SFC
Yonkers, LLC

Atmospheric Dispersion Modeling Report

DRAFT

Prepared for:

SFC Yonkers

DECEMBER 2007

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ATMOSPHERIC DISPERSION MODELING REPORT

1.0 INTRODUCTION

Struever Fidelco Cappelli, LLC (SFC) proposes to construct a major mixed-use development in downtown Yonkers, NY. The primary development components of the proposal (Project) include the River Park Center, Cacace Center, and Palisades Point.

The Scoping Document for the pDEIS specified that, as part of the SEQRA process, a search be performed to identify major stationary sources within 1000 feet and minor sources within 400 feet of the Project. The results of this search are shown in Figure 1-1. A number of minor sources (with emissions of less than 100 tons per year) are present in the Yonkers area. None of the minor sources identified are within 400 feet from the Project Sites. No further assessment was performed on these minor sources in accordance with the Scoping Document.

The only major stationary source identified within 1000 feet of any of the Project areas is the American Sugar Refining Company, Inc. plant (NYSDEC ID 3551800214) (Plant). This facility is located immediately south of and adjacent to, and thus within 1000 feet of, the proposed Palisades Point development. The Plant is located more than 1500 ft (approximately 0.3 miles) from the River Park Center and Cacace Center components of the Project. The Plant emits particulate matter from the processing and refining of sugar, and criteria pollutants (NOx, CO, SO_2, PM-10, PM-2.5) from combustion sources (boiler, diesel engine generator, gas turbine cogeneration system), according to the Title V Operating Permit for the facility. Preliminary screening modeling indicated that there is potential for interactions of emissions from the Plant and the proposed Palisades Point structures.

The pDEIS Scoping Document for the Project states that for major emission sources within 1000 feet of the Project:

> *"an analysis of the potential impacts on the projects sites will be conducted using a screening model"*

and,

> *"in the event that violations of standards are predicted, refined dispersion modeling analysis will be performed using the AERMOD model."*

Atmospheric Dispersion Screening Models are conservative by design and tend to over-predict potential concentration impacts due to worst-case meteorological conditions, as well as receptor locations, and emission source configuration and representation. Also, the Plant has a relatively complex configuration of emission points. Atmospheric Dispersion Modeling with the USEPA AERMOD model has been used to model Plant emissions in lieu of screening modeling for these reasons.

1.1 Purpose

This document describes the Atmospheric Dispersion Modeling Analysis performed to assess the potential for air quality impacts from the Plant on the Project in accordance with the pDEIS Scoping Document for the Project. Refined modeling was performed in accordance with current USEPA and New York State Department of Environmental Conservation (NYSDEC) modeling guidance, as applicable.

Predicted ambient concentrations of applicable criteria pollutants have been used to assess compliance with applicable National and New York State Ambient Air Quality Standards and comparison with Significant Impact Levels (SILs).

This modeling analysis of the Plant emissions was performed based on publicly available information on the Plant emissions and operations. The bulk of information on the Plant emissions and operation was obtained from the New York State Department of Environmental Conservation (NYSDEC) Title V Operating Permit for the Plant as supplemented by other available information such as actual photographs, surveys, etc. and included as Appendix A.

Despite the comprehensive nature of the Title V Operating Permit a number of assumptions were made to facilitate the modeling analysis and provide a reasonable representation and interpretation of the Plant emissions and operations.

The objective of this modeling effort was to identify the potential need to incorporate design of mitigation measures for the Palisades Point residential towers.

The Plant has a valid NYSDEC Title V Operating Permit for a number of diverse emission sources at the Facility. River Park Center and the Cacace Center are greater than 1000 feet from the Plant and therefore are not included in the modeling analysis in accordance with the scoping document.

The Plant Title V Operating Permit contains information on the emission sources at the Plant but does not clearly identify each emission point regarding emissions, stack release point, exit gas temperatures, stack heights and flows, etc. Much of this information is not included or is agglomerated (combined for simplification purposes). A number of assumptions regarding the Plant emissions were made to establish modeling scenarios and estimate emission parameters.

Emission statement data for the Plant is not suitable for modeling purposes and would be inappropriate, since the data does not represent the worst-case situation. However, this information was useful to assess the Plant's current fuel usage and emissions in relation to the permitted amounts and is included as Appendix B.

POLYCHROME CORP

ARISTA NOVELTY PRINT CO INC

EXCELSIOR PACKAGING GROUP INC

DAMIAN CLEANERS

CRESTHILL INDUSTRIES

ALEXANDER ST TERMINAL

LIFE CLEANERS & LAUNDERERS OF YONKERS

GABRIEL SPORTS CAR INC

PALISADE AVE OFFICE BUILDING

RIVER PARK CENTER

REFINED SYRUP & SUGAR INC.

Proposed
Minor League
Ballpark

GOVERNMENT CENTER

PALISADES POINT

RIVERDALE CLEANERS

CACACE CENTER

REFINED SYRUP & SUGAR INC.
STACK LOCATION PER TITLE V PERMIT

GUILLET CLEANERS

TAVARAS CLEANERS

RICARDO TIRIFORERO DRY CLEANERS

ST JOSEPH MEDICAL CENTER

A CARRILS AUTO BODY SHOP INC

POLO COLLISION INC

AMERICAN SUGAR REFINING COMPANY INC

Legend

Redevelopment Project Site

Development Areas

NYSDEC Title V Permit

Emission Point

AIRS Facility Subsystem (Region 2)

Air Major

Air Minor

Air Synthetic Minor

Air Major, Air Minor

Air Major, Air Synthetic Minor

Air Minor, Air Synthetic Minor

Source:
Parcel data based on Tax Maps from 1952-1955

Aerometric Information Retrieval System (AIRS)/ AIRS Facility Subsystem (AIRS/AFS) Permits in EPA Region 2 - U.S. EPA Air Releases - AIRS/AFS

Permits in EPA Region 2 (Clean Air Act), 2007

Redevelopment Project Sites taken from SFC plan entitled "SFC Infrastructure Budget Water Main Improvements", dated 4/30/07.

Proposed Development Areas taken from SFC Infrastructure Budget Water Main Improvements Plan, SFC Phase I Sites, Yonkers, New York, 4/30/2007 and PS&S Plan, 03113006c-bs07-yk.dwg, 4/13/2007

Emission Point from NYDEC Title V Database, 2007

Proposed Junior League Ballpark taken from SFC plan entitled, Field Level Plan, dated 04/03/07.

NYSDOP Aerial Imagery, 2004.

0 300 600 Feet

PS&S
integrating design & engineering

SFC REDEVELOPMENT PROJECT
CITY OF YONKERS
WESTCHESTER COUNTY, NEW YORK

AIR SOURCES IN PROJECT AREA

Dm By: JA	Scale: 1" = 600'	Project: 03113.003.004
Ch'kd By: MH	Date: 01/04/08	Figure No. 1-1

Map Document: (P:\03113\003\Y\N\Maps\Fig6-1_ChickenIs_EPA_010408_08.mxd)
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2.0 MODEL SELECTION/REFINED MODELING

The most recent version (Version 07026) of the AMS/EPA Regulatory Model with the PRIME downwash algorithm (AERMOD) was used for this analysis. AERMOD is a steady-state gaussian plume model that can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex. Effective December 9, 2006, AERMOD is the preferred model to be used to predict the air quality impact of emissions from point, area and volume sources (USEPA 2005, NYSDEC 2006).

Refined modeling was performed in accordance with current USEPA and New York State Department of Environmental Conservation (NYSDEC) modeling guidance, as applicable. Predicted ambient concentrations of applicable criteria pollutants have been compared to National and New York State Ambient Air Quality Standards (NAAQS) and Significant Impact Levels (SILs). The NAAQS and SILs are shown in Table 2-1 and Table 2-2.

Table 2-1 National and New York Ambient Air Quality Standards

Pollutant	Standard	Averaging Period	New York (a)		National (b)	
			(ug/m^3)	(ppm)	(ug/m^3)	(ppm)
Sulfur Dioxide	Primary	24-hour average	365	0.14	365	0.14
		12-month arith. Mean	80	0.03	80	0.03
	Secondary	3-hour average	1300	0.5	1300	0.5
		24-hour average	-	-	-	-
		12-month arith. Mean	-	-	-	-
Total Suspended (TSP) (c)	Primary	24-hour average	250	-	-	-
		12-month geom. Mean	75	-	-	-
	Secondary	24-hour average	-	-	-	-
		12-month geom. Mean	-	-	-	-
Inhalable Particulates (PM-10)	Primary and Secondary	24-hour average (d)	-	-	150	-
		Annual arith. Mean (e)	-	-	50	-
Fine Particulates (PM-2.5)	Primary and Secondary	24-hour average (f)	-	-	35	-
		Annual arith Mean (g)	-	-	15	-
Carbon Monoxide	Primary and Secondary (h)	1-hour average	40,000	35	40,000	35
		8-hour average	10,000	9	10,000	9
Ozone (i)	Primary	Max. Daily 1 Hr. Avg. (j)	235	0.12	235	0.12
	Secondary	1-hour average	235	0.12	235	0.12
	Primary and Secondary	8-hour average	157	0.08	157	0.08
Nitrogen Dioxide	Primary and Secondary	12-month arith. Mean	100	0.05	100	0.053
Lead	Primary and Secondary	Quarterly mean	-	-	1.5	-

Notes:

(a) New York State (NYS) short-term standards are not to be exceeded more than once in any 12-month period.

(b) National short-term standards are not to be exceeded more than once in a calendar year, except as otherwise noted..

(c) As of 1991, the TSP National Standard was replaced by PM-10 standards, which emphasizes the smaller particles (< 10 µm).

(d) Not to be exceeded more than once per year on average over 3 years.

(e) As of December 17, 2006, the PM-10 Annual National Standard was rescinded.

(f) As of December 17, 2006, the PM-2.5 24-hour National Standard was revised from 65 to 35 µg/m³. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³.

(g) To attain this standard, the 3-year average of the weighted annual mean PM-2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

(h) National secondary standards for carbon monoxide have been rescinded.

(i) Former NYS Standard for ozone of 0.08 ppm was not officially revised via regulatory process to coincide with the Federal standard of 0.12 ppm which is currently being applied by NYS to determine compliance status.

(j) Maximum daily 1-hr average to be exceeded no more than once per year averaged over 3 consecutive years. The expected number of days above the standards must be less than or equal to one.
PM-2.5

Source: 40 CFR Part 50 and NYSDEC Chapter III Part 257

Table 2-2 **Significant Impact Levels**		
Pollutant	**Averaging Period**	**Significant Impact Level ($\mu g/m^3$)**
Sulfur Dioxide (SO_2)	Annual	1
	24-Hour	5
	3-Hour	25
Nitrogen Dioxide (NO_2)	Annual	1
Carbon Monoxide (CO)	8-Hour	500
	1-Hour	2000
PM-10	Annual	1
	24-Hour	5
PM-2.5 (a)	Annual	0.3
	24-Hour	5
Lead	Quarterly	0.1
Notes: (a) Source: NYSDEC Policy CP-33, *Assessing and Mitigation Impacts of Fine Particulate Matter Emissions*, December 29, 2003.		

3.0 SOURCE DATA

Modeling was performed for existing process and combustion sources at the Plant as identified in data sources including the facility Title V Operating Permit and associated Permit Application, emission statements, other facility data from NYSDEC files, maps and aerial photographs, as available.

Emission rates have been obtained directly from the Operating Permit and emission statements, as applicable, or calculated from process data contained in the Operating Permit in combination with permit limits and published emission factors. Modeling was performed using reasonable estimates of worst-case short-term and annual emission rates. It has been assumed that these worst-case emissions are equivalent to the approved NYSDEC permit limits and have been utilized as model inputs for purposes of this assessment.

Estimated emission rates for the existing sources at the Plant are presented in Table 3-1. Emission point parameters are provided in Table 3-2. Source locations and stack base elevations have been determined from the Operating Permit for the Plant in conjunction with aerial photographs of the area.

The locations of the cogeneration stack and the diesel generator stack were estimated based on the Operating Permit and aerial photographs. Because the emissions and locations of the numerous process sources are not specifically identified in the Operating Permit, the total permitted emissions from the process sources were distributed among six representative emission points, with locations and release heights estimated from aerial photographs.

Estimated building dimensions (Table 3-3) were used for assessing atmospheric downwash using BPIP-PRIME.

Locations of sources and buildings are shown in Figure 3-1.

Table 3-1
Estimated Emission Rates

EMISSION UNIT	PROCESS DESCRIPTION	HEAT INPUT (MMBTU/h)	Maximum Hourly Emission Rates (lb/hr)						Assumed Hrs/yr
			CO	NOx	SO_2	Filterable PM	PM-10	PM-2.5	
E-00002	Boiler #3 Using Natural Gas	165.5	*13.63*	*46.39*	*0.10*	*0.31*	*1.23*	*1.23*	4500
	Boiler #3 Using No. 2 Fuel Oil	165.5	*5.91*	*28.78*	*62.11*	*2.36*	*2.72*	*1.83*	1425
	Powerhouse Diesel Generator Using No. 2 Fuel Oil	22.96	*19.52*	**107.4**	*8.58*	*2.30*	*2.30*	*2.30*	525
	Gas Turbine/Cogen Unit Using Natural Gas With Duct Burner	167.0	*15.36*	**25.84**	*0.08*	*1.32*	*3.24*	*3.24*	7760
	Gas Turbine/Cogen Unit Using No. 2 Fuel Oil With Duct Burner	167.0	*6.68*	**42.2**	*62.58*	*3.76*	*5.33*	*4.74*	1000
E-00001	Process Sources					**5.28**	**5.28**	**5.28**	8760
						Annual PTE (tons/yr) from Operating Permit			
EMISSION UNIT	**PROCESS DESCRIPTION**		**CO**	**NOx**	**SO_2**	**Filterable PM**	**PM-10**	**PM-2.5**	
E-00002	Combustion Sources Total		118.00	274.50	78.00	18.86	18.86	18.86	
E-00001	Process Sources					23.14	23.14	23.14	
Facility Totals			118.00	274.50	78.00	42.00	42.00	42.00	

Notes:

NOx emission rates in bold are permit limits

Emission rates in italics were calculated using AP-42 factors.

Based on the permit, AP-42 NOx emission factors for Boiler No. 3 were converted from lb/fuel unit to lb/MMBTU using the following actual fuel heating values:

999 BTU/SCF natural gas

138,000 BTU/gal No. 2 oil

All other AP-42 emission factors for boilers were converted from lb/fuel unit to lb/MMBTU using the following conversion factors specified in AP-42:

1020 BTU/SCF natural gas

140,000 BTU/gal No. 2 oil

Turbine emission factors from AP-42 are worst case (uncontrolled or water-steam injection)

SO2 emissions were calculated using 0.37 % sulfur content (NYSDEC limit)

Table 3-2
Emission Point Parameters

Stack Description	UTM East (meters)	UTM North (meters)	Ground Elevation (ft)	Height Above Ground (ft)	Inside Diameter (in)	Exit Temp (F)	Exit Flow (ACFM)
Boiler #3	592256.3	4531599.6	10	150	120	350	39,300
Diesel Generator using No. 2 Fuel Oil	592236.2	4531628.0	7	25	20	800	17,200
Gas Turbine/Cogen Unit	592222.0	4531626.2	7	70	46	300	57,493
Process Sources - Assume No Plume Rise	592212.6	4531575.0	7	44	7	ambient	(a)
	592188.7	4531560.5	7	62	7	ambient	(a)
	592228.6	4531521.6	7	120	7	ambient	(a)
	592261.9	4531510.0	7	47	7	ambient	(a)
	592166.3	4531432.9	7	60	7	ambient	(a)
	592161.2	4531330.7	7	75	7	ambient	(a)

Note:
(a) Modeled with exit velocity of 0.01 m/s following USEPA guidance for capped or horizontal emission points

Table 3-3
Building Dimensions

Building Description	SW Corner UTM-East (meters)	SW Corner UTM-North (meters)	Base Elevation (ft)	Height Above Ground (ft)	Bldg No.	Tier No.	E-W Dimension (ft)	N-S Dimension (ft)
Cogen bldg base tier	592219.6	4531624.4	7	35	1	1	116	32
Cogen bldg top tier	592219.6	4531624.4	7	55	1	2	20	32
Powerhouse 60 ft	592216.2	4531586.6	7	60	2	1	135	125
Process bldgs. base tier	592172.7	4531462.6	7	30	3	1	203	472
Process bldg north 14A height	592209.4	4531567.6	7	42	3	2	59	66
Process bldg 50 ft	592202.9	4531485.2	7	50	3	3	62	270
Process bldg 120 ft	592221.9	4531483.7	7	120	3	4	49	233
Process bldg 160 ft	592199.6	4531443.5	7	160	3	5	105	134
East process bldg 45 ft	592245.5	4531406.5	7	45	4	1	66	502
Process bldg silo 120 ft	592261.1	4531551.4	7	120	4	2	46	(diameter)
East tower 60 ft	592251.6	4531566.4	7	60	5	1	19	28
West tower 60 ft	592182.0	4531544.9	7	60	6	1	46	108
Riverfront dock north bldg	592154.8	4531373.6	7	45	8	1	115	288
Riverfront dock north bldg tier 2	592166.6	4531372.8	7	58	8	2	66	89
Riverfront dock south bldg	592145.8	4531300.4	7	62	9	1	94	240
East process bldg 1 story	592199.6	4531359.3	7	20	10	1	200	203
East process bldg tower	592231.9	4531378.1	7	100	10	2	28	72
East tower south	592242.3	4531352.1	7	45	11	1	58	26
Warehouse truck dock	592209.8	4531262.5	7	35	12	1	148	273
Palisades Point South rooftop garden on 3 story garage	592210.8	4531662.3	12	30	7	1	239	226
Palisades Point South tower 25 story	592212.2	4531705.2	12	250	7	2	161	72
Palisades Point South 5 story residential-retail	592210.8	4531662.3	12	50	7	3	66	49

Legend

- Emission Point
- Receptor
- Proposed Palisades Pointe Development

Existing Building Footprints & Heights

- 8' - 22'
- 23' - 35'
- 36' - 55'
- 56' - 95'
- 96' - 180'

Note:
Existing building heights were measured using Pictometry software and available oblique imagery and are considered approximate.

Emission Point and Receptor locations are approximate.

Source:
Existing building footprints taken from plan entitled, "SFC Phase I Projects, Key Plan", prepared by Struever Fidelco Capelli, LLC, received on 10/30/2006.

Street Map USA, 2007.

Plan imagery from New York State Office of Cyber Security & Critical Infrastructure Coordination, 2004.

0 87.5 175 Feet

PS&S
integrating design & engineering

RIVER PARK CENTER
CITY OF YONKERS
WESTCHESTER COUNTY, NEW YORK

PLANT SITE AND RECEPTOR LOCATIONS

Dm By: JA	Scale: 1" = 175'	Project: 03113.003.010
Ch'kd By: SC	Date: 12/21/07	Figure No. : 3-1

Map Document: (P:\03113\003\Y\N\Maps\PalisadesPointe_EmissionPts_122107_01.mxd)
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4.0 METEOROLOGICAL DATA

Refined modeling with AERMOD has been performed using the latest readily available five years of historical hourly surface meteorological data and twice-daily upper air observations from a representative meteorological station. The meteorological data from the following nearby meteorological station is considered reasonably representative of the area near the Plant:

- LaGuardia Airport (LGA) in Queens, NY, located approximately 10 miles south-southwest of the Plant location and 5 miles east of the Hudson River.
- Upper Air Observations are from Brookhaven (OKX), NY.

A detailed review has been performed for the LGA station as well as the Westchester County Airport (HCN) station near White Plains, NY. The HCN station is located approximately 14 miles north-northwest of the Plant location and 8 miles east of the Hudson River. A comparison of various characteristics and features of climatology/meteorology and land use/cover was performed for the two closest surface air stations, LGA and HCN, to that of Yonkers to determine the most representative meteorological surface data for input to the AERMET meteorological pre-processor for atmospheric dispersion modeling in the vicinity of the Palisades Point Site. This detailed review is provided in Appendix C of this report.

Land use and land cover within 3 km of each of these two meteorological stations has been compared with land use and land cover within 3 km of the Plant to assess the location most representative of the Site area. These meteorological site locations are shown on Figure 4-1. The most recent version of AERMET (Version06431) was used for the pre-processing of the selected meteorological data.

Refined modeling with AERMOD was performed using five years (2002-2006) of historical hourly surface meteorological data (LGA) with upper air observations for the same period from Brookhaven, NY, in a preprocessed dataset provided to PS&S by the NYSDEC.

Figure 4-1 Meteorological Station Locations

5.0 RECEPTORS

Discrete receptors were placed at appropriate publicly accessible locations on the Palisades Point site. The specific receptor points used included ground level locations on sidewalks as well as elevated ("flagpole") receptors placed on the rooftops of the proposed buildings, and at appropriate heights (in 50-ft increments) at the southwest corner of each of the proposed 25-story residential towers, at locations representative of building air intakes, open windows and/or balconies. Receptor locations are listed in Table 5-1 and shown on Figure 3-1.

Table 5-1
Receptor Locations

No.	UTM-East (meters)	UTM-North (meters)	Ground Elevation (ft)	Height Above Ground (ft)	Location Description
1	592202.8	4531648.0	12	0	Walkway SW
2	592190.8	4531670.1	12	0	Sidewalk west side
3	592162.8	4531694.3	12	0	Riverwalk south end
4	592173.4	4531746.3	12	0	Riverwalk center
5	592190.8	4531746.8	12	0	Walkway center
6	592183.0	4531793.9	12	0	Riverwalk north
7	592192.7	4531841.7	12	0	Riverwalk north end
8	592210.8	4531661.3	12	0	Base of S bldg SW
9	592233.5	4531660.4	12	0	Base of S bldg south center
10	592262.5	4531660.0	12	0	Base of S bldg SE
11	592264.3	4531683.2	12	0	Base of S bldg east side
12	592211.5	4531663.2	12	30	S rooftop garden SW
13	592233.5	4531662.5	12	30	S rooftop garden S center
14	592261.7	4531661.7	12	30	S rooftop garden SE
15	592211.6	4531685.2	12	30	S rooftop garden center west
16	592234.4	4531684.2	12	30	S rooftop garden center
17	592262.4	4531683.1	12	30	S rooftop garden center east
18	592213.2	4531704.2	12	30	S rooftop garden NW
19	592236.9	4531706.5	12	30	S rooftop garden N center
20	592261.3	4531708.9	12	30	S rooftop garden NE
21	592213.2	4531706.2	12	250	S tower rooftop SW
22	592236.9	4531708.5	12	250	S tower rooftop S center
23	592260.3	4531710.9	12	250	S tower rooftop SE
24	592212.2	4531705.2	12	100	S tower balcony SW 11th fl
25	592212.2	4531706.2	12	150	S tower balcony SW 16th fl
26	592212.2	4531707.2	12	200	S tower balcony SW 21st fl
27	592216.7	4531771.6	12	0	N tower SW ground
28	592216.5	4531772.1	12	50	N tower balcony SW 6th fl
29	592216.2	4531772.6	12	100	N tower balcony SW 11th fl
30	592216.0	4531773.1	12	150	N tower balcony SW 16th fl
31	592215.7	4531773.6	12	200	N tower balcony SW 21st fl
32	592217.7	4531772.6	12	250	N tower rooftop SW
33	592239.1	4531763.4	12	250	N tower rooftop S center
34	592261.9	4531760.3	12	250	N tower rooftop SE

6.0 TERRAIN

Source and building elevations were determined from the Plant Operating Permit. Receptor elevations on the Palisades Point site were estimated based on available site grading associated with the available preliminary proposed Project design data. These elevations have been incorporated into modeling analysis as appropriate.

7.0 MODEL OPTIONS

The default regulatory option in AERMOD was selected for refined modeling runs including the following inputs:

- Land use parameters for AERMET Stage 3 were determined based on a review of land use within 3 kilometers of the meteorological site as noted from topographic maps and aerial photos etc. These land use parameters were reflected in the preprocessed meteorological data files provided by NYSDEC.
- Urban designation for AERMOD was determined by an analysis of land use and land cover within 3 kilometers of the Plant, following the Auer procedure (Auer 1978) which is described in Appendix C of this report. The default urban surface roughness of 1.0 meter was assumed.
- BPIP-PRIME was used to calculate building downwash.

Pollutant concentrations in building cavity areas, where applicable, have been calculated using AERMOD.

8.0 AVERAGING TIMES

Averaging periods used for each pollutant are consistent with those of the applicable NAAQS shown in Table 2-1.

The following "design values" were used for comparison with the applicable NAAQS:

- CO 1-hr and 8-hr averages: The NAAQS is not to be exceeded more than once per year. At each receptor, the second-highest 1-hr/8-hr average value (in the 5-yr dataset) was used as a conservative surrogate for the highest second-high 1-hr/8-hr average value for each of the 5 years.NO_2 annual average: At each receptor, the 5-yr average concentration was used as a surrogate for the highest 1-yr average concentration.

- SO_2 3-hr and 24-hr averages: The NAAQS is not to be exceeded more than once per year. At each receptor, the second-highest 3-hr/24-hr average value (in the 5-yr dataset) was used as a conservative surrogate for the highest second-high 3-hr/24-hr average value for each of the 5 years.

- SO_2 annual average: At each receptor, the 5-yr average concentration was used as a surrogate for the highest 1-yr average concentration.

- PM-10 24-hr average: The 24-hr NAAQS is in the form of an expected exceedance value, which cannot be exceeded more than once per year on average over a three year period for purposes of attainment demonstrations. USEPA modeling guidance (USEPA 2006a) specifies that modeling demonstrations of compliance with the PM-10 NAAQS are based on the High-N+1-High value over N years, or in the case of five years of NWS meteorological data, the High-6th-High over five years.

- PM-2.5 24-hr average: For attainment demonstrations, the PM-2.5 NAAQS is based on a 3-year average of the 98th percentile 24-hour average. USEPA modeling guidance (USEPA 2006a) specifies that for purposes of modeling demonstrations of compliance with the NAAQS, the eighth-highest value is an

unbiased surrogate for the 98th percentile 24-hour average concentration at a particular receptor over a one-year period. Since the Guideline on Air Quality Models (USEPA 2005) prescribes the use of a 5-year data set for off-site National Weather Service (NWS) meteorological data, a policy was established by EPA to utilize all available meteorological data (both single and multiple years of data) as an unbiased estimate of the 3-year averages for purposes of modeling demonstrations of compliance with the NAAQS. Based on this policy, the 24-hour design value for purposes of modeling demonstrations of compliance with the PM-2.5 NAAQS is based on the highest of the 5-year average of the eighth-highest concentrations at each receptor, if 5 years of meteorological data are input to the model. The model calculates the eighth-highest concentration at each receptor for each year modeled and averages those eighth-highest concentrations across the 5 years of data.

- PM-2.5 annual average: For attainment demonstrations, the PM-2.5 standard is based on a 3-year average of the annual mean at each ambient monitor. USEPA modeling guidance (USEPA 2006a) specifies that an unbiased estimate of the 3-year average annual mean is the 5-year average of the annual means if 5 years of meteorological data are used.

9.0 BACKGROUND AIR QUALITY DATA

Representative background air quality concentrations (Table 9-1) were used in conjunction with predicted concentrations for comparison with NAAQS. The locations of these air quality monitors are shown in Figure 9-1. The monitor locations and concentrations used are identified in the table.

The "design values" used for comparison with the NAAQS were consistent with the attainment criteria specified in the standard for each pollutant and averaging period (e.g., highest annual average, highest second-high short-term concentration for each year, 98th percentile 24-hr concentration averaged over three consecutive years).

It should be noted that the concentrations associated with the Plant emissions are technically included in the existing background concentration since the Plant is not a new source, but an existing permitted source.

Table 9-1
Existing Ambient Air Quality Concentrations
Yonkers, Westchester County, New York

Contaminant (Concentration Units)	Averaging Period	AAQS (a) (ppm)	Background Concentration							Location	Location Number	Approx. Distance from Site (miles)
			Maximum				98th Percentile	Number of Exceedences (b)	Year (d)			
			1st	2nd	3rd	4th						
Sulfur Dioxide (ppm)	3-hour (c)	0.5	0.07	0.057	-	-	-	0	2004	200th St & Southern Blvd, New York, NY	1	4.6
			0.061	0.054	-	-	-	0	2005			
			0.047	0.046	-	-	-	0	2006			
			0.072	0.061	-	-	-	0	2004	E 156th St Bet Dawson and Kelly, New York, NY (g)	2	7.9
			0.079	0.067*	-	-	-	0	2005			
			0.054	0.049	-	-	-	0	2006			
			0.039	0.038	-	-	-	0	2004	NYSDEC Field Headquarters, Gypsy Trail Road, Putnam County, NY	3	36.9
			0.022	0.021	-	-	-	0	2005			
			0.018	0.018	-	-	-	0	2006			
	24-hour (c)	0.14	0.036	0.035	-	-	-	0	2004	200th St & Southern Blvd, New York, NY	1	4.6
			0.042	0.039	-	-	-	0	2005			
			0.03	0.03	-	-	-	0	2006			
			0.036	0.035	-	-	-	0	2004	E 156th St Bet Dawson and Kelly, New York, NY (g)	2	7.9
			0.047	0.042*	-	-	-	0	2005			
			0.031	0.03	-	-	-	0	2006			
			0.014	0.014	-	-	-	0	2004	NYSDEC Field Headquarters, Gypsy Trail Road, Putnam County, NY	3	36.9
			0.012	0.01	-	-	-	0	2005			
			0.011	0.01	-	-	-	0	2006			
	Annual	0.03	0.01	-	-	-	-	0	2004	200th St & Southern Blvd, New York, NY	1	4.6
			0.009	-	-	-	-	0	2005			
			0.007	-	-	-	-	0	2006			
			0.01	-	-	-	-	0	2004	E 156th St Bet Dawson and Kelly, New York, NY (g)	2	7.9
			0.011*	-	-	-	-	0	2005			
			0.01	-	-	-	-	0	2006			
			0.003	-	-	-	-	0	2004	NYSDEC Field Headquarters, Gypsy Trail Road, Putnam County, NY	3	36.9
			0.002	-	-	-	-	0	2005			
			0.002	-	-	-	-	0	2006			
Nitrogen Dioxide (ppm)	Annual	0.05	0.024	-	-	-	-	0	2004	200th St & Southern Blvd, New York, NY	1	4.6
			0.027	-	-	-	-	0	2005			
			0.025	-	-	-	-	0	2006			
			0.03*	-	-	-	-	0	2004	E 156th St Bet Dawson and Kelly, New York, NY (g)	2	7.9
			0.029	-	-	-	-	0	2005			
			0.027	-	-	-	-	0	2006			
Ozone	1-hour	0.12	0.102	0.096	0.093	0.092	-	0	2004	200th St & Southern Blvd, New York, NY	1	4.6
			0.109	0.105	0.1	0.095	-	0	2005			
			0.106	0.099	0.09	0.087	-	0	2006			
			0.094	0.091	0.089	0.089	-	0	2004	E 156th St Bet Dawson and Kelly, New York, NY	2	7.9
			0.108	0.101	0.101	0.099	-	0	2005			
			0.114	0.089	0.089	0.08	-	0	2006			
			0.105	0.099	0.096	0.091	-	0	2004	White Plains Pump Station, Orchard Street, White Plains, Westchester County, NY	4	10.9
			0.133	0.123	0.119	0.118	-	1	2005			
			0.145	0.11	0.105	0.099	-	1	2006			

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Table 9-1
Existing Ambient Air Quality Concentrations
Yonkers, Westchester County, New York

Contaminant (Concentration Units)	Averaging Period	AAQS (a) (ppm)	Background Concentration							Location	Location Number	Approx. Distance from Site (miles)
			Maximum				98th Percentile	Number of Exceedences (b)	Year (d)			
			1st	2nd	3rd	4th						
(ppm)	8-hour	0.08	0.087	0.081	0.079	0.074	-	1	2004	200th St & Southern Blvd, New York, NY	1	4.6
			0.082	0.08	0.075	0.074	-	0	2005			
			0.09	0.075	0.072	0.071	-	1	2006			
			0.08	0.08	0.077	0.07	-	0	2004	E 156th St Bet Dawson and Kelly, New York, NY	2	7.9
			0.097	0.079	0.078	0.077	-	1	2005			
			0.099	0.072	0.07	0.069	-	1	2006			
			0.079	0.079	0.078	0.078	-	0	2004	White Plains Pump Station, Orchard Street, White Plains, Westchester County, NY	4	10.9
			0.106	0.098	0.097	0.095	-	9	2005			
			0.112	0.087	0.082	0.081	-	2	2006			
Carbon Monoxide (ppm)	1-hour (c)	35	3.3	2.8	-	-	-	0	2004	200th St & Southern Blvd, New York, NY (g)	1	4.6
			3.9	3.5*	-	-	-	0	2005			
			2.2	2.1	-	-	-	0	2006			
			2.9	2.6	-	-	-	0	2004	PS 59, 288 E 57th St, New York, NY	5	12.4
			2.3	2.2	-	-	-	0	2005			
			1.9	1.9	-	-	-	0	2006			
	8-hour (c)	9	2	2	-	-	-	0	2004	200th St & Southern Blvd, New York, NY (g)	1	4.6
			2.5	2.2*	-	-	-	0	2005			
			1.9	1.6	-	-	-	0	2006			
			2.1	2	-	-	-	0	2004	PS 59, 288 E 57th St, New York, NY	5	12.4
			1.6	1.5	-	-	-	0	2005			
			1.6	1.5	-	-	-	0	2006			
PM10 (ug/m3)	24-hour	150	49	40	35	34*	-	0	2004	E 156th St Bet Dawson & Kelly (1), New York, NY (g)	2	7.9
			62	61	58	53*	-	0	2005			
			-	-	-	-	-	-	2006			
			41	35	32	31	-	0	2004	E 156th St Bet Dawson & Kelly (2), New York, NY	2	7.9
			55	29	20	19	-	0	2005			
			-	-	-	-	-	-	2006			
			47	32	32	31	-	0	2004	425 Leonard St, New York, NY	6	14.9
			21	20	18	16	-	0	2005			
			-	-	-	-	-	-	2006			
	Annual	50	18	-	-	-	-	0	2004	E 156th St Bet Dawson & Kelly (1), New York, NY	2	7.9
			11	-	-	-	-	0	2005			
			-	-	-	-	-	-	2006			
			17	-	-	-	-	0	2004	E 156th St Bet Dawson & Kelly (2), New York, NY	2	7.9
			19	-	-	-	-	0	2005			
			-	-	-	-	-	-	2006			
			17	-	-	-	-	0	2004	424 Leonard St, New York, NY 425 Leonard St, New York, NY	6	14.9
			13	-	-	-	-	0	2005			
			-	-	-	-	-	-	2006			

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Table 9-1
Existing Ambient Air Quality Concentrations
Yonkers, Westchester County, New York

Contaminant (Concentration Units)	Averaging Period	AAQS (a) (ppm)	Background Concentration							Location	Location Number	Approx. Distance from Site (miles)
			Maximum				98th Percentile	Number of Exceedences (b)	Year (d)			
			1st	2nd	3rd	4th						
PM2.5 (ug/m3)	24-hour (c)(e)	35	39	38	31	31	31	0	2004			
			42	40	37	35	37	0	2005	200th St & Southern Blvd, New York, NY	1	4.6
			40	30	25	24	40	0	2006			
			42	42	38	32	38*	0	2004	2351 1st Ave, New York, NY (1)		
			40	37	37	36	37*	0	2005	2352 1st Ave, New York, NY (1) (g)	7	9.4
			44	31	27	24	44*	0	2006	2353 1st Ave, New York, NY (1)		
			-	-	-	-	-	-	2004	2351 1st Ave, New York, NY (2)		
			-	-	-	-	-	-	2005	2352 1st Ave, New York, NY (2)	7	9.4
			44	32	27	25	44	0	2006	2353 1st Ave, New York, NY (2)		
			38	35	34	30	34	0	2004			
			42	33	33	32	33	0	2005	5th Avenue & Madison, Thruway Exit 9,	8	7.1
			37	24	24	22	37	0	2006	Mamaroneck, Westchester Co, NY		
	Annual (f)	15	12.7	-	-	-	-	0	2004			
			13.9	-	-	-	-	0	2005	200th St & Southern Blvd, New York, NY	1	4.6
			13.4	-	-	-	-	0	2006			
			13.2*	-	-	-	-	1	2004	2351 1st Ave, New York, NY (1)		
			14.3*	-	-	-	-	0	2005	2352 1st Ave, New York, NY (1) (g)	7	9.4
			14.1*	-	-	-	-	0	2006	2353 1st Ave, New York, NY (1)		
			-	-	-	-	-	-	2004	2351 1st Ave, New York, NY (2)		
			-	-	-	-	-	-	2005	2352 1st Ave, New York, NY (2)	7	9.4
			14.5	-	-	-	-	0	2006	2353 1st Ave, New York, NY (2)		
			11.3	-	-	-	-	0	2004			
			12.4	-	-	-	-	0	2005	5th Avenue & Madison, Thruway Exit 9,	8	7.1
			11.7	-	-	-	-	0	2006	Mamaroneck, Westchester Co, NY		
Lead (ug/m3)	3-month	1.5	0.05	0.04	-	-	-	0	2004			
			0.04	0.03	-	-	-	0	2005	424 Leonard St, New York, NY	6	14.9
			-	-	-	-	-	-	2006			
			1.03	0.75	-	-	-	0	2004			
			0.14	0.09	-	-	-	0	2005	Ballard Rd, Wallkill, NY	9	43.7
			-	-	-	-	-	-	2006			

Notes:

(a) AAQS presented are the most stringent of the New York or National AAQS for each contaminant and respective averaging periods.

(b) Denotes an exceedance of National AAQS. (NOTE - 0.12 ppm standard is not exceeded unless hourly ozone concentrations > 0.124 ppm.)

(c) Not to be exceeded more than once per year (NAAQS). The PM2.5 standard was revised in September 2006 from 65 ug/m3 to 35 ug/m3.

(d) AirData reports are produced from a monthly extract of EPA's air pollution database, AQS. Data for this report were extracted on August 3, 2006. They represent the best information available to EPA from state agencies on that date.

(e) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 ug/m3 (NAAQS).

(f) To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 ug/m3 (NAAQS).

(g) Existing concentrations were used to assess the potential impacts associated with the project.

Source: USEPA AIRS Database, Monitor Values Report - Criteria Air Pollutants (URL: http://www.epa.gov/air/data/monvals.html)

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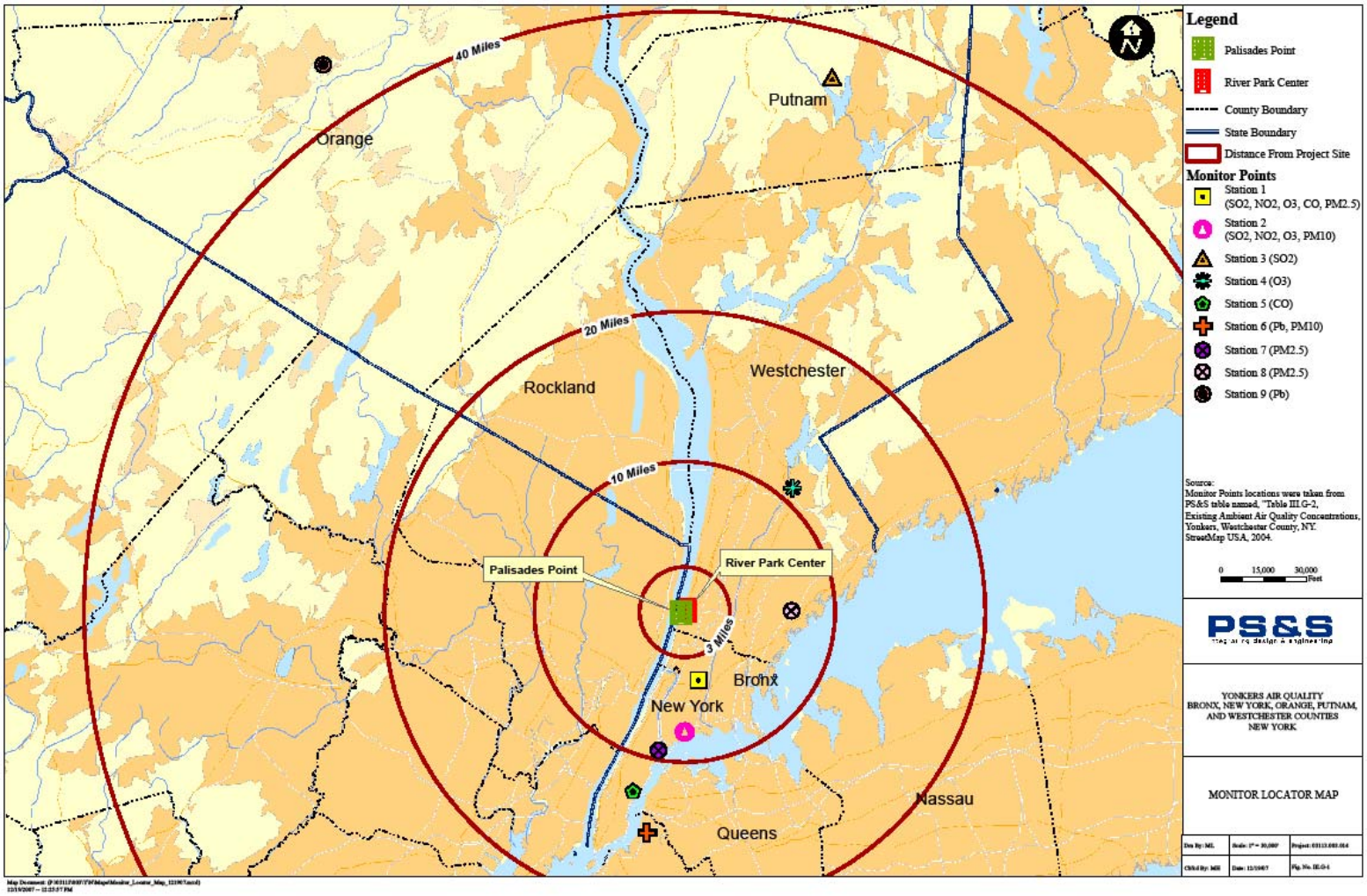


Figure 9-1 Air Quality Monitoring Locations

10.0 SFC YONKERS – PLANT MODELING RESULTS

Atmospheric Dispersion Modeling was performed for Plant emissions of criteria pollutants that included NOx, SO_2, CO, and PM-10/2.5 from combustion sources and PM-10/2.5 from process sources. The combustion sources include a Cogen system with duct burner, boiler, and diesel generator. The primary fuel for the Cogen and boiler is natural gas with secondary fuel (No. 2 fuel oil). The generator burns No. 2 fuel oil. Annual operating hours for each of the major equipment items are not identified in the Title V Operating Permit for the Plant. However, typical operating hours that correlate with the Title V permitted emission limits and facility PTE (Potential to Emit) were estimated and used for modeling purposes. Emission rates were based on information in the Title V Operating Permit as related to the type and capacity of the equipment. The emission rates, estimated operating hours, and annual emissions used for these emission sources are shown in Table 3-1.

A summary of the modeling results is shown in Tables 10-1, 10-2 and 10-3 for predicted concentrations at the various receptor locations at Palisades Point. The modeling scenarios conservatively assume that the Cogen with duct burner, boiler and diesel generator are operating at full capacity at the same time continuously for five years of hour by hour meteorology. This provides worst-case estimates of short-term concentrations for this scenario, which is an extremely conservative scenario. The predicted annual concentrations were based on adjustment of operations according to the estimated permitted annual operating hours shown in Table 3-1.

NO_2

The predicted annual concentrations of NO_2 along with background are less than the NAAQS at Palisades Point receptors. These results are shown in Table 10-1.

CO

The predicted 8-hour concentrations of CO with the Cogen with duct burner, boiler, and diesel generator operating at full capacity at the same time, burning No. 2 fuel oil, were above the applicable SIL at a couple of receptor locations at Palisades Point, but along with background

were well below the applicable CO NAAQS. These results are shown in Table 10-1 for the various Palisades Point receptor locations.

SO_2

The predicted 3-hour SO_2 concentrations were greater than the 3-hour SIL, but with the addition of background concentrations were less than the applicable NAAQS at 33 of 34 Palisades Point receptor locations. The predicted concentration at one receptor was greater than the applicable SO_2 NAAQS, with the three major combustion sources operating at the same time, continuously at full capacity, and burning No. 2 fuel oil.

The predicted 24-hour SO_2 concentration with three emission sources operating at the same time, burning No. 2 fuel oil at full capacity, were greater than the applicable SIL, and with the addition of background concentrations, was greater than the 24-hour SO_2 NAAQS at a number of receptor points located at the south tower and north tower. Most of these predicted high SO_2 concentrations can be attributed to the contributions from the Cogen and boiler with little contribution from the generator.

The predicted annual SO_2 concentrations due to the three sources operating with No. 2 fuel oil at the same time were greater than the SIL, but with the addition of the background concentration were less than the NAAQS at all of the receptor locations except for one at the North Tower.

These results are shown in Table 10-2 for the various Palisades Point receptor locations.

PM-10/2.5

Process source emissions of PM-10PM-2.5 as identified in the Title V Operating Permit for the Plant account for most of the total modeled concentrations in comparison to the three combustion sources.

PM-2.5

The PM-2.5 predicted concentrations are shown in Table 10-3 for the three combustion sources operating at the same time along with emissions from process sources at the Plant. These predicted 24-hour concentrations vary, but are below the PM-2.5 NAAQS at many of the receptor locations with a few locations above the NAAQS. The measured background levels are above the standard as well.

Process emissions have the greatest contributions at many of the receptor locations, with concentrations less than the applicable PM-2.5 NAAQS.

The predicted annual concentrations of PM-2.5 with the three combustion and process emission sources together were below the NAAQS at all of the receptors. Similarly, process emissions account for the concentrations at most of the receptors.

PM-10

The predicted PM-10 concentration at Palisades Point with the Plant cogen, boilers, and diesel generator all burning No. 2 Fuel Oil at full capacity at the same time along with process emissions are shown in Table 10-3 for the 24 hour averaging period. The predicted concentrations at all the receptors, plus background concentrations, are less than the applicable PM-10 NAAQS. The greatest contribution at many of the receptors was from the process sources.

Mitigating Circumstances

The high concentrations predicted with AERMOD for SO_2 were based on the three combustion sources operating at the same time at full capacity, burning No. 2 fuel oil with 0.37% sulfur, which the Plant is permitted for based on the NYSDEC Title V Operating Permit for the Plant.

In addition to these operational factors, a meteorological factor of wind from the south is needed to result in the predicted high concentrations discussed above. Although wind directions at the site area may vary somewhat from LGA, the analysis in Appendix C indicates the great similarities and representativeness of LGA to the Site area. Based on a five-year wind rose

(Figure 10-1) the wind is from the south approximately 19% of the time during the year. Since the standard of concern is a 24-hour averaging period, high 24-hour SO_2 concentrations would be expected at Palisades Point when the wind is from the south and when it persists from that direction for 24 hours or more and the Cogen, boiler and engine are operating continuously during that period, at full capacity, burning No. 2 fuel oil.

These SO_2 levels are predicted during operations of the combustion equipment burning No. 2 fuel oil. In general, facilities similar to the Plant burn gas instead of oil when it is available and burn oil usually if there is a gas curtailment, where residential users get priority for gas. This usually occurs in winter. Therefore it has been assumed that the Plant would be most likely to burn oil in these three combustion sources in the winter and gas in the Cogen and boiler most of the rest of the year. As shown on Table 3-1, the estimated permitted usage of No. 2 fuel oil in the Cogen is approximately 11% of the time, in the boiler approximately 16% of the time, and in the generator 5% of the time. Based on the winter seasonal wind rose for January, February and December from the five-year database (Figure 10-2), the wind is from the south approximately 9% during this time period. If the Cogen and the boiler were operating at the same time on No. 2 fuel oil during the winter months of January, February and December, the potential for high, worst case, SO_2 levels at Palisades Point would be less than 4%. This is a possible and significant situation, however a potentially rare occurrence.

In addition to this situation being a potentially rare occurrence that is allowed within the Plant Title V Operating Permit, in actuality it appears that it may be an even more remote possibility of occurrence. The Emission Statements for the Plant for 2005 and 2006 indicate that the total annual emissions from the Plant are approximately 249.6 lbs per year and 369.3 lbs per year, respectively. This indicates that, for the past two years, the Plant has used much less No. 2 fuel oil than the amount that it is permitted to use. It appears that the amount of fuel oil used in the two past years is less than 1% of the amount that the Plant is permitted to use. Should this mode of operation of Plant continue, it makes the likelihood of the high worst case SO_2 impact scenario at Palisades Point not only rare, but extremely unlikely to occur.

Palisades Point Mitigation Design Features

The Palisades Point residential tower design will incorporate features to mitigate the potential impact from interaction of the nearby Plant emissions. Although, there is potential for impacts from the Plant emissions, the occurrence is dependent on a number of variable factors such as Plant operations, fuel combustion, process operations, season, meteorological conditions especially wind direction, etc. A number of mitigation measures will be incorporated into the building designs to prevent or minimize effects from the Plant. The Palisades Point towers will be ventilated by a central HVAC system that will be located at the top of the towers. The system will provide fresh/conditioned air that will be injected into the residential units therefore providing positive flow of air to the living space. The HVAC system fresh air inlets will be located on the roof of the towers. The systems will incorporate high efficiency particulate air filters on the outside fresh air inlets. In addition the systems will include carbon filters on the outside air inlets. Other design considerations may include units with non opening windows, use of Juliet balconies instead regular balcony with patios, etc.

CONCLUSIONS

Based on atmospheric dispersion modeling (AERMOD), the Plant has the ability to emit high concentrations for SO2 based on the three combustion sources operating at the same time, at full capacity, burning No. 2 fuel oil which the Plant is permitted for based on the NYSDEC Title V Operating Permit for the Plant. The predicted 24-hour SO_2 concentrations with three emission sources operating at the same time, burning No. 2 fuel oil at full capacity, were greater than the applicable SIL, and with the addition of background concentrations, were greater than the 24-hour SO_2 NAAQS at a number receptor points located at the south tower and north tower.

The predicted annual concentrations of NOx along with background are less than the NAAQS at Palisades Point receptors. The predicted 1-hour and 8-hour concentrations of CO with the Cogen with duct burner, boiler, and diesel generator operating at full capacity at the same time, burning No. 2 fuel oil, were above the applicable SIL at a couple of receptor locations at Palisades Point, but along with background were well below the applicable CO NAAQS. The predicted annual concentrations of PM-2.5 with the three combustion and process emission sources together were

below the NAAQS at all of the receptors. Process emissions account for concentrations of PM-2.5 at most of the receptors. The predicted PM-10 concentrations at Palisades Point with the Plant cogen, boilers, and diesel generator all burning No. 2 Fuel Oil at full capacity at the same time along with process emissions, plus background concentrations, are less than the applicable PM-10 NAAQS at all of the receptors. The greatest contribution to PM-10 concentrations at many of the receptors was from the process sources.

It has been assumed that the Plant would be most likely to burn oil in these three combustion sources in the winter and gas in the Cogen and boiler most of the rest of the year. The estimated permitted usage of No. 2 fuel oil in the Cogen is approximately 11% of the time, in the boiler approximately 16% of the time, and in the generator 5% of the time. Based on meteorological conditions, if the Cogen and the boiler were operating at the same time on No. 2 fuel oil during the winter months of January, February and December, the potential for high, worst case, SO_2 levels at Palisades Point would be less than 4%. The emissions for the Plant for 2005 and 2006 indicate that for the past two years, the Plant has used less than 1% of the amount that the Plant is permitted to use. Should this mode of operation of Plant continue, it makes the likelihood of the high worst case SO_2 impact scenario at Palisade Point not only rare, but extremely unlikely to occur.

Table 10-1 Sugar Plant Modeling Results for NO_2 and CO

Receptors					Pollutant Concentrations (µg/m³) Averaging Period		
No.	UTM-East (meters)	UTM-North (meters)	Height Above Ground (ft)	Location Description	NO_2 Annual (5-yr) All Sources	CO 1-hr 2nd high All Sources	CO 8-hr 2nd high All Sources
1	592202.8	4531648.0	0	Walkway SW	0.76	83.49	63.60
2	592190.8	4531670.1	0	Sidewalk west side	0.82	136.45	68.00
3	592162.8	4531694.3	0	Riverwalk south end	0.88	119.42	75.76
4	592173.4	4531746.3	0	Riverwalk center	1.57	94.03	38.55
5	592190.8	4531746.8	0	Walkway center	4.22	185.67	95.03
6	592183.0	4531793.9	0	Riverwalk north	6.17	295.04	152.59
7	592192.7	4531841.7	0	Riverwalk north end	7.50	194.81	99.06
8	592210.8	4531661.3	0	Base of S bldg SW	0.97	216.91	133.86
9	592233.5	4531660.4	0	Base of S bldg south center	1.48	200.52	143.89
10	592262.5	4531660.0	0	Base of S bldg SE	6.09	238.83	98.25
11	592264.3	4531683.2	0	Base of S bldg east side	3.97	209.41	117.57
12	592211.5	4531663.2	30	S rooftop garden SW	4.16	711.32	415.38
13	592233.5	4531662.5	30	S rooftop garden S center	15.55	1029.59	814.67
14	592261.7	4531661.7	30	S rooftop garden SE	16.03	746.45	500.38
15	592211.6	4531685.2	30	S rooftop garden center west	4.27	397.48	256.51
16	592234.4	4531684.2	30	S rooftop garden center	8.97	468.07	374.06
17	592262.4	4531683.1	30	S rooftop garden center east	9.54	408.51	234.03
18	592213.2	4531704.2	30	S rooftop garden NW	3.63	166.17	81.01
19	592236.9	4531706.5	30	S rooftop garden N center	9.52	180.48	107.40
20	592261.3	4531708.9	30	S rooftop garden NE	9.67	133.00	78.06
21	592213.2	4531706.2	250	S tower rooftop SW	4.00	401.60	64.27
22	592236.9	4531708.5	250	S tower rooftop S center	10.24	300.49	96.81
23	592260.3	4531710.9	250	S tower rooftop SE	10.02	353.79	115.93
24	592212.2	4531705.2	100	S tower balcony SW 11th fl	14.85	468.17	125.16
25	592212.2	4531706.2	150	S tower balcony SW 16th fl	15.57	865.83	191.27
26	592212.2	4531707.2	200	S tower balcony SW 21st fl	10.04	554.96	119.06
27	592216.7	4531771.6	0	N tower SW ground	23.41	378.46	242.27
28	592216.5	4531772.1	50	N tower balcony SW 6th fl	22.31	355.56	230.74
29	592216.2	4531772.6	100	N tower balcony SW 11th fl	21.08	317.07	209.98
30	592216.0	4531773.1	150	N tower balcony SW 16th fl	21.38	338.22	198.74
31	592215.7	4531773.6	200	N tower balcony SW 21st fl	21.12	402.52	230.49
32	592217.7	4531772.6	250	N tower rooftop SW	17.08	440.12	194.42
33	592239.1	4531763.4	250	N tower rooftop S center	28.08	514.20	269.31
34	592261.9	4531760.3	250	N tower rooftop SE	22.97	449.32	208.02
	Maximum Modeled Concentration				28.08	1029.59	814.67
	SIL				1	2,000	500
	Background				60	4,229	2,889
	Maximum Modeled Concentration + Background				88	5,259	3,704
	NAAQS				100	40,000	10,000

Table 10-2 Sugar Plant Modeling Results for SO_2

Receptors					Pollutant Concentrations (µg/m³) Averaging Period, Sources Modeled					
No.	UTM-E (meters)	UTM-N (meters)	Height Above Ground (ft)	Location Description	SO_2 3-hr 2nd high All Sources	SO_2 24-hr 2nd high All Sources	SO_2 24-hr 2nd high Boiler	SO_2 24-hr 2nd high Cogen	SO_2 24-hr 2nd high Diesel Generator	SO_2 Annual (5 yr) All Sources
1	592202.8	4531648.0	0	Walkway SW	42.16	17.63	0.26	10.15	15.94	0.07
2	592190.8	4531670.1	0	Sidewalk west side	46.83	19.70	0.69	3.61	17.66	0.07
3	592162.8	4531694.3	0	Riverwalk south end	94.06	30.68	2.16	12.95	15.59	0.09
4	592173.4	4531746.3	0	Riverwalk center	103.62	30.21	17.88	12.74	8.08	0.33
5	592190.8	4531746.8	0	Walkway center	297.00	91.43	48.56	47.17	12.90	1.03
6	592183.0	4531793.9	0	Riverwalk north	468.56	145.85	77.01	65.40	18.67	1.55
7	592192.7	4531841.7	0	Riverwalk north end	284.26	126.90	41.56	91.22	18.48	1.77
8	592210.8	4531661.3	0	Base of S bldg SW	76.48	30.76	0.26	21.60	25.28	0.09
9	592233.5	4531660.4	0	Base of S bldg south center	181.55	83.21	0.04	62.04	26.07	0.16
10	592262.5	4531660.0	0	Base of S bldg SE	234.41	138.58	0.05	125.00	24.28	1.30
11	592264.3	4531683.2	0	Base of S bldg east side	155.29	57.95	0.46	49.21	22.67	0.64
12	592211.5	4531663.2	30	S rooftop garden SW	248.25	111.03	0.48	22.23	110.91	0.35
13	592233.5	4531662.5	30	S rooftop garden S center	424.46	**258.29**	0.16	60.52	**258.25**	1.33
14	592261.7	4531661.7	30	S rooftop garden SE	476.11	245.55	0.23	169.09	107.45	2.50
15	592211.6	4531685.2	30	S rooftop garden center W	141.29	72.08	1.42	25.86	69.98	0.40
16	592234.4	4531684.2	30	S rooftop garden center	204.88	126.85	0.84	64.44	122.20	0.82
17	592262.4	4531683.1	30	S rooftop garden center E	213.91	108.38	1.13	72.52	55.15	1.32
18	592213.2	4531704.2	30	S rooftop garden NW	114.59	45.60	23.58	30.03	18.21	0.67
19	592236.9	4531706.5	30	S rooftop garden N center	192.29	102.72	25.18	79.83	25.27	2.12
20	592261.3	4531708.9	30	S rooftop garden NE	225.59	112.74	18.53	90.53	16.49	2.12
21	592213.2	4531706.2	250	S tower rooftop SW	550.28	108.11	77.46	64.19	6.32	1.14
22	592236.9	4531708.5	250	S tower rooftop S center	646.99	171.06	119.18	58.06	13.54	2.74
23	592260.3	4531710.9	250	S tower rooftop SE	660.53	201.35	148.68	64.62	10.01	2.76
24	592212.2	4531705.2	100	S tower balcony SW 11th	583.55	233.72	52.00	205.30	21.49	3.65
25	592212.2	4531706.2	150	S tower balcony SW 16th	1110.74	**271.51**	147.12	208.73	15.81	4.44
26	592212.2	4531707.2	200	S tower balcony SW 21st fl	733.42	234.45	184.54	118.51	9.01	3.10
27	592216.7	4531771.6	0	N tower SW ground	667.53	**344.01**	120.94	**257.65**	46.68	5.63
28	592216.5	4531772.1	50	N tower balcony SW 6th fl	633.00	**325.74**	119.04	240.65	44.92	5.38
29	592216.2	4531772.6	100	N tower balcony SW 11th	558.46	**303.95**	101.65	206.24	40.97	5.21
30	592216.0	4531773.1	150	N tower balcony SW 16th	625.03	**332.33**	137.38	172.17	36.25	5.63
31	592215.7	4531773.6	200	N tower balcony SW 21st	804.57	**391.57**	213.35	146.95	31.58	5.84
32	592217.7	4531772.6	250	N tower rooftop SW	707.11	**285.96**	122.06	141.72	29.89	4.47
33	592239.1	4531763.4	250	N tower rooftop S center	**1150.58**	**395.76**	170.60	213.61	41.32	7.18
34	592261.9	4531760.3	250	N tower rooftop SE	**1130.58**	**337.24**	175.71	185.76	31.87	5.99
	Maximum Modeled Concentration				**1150.58**	**395.76**	**213.35**	**257.65**	**258.25**	**7.18**
	SIL				25	5	5	5	5	1
	Background				174	110	110	110	110	29
	Maximum Modeled Concentration + Background				1,325	506	323	368	368	36
	NAAQS				1,300	365	365	365	365	80

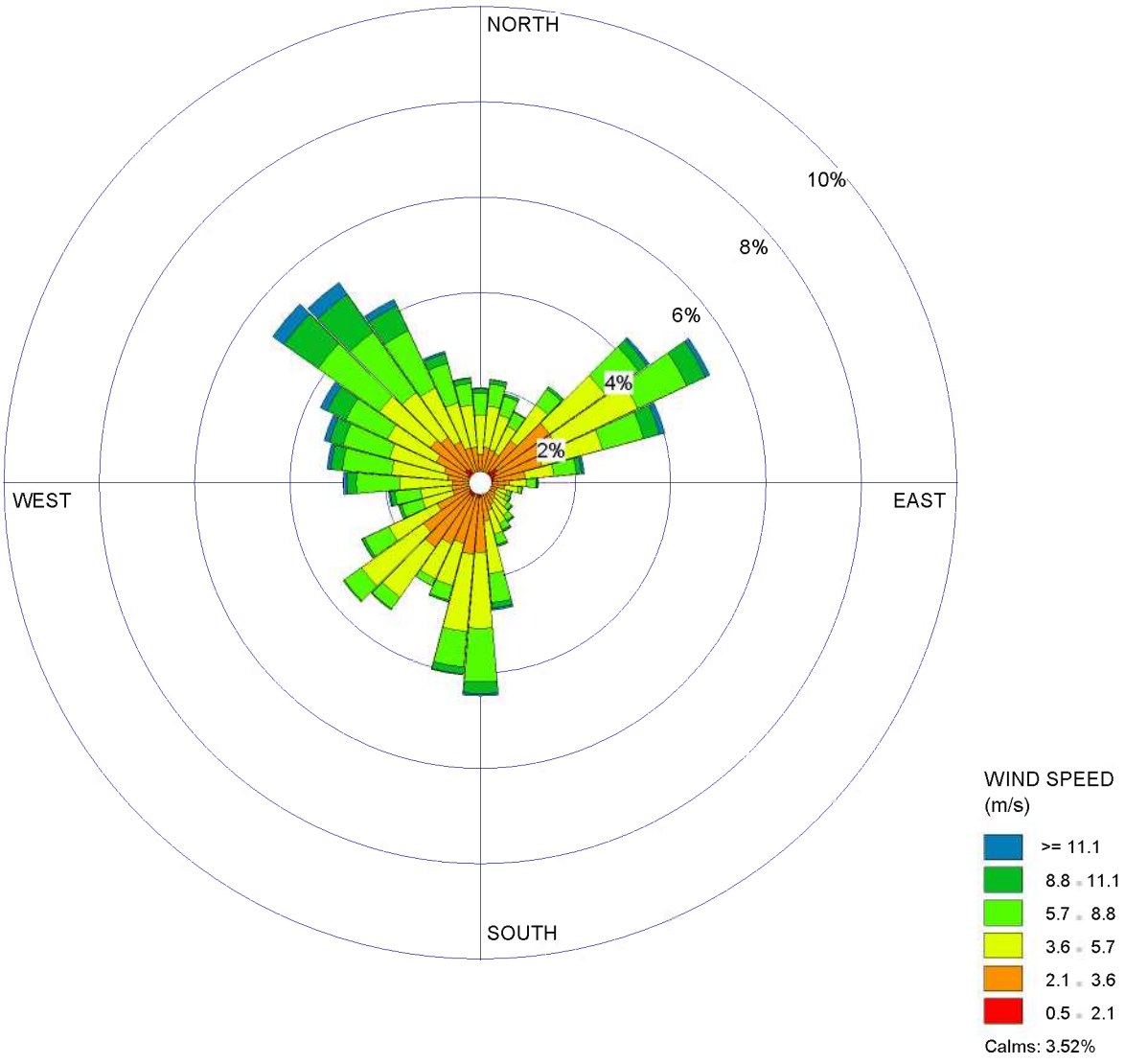
Table 10-3 Sugar Plant Modeling Results for PM-10 and PM-2.5

Receptors					Pollutant Concentrations (µg/m³) Averaging Period, Sources Modeled					
No.	UTM-East (meters)	UTM-North (meters)	Height Above Ground (ft)	Location Description	PM-10 24-hr 6th high (5 yrs) All Sources	PM-2.5 24-hr 8th high average All Sources (oil) (a)	PM-2.5 24-hr 8th high average Process	PM-2.5 24-hr 8th high average All Sources (gas)(b)	PM-2.5 Annual (5 yr) All Sources	PM-2.5 Annual (5 yr) Process
1	592202.8	4531648.0	0	Walkway SW	29.35	24.01	23.60	23.60	5.01	4.99
2	592190.8	4531670.1	0	Sidewalk west side	23.92	18.59	17.96	17.96	3.81	3.79
3	592162.8	4531694.3	0	Riverwalk south end	18.22	14.02	13.20	13.25	2.82	2.79
4	592173.4	4531746.3	0	Riverwalk center	18.52	13.27	12.21	12.44	2.60	2.51
5	592190.8	4531746.8	0	Walkway center	22.21	16.61	12.97	14.65	2.99	2.69
6	592183.0	4531793.9	0	Riverwalk north	23.08	15.97	10.64	12.78	2.63	2.19
7	592192.7	4531841.7	0	Riverwalk north end	22.75	17.08	9.30	12.42	2.52	1.89
8	592210.8	4531661.3	0	Base of S bldg SW	28.62	23.12	22.89	22.89	4.95	4.92
9	592233.5	4531660.4	0	Base of S bldg south center	36.06	27.51	27.25	27.25	5.94	5.89
10	592262.5	4531660.0	0	Base of S bldg SE	44.44	32.65	30.24	31.41	7.28	6.69
11	592264.3	4531683.2	0	Base of S bldg east side	35.91	26.93	25.02	25.39	5.71	5.44
12	592211.5	4531663.2	30	S rooftop garden SW	40.94	32.11	29.15	29.16	5.82	5.72
13	592233.5	4531662.5	30	S rooftop garden S center	66.73	**51.86**	27.97	28.05	6.49	6.09
14	592261.7	4531661.7	30	S rooftop garden SE	47.68	**39.20**	24.66	26.48	6.61	5.57
15	592211.6	4531685.2	30	S rooftop garden center W	34.70	27.56	23.97	24.06	4.72	4.60
16	592234.4	4531684.2	30	S rooftop garden center	44.16	34.63	22.79	22.89	5.15	4.90
17	592262.4	4531683.1	30	S rooftop garden center E	37.20	29.61	22.69	23.17	5.33	4.81
18	592213.2	4531704.2	30	S rooftop garden NW	28.72	23.09	20.65	21.06	4.15	3.96
19	592236.9	4531706.5	30	S rooftop garden N center	33.51	25.48	19.06	21.75	4.84	4.05
20	592261.3	4531708.9	30	S rooftop garden NE	34.61	25.85	18.86	21.97	4.81	3.96
21	592213.2	4531706.2	250	S tower rooftop SW	6.06	2.79	0.28	1.55	0.28	0.05
22	592236.9	4531708.5	250	S tower rooftop S center	10.31	7.09	0.32	3.59	0.76	0.05
23	592260.3	4531710.9	250	S tower rooftop SE	11.40	7.01	0.32	3.64	0.75	0.05
24	592212.2	4531705.2	100	S tower balcony SW 11th	26.58	18.62	6.95	12.84	2.78	1.35
25	592212.2	4531706.2	150	S tower balcony SW 16th	21.02	12.99	2.04	8.51	1.60	0.39
26	592212.2	4531707.2	200	S tower balcony SW 21st	12.94	6.59	0.75	3.91	0.68	0.13
27	592216.7	4531771.6	0	N tower SW ground	46.80	**37.39**	14.26	23.11	4.81	2.78
28	592216.5	4531772.1	50	N tower balcony SW 6th fl	44.30	34.14	12.59	21.25	4.28	2.36
29	592216.2	4531772.6	100	N tower balcony SW 11th	35.13	25.13	5.74	14.12	2.86	1.12
30	592216.0	4531773.1	150	N tower balcony SW 16th	28.74	20.06	2.20	9.94	2.00	0.41
31	592215.7	4531773.6	200	N tower balcony SW 21st	25.97	17.62	0.90	8.22	1.59	0.15
32	592217.7	4531772.6	250	N tower rooftop SW	23.08	15.61	0.41	6.87	1.34	0.06
33	592239.1	4531763.4	250	N tower rooftop S center	33.48	24.62	0.42	11.03	2.31	0.06
34	592261.9	4531760.3	250	N tower rooftop SE	26.59	18.31	0.41	8.57	1.90	0.06
Maximum Modeled Concentration					**66.73**	**51.86**	**30.24**	**31.41**	**7.28**	**6.69**
SIL					5	5	5	5	0	0
Background					43.5	39.7	39.7	39.7	13.9	13.9
Maximum Modeled Concentration + Background					**110.2**	**91.5**	**69.9**	**71.1**	**21.1**	**20.6**
NAAQS					150	35	35	35	15	15

Notes:
(a) Modeled with boiler, cogen and diesel generator firing oil
(b) Modeled with boiler and cogen firing natural gas and diesel generator not operating

FIGURE 10-1
ANNUAL WIND ROSE - NY LAGUARDIA

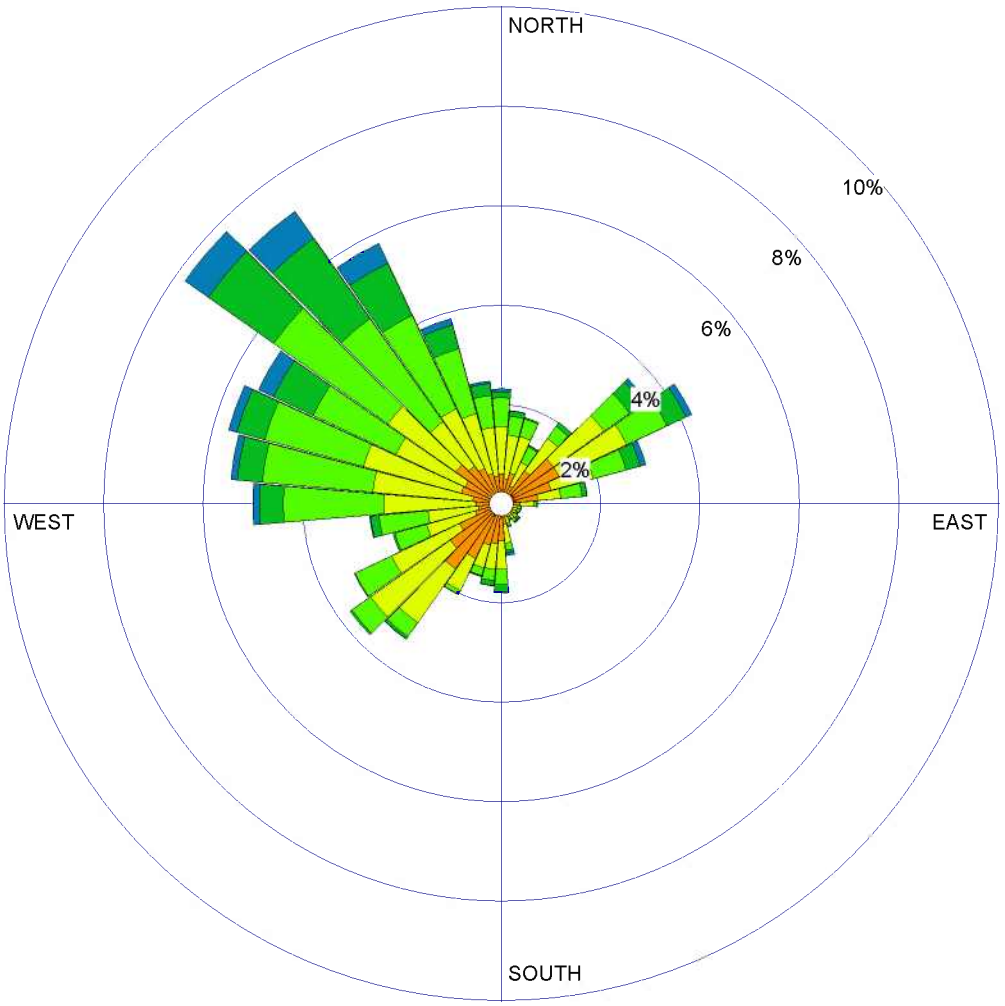
DISPLAY:
Wind Speed
Direction (blowing from)



NOTES: Latest available meteorological data preprocessed for use in AERMOD model 2002-2006	DATA PERIOD: **2002-2006** **Jan 1 - Dec 31** **00:00 - 23:00**	**Paulus, Sokolowski and Sartor, LLC**	
	CALM WINDS: **3.52%**	TOTAL COUNT: **43729 hrs.**	
	AVG. WIND SPEED: **4.88 m/s**	DATE: **12/21/2007**	PROJECT NO.:

FIGURE 10-2
WINTER WIND ROSE - NY LAGUARDIA

DISPLAY:
Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 2.41%

NOTES:

Latest available meteorological data preprocessed for use in AERMOD model
2002-2006
December, January, February

Paulus, Sokolowski and Sartor, LLC

CALM WINDS:	TOTAL COUNT:	
2.41%	**10756 hrs.**	
AVG. WIND SPEED:	DATE:	PROJECT NO.:
5.55 m/s	**12/21/2007**	

11.0 REFERENCES

Auer 1978. Correlation of land use and cover with meteorological anomalies. *J. Appl. Meteor.*, 17:636-643.

NYSDEC 2003. *CP-33 / Assessing and Mitigating Impacts of Fine Particulate Matter Emissions.* New York State Department of Environmental Conservation. December 29, 2003.

NYSDEC 2006. *DAR -10 / NYSDEC Guidelines on Dispersion Modeling Procedures for Air Quality Impact Analysis*. New York State Department of Environmental Conservation, Division of Air Resources. May 9, 2006.

USEPA 1985. *Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)* (EPA-450/4-80-023R). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. 1985.

USEPA 1995. *User's Guide to the Building Profile Input Program* (EPA-454/R-93-038). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Technical Support Division. Revised February 8, 1995.

USEPA 2004a. *User's Guide to the Building Profile Input Program* (EPA-454/R-93-038). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Technical Support Division. Revised April 21, 2004.

USEPA 2004b. *User's Guide for the AMS/EPA Regulatory Model – AERMOD*. (EPA-454/B-03-001). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. September 2004.

USEPA 2004c. *Users Guide for the AERMOD Terrain Preprocessor (AERMAP)* (EPA-454/B-03-003). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. October 2004.

USEPA 2004d. *User's Guide for the AERMOD Meteorological Preprocessor (AERMET)* (EPA-454/B-03-002). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. November 2004.

USEPA 2005. Revision to the Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. *Federal Register* (70 FR 68218), November 9, 2005.

USEPA 2006a. *Addendum – User's Guide for the AMS/EPA Regulatory Model – AERMOD (EPA-454/B-03-001, September 2004)*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. December 2006.

USEPA 2006b. *Addendum – Users Guide for the AERMOD Terrain Preprocessor (AERMAP) (EPA-454/B-03-003, October 2004).* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. December 2006.

USEPA 2006c. *Addendum – User's Guide for the AERMOD Meteorological Preprocessor (AERMET) (EPA-454/B-03-002, November 2004).* U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emissions Monitoring and Analysis Division. December 2006.

USEPA 2006d. Model Change Bulletin MCB#1 – AERMOD (dated 06341). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. December 7, 2006.

USEPA 2006e. Model Change Bulletin MCB#1 – AERMAP (dated 06341). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. December 7, 2006.

USEPA 2006f. Model Change Bulletin MCB#1 – AERMET (dated 06341). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. December 7, 2006.

USEPA 2007a. Model Change Bulletin MCB#2 – AERMOD (dated 07026). U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. January 26, 2007.

USEPA 2007b. *AERMOD Implementation Guide*. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Air Quality Assessment Division. Revised October 19, 2007.

Yonkers City Council 2007. Scoping Outline of Issues to Be Addressed in a Draft Environmental Impact Statement (DEIS) for the Projects Known As: Palisades Point, Cacace Center, River Park Center and Larkin Plaza. Office of the Yonkers City Council. Adopted March 27, 2007.

APPENDIX A

Title V Operating Permit and Application

APPENDIX B

Emission Statements for American Sugar Refining Company, Inc.

APPENDIX C

Comparison of Climatology and Land Use for Surface Air Met Station Data