the action result in a physical alteration to a waterfront site, including land along the shoreline, land underwater, or coastal waters?  | X   |    |
| <b>Policy Questions</b>   |   |     |    |
| 4.                        | Will the proposed project result in revitalization or redevelopment of a deteriorated or under-used waterfront site? (1)  | X   |    |
| 5.                        | Is the project site appropriate for residential or commercial redevelopment? (1.1)  |     | X  |
| 6.                        | Will the action result in a change in scale or character of a neighborhood? (1.2)   |     | X  |
| 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)                                      |     | X  |
| 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)       |     | X  |
| 9.                        | Are there any waterfront structures, such as piers, docks, bulkheads or wharves, located on the project sites? (2)  |     | X  |
| 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) | X   |    |
| 11.                       | Does the action involve the siting of a working waterfront use outside of a SMIA? (2.2)   |     | X  |
| 12.                       | Does the proposed project involve infrastructure improvement, such as construction or repair of piers, docks, or bulkheads? (2.3, 3.2)  |     | X  |

**Table C-2 cont'd**  
**New York City Coastal Zone Consistency Assessment Form**

|     |  |   |   |
|-----|--|---|---|
| 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)  |   | X |
| 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)         |   | X |
| 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)                   |   | X |
| 16. | Would the proposed project create any conflicts between commercial and recreational boating? (3.2)   |   | X |
| 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)  |   | X |
| 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)                       |   | X |
| 19. | Is the project site in or adjacent to a Significant Coastal Fish and Wildlife Habitats? (4.1)  | X |   |
| 20. | Is the site located within or adjacent to a Recognized Ecological Complex: South Shore of Staten Island or Riverdale Natural Area District? (4.1 and 9.2)  |   | X |
| 21. | Would the action involve any activity in or near a tidal or freshwater wetland? (4.2)  | X |   |
| 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)  |   | X |
| 23. | Would the action have any effects on commercial or recreational use of fish resources? (4.4)   |   | X |
| 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)                                       |   | X |
| 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)                         |   | X |
| 26. | Would the action result in the draining of stormwater runoff or sewer overflows into coastal waters? (5.1)   |   | X |
| 27. | Will any activity associated with the project generate nonpoint source pollution? (5.2)  |   | X |
| 28. | Would the action cause violations of the National or State air quality standards? (5.2)  |   | X |
| 29. | Would the action result in significant amounts of acid rain precursors (nitrates and sulfates)? (5.2C)   |   | X |
| 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)   |   | X |
| 31. | Would the proposed action have any effects on surface or ground water supplies? (5.4)  |   | X |
| 32. | Would the action result in any activities within a Federally designated flood hazard area or State designated erosion hazards area? (6)  |   | X |
| 33. | Would the action result in any construction activities that would lead to erosion? (6)   |   | X |
| 34. | Would the action involve construction or reconstruction of flood or erosion control structure? (6.1)   |   | X |
| 35. | Would the action involve any new or increased activity on or near any beach, dune, barrier island, or bluff? (6.1)   |   | X |
| 36. | Does the proposed project involve use of public funds for flood prevention or erosion control? (6.2)   |   | X |
| 37. | Would the proposed project affect a non-renewable source of sand? (6.3)  |   | X |
| 38. | Would the action result in shipping, handling, or storing of solid wastes; hazardous materials, or other pollutants? (7)   |   | X |
| 39. | Would the action affect any sites that have been used as landfills? (7.1)  | X |   |
| 40. | Would the action result in development of a site that may contain contamination or has a history of underground fuel tanks, oil spills, or other form or petroleum product use or storage? (7.2) | X |   |
| 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)          |   | X |
| 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)                                       |   | X |



**Table C-2 cont'd**  
**New York City Coastal Zone Consistency Assessment Form**

|     |  |   |   |
|-----|--|---|---|
| 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)                                |   | X |
| 44. | Would the action result in the provision of open space without the provision for its maintenance? (8.1)  |   | X |
| 45. | Would the action result in any development along the shoreline but NOT include new water enhanced or water dependent recreational space? (8.2)   | X |   |
| 46. | Will the proposed project impede visual access to coastal lands, waters and open space? (8.3)  |   | X |
| 47. | Does the proposed project involve publicly owned or acquired land that could accommodate waterfront open space or recreation? (8.4)  |   | X |
| 48. | Does the project site involve lands or waters held in public trust by the state or city? (8.5)   |   | X |
| 49. | Would the action affect natural or built resources that contribute to the scenic quality of a coastal area? (9)  |   | X |
| 50. | Does the site currently include elements that degrade the area's scenic quality or block views to the water? (9.1)   |   | X |
| 51. | Would the proposed action have a significant adverse impact on historic, archeological, or cultural resources? (10)  |   | X |
| 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) |   | X |

**FURTHER INFORMATION**

For each “yes” response presented above, the following describes the applicable policy and further information with respect to the proposed project’s consistency with the policy. The parenthetical number corresponds to the applicable question in the Consistency Assessment Form checklist.

**Policy 1: Support and facilitate commercial and residential development in areas well-suited to such development. (4)**

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

The project site is located on Rikers Island, which is solely used for a large prison system. Therefore, commercial and residential development is not appropriate in this area, and this policy does not apply.

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

The proposed project is located in area which is not accessible to the public. Rikers Island is not appropriate for public access due its use as a prison facility. Therefore, this policy does not apply.

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

This policy is relevant when new development is appropriate. As noted above, new development is not appropriate on Rikers Island and therefore this policy is not applicable. The proposed project would upgrade the power supply for Rikers Island. Consistent with this policy, existing infrastructure to serve the operation of the cogeneration plant is adequate.

**Policy 2: Support water-dependent and industrial uses in New York City coastal areas that are well-suited to their continued operation. (10)**

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

New York City's *The New Waterfront Revitalization Program* (2002) indicates in the discussion of Policy 2 that New York City's waterfront supports various industrial activities and municipal and public utility services, including energy generation, and important waterfront industrial areas have been recognized by the designation of the city's six Significant Maritime and Industrial Areas. The proposed project is not located in a Significant Maritime Industrial Area. As noted earlier, the purpose of the project is to improve the energy capabilities at Rikers Island, and therefore the project must be located on Rikers Island. Therefore, this policy is not applicable.

**Policy 4: Protect and restore the quality and function of ecological systems within the New York City coastal area. (19, 21)**

*Policy 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.*

The proposed project is not located within a Special Natural Waterfront Area, a Recognized Ecological Complex, or a Significant Coastal Fish and Wildlife Habitat. However, the project site is located approximately 0.5 miles from North and South Brother Island, which have been designated as Significant Coastal Fish and Wildlife Habitats by NYSDOS and as a Special Natural Waterfront Area by the City of New York. As discussed in the Natural Resources section of Attachment B, "Environmental Screening Analyses," the proposed project would not result in any significant adverse impacts to these habitats. The proposed project also does not include in-water construction or dredging, and therefore it would not affect aquatic biota. The proposed project is consistent with this policy.

*Policy 4.2: Protect and restore tidal and freshwater wetlands.*

The proposed project is located near East River tidal wetlands on the Rikers Island shoreline. The proposed project would not involve dredging or in-water construction, nor would it increase stormwater runoff or other discharges into waterbodies. Therefore, the proposed project would not affect the tidal waters or any DEC-designated tidal wetlands in the vicinity of the project site. The proposed project would be consistent with this policy.

**Policy 7: Minimize environmental degradation from solid waste and hazardous substances. (39, 40)**

*Policy 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.*

As described in the Phase I Environmental Site Assessment (ESA) for the project site, fill material from refuse and possible dredged material was disposed on the island during the early 1900s. Sanitary landfilling also took place on Rikers Island.

## **Rikers Island Cogeneration Plant**

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The construction of the proposed project would include measures to avoid potential impacts from hazardous materials potentially in the fill material on the project site. All construction work involving subsurface disturbance would be performed under a site-specific environmental Health and Safety Plan (HASP). The HASP would specify appropriate testing and/or monitoring, and detail appropriate measures to be implemented (including notification of regulatory agencies) if underground storage tanks, soil and groundwater contamination, or other unforeseen environmental conditions are encountered.

In addition, all soil excavated as part of any future site development activities would be managed in accordance with all applicable regulations. Soil intended for off-site disposal would be tested in accordance with the requirements of the receiving facility. Transportation of material leaving the site for off-site disposal would be in accordance with federal, state and local requirements covering licensing of haulers and trucks, placarding, truck routes, and manifesting.

Therefore, the proposed project would be consistent with this policy.

*Policy 7.2: Prevent and remediate discharge of petroleum products.*

As described in the “Hazardous Materials” section of the Environmental Assessment Form, storage and handling of any petroleum products associated with the proposed project would follow applicable regulations. If petroleum contaminated soils are encountered during construction, they would be removed and disposed of in accordance with all applicable laws and regulations. Therefore, the proposed project would be consistent with this policy.

### **Policy 8: Provide public access to and along New York City’s coastal waters. (45)**

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

The project site is not publically-accessible and due to Rikers Island use as a prison complex, it is not an appropriate location for public access to the waterfront. Therefore, this policy does not apply.

\*

**A. INTRODUCTION**

This chapter examines the potential for air quality impacts from the proposed project. Ambient air quality is affected by numerous sources and activities that introduce air pollutants into the atmosphere. A comprehensive assessment of potential air quality impacts from the proposed project was performed.

The New York City Department of Correction (DOC) is proposing to construct and operate a new cogeneration plant to be located in the northwest corner of Rikers Island in the Bronx. The proposed cogeneration plant is initially being funded by the New York Power Authority (NYPA).

The buildings (prison complexes and offices) on Rikers Island have high year-round energy requirements and need highly reliable utilities. As noted below, the proposed cogeneration plant would generate a portion of the electricity needed to serve Rikers Island, instead of the DOC purchasing all necessary electricity from Con Edison. This would increase reliability of electrical service and potentially decrease its costs. In addition to providing power, the cogeneration plant would provide heating and cooling to the buildings on the Island. This would reduce the amount of required fuel for steam generation from the existing plant boilers. Cogeneration systems are also an important component of energy and environmental design objectives.

The proposed cogeneration plant would be located next to the existing power plant as shown in Figure A-2. The existing power plant includes eight boilers rated at (8) 96 million British Thermal Units per hour (mmBtu/hr) firing natural gas and distillate fuel oil as backup. The proposed cogeneration plant would consist of two (2) new 7.5 megawatt (MW) (15 MW maximum) natural gas-fired simple cycle combustion gas turbines (CGTs) equipped with supplemental duct firing and heat recovery steam generators (HRSGs). The existing boilers would remain on-site providing back-up steam generating capability with limited operation. The cogeneration plant would provide a portion of the electrical needs of Rikers Island with the remaining portion being provided by the existing utility.

In addition to the existing boilers, Rikers Island has 70 operable emergency diesel engines which provide emergency power scattered throughout the 413-acre island. Fifty-one of the generators are used as emergency generators and are operated periodically for maintenance and testing purposes. The other 19 engines are currently permitted to operate under a Peak Load Management (PLM) program.

The facility would operate in full compliance with all applicable federal, state and local air quality regulations and standards. These requirements include Prevention of Significant Deterioration (PSD), Non-Attainment New Source Review (NANSR), New Source Performance Standards (NSPS), NO<sub>x</sub> Reasonably Available Control Technology (RACT) and National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations.

## **Rikers Island Cogeneration Plant**

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A Title V permit modification for Rikers Island is being submitted to the New York State Department of Environmental Conservation (NYSDEC) and an application for a work permit is being submitted to the New York Department of Environmental Protection (NYCDEP).

This chapter describes the methodology and assumptions that were utilized to determine the air quality impacts from the proposed project and compares the impacts to applicable regulatory requirements. Emissions of carbon monoxide (CO), particulate matter with a diameter less than 10 micrometers and 2.5 micrometers (PM<sub>10</sub> and PM<sub>2.5</sub>, respectively), sulfur dioxide (SO<sub>2</sub>), and nitrogen dioxide (NO<sub>2</sub>), were evaluated as part of the air quality impact analysis. The general modeling procedures follow the Air Quality Modeling Protocol submitted to the NYCDEP on September 17, 2008 and subsequently updated on September 26, 2008.

The proposed project is not expected to significantly alter traffic conditions. Therefore, a quantified assessment of on-street mobile source emissions is not warranted.

## **B. PROJECT DESCRIPTION**

### **LOCATION DESCRIPTION**

DOC maintains a prison facility on Rikers Island in the East River, near the boroughs of Queens and the Bronx. A powerhouse operates in a separate structure on the island, producing steam to provide heat for the entire island, as well as process steam for the laundry. The proposed cogeneration facility would be located near the existing powerhouse. The Rikers Island prison complex is an institutional use, defined by low-rise buildings and prison cells. The project site is bounded on three sides by the Long Island Sound.

The site topography is generally flat, and there are no significant terrain features existing in the vicinity of the site.

### **FACILITY DESCRIPTION**

#### *EQUIPMENT*

The proposed cogeneration plant would include two new simple-cycle natural gas-fired CGTs with HRSG duct firing. The CGTs would fire natural gas. Exhaust gas would be emitted through two stacks approximately 150 feet in height and 5 feet in diameter.

The proposed cogeneration plant's output is affected by ambient temperature. Maximum combustion turbine power output would be achieved during the winter months; however, to boost output during the peak power demand season, an air inlet evaporative cooler would be used to reduce the combustion inlet air temperature.

The proposed project would include two new gas-fired turbines in a new building approximately 9,734 square feet with a height of approximately 39.5 feet.

The existing powerhouse may operate for a limited amount of time and at a very low load in the colder months to supplement the heat generated by the cogeneration plant. The powerhouse is located in a separate structure, currently producing steam to provide heat for the entire island, as well as process steam for the laundry. The powerhouse has eight boilers with a capacity of 96 mmbtu/hr each, firing natural gas or distillate oil as back up. The eight boilers at the facility have low NO<sub>x</sub> burners, utilizing natural gas as the primary fuel and Number 2 fuel oil as back up. The eight boilers exhaust through

three existing stacks outside the powerhouse with individual heights of 182 feet, 185 feet, and 170 feet. Once the cogeneration plant is operational, operation of the eight boilers would be curtailed.

**OPERATIONS**

The proposed cogeneration plant would be designed to operate on a continuous basis at a maximum net output of 15 MW. However, due to the nature of electricity generation, the proposed plant may be operated on a non-continuous basis, and at varying loads. Operation at partial loads (75 percent and 50 percent), with and without duct firing, and at varying ambient temperature conditions (0°F, 59°F, and 100°F), in addition to the 100 percent load condition, were considered in the air quality analysis in order to determine the maximum potential impacts. Load analyses, ambient temperature analyses, and short-term and annual operating scenarios are presented in Section E., *Methodology for Predicting Pollutant Concentrations*.

**STACK PARAMETERS AND EMISSION RATES**

Air emissions from the proposed project are primarily products of combustion of natural gas in the CGTs. The emission rates and stack exhaust parameters for the CGTs are provided in Table D-1 below. The parameters presented are for each CGT operating at 100 percent load with supplemental duct firing at ISO conditions. Emissions presented in Table D-1 and the subsequent modeling analysis are based on NO<sub>x</sub> outlet concentrations of 15 ppm from the turbines and 17 ppm from the duct burners. The cogeneration plant configuration would actually have NO<sub>x</sub> outlet concentrations of 12 ppm from the turbines and 0.07 lbs/mmBtu from the duct burners, allowing for slightly lower emissions and modeled impacts.

**Table D-1  
Stack Parameters and Emission Quantities**

| Parameter                                    | CGTs                                   |
|--|--|
|  | 100% Load, ISO Conditions <sup>1</sup> |
| Stack Height (feet)                          | 150                                    |
| Inside Diameter (feet)                       | 5                                      |
| Exhaust Velocity (feet/sec)                  | 58.2                                   |
| Exhaust Temperature (°F)                     | 292                                    |
| NO <sub>x</sub> (lbs/hr)                     | 7.77                                   |
| CO (lbs/hr)                                  | 7.77                                   |
| VOC (lbs/hr)                                 | 0.44                                   |
| PM <sub>10</sub> /PM <sub>2.5</sub> (lbs/hr) | 1.98                                   |
| SO <sub>2</sub> (lbs/hr)                     | 0.40                                   |

**Notes:** <sup>1</sup> Values are at 59°F and include supplemental duct firing.

In addition, on an annual basis, emissions of NO<sub>x</sub> and PM<sub>10</sub> from the cogeneration units would be limited to a maximum of 42.00 and 15.77 tons per year to avoid NSR and PSD applicability. Annual operation of the proposed CGTs would be limited with fuel usage, operating hours, and kilowatt output tracked on a rolling average basis. Annual emission rates for the cogeneration units are provided in Table D-2.

**Table D-2  
Annual Emissions (Tons/yr)**

| Pollutant                           | Emissions (tons/yr) |
|-------------------------------------|---------------------|
| NOx                                 | 42.00               |
| CO                                  | 53.98               |
| VOC                                 | 3.09                |
| PM <sub>10</sub> /PM <sub>2.5</sub> | 15.77/ 15.77        |
| SO <sub>2</sub>                     | 1.74                |

The air dispersion modeling analysis included operating scenarios with higher annual emissions than the permit limits, therefore ensuring a conservative analysis.

### **C. POLLUTANTS FOR ANALYSIS**

Ambient air quality is affected by air pollutants produced by both motor vehicles and stationary sources. Emissions from motor vehicles are referred to as mobile source emissions, while emissions from fixed facilities are referred to as stationary source emissions. Typically, ambient concentrations of CO are predominantly influenced by mobile source emissions. Particulate matter (PM), volatile organic compounds (VOCs), and nitrogen oxides (NO and NO<sub>2</sub>, collectively referred to as NO<sub>x</sub>) are emitted from both mobile and stationary sources. Fine PM is also formed when emissions of NO<sub>x</sub>, sulfur oxides (SO<sub>x</sub>), ammonia, organic compounds, and other gases react or condense in the atmosphere. The formation of such secondary PM takes hours or days to occur and thus has no measurable effect on air quality in the immediate vicinity of the source. Emissions of SO<sub>2</sub> are associated mainly with stationary sources and sources using nonroad diesel fuel, such as diesel trains, marine engines, and nonroad vehicles such as construction engines; diesel-powered vehicles, primarily heavy-duty trucks and buses, also contribute somewhat to these emissions. However, diesel fuel regulations that recently began to take effect will reduce SO<sub>2</sub> emissions from mobile sources to extremely low levels. Ozone is formed in the atmosphere by complex photochemical processes that include NO<sub>x</sub> and VOCs, emitted mainly from industrial processes and mobile sources.

#### **CARBON MONOXIDE**

CO, a colorless and odorless gas, is produced in the urban environment primarily by the incomplete combustion of gasoline and other fossil fuels. In urban areas, approximately 80 to 90 percent of CO emissions are from motor vehicles. Since CO is a reactive gas that does not persist in the atmosphere, CO concentrations can vary greatly over relatively short distances. Elevated concentrations are usually limited to locations near crowded intersections, heavily traveled and congested roadways, parking lots, and garages. Consequently, CO concentrations must be predicted on a local, or microscale, basis.

The proposed project is not expected to significantly alter traffic conditions; therefore a quantified assessment of on-street CO emissions is not warranted. CO emissions were evaluated as a result of the natural gas combustion from the cogeneration plant.

#### **NITROGEN OXIDES, VOCs, AND OZONE**

NO<sub>x</sub> are of principal concern because of their role, together with VOCs, as precursors in the formation of ozone. Ozone is formed through a series of reactions that take place in the atmosphere in the presence of sunlight. Because the reactions are slow, and occur as the pollutants are advected downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. The effects of NO<sub>x</sub> and VOC emissions from all sources are therefore generally examined on a regional basis. The contribution of any action or project to regional emissions of these pollutants would include any added stationary or mobile source emissions. The change in regional mobile source emissions of these pollutants would be related to the total vehicle miles traveled added or subtracted on various roadway types throughout the New York metropolitan area, which is designated as a moderate non-attainment area for ozone by the U.S. Environmental Protection Agency (EPA).

The proposed project would not have a significant effect on the overall volume of vehicular travel in the metropolitan area; therefore, no measurable impact on regional NO<sub>x</sub> emissions or on ozone levels would result. An analysis of project-related emissions of these pollutants from mobile sources is therefore not warranted.

There is a standard for average annual NO<sub>2</sub> concentrations, which is normally examined only for fossil fuel energy sources. An analysis of the potential NO<sub>2</sub> impacts from the proposed project's stationary sources of emissions was performed.

### **LEAD**

Airborne lead emissions are currently associated principally with industrial sources. Effective January 1, 1996, the Clean Air Act (CAA) banned the sale of the small amount of leaded fuel that was still available in some parts of the country for use in on-road vehicles, concluding a 25-year effort to phase out lead in gasoline. Even at locations in the New York City area where traffic volumes are very high, atmospheric lead concentrations are far below the 3-month average national standard of 0.15 micrograms per cubic meter (µg/m<sup>3</sup>).

No significant sources of lead are associated with the proposed project and, therefore, analysis is not warranted.

### **RESPIRABLE PARTICULATE MATTER—PM<sub>10</sub> AND PM<sub>2.5</sub>**

PM is a broad class of air pollutants that includes discrete particles of a wide range of sizes and chemical compositions, as either liquid droplets (aerosols) or solids suspended in the atmosphere. The constituents of PM are both numerous and varied, and they are emitted from a wide variety of sources (both natural and anthropogenic). Natural sources include the condensed and reacted forms of naturally occurring VOC; salt particles resulting from the evaporation of sea spray; wind-borne pollen, fungi, molds, algae, yeasts, rusts, bacteria, and material from live and decaying plant and animal life; particles eroded from beaches, soil, and rock; and particles emitted from volcanic and geothermal eruptions and from forest fires. Naturally occurring PM is generally greater than 2.5 micrometers in diameter. Major anthropogenic sources include the combustion of fossil fuels (e.g., vehicular exhaust, power generation, boilers, engines, and home heating), chemical and manufacturing processes, all types of construction, agricultural activities, as well as wood-burning stoves and fireplaces. PM also acts as a substrate for the adsorption (accumulation of gases, liquids, or solutes on the surface of a solid or liquid) of other pollutants, often toxic and some likely carcinogenic compounds.

As described below, PM is regulated in two size categories: particles with an aerodynamic diameter of less than or equal to 2.5 micrometers (PM<sub>2.5</sub>), and particles with an aerodynamic diameter of less than or equal to 10 micrometers (PM<sub>10</sub>, which includes PM<sub>2.5</sub>). PM<sub>2.5</sub> has the ability to reach the lower regions of the respiratory tract, delivering with it other compounds that adsorb to the surfaces of the particles, and is also extremely persistent in the atmosphere. PM<sub>2.5</sub> is mainly derived from combustion material that has volatilized and then condensed to form primary PM (often soon after the release from a source exhaust) or from precursor gases reacting in the atmosphere to form secondary PM.

Diesel-powered vehicles, especially heavy duty trucks and buses, are a significant source of respirable PM, most of which is PM<sub>2.5</sub>; PM concentrations may, consequently, be locally elevated near roadways with high volumes of heavy diesel powered vehicles. The proposed project would not result in any significant increases in truck traffic near the project site or in the



region, and therefore, an analysis of potential impacts from mobile sources of PM was not warranted.

On-site combustion sources would result in emissions of PM<sub>10</sub> and PM<sub>2.5</sub>; therefore, these sources were evaluated for potential impacts. Potential 24-hour and annual incremental impacts of PM<sub>2.5</sub> from the cogeneration plant are evaluated using an incremental microscale analysis.

## **SULFUR DIOXIDE**

SO<sub>2</sub> emissions are primarily associated with the combustion of sulfur-containing fuels: oil and coal. Due to the federal restrictions on the sulfur content in diesel fuel for on-road vehicles, no significant quantities are emitted from vehicular sources. Monitored SO<sub>2</sub> concentrations in New York City are below the national standards. Vehicular sources of SO<sub>2</sub> are not significant, and, therefore, an analysis of this pollutant from mobile sources is not warranted.

As part of the proposed project, natural gas would be burned in the proposed cogeneration plant. The sulfur content of natural gas is negligible; however, an analysis was performed to estimate the future levels of SO<sub>2</sub> with the proposed project.

## **D. AIR QUALITY REGULATIONS, STANDARDS, AND BENCHMARKS**

### **NATIONAL AND STATE AIR QUALITY STANDARDS**

As required by the CAA, primary and secondary National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: CO, NO<sub>2</sub>, ozone, respirable PM (both PM<sub>2.5</sub> and PM<sub>10</sub>), SO<sub>2</sub>, and lead. The primary standards represent levels that are requisite to protect the public health, allowing an adequate margin of safety. The secondary standards are intended to protect the nation's welfare, and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the environment. The primary and secondary standards are the same for NO<sub>2</sub>, ozone, lead, and PM, and there is no secondary standard for CO. The NAAQS are presented in Table D-3. The NAAQS for CO, NO<sub>2</sub>, and SO<sub>2</sub> have also been adopted as the ambient air quality standards for New York State, but are defined on a running 12-month basis rather than for calendar years only. New York State also has standards for total suspended particulate matter (TSP), settleable particles, non-methane hydrocarbons (NMHC), and ozone which correspond to federal standards that have since been revoked or replaced, and for beryllium, fluoride, and hydrogen sulfide (H<sub>2</sub>S).

EPA has revised the NAAQS for PM, effective December 18, 2006. The revision included lowering the level of the 24-hour PM<sub>2.5</sub> standard from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup> and retaining the level of the annual standard at 15 µg/m<sup>3</sup>. The PM<sub>10</sub> 24-hour average standard was retained and the annual average PM<sub>10</sub> standard was revoked. EPA has also revised the 8-hour ozone standard, lowering it from 0.08 to 0.075 parts per million (ppm), effective as of May 2008.

EPA lowered the primary and secondary standards for lead to 0.15 µg/m<sup>3</sup>, effective January 12, 2009. EPA revised the averaging time to a rolling 3-month average and the form of the standard to not-to-exceed across a 3-year span. The current lead NAAQS will remain in place for one year following the effective date of attainment designations for any new or revised NAAQS before being revoked, except in current non-attainment areas, where the existing NAAQS will not be revoked until the affected area submits, and EPA approves, an attainment demonstration for the revised lead NAAQS.

**Table D-3**

**National Ambient Air Quality Standards (NAAQS)**

| Pollutant  | Primary |                   | Secondary |                   |
|--|---------|-------------------|-----------|-------------------|
|  | ppm     | µg/m <sup>3</sup> | ppm       | µg/m <sup>3</sup> |
| <b>Carbon Monoxide (CO)</b>  |         |                   |           |                   |
| 8-Hour Average <sup>(1)</sup>  | 9       | 10,000            | None      |                   |
| 1-Hour Average <sup>(1)</sup>  | 35      | 40,000            |           |                   |
| <b>Lead</b>  |         |                   |           |                   |
| Rolling 3-Month Average <sup>(5)</sup>   | NA      | 0.15              | NA        | 0.15              |
| <b>Nitrogen Dioxide (NO<sub>2</sub>)</b>   |         |                   |           |                   |
| 1-Hour Average <sup>(6)</sup>  | 0.100   | 188               | None      |                   |
| Annual Average   | 0.053   | 100               | 0.053     | 100               |
| <b>Ozone (O<sub>3</sub>)</b>   |         |                   |           |                   |
| 8-Hour Average <sup>(2)</sup>  | 0.075   | 150               | 0.075     | 150               |
| <b>Respirable Particulate Matter (PM<sub>10</sub>)</b>   |         |                   |           |                   |
| 24-Hour Average <sup>(1)</sup>   | NA      | 150               | NA        | 150               |
| <b>Fine Respirable Particulate Matter (PM<sub>2.5</sub>)</b>   |         |                   |           |                   |
| Average of 3 Annual Means  | NA      | 15                | NA        | 15                |
| 24-Hour Average <sup>(3,4)</sup>   | NA      | 35                | NA        | 35                |
| <b>Sulfur Dioxide (SO<sub>2</sub>)</b>   |         |                   |           |                   |
| Annual Arithmetic Mean   | 0.03    | 80                | NA        | NA                |
| Maximum 24-Hour Average <sup>(1)</sup>   | 0.14    | 365               | NA        | NA                |
| Maximum 3-Hour Average <sup>(1)</sup>  | NA      | NA                | 0.50      | 1,300             |
| <p><b>Notes:</b> ppm – parts per million<br/> µg/m<sup>3</sup> – micrograms per cubic meter<br/> NA – not applicable</p> <p>All annual periods refer to calendar year.<br/> PM concentrations (including lead) are in µg/m<sup>3</sup> since ppm is a measure for gas concentrations. Concentrations of all gaseous pollutants are defined in ppm and approximately equivalent concentrations in µg/m<sup>3</sup> are presented.</p> <p><sup>(1)</sup> Not to be exceeded more than once a year.<br/> <sup>(2)</sup> 3-year average of the annual fourth highest daily maximum 8-hr average concentration. EPA has reduced these standards down from 0.08 ppm, effective May 27, 2008.<br/> <sup>(3)</sup> Not to be exceeded by the annual 98th percentile when averaged over 3 years.<br/> <sup>(4)</sup> EPA has lowered the NAAQS down from 65 µg/m<sup>3</sup>, effective December 18, 2006.<br/> <sup>(5)</sup> EPA has lowered the NAAQS down from 1.5 µg/m<sup>3</sup>, effective January 12, 2009.<br/> <sup>(6)</sup> 3-year average of the annual 98th percentile daily maximum 1-hr average concentration. Effective April 12, 2010.</p> <p><b>Source:</b> 40 CFR Part 50: National Primary and Secondary Ambient Air Quality Standards.</p> |         |                   |           |                   |

EPA established a new 1-hour average NO<sub>2</sub> standard of 0.100 ppm, effective April 12, 2010, in addition to the current annual standard. The statistical form is the 3-year average of the 98th percentile of daily maximum 1-hour average concentration in a year.

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On November 16, 2009, EPA proposed to establish a new 1-hour average SO<sub>2</sub> standard at a level between 0.050-0.100 ppm, replacing the current 24-hour and annual primary standards. The statistical form proposed is the 3-year average of the 4th highest daily maximum 1-hour average concentration in a year (the the 4th highest daily maximum corresponds approximately to 99th percentile for a year.) EPA intends to issue a final decision on the SO<sub>2</sub> standard by June 2, 2010.

On January 6, 2010, EPA proposed a change in the 2008 ozone NAAQS, lowering the primary NAAQS from the current 0.075 ppm level to within the range of 0.060-0.070 ppm. EPA is also proposing a secondary standard, measured as a cumulative concentration within the range of 7-15 ppm-hours aimed mainly at protecting sensitive vegetation. EPA intends to complete this reconsideration of the 2008 ozone NAAQS by August 31, 2010.

### *EPA SIGNIFICANT IMPACT LEVELS*

EPA has defined significant impact levels (SILs) for certain criteria pollutants that are used to evaluate impacts from proposed stationary source projects subject to the federal Prevention of Significant Deterioration (PSD) or Non-Attainment New Source Review (NANSR) programs. The SILs are a small percentage of the NAAQS, and are used to determine whether further analysis is necessary to assess whether impacts from a proposed project would potentially cause a violation of a NAAQS or a PSD increment. Projects exceeding a SIL that are subject to these permitting programs must perform an additional dispersion analysis to assess impacts from the proposed project as well as impacts from nearby sources of emissions.

Based on the proposed project's potential to emit (PTE) pollutant emissions regulated under the PSD and NANSR programs, the PSD and NANSR regulations do not apply. The SILs are used, however, as benchmarks for comparison since impacts below SILs are considered to have an insignificant impact on air quality. These significant impact levels (SILs) are presented in Table D-4 below.

**Table D-4**  
**Significant Impact Levels ( $\mu\text{g}/\text{m}^3$ )**

| <b>Pollutant</b>  | <b>Annual</b> | <b>24-hour</b> | <b>8-hour</b> | <b>3-hour</b> | <b>1-hour</b> |
|-------------------|---------------|----------------|---------------|---------------|---------------|
| SO <sub>2</sub>   | 1             | 5              | ---           | 25            | ---           |
| PM <sub>10</sub>  | 1             | 5              | ---           | ---           | ---           |
| PM <sub>2.5</sub> | 0.3/0.1       | 5/2            | ---           | ---           | ---           |
| NOx               | 1             | ---            | ---           | ---           | ---           |
| CO                | ---           | ---            | 500           | ---           | 2,000         |

Maximum predicted concentrations from the air modeling analysis for the proposed project were compared with the SILs.

### *PSD INCREMENTS*

In addition to the SILs, the project impacts were also compared to the PSD increments for Class II areas, as presented in Table D-5.

**Table D-5**  
**PSD Increments ( $\mu\text{g}/\text{m}^3$ )**

| Pollutant  | Class II PSD Increment |
|--|------------------------|
| SO <sub>2</sub> , annual   | 20                     |
| SO <sub>2</sub> , 24-hour  | 91                     |
| SO <sub>2</sub> , 3-hour   | 512                    |
| PM <sub>10</sub> , annual  | 17                     |
| PM <sub>10</sub> , 24-hour   | 30                     |
| NO <sub>2</sub> , annual   | 25                     |
| <b>Notes:</b> For any period other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at any one location. |                        |

*INTERIM GUIDANCE CRITERIA REGARDING PM<sub>2.5</sub> IMPACTS*

NYSDEC has published a policy to provide interim direction for evaluating PM<sub>2.5</sub> impacts<sup>1</sup>. This policy applies only to facilities applying for permits or major permit modifications under SEQRA that emit 15 tons of PM<sub>10</sub> or more annually. The policy states that such a project will be deemed to have a potentially significant adverse impact if the project's maximum impacts are predicted to increase PM<sub>2.5</sub> concentrations by more than 0.3  $\mu\text{g}/\text{m}^3$  averaged annually or more than 5  $\mu\text{g}/\text{m}^3$  on a 24-hour basis. Projects that exceed either the annual or 24-hour threshold will be required to prepare an Environmental Impact Statement (EIS) to assess the severity of the impacts, to evaluate alternatives, and to employ reasonable and necessary mitigation measures to minimize the PM<sub>2.5</sub> impacts of the source to the maximum extent practicable.

In addition, NYCDEP is currently recommending interim guidance criteria for evaluating the potential PM<sub>2.5</sub> impacts for projects subject to CEQR. The interim guidance criteria currently employed by NYCDEP for determination of potential significant adverse PM<sub>2.5</sub> impacts under CEQR are as follows:

- 24-hour average PM<sub>2.5</sub> concentration increments which are predicted to be greater than 5  $\mu\text{g}/\text{m}^3$  at a discrete receptor location would be considered a significant adverse impact on air quality under operational conditions (i.e., a permanent condition predicted to exist for many years regardless of the frequency of occurrence);
- 24-hour average PM<sub>2.5</sub> concentration increments which are predicted to be greater than 2  $\mu\text{g}/\text{m}^3$  but no greater than 5  $\mu\text{g}/\text{m}^3$  would be considered a significant adverse impact on air quality based on the magnitude, frequency, duration, location, and size of the area of the predicted concentrations;
- Annual average PM<sub>2.5</sub> concentration increments which are predicted to be greater than 0.1  $\mu\text{g}/\text{m}^3$  at ground level on a neighborhood scale (i.e., the annual increase in concentration representing the average over an area of approximately 1 square kilometer, centered on the location where the maximum ground-level impact is predicted for stationary sources; or at a distance from a roadway corridor similar to the minimum distance defined for locating neighborhood scale monitoring stations); or
- Annual average PM<sub>2.5</sub> concentration increments which are predicted to be greater than 0.3  $\mu\text{g}/\text{m}^3$  at a discrete receptor location (elevated or ground level).

<sup>1</sup> CP33/Assessing and Mitigating Impacts of Fine Particulate Emissions, NYSDEC 12/29/2003.

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Actions under CEQR predicted to increase PM<sub>2.5</sub> concentrations by more than the NYCDEP or NYSDEC interim guidance criteria above will be considered to have a potential significant adverse impact. NYCDEP recommends that actions subject to CEQR that fail the interim guidance criteria prepare an environmental impact statement (EIS) and examine potential measures to reduce or eliminate such potential significant adverse impacts.

The proposed project's annual emissions of PM<sub>10</sub> are estimated to be above the 15-ton-per-year threshold under NYSDEC's PM<sub>2.5</sub> policy guidance. The above NYCDEP and NYSDEC interim guidance criteria were used to evaluate the significance of predicted impacts of the proposed project on PM<sub>2.5</sub> concentrations and determine the need to minimize particulate matter emissions from the proposed project. Incremental impacts from the proposed cogeneration plant are compared to the PM<sub>2.5</sub> significance thresholds assuming a baseline of zero emissions.

### **NAAQS ATTAINMENT STATUS AND STATE IMPLEMENTATION PLANS (SIP)**

The CAA, as amended in 1990, defines non-attainment areas (NAA) as geographic regions that have been designated as not meeting one or more of the NAAQS. When an area is designated as non-attainment by EPA, the state is required to develop and implement a State Implementation Plan (SIP), which delineates how a state plans to achieve air quality that meets the NAAQS under the deadlines established by the CAA.

In 2002, EPA re-designated New York City as in attainment for CO. The CAA requires that a maintenance plan ensure continued compliance with the CO NAAQS for former non-attainment areas. New York City is also committed to implementing site-specific control measures throughout the city to reduce CO levels, should unanticipated localized growth result in elevated CO levels during the maintenance period.

Manhattan has been designated as a moderate NAA for PM<sub>10</sub>. On December 17, 2004, EPA took final action designating the five New York City counties, Nassau, Suffolk, Rockland, Westchester, and Orange counties as a PM<sub>2.5</sub> non-attainment area under the CAA due to exceedance of the annual average standard. New York State has submitted a draft SIP to EPA, dated April 2008, designed to meet the annual average standard by April 8, 2010, which will be finalized after public review.

As described above, EPA has revised the 24-hour average PM<sub>2.5</sub> standard. In October 2009 EPA finalized the designation of the New York City Metropolitan Area as nonattainment with the 2006 24-hour PM<sub>2.5</sub> NAAQS, effective in November 2009. The nonattainment area includes the same 10-county area EPA designated as nonattainment with the 1997 annual PM<sub>2.5</sub> NAAQS. By November 2012 New York will be required to submit a SIP demonstrating attainment with the 2006 24-hour standard by November 2014 (EPA may grant attainment date extensions for up to five additional years).

Nassau, Rockland, Suffolk, Westchester, Lower Orange County Metropolitan Area (LOCMA), and the five New York City counties had been designated as a severe non-attainment area for ozone (1-hour average standard). In November 1998, New York State submitted its *Phase II Alternative Attainment Demonstration for Ozone*, which was finalized and approved by EPA effective March 6, 2002, addressing attainment of the 1-hour ozone NAAQS by 2007. These SIP revisions included additional emission reductions that EPA requested to demonstrate attainment of the standard, and an update of the SIP estimates using the latest versions of the mobile source emissions model, MOBILE6.2, and the nonroad emissions model, NONROAD—which have

been updated to reflect current knowledge of engine emissions and the latest mobile and nonroad engine emissions regulations.

On April 15, 2004, EPA designated these same counties as moderate non-attainment for the 8-hour average ozone standard which became effective as of June 15, 2004 (LOCMA was moved to the Poughkeepsie moderate non-attainment area for 8-hour ozone). EPA revoked the 1-hour standard on June 15, 2005; however, the specific control measures for the 1-hour standard included in the SIP are required to stay in place until the 8-hour standard is attained. The discretionary emissions reductions in the SIP would also remain but could be revised or dropped based on modeling. On February 8, 2008, NYSDEC submitted final revisions to a new SIP for the ozone to EPA. NYSDEC has determined that achieving attainment for ozone before 2012 is unlikely, and has therefore made a request for a voluntary reclassification of the New York nonattainment area as “serious”.

In March 2008 EPA strengthened the 8-hour ozone standards. SIPs will be due three years after the final designations are made. On March 12, 2009, NYSDEC recommended that the counties of Suffolk, Nassau, Bronx, Kings, New York, Queens, Richmond, Rockland, and Westchester be designated as a non-attainment area for the 2008 ozone NAAQS (the NYMA MSA nonattainment area). The EPA has proposed to determine that the Poughkeepsie nonattainment area (Dutchess, Orange, Ulster, and Putnam counties) has attained the one-hour and eight-hour National Ambient Air Quality Standards for ozone.

New York City is currently in attainment of the annual-average NO<sub>2</sub> standard. EPA has promulgated a new 1-hour standard, but it is unclear at this time what the City’s attainment status will be due to the need for additional near road monitoring required for the new standard. The existing monitoring data indicates background concentrations below the standard. It is likely that New York City will be designated as “unclassifiable” at first (January 2012), and then classified once three years of monitoring data are available (2016 or 2017).

New York City is currently in attainment of the SO<sub>2</sub> standards. EPA has proposed to replace the current standards with a new 1-hour standard. Bronx, Chautauqua, and Suffolk counties are the only counties in NY State currently within the proposed range of the standard and the status of those areas will be determined based on the level established in the final standard. Concentrations in all other areas are below the proposed range.

## **E. METHODOLOGY FOR PREDICTING POLLUTANT CONCENTRATIONS**

This section presents the methodologies, data, and assumptions used to conduct the air quality analyses for the proposed project. The analysis followed the approved Air Quality Modeling Protocol with the following changes:

- The facility is proposing to install and operate only two 7.5 MW CGTs instead of three 7.5 MW CGTs as originally proposed in the modeling protocol.
- There will be a total of two stacks; each turbine would have an individual stack.
- The cooling tower has been removed from the design and is no longer being considered in the analysis.

### LAND USE

The U.S. Environmental Protection Agency (EPA) recommends the use of the Auer Meteorological Land Use Classification System (Auer 1978)<sup>1</sup> to determine “meteorologically significant” land cover characteristics. The Auer methodology identifies land by use and proportion of vegetative cover. Auer concluded that certain types of land use can create surface characteristics of an urban area as it pertains to urban meteorology. The lack of evaporating surfaces in these “urban” land uses differ from rural areas. Rural areas are characterized by a dominance of vegetative cover such as grassed areas, woodland, and undeveloped vegetated areas and water. The abundance of vegetation in rural areas allows the cooling effect of evaporation, in combination with increased radiational cooling, to influence the local meteorology.

Existing land use within the study area was surveyed in accordance with the methodology recommended by Auer. Within a 3 kilometer radius of the site, urban land uses comprise 57 percent of the study area. The remaining 43 percent of the land use surrounding the site is rural, 37 percent of which is water. Therefore, urban dispersion coefficients were used in the air quality modeling analysis. Figure D-1 presents the land uses.

### DISPERSION MODEL

Dispersion modeling for the proposed facility was performed using the EPA/AMS AERMOD dispersion model.<sup>2</sup> The AERMOD model was designed as a replacement to the ISCST3 model by EPA. AERMOD is a state-of-the-art dispersion model, applicable to rural and urban areas, flat and complex terrain, surface and elevated releases, and multiple sources (including point, area, and volume sources). AERMOD is a steady-state plume model that incorporates current concepts about flow and dispersion in complex terrain, including updated treatments of the boundary layer theory, understanding of turbulence and dispersion, and includes handling of terrain interactions.

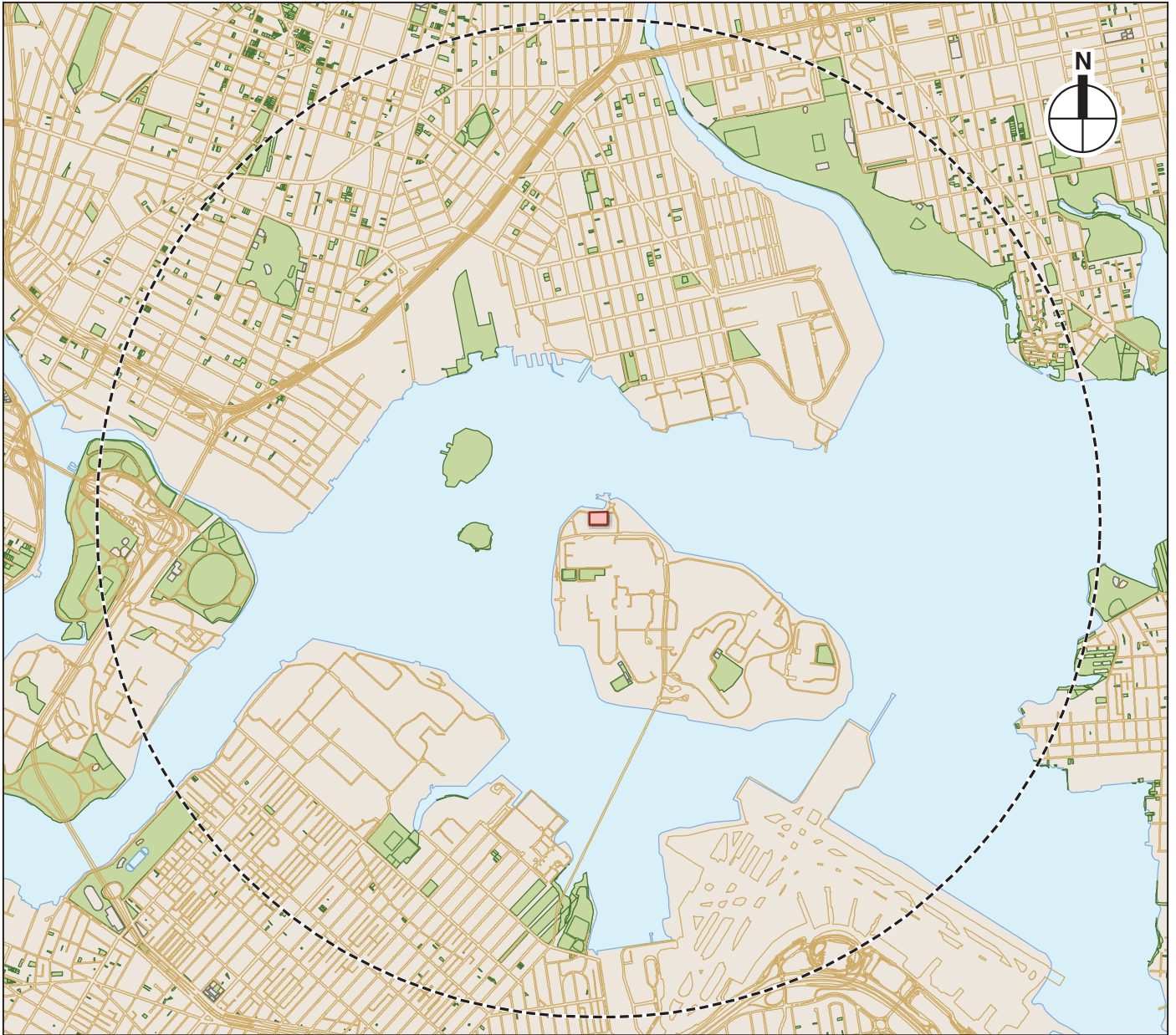
The AERMOD model calculates pollutant concentrations from one or more points (e.g., exhaust stacks) based on hourly meteorological data, and has the capability to calculate pollutant concentrations at locations where the plume from the exhaust stack is affected by the aerodynamic wakes and eddies (downwash) produced by nearby structures. The analyses of potential impacts from exhaust stacks were made assuming stack tip downwash, with and without building downwash, and with routines for processing averages when there are calm winds or missing meteorological data.






The AERMOD model also incorporates the algorithms from the PRIME model, which is designed to predict impacts in the “cavity region” (i.e., the area around a structure which under certain conditions may affect an exhaust plume, causing a portion of the plume to become entrained in a recirculation region). The Building Profile Input Program (BPIP) program for the PRIME model (BPIPRM) was used to determine the projected building dimensions modeling with the building downwash algorithm enabled. The modeling of downwash from sources accounts for all obstructions within a radius equal to five obstruction heights of the buildings.

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<sup>1</sup> *Correlation of Land Use and Cover with Meteorological Anomalies* (August H. Auer Jr., Journal of Applied Meteorology, Vol.17, 1978).

<sup>2</sup> *EPA, AERMOD: Description Of Model Formulation, 454/R-03-004, September 2004; and EPA, User's Guide For The AMS/EPA Regulatory Model AERMOD, 454/B-03-001, September 2004 and Addendum December 2006.*



-  Proposed Cogeneration Facility (Approximate Location)
-  Study Area Boundary (3 kilometer perimeter)
-  "Rural" Land Uses within Study Area = 43% of Study Area
-  "Urban" Land Uses within Study Area = 57% of Study Area
-  Water Surfaces (classified "Rural") = 37% of Study Area

0 1 KILOMETER  
SCALE



## GOOD ENGINEERING PRACTICE STACK HEIGHT

Turbulent wakes downwind of nearby structures can affect pollutant dispersion from stack releases in the vicinity of those structures. The effect is called “building downwash” and generally increases maximum ground level concentrations of the pollutant. The CGT stack will be evaluated to assess whether downwash from nearby structures can affect dispersion. The EPA provides guidance for the use of Good Engineering Practice (GEP) in determining stack heights and determining if building downwash is likely to occur at the proposed stack height. GEP stack height is defined by the EPA as “the height necessary to ensure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, and wakes that may be created by the source itself, or nearby structures, or nearby terrain ‘obstacles.’” EPA provides the following formula for calculating a GEP stack height:

$$H_G = H_B + 1.5L$$

where:

$H_G$  = the GEP stack height,

$H_B$  = the height of any nearby building or building tier (where nearby means located within a distance of  $5 \times L$  of the stack), and

$L$  = the lesser of  $H_B$  and the projected width (PW) as viewed from the stack to the building.

Guidelines for the determination of GEP stack height were followed in order to provide assurance that efforts to minimize air quality impacts without limiting the proposed facility’s ability to generate electricity are achieved in practice. Direction specific building dimensions for input to the AERMOD dispersion model were calculated for the proposed facility using the EPA’s BPIP program (described in the *User’s Guide to the Building Profile Input Program*, EPA, Research Triangle Park, North Carolina (<http://www.epa.gov/scram001/>)). If the stack is below the determined GEP stack height based on BPIP output files, the dispersion modeling will be performed using direction-specific downwash parameters. The proposed CGTs have a stack height of 150 feet. The GEP analysis determined that the proposed stack heights are below the GEP stack height of 213 feet.

## METEOROLOGICAL DATA

A five-year meteorological data set for the dispersion modeling was selected in accordance with EPA guidelines. This data set, consisting of the latest five years of concurrent meteorological data available from a nearby monitoring station, was utilized for the refined modeling of the proposed plant.

For this analysis, hourly surface meteorological data from LaGuardia Airport (2003-2007) and upper air data from the Brookhaven, New York station (2003-2007) was utilized. La Guardia Airport is located approximately 2 miles south of the site. These stations were selected as they are considered to be temporally and spatially representative of conditions in the area of the site.

The AERMOD urban option was used in accordance with the procedures in the *AERMOD Implementation Guide*, revised 1/9/08. The AERMOD Implementation Guide was also used to determine the surface characteristics for the LaGuardia NWS site. The surface roughness length was based on an inverse-distance weighted geometric mean for a default upwind distance of 1 kilometer relative to the measurement site. The surface roughness length was varied by sector to account for variations in land cover near the measurement site, with sector widths of 30 degrees. The Bowen ratio was based on an unweighted geometric mean (i.e., no direction or distance dependency) for a representative domain, with a default domain defined by a 10 km x 10 km region centered on the measurement site. The albedo was based on an unweighted arithmetic mean for the same representative domain as the Bowen ratio, with a default domain defined by a

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10 km x 10 km region centered on the measurement site. Data for the albedo, Bowen ratio, and surface roughness length was taken from the EPA's *AERSURFACE User's Guide*, 1/2008.

### RECEPTOR DATA

Receptor data, including ground level elevations and coordinates were input to the AERMOD model. Three uniform Cartesian receptor grids were utilized, consisting of a coarse grid with receptor spacing of 1,000 meters extending out from 5 kilometers (km) to 10 km in all directions from the proposed plant; a medium grid with 500 meter receptor spacing, extending out from 2 km to 5 km and a fine grid with 100 meter receptor spacing, extending from the center of the proposed plant out to 2 km. Offsite elevated discrete receptors, including balconies and rooftops, within 2 km of the source were also modeled. 7-Minute digital elevation model (DEM) files were obtained for the receptor grid area. A terrain pre-processor program was used to determine the representative elevations for each receptor.

### LOAD AND AMBIENT TEMPERAURE SCREENING

Operation of the proposed plant would vary on a daily basis. A screening analysis was performed to determine the worst-case operating load and ambient temperature for operation of the turbines, duct burners, and HRSGs. Table D-6 presents the short-term load and ambient temperature cases that were modeled in the screening analysis. Cases 1 through 3 had 2 turbines and 2 duct burners operating at 100% load, using stack parameters at three ambient temperatures (0°, 59°, and 100°F). The case that had the maximum predicted impacts (0°F ambient temperature) was then modeled in cases 4 through 6, which then determined the turbine worst-case load condition (100%, 75%, or 50%). The worst-case operating condition was used in subsequent modeling analyses.

Since annual emissions are based on 8,760 hours per year of continuous operation, an annual load analysis was not performed since the relative impacts between loads would be the same under the same load conditions as the short-term analysis. Per EPA/NYSDEC guidance, annual conditions were modeled assuming maximum turbine and duct burner capacity and 100 percent load conditions.

**Table D-6**  
**Short-term Screening Analysis Cases**

| Case | No. of Turbines | % Load Turbines | No. of Duct burners | % Load Duct Burners | Ambient Temp.(°F) |
|------|-----------------|-----------------|---------------------|---------------------|-------------------|
| 1    | 2 turbines      | 100             | 2 duct burners      | 100                 | 0                 |
| 2    | 2 turbines      | 100             | 2 duct burners      | 100                 | 59                |
| 3    | 2 turbines      | 100             | 2 duct burners      | 100                 | 100               |
| 4    | 2 turbines      | 100             | None                | 0                   | 0                 |
| 5    | 2 turbines      | 75              | None                | 0                   | 0                 |
| 6    | 2 turbines      | 50              | None                | 0                   | 0                 |

**Notes:**  
The worst-case ambient temperature case was determined from cases 1 – 3. The worst-case load was determined from cases 4 – 6. The worst-case ambient temperature/load condition was modeled for all pollutants.

The stack exhaust parameters and emission rates for the CGTs for all the load and ambient temperature scenarios are provided in Table D-7. Note that the emission rates provided in Table D-7 and subsequent impacts reflect NO<sub>x</sub> outlet concentrations of 15 ppm from the turbines and 17 ppm from the duct burners. The cogeneration plant configuration would actually have NO<sub>x</sub> outlet concentrations of 12 ppm from the turbines and 0.07 lbs/mmBtu from the duct burners, allowing for slightly lower emissions and modeled impacts.

**Table D-7**  
**Emissions and Stack Parameters**

| Parameter                      |               | 1          | 2       | 3       | 4       | 5       | 6       |        |
|--------------------------------|---------------|------------|---------|---------|---------|---------|---------|--------|
| Ambient Temperature (°F)       |               | 0          | 59      | 100     | 0       | 0       | 0       |        |
| Load                           |               | 100%       | 100%    | 100%    | 100%    | 75%     | 50%     |        |
| Heat Input (MMBtu/hr, HHV)     |               | 95.7       | 82.7    | 71.9    | 95.7    | 77.7    | 63      |        |
| Combustion Turbine Emissions   | Lb/MMBtu, HHV | NOx        | --      | --      | --      | --      | --      | --     |
|                                |               | CO         | --      | --      | --      | --      | --      | --     |
|                                |               | PM10/PM2.5 | 0.019   | 0.019   | 0.019   | 0.019   | 0.019   | 0.019  |
|                                |               | SO2        | --      | --      | --      | --      | --      | --     |
|                                | Lb/hr         | NOx        | 4.80    | 4.50    | 4.20    | 4.80    | 4.70    | 4.90   |
|                                |               | CO         | 4.80    | 4.50    | 4.30    | 4.80    | 2.80    | 5.00   |
|                                |               | VOC        | 0.28    | 0.26    | 0.25    | 0.28    | 0.27    | 0.28   |
|                                |               | PM10/PM2.5 | 1.82    | 1.57    | 1.37    | 1.82    | 1.48    | 1.20   |
|                                | g/s           | SO2        | 0.30    | 0.30    | 0.20    | 0.30    | 0.30    | 0.20   |
|                                |               | NOx        | 0.6048  | 0.5670  | 0.5292  | 0.6048  | 0.5922  | 0.6174 |
|                                |               | CO         | 0.6048  | 0.5670  | 0.5418  | 0.6048  | 0.3528  | 0.6300 |
|                                |               | VOC        | 0.0353  | 0.0328  | 0.0315  | 0.0353  | 0.0340  | 0.0353 |
|                                |               | PM10/PM2.5 | 0.2291  | 0.1980  | 0.1722  | 0.2291  | 0.1859  | 0.1509 |
| SO2                            | 0.0378        | 0.0378     | 0.0252  | 0.0378  | 0.0378  | 0.0252  |         |        |
| Duct Burner                    |               | Y          | Y       | Y       | N       | N       | N       |        |
| Load                           |               | 100%       | 100%    | 100%    | 0%      | 0%      | 0%      |        |
| Fuel Flow (lbs/hr)             |               | 1,663      | 1,796   | 1,776   | 0       | 0       | 0       |        |
| Heat Input (MMBtu/hr, HHV)     |               | 38.0       | 40.9    | 40.5    | 0.0     | 0.0     | 0.0     |        |
| Duct Burner Emissions          | Lb/MMBtu, HHV | NOx        | 0.080   | 0.080   | 0.080   | 0.080   | 0.080   | 0.080  |
|                                |               | CO         | 0.080   | 0.080   | 0.080   | 0.080   | 0.080   | 0.080  |
|                                |               | VOC        | 0.0045  | 0.0045  | 0.0045  | 0.0045  | 0.0045  | 0.0045 |
|                                |               | PM10/PM2.5 | 0.010   | 0.010   | 0.010   | 0.010   | 0.010   | 0.010  |
|                                |               | SO2        | --      | --      | --      | --      | --      | --     |
|                                | Lb/hr         | NOx        | 3.04    | 3.27    | 3.24    | 0.00    | 0.00    | 0.00   |
|                                |               | CO         | 3.04    | 3.27    | 3.24    | 0.00    | 0.00    | 0.00   |
|                                |               | VOC        | 0.17    | 0.18    | 0.18    | 0.00    | 0.00    | 0.00   |
|                                |               | PM10/PM2.5 | 0.38    | 0.41    | 0.40    | 0.00    | 0.00    | 0.00   |
|                                | g/s           | SO2        | 0.20    | 0.10    | 0.20    | 0.00    | 0.00    | 0.00   |
|                                |               | NOx        | 0.3825  | 0.4124  | 0.4080  | 0.0000  | 0.0000  | 0.0000 |
|                                |               | CO         | 0.3825  | 0.4124  | 0.4080  | 0.0000  | 0.0000  | 0.0000 |
|                                |               | VOC        | 0.0215  | 0.0232  | 0.0229  | 0.0000  | 0.0000  | 0.0000 |
| PM10/PM2.5                     |               | 0.0478     | 0.0516  | 0.0510  | 0.0000  | 0.0000  | 0.0000  |        |
| SO2                            | 0.0252        | 0.0126     | 0.0252  | 0.0000  | 0.0000  | 0.0000  |         |        |
| Stack Height (ft)              |               | 150        | 150     | 150     | 150     | 150     | 150     |        |
| Stack Exhaust Temperature (°F) |               | 275        | 292     | 275     | 314     | 312     | 305     |        |
| Stack Exhaust Flow (lbs/hr)    |               | 231,691    | 213,417 | 190,389 | 230,028 | 187,520 | 145,948 |        |
| Stack Exhaust Flow (ACFM)      |               | 72,715     | 68,529  | 59,752  | 76,025  | 61,816  | 47,675  |        |
| Stack Exhaust Diameter (feet)  |               | 5          | 5       | 5       | 5       | 5       | 5       |        |
| Stack Exhaust Velocity (ft/s)  |               | 61.7       | 58.2    | 50.7    | 64.5    | 52.5    | 40.5    |        |
| Stack Exhaust Emissions        | Lb/hr         | NOx        | 7.84    | 7.77    | 7.44    | 4.80    | 4.70    | 4.90   |
|                                |               | CO         | 7.84    | 7.77    | 7.54    | 4.80    | 2.80    | 5.00   |
|                                |               | VOC        | 0.45    | 0.44    | 0.43    | 0.28    | 0.27    | 0.28   |
|                                |               | PM10/PM2.5 | 2.20    | 1.98    | 1.77    | 1.82    | 1.48    | 1.20   |
|                                | g/s           | SO2        | 0.50    | 0.40    | 0.40    | 0.30    | 0.30    | 0.20   |
|                                |               | NOx        | 0.9873  | 0.9795  | 0.9372  | 0.6048  | 0.5922  | 0.6174 |
|                                |               | CO         | 0.9873  | 0.9795  | 0.9498  | 0.6048  | 0.3528  | 0.6300 |
|                                |               | VOC        | 0.0568  | 0.0560  | 0.0545  | 0.0353  | 0.0340  | 0.0353 |
|                                |               | PM10/PM2.5 | 0.2769  | 0.2496  | 0.2232  | 0.2291  | 0.1859  | 0.1509 |
|                                |               | SO2        | 0.0630  | 0.0504  | 0.0504  | 0.0378  | 0.0378  | 0.0252 |

**EXISTING EMERGENCY GENERATORS**

There are existing emergency diesel-fueled generators scattered throughout Rikers Island to serve facilities in the event of the loss of utility electrical power. The emergency generators are routinely tested periodically for a short period to ensure their availability and reliability in the event of a sudden loss in utility electrical power. Emergency generators are exempt from NYSDEC air permitting requirements. Potential air quality impacts from the emergency generators are insignificant, since they would be used only for testing purposes outside of an actual emergency use, and individual generators would be tested at different times. Nineteen of the emergency generators are currently permitted to be used in a PLM Program. Operation of these engines is not expected to change with the proposed project.

**BACKGROUND AMBIENT AIR QUALITY**

To estimate the maximum expected total pollutant concentrations at a given receptor location, the localized impacts must be added to background values that account for existing pollutant concentrations from other sources (see Table D-8). The background levels were based on concentrations monitored at the nearest NYSDEC ambient air monitoring stations. The measured background concentrations are added to the predicted contributions from the modeled sources to determine the maximum predicted total pollutant concentrations for comparison to the NAAQS. The I.S.52 School monitoring station in the Bronx is used for background data for SO<sub>2</sub>, PM<sub>10</sub>, and NO<sub>x</sub>. CO background data is obtained from the Botanical Gardens monitoring station. For short-term averaging periods, the second-highest background concentration is used. The modeling analysis conservatively assumed that the maximum background concentrations occur on all days, regardless of when maximum impacts are predicted to occur.

**Table D-8  
Background Pollutant Concentrations**

| <b>Pollutant</b>              | <b>Averaging Period</b> | <b>Monitoring Station</b> | <b>Background Concentration (µg/m<sup>3</sup>)</b> | <b>Ambient Standard (µg/m<sup>3</sup>)</b> |
|-------------------------------|-------------------------|---------------------------|--|--|
| SO <sub>2</sub>               | Annual                  | IS52                      | 29   | 80   |
| SO <sub>2</sub>               | 24 hour                 | IS52                      | 133  | 365  |
| SO <sub>2</sub>               | 3 hour                  | IS52                      | 209  | 1300                                       |
| NO <sub>2</sub> <sup>3</sup>  | 1 hour                  | IS52                      | 132.3  | 188  |
| NO <sub>2</sub>               | Annual                  | IS 52                     | 56.4   | 100  |
| PM <sub>10</sub> <sup>1</sup> | 24 hour                 | IS 52                     | 48   | 150  |
| CO <sup>2</sup>               | 8 hour                  | Botanical Gardens         | 2.2  | 9  |
| CO <sup>2</sup>               | 1 hour                  | Botanical Gardens         | 3.5  | 35   |

**Notes:**  
<sup>1</sup> The background concentration for PM<sub>10</sub> is based on only one year of available data. All other pollutants are based on five years of available data.  
<sup>2</sup> Background Concentration amounts for CO are given in parts per million (ppm).  
 Background concentrations for short-term standards represent second-highest concentrations.  
<sup>3</sup> Background presented is the 8th highest daily 1-hour average of recent 3 years (2006- 2008).  
**Sources:** 2003-2007 Annual New York State Air Quality Report, Ambient Air Monitoring System, NYSDEC.

## STARTUP/SHUTDOWN ANALYSIS

During start-up and shutdown, the maximum short-term NO<sub>x</sub> and CO concentrations could increase due to the higher emissions from the CGTs under these conditions. Therefore, the potential impacts associated with start-up and shutdown were analyzed.

For NO<sub>2</sub>, the EPA has established a new 1-hour average NO<sub>2</sub> standard of 0.100 ppm, effective April 12, 2010, in addition to the current annual standard. The statistical form is the 3-year average of the 98th percentile of daily maximum 1-hour average concentration in a year. NO<sub>2</sub>, and more generally, NO<sub>x</sub>, are precursors of ozone, which is also regulated by a 1-hour and 8-hour NAAQS. In addition, some states have adopted short-term standards or guideline concentrations for NO<sub>2</sub>. For example, California has established a 1-hour ambient air quality standard equivalent to 470 µg/m<sup>3</sup>, while Massachusetts has a guideline of 320 µg/m<sup>3</sup>. Therefore, short-term impacts of NO<sub>2</sub> were evaluated during start-up and shutdown. The 1-hour and 8-hour CO impacts were also evaluated for comparison to the NAAQS. Emissions during start-up and shut-down are prorated and compared to the 1-hour and 8-hour NAAQS.

Emissions of NO<sub>x</sub> are proposed to be limited in the air quality permit to a maximum of 61.01 tons per year. This means that even if emissions during some hours increase, the total hours of operation must be limited to ensure that annual emissions do not exceed the 61.01 tons per year limit, and this limit is not affected by the number of startups and shutdowns. Therefore, an analysis of the effect of startups and shutdowns on annual ambient NO<sub>2</sub> concentrations is not necessary since, on an annual basis, the impacts associated with modeling startups and shutdowns would be negligible.

## DETERMINATION OF SIGNIFICANT IMPACTS

Although the proposed project is not subject to PSD review, the modeling analysis was performed to determine if the emissions from the proposed facility would result in significant air quality impacts. The highest concentration from each receptor was determined for each pollutant and compared to EPA defined SILs and PSD increments. In addition, impacts of PM<sub>2.5</sub> were compared to the thresholds specified in the NYSDEC PM<sub>2.5</sub> Interim Guidance criteria. If any of the maximum modeled concentrations for the criteria pollutants are greater than the SILs, the area of impact would be determined for each pollutant and/or averaging period. The area of impact corresponds to the maximum distance from the source at which calculated concentrations fall below the SILs. A multi-source analysis (cumulative impacts from other off-site major sources) would then be performed and compared with the NAAQS. This cumulative analysis would include facility emissions from any simultaneous operations with existing boilers and testing of the emergency generators.

## F. ANALYSIS RESULTS

The maximum predicted concentrations from the modeling analysis were compared to the EPA's SILs and PSD increments. In addition, for comparative purposes, the proposed project's modeled concentrations were also added to the ambient background concentrations and compared to the NAAQS. The results of this analysis are presented in Table D-9 for NO<sub>2</sub>, PM<sub>10</sub>, SO<sub>2</sub> and CO.

NO<sub>x</sub> and CO impacts from start-up and shut-down operations are presented in Table D-10 and compared to the 1-hour California NO<sub>x</sub> ambient air quality equivalent standard, the 1-hour Massachusetts NO<sub>x</sub> guideline concentration, and the 1-hour and 8-hour CO NAAQS.

**Table D-9  
Maximum Modeled Criteria Pollutant Concentrations  
Steady-State Conditions**

| Modeled Pollutant | Averaging Period      | Maximum Impact ( $\mu\text{g}/\text{m}^3$ ) | SILs ( $\mu\text{g}/\text{m}^3$ ) | PSD Increment ( $\mu\text{g}/\text{m}^3$ ) | Background Concentration ( $\mu\text{g}/\text{m}^3$ ) | Total Concentration ( $\mu\text{g}/\text{m}^3$ ) | NAAQS ( $\mu\text{g}/\text{m}^3$ ) |
|-------------------|-----------------------|---|-----------------------------------|--|---|--|------------------------------------|
| NO <sub>2</sub>   | 1-Hour <sup>(2)</sup> | 12.08                                       |                                   |  | 132.3   | 144.38   | 188                                |
|                   | Annual                | 0.43  | 1                                 | 25   | 56.4  | 56.8   | 100                                |
| SO <sub>2</sub>   | 3-Hour                | 0.70  | 25                                | 512  | 209   | 209.7  | 1,300                              |
|                   | 24-Hour               | 0.29  | 5                                 | 91   | 133   | 133.3  | 365                                |
|                   | Annual                | 0.03  | 1                                 | 20   | 29  | 29.0   | 80                                 |
| CO                | 1-Hour                | 12.04                                       | 2,000                             | --   | 4,074   | 4,086  | 40,000                             |
|                   | 8-Hour                | 8.16  | 500                               | --   | 2,561   | 2,569  | 10,000                             |
| PM <sub>10</sub>  | 24-Hour               | 1.29  | 5                                 | 30   | 48  | 49.3   | 150                                |
|                   | Annual                | 0.12  | 1                                 | 17   | (1)   | (1)  | (1)                                |

**Notes:**

(1) The PM<sub>10</sub> annual NAAQS has been revoked.  
 (2) The NAAQS is based on the 98th percentile (8th highest) of the annual distribution of the daily 1-hour concentrations, however, the increment presented in the table represents the maximum modeled 1-hour concentration assuming all of the NO<sub>x</sub> is converted to NO<sub>2</sub> which is very conservative. Since the maximum 1-hour increment is already less than the NAAQS, further analysis to determine the 98th percentile of the annual distribution of the daily maximum 1-hour concentrations was not warranted.

**Table D-10  
Maximum Modeled Criteria Pollutant Concentrations  
During Start-up and Shut-Down Conditions**

| Modeled Pollutant | Averaging Period      | Maximum Impact - Start-up ( $\mu\text{g}/\text{m}^3$ ) | Maximum Impact - Shut-down ( $\mu\text{g}/\text{m}^3$ ) | Massachusetts Guideline Conc. ( $\mu\text{g}/\text{m}^3$ ) | California AAQS equivalent ( $\mu\text{g}/\text{m}^3$ ) | NAAQS ( $\mu\text{g}/\text{m}^3$ ) |
|-------------------|-----------------------|--|---|--|---|------------------------------------|
| NO <sub>2</sub>   | 1-hour <sup>(1)</sup> | 13.30  | 13.66   | 320  | 470   | 188                                |
| CO                | 1-Hour                | 124.43   | 155.54  | --   | --  | 40,000                             |
| CO                | 8-Hour                | 17.69  | 20.34   | --   | --  | 10,000                             |

**Notes:**

(1) The NAAQS is based on the 98th percentile (8th highest) of the annual distribution of the daily 1-hour concentrations, however, the increment presented in the table represents the maximum modeled 1-hour concentration assuming all of the NO<sub>x</sub> is converted to NO<sub>2</sub> which is very conservative. Since the maximum 1-hour increment is already less than the NAAQS, further analysis to determine the 98th percentile of the annual distribution of the daily maximum 1-hour concentrations was not warranted.

Impacts from the proposed project were predicted to be below the SILs and the PSD Increments and well below the NAAQS. In addition, start-up and shut-down NO<sub>x</sub> and CO impacts are also below comparative 1-hour and 8-hour standards. Therefore, the proposed project would not result in any significant adverse air quality impacts.

Maximum concentrations of PM<sub>2.5</sub> from the proposed project were estimated. Impacts were examined and compared to the City's interim guidance criteria for PM<sub>2.5</sub>. The maximum predicted 24-hour and localized annual average incremental PM<sub>2.5</sub> concentrations are presented in Table D-11.

The results show that the predicted annual and daily (24-hour) PM<sub>2.5</sub> increments are below the updated interim guidance criteria, and therefore the proposed project would not result in significant adverse PM<sub>2.5</sub> impacts.

**Table D-11**  
**Maximum Predicted Incremental 24-Hour and**  
**Annual Average PM<sub>2.5</sub> Concentrations**

| <b>Averaging Period</b>             | <b>Impact<br/>(<math>\mu\text{g}/\text{m}^3</math>)</b> | <b>Interim Guidance<br/>Thresholds (<math>\mu\text{g}/\text{m}^3</math>)</b> |
|-------------------------------------|---|--|
| Localized 24-Hour Increment         | 1.29  | 2.0  |
| Localized Annual Increment          | 0.12  | 0.3  |
| Neighborhood Scale Annual Increment | 0.05  | 0.1  |

\*

**A. INTRODUCTION**

This environmental justice analysis has been prepared to identify and address any potential disproportionate adverse impacts on minority or low-income populations that could result from the proposed project. The need for performing an environmental justice analysis is related to the establishment of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations* (February 11, 1994). Certain state agencies, such as the New York State Department of Environmental Conservation (NYSDEC), have developed their own policies for incorporating environmental justice concerns into environmental review. NYSDEC's environmental justice policy is provided in *Commissioner Policy-29 Environmental Justice and Permitting* (CP-29). CP-29 was issued on March 19, 2003 to address environmental justice concerns and ensure community participation in the NYSDEC environmental permit review process and the NYSDEC application of the State Environmental Quality Review Act. CP-29 is intended to encourage meaningful public participation by minority or low-income communities in the environmental review process and to assist NYSDEC in addressing any disproportionate adverse impacts on minority and low-income communities.

Pursuant to CP-29, NYSDEC reviews issues related to environmental justice prior to issuing permits or approvals. This analysis of environmental justice has been prepared pursuant to CP-29 to address any potential environmental justice issues related to the proposed cogeneration plant and feeder lines at Rikers Island. In order to provide the information necessary for such NYSDEC review, this document discusses the potential effects of the proposed project on minority and low-income residents in accordance with CP-29, and determines whether these populations would be disproportionately affected by adverse environmental impacts resulting from the proposed project.

**METHODOLOGY**

As set forth in CP-29, "Environmental justice means the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences."

This analysis was prepared following the methodology set forth in CP-29. This methodology involves (1) identifying potential adverse environmental impacts and the area to be affected (i.e., establishing a study area); (2) determining whether potential adverse environmental impacts are likely to affect a potential environmental justice area (i.e., whether low-income and/or minority populations are present in the study area); (3) identifying the potential for cumulative environmental burdens in the study area; and (4) identifying whether potential adverse environmental impacts of the proposed action would disproportionately affect low-income and minority populations. Projects that are seeking permits from NYSDEC and have environmental



## **Rikers Island Cogeneration Plant**

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justice areas must also seek public participation from the affected community. A separate public participation plan has been developed for the proposed project, the key details of which are summarized below. In addition, this analysis identifies other environmental burdens within the environmental justice study area.

### *ESTABLISH STUDY AREA*

The study area for this environmental justice analysis was defined to include the area where any potential impacts resulting from the proposed project could occur. To be conservative, the environmental justice study area was defined as the area within 1 mile of the proposed cogeneration facility because this is the project element for which air permits are being sought. The areas within 1 mile of the proposed feeder lines was not included in the environmental justice study area because this use would not generate air emissions, nor would it have the potential to result in significant adverse impacts on areas beyond the project site. The 1 mile study area around the proposed cogeneration facility includes Rikers Island, a small portion of the Hunts Point neighborhood of the South Bronx, and a small portion of the Astoria neighborhood of Queens (see Figure E-1). The portion of Queens that falls within the 1 mile study area is an industrial area that includes only the existing Poletti Power Plant and does not have any population. Therefore it is not considered in the environmental justice analysis.

### *IDENTIFY POPULATION OF CONCERN*

The next step in the analysis is to determine whether low-income or minority populations (“populations of concern”) are present in the study area. Following NYSDEC’s methodology to identify minority and low-income populations within the study area, demographic information from the 2000 Census was used. The U.S. Census Bureau collects information using various geographic units such as census tracts, block groups, and blocks. For the purposes of this analysis, demographic data such as population, race, and poverty status were compiled at the block group level within the environmental justice study area. The study area includes five block groups—Census Tract 1, Block Group 9; Census Tract 81, Block Group 1; and Census Tract 97, Block Groups 1, 2, and 3. Figure E-1 depicts the five census block groups in the environmental justice study area.

In addition, data were compiled for the Bronx and New York City as a whole, to allow for a comparison of study area characteristics to a larger reference area.

### *IDENTIFICATION OF MINORITY COMMUNITIES*

NYSDEC’s Policy defines minorities to include Hispanics, African-Americans, Asian Americans and Pacific Islanders, and American Indian or Alaskan natives. In identifying minority residents within the study area, data from the U.S. Census Bureau were used to determine the population characteristics for the study area. The following information was collected for each census tract block group:

- *Data on racial and ethnic characteristics:* The population in each census tract block group in the study area was characterized using the following racial categories provided in the 2000 Census: White, Black, Asian, and “Other.” “Other” includes residents of American Indian, Alaska Native, Native Hawaiian and Other Pacific Islander descent, as well as those respondents who did not identify with any listed racial groups (White, Black, Asian), or who indicated that they are of more than one race defined in the Census. In addition to racial characteristics, the 2000 Census also includes information on Hispanic origin, which is



considered to be an ethnic rather than racial characteristic. People of this ethnic category can be any race.

- *Total percentage of minority population:* Because Hispanic residents may be of any race, people who characterized themselves as White, Black, Asian, and Other in the 2000 Census may be non-Hispanic or Hispanic. To determine the total number of minority residents in each block group, the number of Black (both Hispanic and non-Hispanic), Asian (Hispanic and non-Hispanic), Other (Hispanic and non-Hispanic), and Hispanic Whites were tallied.

According to NYSDEC, a “minority community” is present when 51.1 percent or more of the population is minority.

*IDENTIFICATION OF LOW-INCOME COMMUNITIES*

CP-29 defines a low-income population as a population with an annual income below the poverty threshold as defined by the U.S. Census Bureau. Data were compiled on the percentage of persons in each block group in the study area living below the poverty threshold. CP-29 defines a low-income community to be any area where the low-income population (i.e., percent living below the poverty threshold) is equal to or greater than 23.59 percent of the total.

**B. IDENTIFICATION OF POPULATIONS OF CONCERN IN THE STUDY AREA**

Using the methodology described above, the 1-mile study area around the project site contains a population of concern for environmental justice. As reported in the 2000 Census, more than 51.1 percent of the population in the study area is minority and more than 23.59 percent of the population lives below the poverty level (see Table E-1).

**Table E-1  
Study Area Population and Economic Characteristics**

| Area                           | Population (2000)     |                     |             |                  |             |                |            |                |            |                  |             | Economic Profile (1999) |                                       |
|--------------------------------|-----------------------|---------------------|-------------|------------------|-------------|----------------|------------|----------------|------------|------------------|-------------|-------------------------|---------------------------------------|
|                                | 2000 Total Population | Race and Ethnicity* |             |                  |             |                |            |                |            |                  |             | Total Minority (%)      | Individuals Below Poverty Level (%)** |
|                                |                       | White               | %           | Black            | %           | Asian          | %          | Other          | %          | Hispanic         | %           |                         |                                       |
| Census Tract 1, Block Group 9  | 12,780                | 1,091               | 8.5         | 7,741            | 60.6        | 33             | 0.3        | 472            | 3.7        | 3,443            | 26.9        | 91.5                    | 0.0***                                |
| Census Tract 81, Block Group 1 | 0                     | 0                   | 0.0         | 0                | 0.0         | 0              | 0.0        | 0              | 0.0        | 0                | 0.0         | 0.0                     | 0.0                                   |
| Census Tract 97, Block Group 1 | 60                    | 3                   | 5.0         | 7                | 11.7        | 0              | 0.0        | 6              | 10.0       | 44               | 73.3        | 95.0                    | 100.0                                 |
| Census Tract 97, Block Group 2 | 14                    | 0                   | 0.0         | 5                | 35.7        | 6              | 42.9       | 0              | 0.0        | 3                | 21.4        | 100.0                   | 0.0                                   |
| Census Tract 97, Block Group 3 | 59                    | 3                   | 5.1         | 23               | 39.0        | 0              | 0.0        | 1              | 1.7        | 32               | 54.2        | 94.9                    | 0.0                                   |
| <b>Study Area Total</b>        | <b>12,913</b>         | <b>1,097</b>        | <b>8.5</b>  | <b>7,776</b>     | <b>60.2</b> | <b>39</b>      | <b>0.3</b> | <b>479</b>     | <b>3.7</b> | <b>3,522</b>     | <b>27.3</b> | <b>91.5</b>             | <b>34.8</b>                           |
| <b>Bronx</b>                   | <b>1,332,650</b>      | <b>193,651</b>      | <b>14.5</b> | <b>416,338</b>   | <b>31.2</b> | <b>38,558</b>  | <b>2.9</b> | <b>39,398</b>  | <b>3.0</b> | <b>644,705</b>   | <b>48.4</b> | <b>85.5</b>             | <b>30.7</b>                           |
| <b>New York City</b>           | <b>8,008,278</b>      | <b>2,801,267</b>    | <b>35.0</b> | <b>1,962,154</b> | <b>24.5</b> | <b>780,229</b> | <b>9.7</b> | <b>304,074</b> | <b>3.8</b> | <b>2,160,554</b> | <b>27.0</b> | <b>65.0</b>             | <b>21.2</b>                           |

**Notes:**

- \* The racial and ethnic categories provided are further defined as: White (White alone, not Hispanic or Latino); Black (Black or African American alone, not Hispanic or Latino); Asian (Asian alone, not Hispanic or Latino); Other (American Indian and Alaska Native alone, not Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone, not Hispanic or Latino; Some other race alone, not Hispanic or Latino; Two or more races, not Hispanic or Latino); Hispanic (Hispanic or Latino; Persons of Hispanic origin may be of any race).
- \*\* Percent of individuals with incomes below established poverty level. The U.S. Census Bureau's established income thresholds define poverty level.
- \*\*\* According to census methodology, institutionalized populations, such as the inmates of Rikers Island, are not part of the population for whom poverty status is determined. These inmates are neither poor nor non-poor as defined by the census. Therefore, these residents are not included in the calculation of the percent of study area population that is below the poverty level because they are not part of the census "population for whom poverty status is determined."

**Sources:** U.S. Census Bureau, Census 2000.

## **Rikers Island Cogeneration Plant**

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According to the 2000 Census, the study area has a total population of 12,913 residents, of which approximately 91.5 percent is minority. Black residents are the largest minority group, comprising approximately 60.2 percent of the population in the study area. Thus, the study area meets NYSDEC's definition of a minority community. The minority population is higher than in the Bronx and New York City as a whole.

As shown in Table 1, the 2000 Census reports that approximately 35 percent of the residents in the study area live below the poverty level (compared to approximately 31 percent in the Bronx as a whole). All of the population below the poverty level resides in Census Tract 97, Block Group 2, where 100 percent of the residents are below the poverty level. This block group, and the study area overall, exceeds NYSDEC's 23.59 percent threshold for a low-income community. Therefore, Census Tract 97, Block Group 2 and the study area overall meet NYSDEC's definition of a low-income community.

This calculation does not include the population in Census Tract 1, Block Group 9, because this population includes only the inmates at Rikers Island, which is considered an institutionalized population by the census. According to census methodology, institutionalized populations, such as the inmates of Rikers Island, are not part of the population for whom poverty status is determined. These inmates are neither poor nor non-poor as defined by the census.

### **C. ANALYSIS OF EXISTING ENVIRONMENTAL BURDENS IN THE STUDY AREA**

In accordance with CP-29 guidance, other sources of pollution or facility types similar to the proposed project in the study area must be considered in order to establish the baseline conditions against which project impacts will be assessed. In this case, the proposed project involves the construction of a new cogeneration facility, which would result in new air emissions. Therefore, this section identifies sources of air emissions not related to the proposed project that may be a burden on the community.

Data on air emissions discharges were gathered to assess how the study area may be burdened by the presence of local air discharges and to determine whether the study area is currently disproportionately burdened by air emissions. To make this determination, the U.S. Environmental Protection Agency's (EPA) pollution data contained in its Toxic Release Inventory (TRI) database was reviewed. TRI provides data on emissions or releases for air, surface water, and groundwater discharges. The data provided in TRI generally focuses on major sources of emissions such as power plants, chemical plants, and major manufacturing complexes. The review of the TRI database indicates that there are no TRI sites within the Census block groups that comprise the environmental justice study area.

In addition to TRI, which focuses on major records, data were gathered on total air discharge permits within a distance of 1 mile from the proposed project. These permits cover a much broader range of all regulated air discharge activities, including major sources referenced above, but also minor sources such as dry cleaners, gas stations, and auto body shops. These data for the 1-mile study area were compiled by Toxics Targeting Inc., a service that specializes in such databases. Forty-eight sites within the 1-mile radius are listed as Air Discharge Facilities on the US EPA AIRS Database. Three sites are located on Rikers Island, including the Riker's Island Power Plant, which is located adjacent to the project site. This facility is in violation of emission thresholds of nitrogen dioxide and procedural compliance. Many of the other discharges in the 1-mile study area are concentrated in the manufacturing districts within Hunts Point. Discharges in

this area include gas stations and dry cleaners, which are typical of neighborhoods throughout the city. In addition, a number of the discharges in this area were related to various industrial uses, which are typical of manufacturing zoning districts throughout the city.

Overall, although there are other existing sources of air pollution within the 1-mile study area, these sources do not constitute a disproportionate concentration of air emissions facilities. Many of the air discharge sources are typical of manufacturing areas throughout New York City, and the industrial uses in the area are typical of manufacturing zoning districts in New York City. Furthermore, the proposed project is located across the East River from the vast majority of these air discharge sites. Therefore, these facilities do not have the potential to result in cumulative adverse impacts on the potential environmental justice area when combined with the effects of the proposed project.

#### **D. SUMMARY OF SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS**

The technical analyses in the other attachments of this EAF analyze the potential impacts of the proposed project in combination with conditions expected in the surrounding area in the future without the proposed project, including the existing environmental burdens presented above. These analyses therefore consider the cumulative, or combined, effects of the proposed project together with the baseline condition, which includes other sources of pollution and similar facility types in the study area. This is consistent with the requirements of the NYSDEC's environmental justice policy, which notes that under existing regulations, NYSDEC must consider other sources of pollution or similar facility types in order to establish the baseline conditions against which project impacts will be assessed.

Based on a review of the technical analyses included in this EAF and supplemental studies, the proposed project is not expected to result in any significant adverse impacts. However, there is the potential for some localized adverse effects with respect to air quality and noise, but these effects do not rise to the level of significance. The effects of the proposed project with respect to these technical areas are summarized below.

#### **AIR QUALITY**

Attachment D, "Air Quality," discloses the potential for air quality impacts from the proposed project. The analysis concluded that the proposed project would not result in any significant adverse air quality impacts.

The analysis considered the emissions of carbon monoxide (CO), particulate matter with a diameter less than 10 micrometers and 2.5 micrometers (PM<sub>10</sub> and PM<sub>2.5</sub>, respectively)<sup>1</sup>, sulfur dioxide (SO<sub>2</sub>), and nitrogen dioxide (NO<sub>2</sub>). The proposed project would result in minimal local increases in the emission of these pollutants. The maximum pollutant concentrations from the proposed project would be below the EPA significant impact levels (SILs) and the Prevention of Significant Deterioration (PSD) Increments. The analysis concluded that the maximum concentrations from the proposed project, when added to measured background concentrations, would be below National Ambient Air Quality Standards (NAAQS). In addition, the predicted annual and daily (24-hour) PM<sub>2.5</sub> increments would be below the City's updated interim

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<sup>1</sup> A micrometer is one millionth of a meter, which is approximately 1/100 the width of a human hair.

guidance criteria. Therefore, there would be no significant adverse air quality impacts from the proposed project.

## **NOISE**

As discussed in Attachment F, “Noise,” the proposed project result in changes to ambient noise levels near the project site. However, the proposed project would contain sufficient noise attenuation (i.e., silencers, acoustical enclosures, etc.) to ensure that noise from the proposed cogeneration facility would not result in exceedances of the New York City Noise Code or of the CEQR or NYSDEC noise impact criteria. Therefore, there would be no significant adverse noise impacts as a result of the proposed project.

## **E. CONCLUSIONS ON DISPROPORTIONATE PROJECT IMPACTS**

The study area population is a low-income and minority community, and is a population of concern for environmental justice. As noted above, the proposed project would not result in significant adverse impacts in any of the technical analysis areas, but it does have the potential to result in localized adverse effects with respect to air quality and noise. However, as described above, these localized adverse effects would not rise to the level of significance. This conclusion includes consideration of other sources of air emissions and ambient noise that are located in the area. Therefore, the proposed project would not adversely affect the population of the study area or any other area, and a disproportionate significant adverse impact to an environmental justice community would not occur.

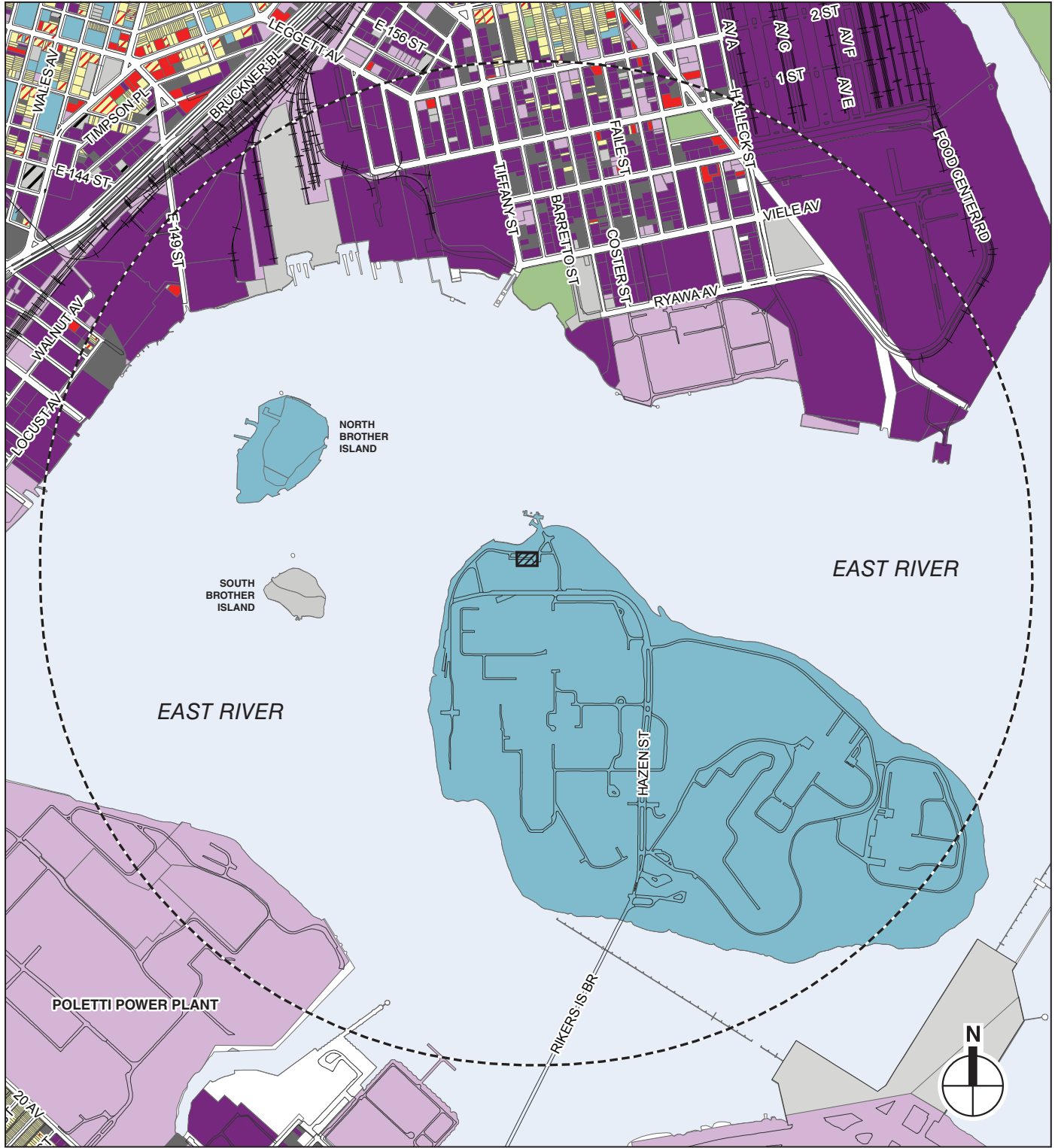
## **F. PUBLIC PARTICIPATION**








The operation of the new cogeneration plant proposed on Rikers Island will require the modification of the facility’s existing Title V State Facility Air Permit from the New York State Department of Environmental Conservation (DEC). The permit modification being sought from DEC for the operation of the cogeneration plant requires that the permit applicant actively solicit community participation in the environmental permit review process.








As noted above, in March 2003, the DEC issued CP-29, to address Environmental Justice concerns and ensure community participation in the DEC environmental permit review process. When a proposed action for which a DEC permit is sought may affect a minority or low-income community (an “environmental justice area”), CP-29 requires applicants for the permit to actively seek public participation throughout the environmental permit review process. Public participation in the DEC environmental permit review process means a program of activities that provides opportunities for stakeholders to be informed about and involved in the review of a proposed action.

In accordance with CP-29, public participation will be executed throughout the environmental permit review process. A public participation plan has been developed and submitted to DEC for its review, in conjunction with the permit application. The key elements of the plan include the following tasks:

- **Identify Affected Area:** The preliminary outreach area for this proposed action has been assumed to lie within a 1-mile radius of the project site, where any effects from the action are most likely to be felt, as shown in Figure E-2. This area will serve as an initial component in identifying stakeholders. Particular emphasis will be placed on identifying



-  Proposed Cogeneration Plant (Approximate Location)
-  Environmental Justice Study Area Boundary One-Mile Perimeter
-  Study Area Block Groups
-  Residential
-  Residential with Commercial Below
-  Hotels
-  Commercial and Office Buildings

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

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SCALE

stakeholders representing the area's minority and low-income populations for outreach during the public participation process.

- **Identify Stakeholders:** The 1-mile outreach area identified above—the area where effects from the action are most likely to be felt—will be used to identify stakeholders. Stakeholders will likely include: residents/neighborhood groups; Community Boards; community leaders; local community, civic and recreational organizations; elected officials; appropriate state and local government personnel; environmental and business groups; and people/organizations who have expressed an interest in similar projects or in projects affecting the same neighborhood or community.
- **Prepare, Distribute, and Post Written Information/Establish Document Repositories:** Written information on the proposed project and the environmental permit review process will be prepared for posting and distribution to the public and other stakeholders. Project materials will be translated into Spanish to the extent possible and practical (some highly technical materials may not be provided). Materials to be prepared would include: a Project Fact Sheet; Meeting Notices; Environmental Justice Analysis (contained herein); Draft Public Participation Plan. In addition, Progress Reports will be prepared for submission to DEC, which will also be made available to the public. These materials will be posted at easily accessible document repositories, such as Community Board offices, local libraries, and government offices. In addition, this information will be distributed to the Rikers Correctional Facility library for inmate and staff review. Fliers and other project materials will be made available to the Rikers Island community (staff, visitors, and inmates) at locations determined by the Department of Correction.
- **Conduct Public Information Meeting:** A public information meeting will be held to provide information about the proposed temporary boiler replacement and permit process. Stakeholders will be invited to participate in the meeting, and NYPA and consultant team staff members will be available to receive and answer questions from the public about the project. It is anticipated that the informational meeting will be held in conjunction with a Bronx Community Board 2 meeting. Only a very small portion of Queens Community Board (CB) 1 lies within the 1-mile radius of the project site (other than Rikers Island itself), and that portion of Queens CB1 has no residential population as it is all industrial and located entirely within the existing Poletti Power Plant property. For this reason, it is not anticipated that a public information meeting in Queens would be necessary. It is envisioned that project information will be provided to Queens CB1, and a project briefing with the district manager will be held. If, after the briefing and reviewing the project information Queens CB1 requests that a public information meeting be held, such a meeting would be scheduled.

With implementation of this public participation plan, the proposed project would be consistent with the public participation requirements of CP-29. \*



## **A. INTRODUCTION**

As part of a noise assessment to determine whether the proposed modifications to the energy plant at Riker's Island would produce significant changes in ambient noise levels and to determine whether noise produced by the modifications would be consistent with applicable noise regulations, a noise monitoring was performed. The noise monitoring was done to determine existing ambient noise levels as a baseline for comparison with future predicted noise levels.

## **B. NOISE FUNDAMENTALS**

Quantitative information on the effects of airborne noise on people is well documented. If sufficiently loud, noise may adversely affect people in several ways. For example, noise may interfere with human activities, such as sleep, speech communication, and tasks requiring concentration or coordination. It may also cause annoyance, hearing damage, and other physiological problems. Although it is possible to study these effects on people on an average or statistical basis, it must be remembered that all the stated effects of noise on people vary greatly with the individual. Several noise scales and rating methods are used to quantify the effects of noise on people. These scales and methods consider such factors as loudness, duration, time of occurrence, and changes in noise level with time.

### **“A”-WEIGHTED SOUND LEVEL (DBA)**

Noise is typically measured in units called decibels (dB), which are ten times the logarithm of the ratio of the sound pressure squared to a standard reference pressure squared. Because loudness is important in the assessment of the effects of noise on people, the dependence of loudness on frequency must be taken into account in the noise scale used in environmental assessments. Frequency is the rate at which sound pressures fluctuate in a cycle over a given quantity of time, and is measured in Hertz (Hz), where 1 Hz equals 1 cycle per second. Frequency defines sound in terms of pitch components. Sometimes noise is filtered or separated into octaves and noise is reported in the geometric mean of the octave frequency range of the band (typically at geometric mean frequencies of 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000 Hz). One of the simplified scales that accounts for the dependence of perceived loudness on frequency is the use of a weighting network known as A-weighting in the measurement system, to simulate response of the human ear. For most noise assessments the A-weighted sound pressure level in units of dBA is used in view of its widespread recognition and its close correlation with perception. In this analysis, all measured noise levels are reported in dBA or A-weighted decibels. Common noise levels in dBA are shown in Table F-1.

**Table F-1  
Common Noise Levels**

| Sound Source   | (dBA) |
|--|-------|
| Military jet, air raid siren   | 130   |
| Amplified rock music   | 110   |
| Jet takeoff at 500 meters  | 100   |
| Freight train at 30 meters   | 95    |
| Train horn at 30 meters  | 90    |
| Heavy truck at 15 meters   | 80    |
| Busy city street, loud shout   | 80    |
| Busy traffic intersection  | 80    |
| Highway traffic at 15 meters, train  | 70    |
| Predominantly industrial area  | 60    |
| Light car traffic at 15 meters, city or commercial areas or residential areas close to industry  | 60    |
| Background noise in an office  | 50    |
| Suburban areas with medium density transportation  | 50    |
| Public library   | 40    |
| Soft whisper at 5 meters   | 30    |
| Threshold of hearing   | 0     |
| <b>Note:</b> A 10 dBA increase in level appears to double the loudness, and a 10 dBA decrease halves the apparent loudness.<br><b>Source:</b> Cowan, James P. Handbook of Environmental, Acoustics. Van Nostrand Reinhold, New York, 1994.<br>Egan, M. David, Architectural Acoustics. McGraw-Hill Book Company, 1988. |       |

**ABILITY TO PERCEIVE CHANGES IN NOISE LEVELS**

The average ability of an individual to perceive changes in noise levels is well documented (see Table F-2). Generally, changes in noise levels less than 3 dBA are barely perceptible to most listeners, whereas changes in noise levels of 10 dBA are normally perceived as doublings (or halvings) of noise loudness. These guidelines permit direct estimation of an individual’s probable perception of changes in noise levels.

**Table F-2  
Average Ability to Perceive Changes in Noise Levels**

| Change (dBA)  | Human Perception of Sound  |
|---|--|
| 2-3   | Barely perceptible   |
| 5   | Readily noticeable   |
| 10  | A doubling or halving of the loudness of sound                   |
| 20  | A “dramatic change”  |
| 40  | Difference between a faintly audible sound and a very loud sound |
| <b>Source:</b> Bolt Beranek and Neuman, Inc., <i>Fundamentals and Abatement of Highway Traffic Noise</i> , Report No. PB-222-703. Prepared for Federal Highway Administration, June 1973. |  |

## NOISE DESCRIPTORS USED IN IMPACT ASSESSMENT

Because the sound pressure level unit of dBA describes a noise level at just one moment, and very few noises are constant, other ways of describing noise over more extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific period as if it had been a steady, unchanging sound. For this condition, a descriptor called the “equivalent sound level,”  $L_{eq}$ , can be computed.  $L_{eq}$  is the constant sound level that, in a given situation and period (e.g., 1 hour, denoted by  $L_{eq(1)}$ , or 24 hours, denoted by  $L_{eq(24)}$ ), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors, such as  $L_1$ ,  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$ , and  $L_x$ , are sometimes used to indicate noise levels that are exceeded 1, 10, 50, 90, and x percent of the time, respectively. Discrete event peak levels are given as  $L_{01}$  levels.

For purposes of the proposed project, the maximum 1-hour equivalent sound level ( $L_{eq(1)}$ ) has been selected as one of the noise descriptors to be used for noise impact evaluation.  $L_{eq(1)}$  is the noise descriptor recommended for use in the *CEQR Technical Manual* for impact evaluation. (Conformance with requirements of the NYC Noise Code is determined based upon consideration of octave band noise levels.)

## C. NOISE STANDARDS AND CRITERIA

Noise levels associated with the operation of the proposed project would be subject to the emission source provisions of the New York City Noise Control Code and to noise criteria set for the CEQR process.

### NEW YORK CITY NOISE CODE

The New York City Noise Control Code as amended in December 2005 contains: prohibitions regarding unreasonable noise; requirements for noise due to construction activities; and specific noise standards, including plainly audible criteria for specific noise sources. In addition, the amended code specifies that no sound source operating in connection with any commercial or business enterprise may exceed the decibel levels in the designated octave bands shown in Table F-3 at the specified receiving properties.

**Table F-3**  
**New York City Noise Codes**

| Octave Band Frequency (Hz) | Maximum Sound Pressure Levels (dB) as Measured Within a Receiving Property as Specified Below  |  |
|----------------------------|--|--|
|                            | <i>Residential receiving property for mixed-use building and residential buildings (as measured within any room of the residential portion of the building with windows open, if possible)</i> | <i>Commercial receiving property (as measured within any room containing offices within the building with windows open, if possible)</i> |
| 31.5                       | 70   | 74   |
| 63                         | 61   | 64   |
| 125                        | 53   | 56   |
| 250                        | 46   | 50   |
| 500                        | 40   | 45   |
| 1000                       | 36   | 41   |
| 2000                       | 34   | 39   |
| 4000                       | 33   | 38   |
| 8000                       | 32   | 37   |

**Source:** Section 24-232 of the Administrative Code of the City of New York, as amended December 2005.

**NEW YORK CEQR NOISE CRITERIA**

The *CEQR Technical Manual* contains noise exposure guidelines for use in City environmental impact review, as well as required attenuation values to achieve acceptable interior noise levels. These values are shown in Tables F-4 and F-5. Noise exposure is classified into four categories—acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable. The *CEQR Technical Manual* criteria are based on maintaining an interior noise level for the worst-case hour  $L_{10}$  less than or equal to 45 A-weighted decibels (dBA).

**Table F-4**  
**Noise Exposure Guidelines For Use in City Environmental Impact Review<sup>1</sup>**

| Receptor Type  | Time Period   | Acceptable General External Exposure | Airport <sup>3</sup> Exposure          | Marginally Acceptable General External Exposure | Airport <sup>3</sup> Exposure               | Marginally Unacceptable General External Exposure | Airport <sup>3</sup> Exposure               | Clearly Unacceptable General External Exposure | Airport <sup>3</sup> Exposure          |
|--|---------------|--------------------------------------|--|---|---|---|---|--|--|
| 1. Outdoor area requiring serenity and quiet <sup>2</sup>  |               | $L_{10} \leq 55$ dBA                 | -----<br>$L_{dn} \leq 60$ dBA<br>----- | NA  | -----<br>$60 < L_{dn} \leq 65$ dBA<br>----- | NA  | -----<br>$65 < L_{dn} \leq 70$ dBA<br>----- | NA   | -----<br>$L_{dn} \leq 75$ dBA<br>----- |
| 2. Hospital, Nursing Home  |               | $L_{10} \leq 55$ dBA                 |  | $55 < L_{10} \leq 65$ dBA                       |   | $65 < L_{10} \leq 80$ dBA                         |   |  |  |
| 3. Residence, residential hotel, or motel  | 7 AM to 10 PM | $L_{10} \leq 65$ dBA                 |  | $65 < L_{10} \leq 70$ dBA                       |   | $70 < L_{10} \leq 80$ dBA                         |   |  |  |
|  | 10 PM to 7 AM | $L_{10} \leq 55$ dBA                 |  | $55 < L_{10} \leq 70$ dBA                       |   | $70 < L_{10} \leq 80$ dBA                         |   |  |  |
| 4. School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, out-patient public health facility |               | Same as Residential Day (7 AM-11 PM) |  | Same as Residential Day (7 AM-11 PM)            |   | Same as Residential Day (7 AM-11 PM)              |   |  |  |
| 5. Commercial or office  |               | Same as Residential Day (7 AM-11 PM) |  | Same as Residential Day (7 AM-11 PM)            |   | Same as Residential Day (7 AM-11 PM)              |   |  |  |
| 6. Industrial, public areas only <sup>4</sup>  | Note 4        | Note 4                               | Note 4                                 | Note 4  |   |   |   |  |  |

**Notes:**  
(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more; (ii) *CEQR Technical Manual* noise criteria for train noise are similar to the above aircraft noise standards: the noise category for train noise is found by taking the  $L_{dn}$  value for such train noise to be an  $L_{dn}^x$  ( $L_{dn}$  contour) value.

**Table Notes:**  
<sup>1</sup> Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.  
<sup>2</sup> Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheatres, particular parks or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and nursing homes.  
<sup>3</sup> One may use the FAA-approved  $L_{dn}$  contours supplied by the Port Authority, or the noise contours may be computed from the federally approved INM Computer Model using flight data supplied by the Port Authority of New York and New Jersey.  
<sup>4</sup> External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).

**Source:** New York City Department of Environmental Protection (adopted policy 1983).

**Table F-5**

**Required Attenuation Values to Achieve Acceptable Interior Noise Levels**

|                                  | Marginally Acceptable   | Marginally Unacceptable |                        | Clearly Unacceptable   |                        |                        |
|----------------------------------|---|-------------------------|------------------------|------------------------|------------------------|------------------------|
| Noise level with proposed action | 65<L <sub>10</sub> <70  | 70<L <sub>10</sub> <75  | 75<L <sub>10</sub> <80 | 80<L <sub>10</sub> <85 | 85<L <sub>10</sub> <90 | 90<L <sub>10</sub> <95 |
| Attenuation <sup>1</sup>         | 25 dB(A)  | 30dB(A)                 | 35 dB(A)               | 40 dB(A)               | 45 dB(A)               | 50 dB(A)               |
| <b>Note:</b>                     | <sup>1</sup> The above composite window-wall attenuation values are for residential dwellings. Commercial office spaces and meeting rooms would be 5 dB(A) less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation. |                         |                        |                        |                        |                        |
| <b>Source:</b>                   | New York City Department of Environmental Protection (DEP)  |                         |                        |                        |                        |                        |

The *CEQR Technical Manual* provides the following criteria to define a significant adverse noise impact:

- An increase of 5 dBA, or more, in Build  $L_{eq(1)}$  noise levels at sensitive receptors (including residences, play areas, parks, schools, libraries, and houses of worship) over those calculated for the No Build condition, if the No Build levels are less than 60 dBA  $L_{eq(1)}$  and the analysis period is not a nighttime period.
- An increase of 4 dBA, or more, in Build  $L_{eq(1)}$  noise levels at sensitive receptors over those calculated for the No Build condition, if the No Build levels are 61 dBA  $L_{eq(1)}$  and the analysis period is not a nighttime period.
- An increase of 3 dBA, or more, in Build  $L_{eq(1)}$  noise levels at sensitive receptors over those calculated for the No Build condition, if the No Build levels are greater than 62 dBA  $L_{eq(1)}$  and the analysis period is not a nighttime period.
- An increase of 3 dBA, or more, in Build  $L_{eq(1)}$  noise levels at sensitive receptors over those calculated for the No Build condition, if the analysis period is a nighttime period (defined by the *CEQR Technical Manual* criteria as being between 10 PM and 7 AM).

The criteria listed above will be utilized to determine potential significant project noise impacts.

#### **NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

The New York State Department of Environmental Conservation (NYSDEC) published a guidance document titled *Assessing and Mitigating Noise Impacts* (October 6, 2000). This document states that increases from 0-3 dBA should have no appreciable effect on receptors, increases of 3-6 dBA may have the potential for adverse impact only in cases where the most sensitive of receptors are present, and increases of more than 6 dBA may require a closer analysis of impact potential depending on existing noise levels and the character of surrounding land use and receptors. It goes on to say that in terms of threshold values, the addition of any noise source, in a non-industrial setting, should not raise the ambient noise level above a maximum of 65 dBA, and ambient noise levels in industrial or commercial areas may exceed 65 dBA with a high end of approximately 79 dBA. Projects which exceed these guidance levels should explore the feasibility of implementing mitigation.

#### **D. NOISE PREDICTION METHODOLOGY**

To determine potential noise impacts due to the proposed project, a screening analysis was performed. The screening analysis consisted of the following:

## Rikers Island Cogeneration Plant

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- Determine receptor locations at the closest sensitive land uses to the project site within the adjacent study area;
- Measure the existing ambient noise levels at the selected receptor locations during the quietest time of the day/night when the proposed project equipment may be operating;
- Determine individual equipment sound power noise levels based on available manufacturer data and published material;
- Determine the location of individual equipment on the project sites;
- Estimate noise attenuation due to building structures and enclosures, and other factors;
- Calculate noise levels at sensitive receptor locations using attenuation correction terms; and
- Compare calculated noise levels with standards and existing ambient noise levels.

Equipment lists were prepared for the proposed facility. These lists included the number of operating units and the sound power levels generated by each piece of equipment. Equipment considered capable of producing significant noise levels included gas turbines, exhaust fans, compressors, and heat recovery system generators.

Octave band sound pressure levels,  $L_p$ , at receptor sites were calculated based on sound power levels using the following formula:

$$L_p = L_w - A_{div} - A_{atm} - A_{screen} - A_{TL} - A_D - 0.6$$

where:

- $L_w$  is the point source sound power level, in dB re 1 picowatt;
- $A_{div}$  is the attenuation due to geometrical divergence;
- $A_{atm}$  is the attenuation due to atmospheric absorption;
- $A_{screen}$  is the attenuation due to screening;
- $A_{TL}$  is the attenuation due to sound transmission loss due to building partition (for equipment located inside a structure only); and
- $A_D$  is the attenuation due to acoustical design features.

Sound power levels were determined based on data from equipment manufacturers, and professional experience with similar equipment (where manufacturer data was not available).

The analysis included the following: attenuation due to geometrical divergence, attenuation due to absorption in the air, attenuation due to shielding or obstructions, and attenuation due to sound transmission loss due to building partitions, and attenuation due to acoustical design features, such as silencers.

As part of the proposed plant modifications, two gas turbines, two compressors, six exhaust fans, and two heat recovery system generators would be installed at the central energy plant. The gas turbines selected are the Solar Titan 130 model and would be located in an acoustical enclosure to reduce noise levels. The main exhaust stacks would be fitted with silencers. Noise levels of this equipment are shown in Table F-6.

Noise levels at each receptor site were determined by adding the contribution from each piece of equipment and comparing the total calculated noise levels to the applicable CEQR and NYC Noise Code criteria.

**Table F-6**  
**Equipment Sound Power Levels**

| Equipment                       | Basic Octave Band Sound Power Level ( $L_w$ ) in Hertz |     |     |     |     |     |    |    |    |
|---------------------------------|--|-----|-----|-----|-----|-----|----|----|----|
|                                 | 31.5   | 63  | 125 | 250 | 500 | 1k  | 2k | 4k | 8k |
| Gas Turbine                     | 101  | 99  | 98  | 95  | 92  | 91  | 93 | 89 | 85 |
| Roof Exhaust Fan                | 90   | 90  | 86  | 85  | 83  | 79  | 71 | 63 | 55 |
| Scanner Air Fan                 | 90   | 90  | 86  | 85  | 83  | 79  | 71 | 63 | 55 |
| Switchgear Room Exhaust Fan 1   | 101  | 101 | 101 | 103 | 106 | 103 | 98 | 94 | 90 |
| Switchgear Room Exhaust Fan 2   | 89   | 89  | 96  | 97  | 91  | 84  | 81 | 78 | 74 |
| Compressor                      | 94   | 92  | 91  | 88  | 85  | 84  | 86 | 82 | 78 |
| Heat Recovery System Generators | 101  | 101 | 100 | 98  | 95  | 92  | 89 | 86 | 83 |

**Note:** Octave Bands take into account acoustical design features (including enclosures that will contain the equipment).

In addition to the equipment listed above some additional equipment would be located within the building housing the existing energy plant. The noise contribution from this equipment, which would be located within the existing brick and masonry central energy plant building, was assumed to be negligible.

## E. EXISTING CONDITIONS

### SITE DESCRIPTION

The project site is located at the northwest corner of Riker's Island. The O.B.C.C. residential portion of the Riker's Island correctional facility to the west and south of the project site represent the closest adjacent sensitive land uses.

### SELECTION OF NOISE RECEPTOR LOCATIONS

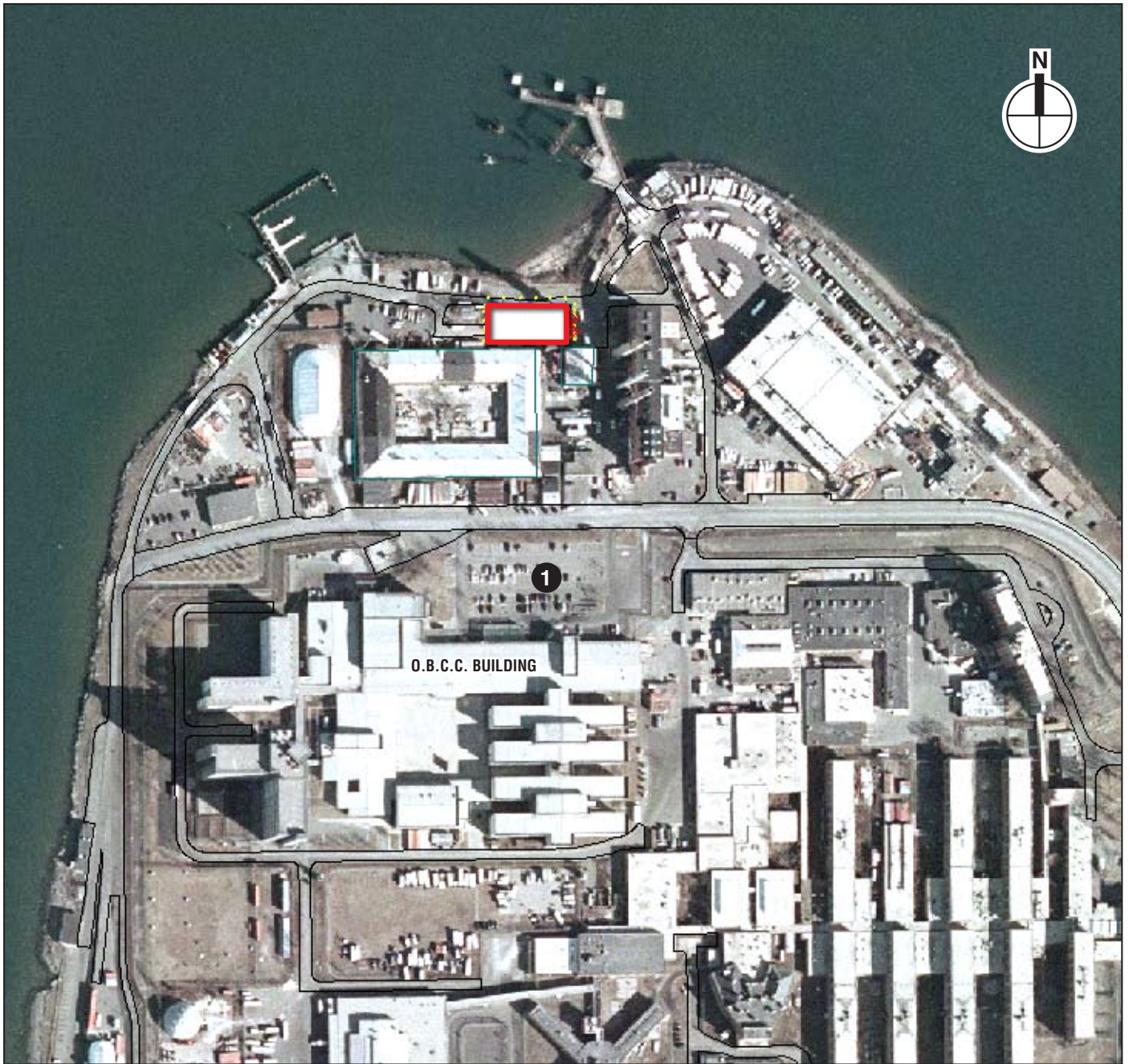
Figure F-1 is an aerial photograph of the area showing the location of the proposed cogeneration facility and of the noise receptor location. The noise measurement was performed roughly 50 feet from the O.B.C.C. building due to security reasons, but is representative of the noise levels at the building. This receptor site is the location where maximum project impacts would be expected based on proximity to the proposed project.

### NOISE MONITORING

Noise monitoring at the receptor location was performed on September 10 and 11, 2008. A continuous 24-hour noise measurement was made at the receptor location. Noise levels late at night would represent the lowest ambient noise levels.

### EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using Brüel & Kjær Noise Level Meters Type 2260, Brüel & Kjær Sound Level Calibrators Type 4231, and Brüel & Kjær ½-inch microphones Type 4189. The instruments were mounted at a height of 5 feet above the ground on a tripod. The meters were calibrated before and after readings using Brüel & Kjær Type 4231 sound level calibrators using the appropriate adaptors. The data were digitally recorded by the sound meters and displayed at the end of the measurement period in units of dBA. Measured quantities included  $L_{eq}$ ,  $L_1$ ,  $L_{10}$ ,  $L_{50}$ , and  $L_{90}$ . Windscreens were used during all sound measurements except for calibration. All measurement procedures conformed to the requirements of ANSI Standard S1.13-1971 (R2005).



-  *Proposed Cogeneration Plant (Approximate Location)*
-  *Noise Receptor*





**RESULTS OF BASELINE MEASUREMENTS**

Table F-8 shows the results of the baseline measurements. In general, noise levels are directly related to the volume of traffic on the immediately adjacent streets and the amount of air traffic accessing nearby LaGuardia Airport. Noise levels along adjacent roadways, the access roadways for the correctional facility and the existing power facility, are very low during most hours. The lowest measured  $L_{eq}$  level occurred at 12AM, and is 53.7 dBA, which will be the baseline noise level for this analysis.

**Table F-8**  
**Measured Existing Noise Levels At O.B.C.C. Building (dBA)**

| Date    | Start Time | $L_{eq}$ | $L_1$ | $L_{10}$ | $L_{50}$ | $L_{90}$ |
|---------|------------|----------|-------|----------|----------|----------|
| 9/10/08 | 11:00 AM   | 56.3     | 65.0  | 58.3     | 53.9     | 51.4     |
| 9/10/08 | 12:00 PM   | 54.6     | 62.3  | 56.0     | 51.9     | 50.3     |
| 9/10/08 | 1:00 PM    | 56.3     | 65.8  | 57.9     | 53.4     | 51.0     |
| 9/10/08 | 2:00 PM    | 58.5     | 67.3  | 59.4     | 54.5     | 52.0     |
| 9/10/08 | 3:00 PM    | 57.1     | 65.0  | 60.3     | 54.9     | 52.3     |
| 9/10/08 | 4:00 PM    | 58.4     | 67.8  | 61.4     | 55.6     | 53.2     |
| 9/10/08 | 5:00 PM    | 57.0     | 65.1  | 59.2     | 55.0     | 53.2     |
| 9/10/08 | 6:00 PM    | 58.0     | 66.7  | 59.2     | 54.3     | 52.1     |
| 9/10/08 | 7:00 PM    | 56.2     | 63.9  | 58.7     | 54.2     | 52.5     |
| 9/10/08 | 8:00 PM    | 57.9     | 66.6  | 59.4     | 54.4     | 51.8     |
| 9/10/08 | 9:00 PM    | 57.0     | 66.1  | 59.0     | 54.7     | 51.5     |
| 9/10/08 | 10:00 PM   | 56.4     | 66.9  | 58.2     | 53.1     | 51.4     |
| 9/10/08 | 11:00 PM   | 55.1     | 63.8  | 57.8     | 52.9     | 51.6     |
| 9/11/08 | 12:00 AM   | 53.7     | 60.6  | 54.7     | 51.8     | 51.1     |
| 9/11/08 | 1:00 AM    | 57.7     | 65.3  | 57.4     | 55.4     | 52.5     |
| 9/11/08 | 2:00 AM    | 55.5     | 65.0  | 57.1     | 53.5     | 51.9     |
| 9/11/08 | 3:00 AM    | 54.3     | 63.2  | 55.3     | 52.0     | 51.5     |
| 9/11/08 | 4:00 AM    | 53.8     | 61.4  | 55.9     | 52.3     | 51.7     |
| 9/11/08 | 5:00 AM    | 58.4     | 65.6  | 58.0     | 53.4     | 51.6     |
| 9/11/08 | 6:00 AM    | 59.8     | 69.4  | 61.6     | 56.3     | 52.7     |
| 9/11/08 | 7:00 AM    | 59.6     | 67.1  | 60.8     | 55.0     | 51.7     |
| 9/11/08 | 8:00 AM    | 58.0     | 68.1  | 59.6     | 54.6     | 51.5     |
| 9/11/08 | 9:00 AM    | 54.8     | 63.0  | 56.5     | 52.2     | 49.8     |
| 9/11/08 | 10:00 AM   | 56.1     | 63.8  | 57.2     | 52.9     | 50.7     |

**Notes:** Field measurements were performed by AKRF, Inc. on September 10 and 11, 2008.

In terms of CEQR noise exposure guidelines, existing noise levels are in the “Clearly Acceptable” category. These values are based on the measured  $L_{10}$  values.

**F. ANALYSIS RESULTS**

Two separate screening analyses were performed. The first analysis examined whether the proposed project would result in increases in ambient noise levels that exceeded CEQR impact criteria or NYSDEC impact criteria, and the second analysis examined whether noise levels produced by the proposed project would result in exceedances of the NYC Noise Code.

**CEQR AND NYSDEC IMPACT ANALYSIS**

A screening analysis was performed to determine whether noise levels at sensitive receptor locations would exceed the criteria set forth in the *CEQR Technical Manual* or those set forth by the NYSDEC. Table F-9 shows the results of the screening analysis. For purposes of this

analysis, the lowest measured existing  $L_{eq(1)}$ , which occurred at 12AM, was taken as a baseline noise level, and future noise levels without the proposed project are assumed to be the same as the existing measured levels.

**Table F-9  
Future with the Proposed Project (in dBA)**

| Receptor | Location          | Existing Measured Levels |          | Project Generated Levels | Future With Project |          | Increase Over Existing |
|----------|-------------------|--------------------------|----------|--------------------------|---------------------|----------|------------------------|
|          |                   | $L_{eq}$                 | $L_{10}$ | $L_{eq}$                 | $L_{eq}$            | $L_{10}$ | $L_{eq}$               |
| 1        | O.B.C.C. Building | 53.7                     | 54.7     | 49.3                     | 55.0                | 56.0     | 1.3                    |

As shown in Table F-9, the largest increase in noise levels due to the proposed project would be 1.3 dBA.

A change of this magnitude would not be perceptible or significant according to CEQR impact criteria. During daytime hours, when ambient noise levels are higher than during the late night hours, the proposed project would produce even smaller increases in noise levels.

According to the NYSDEC impact criteria, an increase less than 3 dBA would not be significant, even in the presence of the most sensitive of receptors. Furthermore, the resulting noise level with the proposed project would be less than the NYSDEC recommended level for residential areas of 65dBA. Therefore, it would not constitute a significant impact.

In terms of CEQR noise exposure guidelines, future noise levels with the proposed project would remain in the “Clearly Acceptable” category. These values are based on the measured  $L_{10}$  values.

**NEW YORK CITY NOISE CODE**

This analysis uses the sound power level of each piece of equipment and accounts for shielding from structures such as buildings, ground effects, and attenuation due to absorption in the air. Table F-10 shows the results of the detailed analysis. The O.B.C.C. would be expected to provide at least 10 dBA of attenuation with an open-window condition, and as such interior noise levels were assumed to be 10 dBA less than exterior noise levels for this analysis.

**Table F-10  
New York City Noise Code Impact Assessment**

| Octave Band Frequency (Hz) | Maximum Allowable Sound Pressure Levels (dB) as Measured Within A Residential Receiving Property | Project Generated Octave Band Noise Levels in dB |                 |
|----------------------------|--|--|-----------------|
|                            |  | Receptor Site                                    | Exceed Criteria |
| 31.5                       | 70   | 41.3   | No              |
| 63                         | 61   | 37.6   | No              |
| 125                        | 53   | 37.2   | No              |
| 250                        | 46   | 37.0   | No              |
| 500                        | 40   | 38.3   | No              |
| 1000                       | 36   | 34.8   | No              |
| 2000                       | 34   | 29.1   | No              |
| 4000                       | 33   | 23.3   | No              |
| 8000                       | 32   | 20.7   | No              |

As shown in Table F-10, the proposed project would not result in noise levels that would not exceed the interior noise level criteria set forth in the New York City Noise Code in any of the octave band frequencies.

## **G. CONCLUSION**

Based on the analyses presented above, the proposed action would not result in any predicted exceedances of the octave band limits in the New York City Noise Code or any exceedances of the CEQR or NYSDEC noise impact criteria. Since no significant exceedances are predicted by this conservative screening analysis, there is no need for a more detailed analysis. As a result, it can be concluded that the proposed project would not result in any significant noise impacts. \*