DOCKETED

Docket Number:	16-AFC-01
Project Title:	Stanton Energy Reliability Center
TN #:	214207-13
Document Title:	Appendix 5.1B - Air Quality Impact Analysis Support Data
Description:	Application for Certification Vol. 2
Filer:	Sabrina Savala
Organization:	Stanton Energy Reliability Center, LLC
Submitter Role:	Applicant
Submission Date:	10/27/2016 10:23:29 AM
Docketed Date:	10/26/2016

Appendix 5.1B
Air Quality Impact Analysis Support Data

APPENDIX 5.1B

Modeling Support Data

Tables presented in this Appendix are as follows:

5.1B-1	ASHRAE Climatology Summary for Fullerton Airport
5.1B-2	Air Monitoring Summary Data for 2013-2015
5.1B-3	Locations of SCAQMD AERMOD Meteorological Data
5.1B-4	Facility Impact/Modeling Results Summary
5.1B-5	Fumigation Modeling Results
5.1B-6	Deposition Modeling Results
5.1B-7	Construction Impact/Modeling Summary

In addition, this Appendix contains the following figures:

5.1B-1a-e	Annual and Quarterly Wind Roses
5.1B-2	Deposition Modeling for Seal Beach National Wildlife Refuge

Modeling input/output files are included in the enclosed CD's.

Figures showing the Facility BPIP Structures and the Coarse and Downwash Receptor Grids are contained in the main report in Section 5.1.

Table 5.1B-1 ASHRAE Climatology Summary for Fullerton Airport (2 pages)

2013 ASHRAE Handbook - Fundamentals (IP)

FULLERTON MUNICIPAL, CA, USA

WMO#: **722976**

Lat: **33.87N** Long: **117.98W** Elev: **95** StdP: **14.65** Time Zone: **-8.00 (NAP)** Period: **98-10** WBAN: **03166**

Annual Heating and Humidification Design Conditions

	Coldest Month	Heating DB		Humidification DP/MCDB and HR						Coldest month WS/MCDB				MCWS/PCWD to 99.6% DB	
				99.6%			99%			0.4%		1%			
		99.6%	99%	DP	HR	MCDB	DP	HR	MCDB	WS	MCDB	WS	MCDB	MCWS	PCWD
	(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*	*(g)*	*(h)*	*(i)*	*(j)*	*(k)*	*(l)*	*(m)*	*(n)*	*(o)*
(1)	**12**	**39.2**	**42.8**	**9.9**	**9.2**	**67.0**	**16.4**	**12.6**	**66.5**	**19.7**	**67.8**	**16.4**	**65.6**	**1.2**	**90**

Annual Cooling, Dehumidification, and Enthalpy Design Conditions

	Hottest Month	Hottest Month DB Range	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWD to 0.4% DB	
			0.4%		1%		2%		0.4%		1%		2%			
			DB	MCWB	DB	MCWB	DB	MCWB	WB	MCDB	WB	MCDB	WB	MCDB	MCWS	PCWD
	(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*	*(g)*	*(h)*	*(i)*	*(j)*	*(k)*	*(l)*	*(m)*	*(n)*	*(o)*	*(p)*
(2)	**8**	**19.2**	**93.4**	**67.0**	**90.6**	**66.8**	**88.0**	**66.7**	**72.4**	**86.5**	**71.0**	**84.3**	**69.7**	**82.3**	**6.7**	**200**

	Dehumidification DP/MCDB and HR									Enthalpy/MCDB						Hours 8 to 4 & 55/69
	0.4%			1%			2%			0.4%		1%		2%		
	DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB	
	(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*	*(g)*	*(h)*	*(i)*	*(j)*	*(k)*	*(l)*	*(m)*	*(n)*	*(o)*	*(p)*
(3)	**67.6**	**101.7**	**79.6**	**65.9**	**95.8**	**78.1**	**64.3**	**90.4**	**75.0**	**36.1**	**86.6**	**34.7**	**84.1**	**33.6**	**83.1**	**1354**

Extreme Annual Design Conditions

	Extreme Annual WS			Extreme Max WB	Extreme Annual DB				n-Year Return Period Values of Extreme DB							
					Mean		Standard deviation		n=5 years		n=10 years		n=20 years		n=50 years	
	1%	2.5%	5%		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*	*(g)*	*(h)*	*(i)*	*(j)*	*(k)*	*(l)*	*(m)*	*(n)*	*(o)*	*(p)*
(4)	**12.9**	**11.0**	**10.2**	**81.5**	**34.9**	**102.7**	**2.8**	**4.5**	**32.8**	**105.9**	**31.2**	**108.5**	**29.6**	**111.0**	**27.6**	**114.3**

Monthly Climatic Design Conditions

				Annual *(d)*	Jan *(e)*	Feb *(f)*	Mar *(g)*	Apr *(h)*	May *(i)*	Jun *(j)*	Jul *(k)*	Aug *(l)*	Sep *(m)*	Oct *(n)*	Nov *(o)*	Dec *(p)*
(5)	**Temperatures, Degree-Days and Degree-Hours**	Tavg		**65.1**	**57.2**	**57.5**	**60.0**	**61.9**	**66.5**	**69.8**	**74.2**	**74.9**	**73.0**	**67.8**	**61.8**	**56.2**
(6)		Sd			**5.18**	**4.57**	**4.97**	**5.25**	**4.20**	**3.80**	**3.85**	**3.93**	**4.77**	**4.73**	**5.06**	**4.28**
(7)		HDD50		**9**	**3**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
(8)		HDD65		**1202**	**250**	**215**	**170**	**120**	**29**	**3**	**0**	**0**	**0**	**21**	**121**	**273**
(9)		CDD50		**5522**	**226**	**210**	**311**	**358**	**510**	**594**	**751**	**772**	**689**	**551**	**353**	**197**
(10)		CDD65		**1240**	**7**	**4**	**15**	**28**	**74**	**147**	**286**	**307**	**239**	**108**	**24**	**1**
(11)		CDH74		**9455**	**184**	**138**	**242**	**408**	**505**	**773**	**1912**	**2195**	**1724**	**933**	**364**	**77**
(12)		CDH80		**3475**	**38**	**41**	**77**	**181**	**183**	**220**	**651**	**836**	**716**	**394**	**130**	**8**
(13)	**Precipitation**	PrecAvg		**13.2**	**3.1**	**2.6**	**2.0**	**1.3**	**0.3**	**0.1**	**0.0**	**0.1**	**0.3**	**0.3**	**1.6**	**1.8**
(14)		PrecMax		**87.6**	**6.4**	**6.4**	**6.3**	**6.9**	**7.6**	**8.1**	**8.9**	**9.2**	**9.3**	**8.0**	**7.2**	**6.3**
(15)		PrecMin		**73.0**	**4.2**	**0.4**	**0.0**	**0.1**	**0.0**	**6.5**	**0.1**	**6.3**	**6.3**	**6.1**	**5.4**	**3.9**
(16)		PrecSD		**3.7**	**0.5**	**1.2**	**1.4**	**1.8**	**2.0**	**0.5**	**1.8**	**0.7**	**0.7**	**0.6**	**0.5**	**0.7**
(17)	**Monthly Design Dry Bulb and Mean Coincident Wet Bulb Temperatures**	0.4%	DB		**84.0**	**86.1**	**89.7**	**96.9**	**93.3**	**92.8**	**93.0**	**97.1**	**100.1**	**94.8**	**90.4**	**81.0**
(18)			MCWB		**56.7**	**56.5**	**60.6**	**59.6**	**62.8**	**69.1**	**70.4**	**69.4**	**68.8**	**64.7**	**60.2**	**56.0**
(19)		2%	DB		**79.5**	**78.9**	**81.1**	**83.9**	**83.9**	**85.6**	**90.1**	**91.3**	**92.7**	**90.1**	**83.1**	**75.2**
(20)			MCWB		**55.8**	**55.6**	**56.6**	**59.5**	**63.5**	**67.6**	**69.3**	**69.5**	**68.4**	**62.4**	**57.3**	**53.6**
(21)		5%	DB		**73.4**	**72.6**	**74.6**	**77.2**	**79.4**	**81.4**	**87.5**	**88.4**	**88.3**	**83.8**	**77.4**	**71.9**
(22)			MCWB		**53.4**	**54.0**	**56.3**	**58.5**	**62.9**	**66.3**	**69.7**	**69.3**	**67.9**	**61.5**	**55.9**	**52.8**
(23)		10%	DB		**69.8**	**67.6**	**70.3**	**72.1**	**74.7**	**78.8**	**83.5**	**84.0**	**82.4**	**79.1**	**72.4**	**66.2**
(24)			MCWB		**52.7**	**53.2**	**56.4**	**57.9**	**61.9**	**65.4**	**68.8**	**68.8**	**67.1**	**62.0**	**56.4**	**51.5**
(25)	**Monthly Design Wet Bulb and Mean Coincident Dry Bulb Temperatures**	0.4%	WB		**61.4**	**61.2**	**64.1**	**65.0**	**68.6**	**70.9**	**74.5**	**74.1**	**73.8**	**70.9**	**63.6**	**60.4**
(26)			MCDB		**73.9**	**77.3**	**78.9**	**80.4**	**81.5**	**87.0**	**88.9**	**90.1**	**90.0**	**84.3**	**74.0**	**70.0**
(27)		2%	WB		**58.9**	**58.7**	**61.2**	**62.2**	**65.9**	**68.9**	**72.2**	**72.0**	**71.6**	**67.5**	**61.9**	**58.3**
(28)			MCDB		**67.8**	**69.2**	**72.8**	**76.8**	**78.3**	**82.9**	**84.7**	**86.8**	**85.6**	**79.3**	**73.4**	**65.6**
(29)		5%	WB		**57.2**	**57.2**	**59.4**	**60.2**	**64.3**	**67.4**	**70.8**	**70.7**	**69.9**	**65.4**	**60.3**	**56.9**
(30)			MCDB		**65.9**	**66.1**	**69.0**	**73.2**	**75.9**	**79.8**	**82.6**	**84.5**	**82.7**	**75.8**	**70.7**	**64.0**
(31)		10%	WB		**55.6**	**55.8**	**57.7**	**58.5**	**62.5**	**65.9**	**69.3**	**69.3**	**68.5**	**63.9**	**59.1**	**55.5**
(32)			MCDB		**64.5**	**63.8**	**66.5**	**69.3**	**72.4**	**76.9**	**80.7**	**82.1**	**80.7**	**72.5**	**68.2**	**62.3**

FULLERTON MUNICIPAL, CA, USA

WMO#: **722976**

Lat: **33.87N** Long: **117.98W** Elev: **95** StdP: **14.65** Time Zone: **-8.00 (NAP)** Period: **98-10** WBAN: **03166**

(33)	**Mean Daily Temperature Range**		MDBR	**21.6**	**19.4**	**18.7**	**18.1**	**16.3**	**15.7**	**17.8**	**19.2**	**19.7**	**19.8**	**21.7**	**21.5**
(34)		5% DB	MCDBR	**31.3**	**30.3**	**29.0**	**30.5**	**25.9**	**21.5**	**23.1**	**25.7**	**28.7**	**32.1**	**31.7**	**30.9**
(35)			MCWBR	**13.6**	**13.3**	**12.2**	**12.3**	**10.4**	**8.4**	**8.1**	**9.2**	**10.4**	**12.3**	**12.5**	**14.2**
(36)		5% WB	MCDBR	**21.8**	**21.0**	**20.7**	**22.8**	**19.6**	**20.0**	**20.1**	**21.8**	**22.7**	**21.8**	**22.3**	**20.6**
(37)			MCWBR	**11.3**	**10.9**	**10.3**	**10.5**	**8.8**	**8.4**	**7.8**	**8.7**	**9.2**	**10.2**	**10.9**	**11.6**
(38)	**Clear Sky Solar Irradiance**	taub		**0.334**	**0.345**	**0.338**	**0.326**	**0.338**	**0.336**	**0.350**	**0.361**	**0.347**	**0.360**	**0.333**	**0.331**
(39)		taud		**2.624**	**2.545**	**2.524**	**2.495**	**2.431**	**2.423**	**2.411**	**2.428**	**2.519**	**2.479**	**2.610**	**2.613**
(40)		Ebn,noon		**280**	**287**	**298**	**305**	**300**	**299**	**294**	**290**	**291**	**277**	**278**	**274**
(41)		Edh,noon		**24**	**29**	**32**	**34**	**37**	**37**	**37**	**36**	**31**	**30**	**24**	**23**

Nomenclature: See separate page

Nomenclature - Tables of Climatic Design Conditions

CDD*n*	Cooling degree-days base n°F, °F-day
CDH*n*	Cooling degree-hours base n°F, °F-hour
DB	Dry bulb temperature, °F
DP	Dew point temperature, °F
Ebn,noon	Clear sky beam normal irradiances at solar noon, Btu/h/ft2
Edh,noon	Clear sky diffuse horizontal irradiance at solar noon, Btu/h/ft2
Elev	Elevation, ft
Enth	Enthalpy, Btu/lb
HDD*n*	Heating degree-days base n°F, °F-day
Hours 8/4 & 55/69	Number of hours between 8 a.m. and 4 p.m. with DB between 55 and 69 °F
HR	Humidity ratio, grains of moisture per lb of dry air
Lat	Latitude, °
Long	Longitude, °
MCDB	Mean coincident dry bulb temperature, °F
MCDBR	Mean coincident dry bulb temp. range, °F
MCDP	Mean coincident dew point temperature, °F
MCWB	Mean coincident wet bulb temperature, °F
MCWBR	Mean coincident wet bulb temp. range, °F
MCWS	Mean coincident wind speed, mph
MDBR	Mean dry bulb temp. range, °F
PCWD	Prevailing coincident wind direction, °, 0 = North, 90 = East
Period	Years used to calculate the design conditions
PrecAvg	Average precipitation, in
PrecSD	Standard deviation of precipitation, in
PrecMin	Minimum precipitation, in
PrecMax	Maximum precipitation, in
Sd	Standard deviation of daily average temperature, °F
StdP	Standard pressure at station elevation, psi
taub	Clear sky optical depth for beam irradiance
taud	Clear sky optical depth for diffuse irradiance
Tavg	Average temperature, °F
Time Zone	Hours ahead or behind UTC, and time zone code
WB	Wet bulb temperature, °F
WBAN	Weather Bureau Army Navy number
WMO#	Station identifier from the World Meteorological Organization
WS	Wind speed, mph

Numbers *(1)* to *(41)* and letters *(a)* to *(p)* are row and column references to quickly point to an element in the table.
For example the 5% design wet bulb temperature for July can be found in row (29), column (k).

Table 5.1B-2 SERC Background Air Quality Values for 2013-2015 (3 Pages)

Historical Monitored Air Quality Values

Pollutant	Units	Avg Time	Station	2013	2014	2015
Ozone	ppm	1-Hr State	Anaheim	0.084	0.111	0.100
			Costa Mesa	0.095	0.096	0.099
		8-Hr State	Anaheim	0.070	0.082	0.081
			Costa Mesa	0.084	0.080	0.080
		8-Hr Federal 4th High	Anaheim	0.063	0.076	0.065
			Costa Mesa	0.065	0.076	0.068

Data Sources: CARB iADAM website, 2016
EPA AIRS website, 2016

All Values Taken from CARB iADAM Website

1. CAAQS background is the highest value in the 3 year period.
2. NAAQS background is the 3 year avg of the 4th high 8 hr values.

Background Values:	*ppm*	*ug/m3*	
1-Hr State	*0.111*	*222.0*	*Anaheim (2014)*
8-Hr State	*0.084*	*164.4*	*CostaMesa (2013)*
8-Hr Fed	*0.070*	*137.2*	*CostaMesa (Avg)*

AAM = annual arithmetic mean.

12-Oct-16

Pollutant	Units	Avg Time	Station	2013	2014	2015
NO2	ppm	1-Hr State	Anaheim 1	0.081	0.075	0.059
			Anaheim 2	nd	0.078	0.070
			Costa Mesa	0.075	0.060	0.052
		AAM-State	Anaheim 1	nd	nd	0.014
			Anaheim 2	nd	0.027	0.025
			Costa Mesa	nd	0.010	0.011
		1-Hr Federal 98th %	Anaheim 1	0.0587	0.0598	0.0546
			Anaheim 2	nd	0.0660	0.0614
			Costa Mesa	0.0531	0.0547	0.0481
		AAM-Federal	Anaheim 1	0.017	0.015	0.015
			Anaheim 2	nd	0.027	0.025
			Costa Mesa	0.011	0.011	0.012

All Values Taken from CARB iADAM Website

1. CAAQS background is the highest value in the 3 year period.
2. NAAQS background for 1 hr is the 3 year avg of the 1 hr 98th percentile values.
3. NAAQS background for annual is highest value in the 3 yr period

Background Values:	*ppm*	*ug/m3*	
1-Hr State	*0.081*	*152.6*	*Anaheim1 (2013)*
AAM-State	*0.027*	*51.3*	*Anaheim2 (2014) - Used AAM Fed*
1-Hr Fed	*0.0620*	*116.6*	*An1 (2013) + An2 (2014-15) Avg.*
AAM Fed	*0.027*	*50.9*	*Anaheim2 (2014)*

Historical Monitored Air Quality Values

Pollutant	Units	Avg Time	Station	2013	2014	2015
CO	ppm	1-Hr State	Anaheim1	3.4	3.1	3.1
			Anaheim2	nd	nd	3.1
			Costa Mesa	2.4	2.7	3.0
		8-Hr State	Anaheim1	2.6	2.1	2.2
			Anaheim2	nd	nd	2.3
			Costa Mesa	2.0	1.9	2.2
		1-Hr Federal 2nd High	Anaheim1	3.3	2.6	2.6
			Anaheim2	nd	nd	2.9
			Costa Mesa	2.4	2.2	2.6
		8-Hr Federal 2nd High	Anaheim1	2.4	2.1	2.0
			Anaheim2	nd	nd	2.3
			Costa Mesa	1.7	1.6	1.8

All Values Taken from EPA AirData Website

1. CAAQS background is the highest value in the 3 year period.
2. NAAQS background is the highest of the 2nd highs

Background Values:	*ppm*	*ug/m3*	
1-Hr State	*3.4*	*3910.0*	*Anaheim1 (2013)*
8-Hr State	*2.6*	*2888.9*	*Anaheim1 (2013)*
1-Hr Fed	*3.3*	*3795.0*	*Anaheim1 (2013)*
8-Hr Fed	*2.4*	*2666.7*	*Anaheim1 (2013)*

Used Maximum State Values for both CAAQS/NAAQS assessments

Pollutant	Units	Avg Time	Station	2013	2014	2015
SO2	ppm	1-Hr State	Costa Mesa	0.0041	0.0088	0.0045
		24-Hr State/Fed (only H2H Available)	Costa Mesa	0.0012	0.0014	0.0011
		1-Hr Federal 99th %	Costa Mesa	0.003	0.004	0.003
		Annual Mean Federal	Costa Mesa	0.00022	0.00031	0.00013

All Values Taken from EPA AirData Website

1. CAAQS background is the highest value in the 3 year period.
2. NAAQS background is the 3 year avg of the 1 hr 99th % values.
3. NAAQS 3 hr background not available - used 1-hour Max
4. NAAQS background for annual is highest value in the 3 yr period

Background Values:	*ppm*	*ug/m3*	
1-Hr State	*0.0088*	*23.1*	*CostaMesa (2014)*
24-Hr State/Fed	*0.0014*	*3.7*	*CostaMesa (2014)/H2H*
1-Hr Fed	*0.0033*	*8.6*	*CostaMesa - Used 1-hr State*
AAM-Fed	*0.00031*	0.8	*CostaMesa (2014)*

Used Maximum State Value for both CAAQS/NAAQS 1-hour SO2 assessments

Historical Monitored Air Quality Values

Pollutant	Units	Avg Time	Station	2013	2014	2015
PM10	ug/m3	24-Hr State	Anaheim	77	84	59
		AAM-State	Anaheim	25.2	26.7	25.3
		24-Hr Federal 2nd High	Anaheim	46	58	57

All Values Taken from CARB iADAM Website

1. annual refers to "arithmetic means".
2. CAAQS background is the highest value in the 3 year period.
3. NAAQS 24 hr background is the highest of the 2nd highs

Background Values:	*ug/m3*	
24-Hr State	*84.0*	*Anaheim (2014)*
AAM-State	*26.7*	*Anaheim (2014)*
24-Hr Fed	*58.0*	*Anaheim (2014)*

Pollutant	Units	Avg Time	Station	2013	2014	2015
PM2.5	ug/m3	AAM-State	Anaheim	10.1	16.1	14.8
		24-Hr Federal 98th %	Anaheim	23	30	30
		AAM-Federal	Anaheim	10.1	10.5	9.4

AAM-State from CARB iADAM, 24-hr/AAM-Federal from EPA AirData

1. annual refers to "arithmetic means".
2. CAAQS background is the highest value in the 3 year period.
3. NAAQS 24 hr background is the 3 year avg of the 24 hr 98th percentile values.
4. NAAQS annual background is the 3 year avg of the AAMs.

Background Values:	*ug/m3*	
AAM-State	*16.1*	*Anaheim (2014) - Used Max AAM-Fed*
24-Hr Fed	*27.7*	*Anaheim (Avg)*
AAM-Fed	*10.0*	*Anaheim (Avg)*

Used Maximum Federal Value for CAAQS Annual PM2.5 assessments (10.5 ug/m3)

Table 5.1B-3 Locations of SCAQMD AERMOD Meteorological Data* (1 page)

Station	Latitude/Longitude		UTM Coordinates		Elevation (m)	Dist. From Project (km)	Direction From Project (deg)	
	Latitude	Longitude	Easting (km)	Northing (km)				
Anaheim	33:49:50	117:56:19	413.14	3743.57	41	5.001	61.6	ENE
La Habra	33:55:31	117:57:08	411.98	3754.08	82	13.291	14.1	NNE
Costa Mesa	33:40:26	117:55:33	414.16	3726.19	20	15.948	160.1	SSE
Long Beach	33:49:25	118:11:19	389.99	3743.04	30	18.843	275.6	W
Compton	33:54:05	118:12:18	388.59	3751.88	22	22.812	297.9	WNW
Pico Rivera	34:00:37	118:04:07	401.31	3763.61	58	23.621	341.7	NNW
Lynnwood	33:55:44	118:12:39	388.07	3754.73	29	24.712	303.2	WNW
Mission Viejo	33:37:49	117:40:30	437.39	3721.17	170	34.950	124.9	SE
Pomona	34:04:00	117:45:00	430.78	3769.61	270	35.964	37.8	NE
Central LA	34:03:59	118:13:36	386.79	3770.00	87	36.221	322.7	NW
Azusa	34:08:11	117:55:26	414.81	3777.47	182	36.785	9.5	N
LAX	33:57:15	118:25:49	367.83	3757.80	42	44.156	292.1	WNW
Upland	34:06:14	117:37:45	441.96	3773.66	379	46.452	45.7	NE
Burbank	34:10:33	118:19:01	378.62	3782.24	175	50.917	323.7	NW
West LA	34:03:02	118:27:24	365.54	3768.52	97	51.121	302.3	WNW
Fontana	34:06:01	117:29:31	454.62	3773.19	367	55.936	55.1	NE
Riverside	34:00:02	117:24:55	461.64	3762.10	250	56.881	68.4	ENE
Lake Elsinore	33:40:35	117:19:51	469.33	3726.13	406	62.431	104.0	ESE
Reseda	34:11:57	118:31:58	358.76	3785.11	228	66.538	311.3	NW
Perris	33:47:20	117:13:40	478.91	3738.58	442	70.216	92.1	E
San Bernardino	34:06:24	117:16:25	474.76	3773.82	305	73.642	63.7	ENE
Santa Clarita	34:23:00	118:31:42	359.48	3805.52	375	81.026	322.6	NW
Crestline	34:14:29	117:16:32	474.62	3788.76	1387	81.258	54.2	NE
Redlands	34:03:32	117:08:52	486.36	3768.50	481	82.283	70.6	ENE
Banning Airport	33:55:15	116:51:30	513.10	3753.19	660	105.046	83.4	E
Palm Springs	33:51:10	116:32:28	542.46	3745.73	171	133.795	88.1	E
Indio	33:42:30	116:12:57	572.67	3729.90	-4	164.316	93.9	E
SERC Project Site	33:48:25	117:59:10	408.742	3741.189	21			

Locations of SCAQMD AERMOD Meteorological Data likely correspond to SCAQMD Air Quality (AQ) Monitoring Sites, which would include one of the Anaheim AQ monitoring sites and the Costa Mesa AQ monitoring site used for background air quality in this report.

Table 5.1B-4 Facility Impact/Model Results Summary (2 pages)

Stack Ht= 70.7' above grade elevation of 72' amsl = 21.549m & 21.946m

Stanton 2x0

Combustion Turbine AERMOD Screening Analysis

		Hot Ambient Conditions			Average Ambient Conditions			Cold Ambient Conditions		
		Case 100	Case 101	Case 102	Case 103	Case 104	Case 105	Case 106	Case 107	Case 108
		Base	Mid	Min	Base	Mid	Min	Base	Mid	Min
Operating Conditions										
Ambient Dry Bulb Temp.	deg. F	**102.7**	102.7	102.7	**65.0**	65.0	65.0	**40.0**	40.0	40.0
Combustion Turbine Load	%	**100%**	**50%**	**21%**	**100%**	**50%**	**21%**	**100%**	**50%**	**20%**
Evap Cooling or Fogging? (Yes/No)		**Yes**	**No**	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**
Performance Water Injection? (Yes/No)		**Yes**	**No**	**No**	**Yes**	**No**	**No**	**Yes**	**No**	**No**
Stack Exhaust Analysis (each CT)										
Stack Temperature	deg. F	847.69	816.23	813.37	839.13	751.91	721.22	826.85	701.10	662.16
Stack Temperature	deg. K	726.31	708.83	707.24	721.56	673.10	656.05	714.73	644.87	623.24
Stack Flow	cf/hr	35,718,000	26,008,000	19,857,000	36,414,000	26,419,000	19,811,000	37,197,000	26,916,000	19,936,000
Effective Stack Diameter	feet	12.036	12.036	12.036	12.036	12.036	12.036	12.036	12.036	12.036
Effective Stack Diameter	meters	3.6698	3.6698	3.6698	3.6698	3.6698	3.6698	3.6698	3.6698	3.6698
Calc'd Stack Velocity	ft/sec	87.203	63.497	48.479	88.902	64.500	48.367	90.814	65.713	48.672
Calc'd Stack Velocity	m/sec	26.579	19.354	14.776	27.097	19.660	14.742	27.680	20.029	14.835
Initial Stack Buoyancy Flux	m4/s3	500.26	357.40	272.50	533.52	368.15	270.52	559.14	376.80	271.82
AERMOD Results for Grade Elevation (72.0'amsl)= Base Elevation										
1-Hour Maximum Impacts	Conc(ug/m3)	2.77323	3.85047	8.92608	2.72261	3.90582	8.76243	2.67117	3.94542	9.15561
(ug/m3 for 1 g/s/turbine)	UTM-X(m)	408960.00	408960.00	409040.00	408960.00	408960.00	409040.00	408960.00	408980.00	409040.00
	UTM-Y(m)	3741320.00	3741320.00	3741140.00	3741320.00	3741320.00	3741200.00	3741320.00	3741240.00	3741200.00
	Elev(m)	22.01	22.01	22.01	22.01	22.01	22.01	22.01	21.97	22.01
	Period	09062911	09062911	08031516	09062911	09062911	12031814	09062911	12040813	12031814
Max 5-Yr Avg/1-Hr Max Daily Yearly Impacts	Conc(ug/m3)	2.50346	3.53104	4.63626	2.45958	3.58690	4.81286	2.41503	3.62081	4.93696
for NO2 NAAQS SIL	UTM-X(m)	408560.00	408560.00	409020.00	408560.00	408560.00	409040.00	408560.00	408560.00	409040.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3741100.00	3741100.00	3741140.00	3741100.00	3741100.00	3741180.00	3741100.00	3741100.00	3741180.00
	Elev(m)	21.97	21.97	22.01	21.97	21.97	22.01	21.97	21.97	22.01
Max 5-Yr Avg/1-Hr 98th% Yearly Impacts	Conc(ug/m3)	1.78130	2.55096	3.38811	1.75241	2.59655	3.55993	1.72296	2.62741	3.66381
for NO2 NAAQS	UTM-X(m)	408480.00	408580.00	408580.00	408480.00	408580.00	408580.00	408480.00	408580.00	408580.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3741060.00	3741060.00	3741060.00	3741060.00	3741060.00	3741060.00	3741060.00	3741060.00	3741060.00
	Elev(m)	20.90	22.01	22.01	20.90	22.01	22.01	20.90	22.01	22.01
3-Hour Maximum Impacts	Conc(ug/m3)	2.39391	3.22393	4.84896	2.35836	3.26722	5.43071	2.32221	3.29269	5.57162
(ug/m3 for 1 g/s/turbine)	UTM-X(m)	408480.00	408500.00	409080.00	408480.00	408500.00	409060.00	408480.00	408500.00	409060.00
	UTM-Y(m)	3741120.00	3741120.00	3741220.00	3741120.00	3741120.00	3741220.00	3741120.00	3741120.00	3741220.00
	Elev(m)	21.35	21.40	22.01	21.35	21.40	22.01	21.35	21.40	22.01
	Period	06012412	06012412	12031815	06012412	06012412	12031815	06012412	06012412	12031815
8-Hour Maximum Impacts	Conc(ug/m3)	1.57576	2.20306	2.83186	1.54952	2.24065	2.97724	1.52281	2.26462	3.05729
(ug/m3 for 1 g/s/turbine)	UTM-X(m)	408500.00	408520.00	408540.00	408500.00	408520.00	409100.00	408500.00	408520.00	408560.00
	UTM-Y(m)	3740980.00	3741000.00	3741000.00	3740980.00	3741000.00	3741240.00	3740980.00	3741000.00	3741020.00
	Elev(m)	19.88	20.25	20.33	19.88	20.25	22.01	19.88	20.25	21.21
	Period	06020616	06020616	06020616	06020616	06020616	12031816	06020616	06020616	06020616
24-Hour Maximum Impacts	Conc(ug/m3)	0.56590	0.84038	1.21636	0.55707	0.86532	1.30520	0.54827	0.88287	1.36124
for CAAQS and PM10 NAAQS	UTM-X(m)	408340.00	408220.00	408280.00	408340.00	408220.00	408320.00	408360.00	408220.00	408320.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3740960.00	3740960.00	3740980.00	3740960.00	3740960.00	3741000.00	3741040.00	3740960.00	3741000.00
	Elev(m)	20.48	20.48	20.48	20.48	20.48	20.64	20.63	20.48	20.64
	Period	06112924	07102224	07102224	06112924	07102224	07102224	06120324	07102224	07102224
Max 5-Year Avg/24-Hr Max Yearly Impacts	Conc(ug/m3)	0.49623	0.73039	0.97312	0.48866	0.74499	1.02875	0.48104	0.75444	1.06394
for PM25 NAAQS SIL	UTM-X(m)	408400.00	408960.00	408960.00	408400.00	408960.00	408960.00	408400.00	408960.00	408960.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3741040.00	3741360.00	3741340.00	3741040.00	3741360.00	3741340.00	3741040.00	3741360.00	3741340.00
	Elev(m)	20.47	22.01	22.01	20.47	22.01	22.01	20.47	22.01	22.01
Max 5-Year Avg/24-Hr 98th% Yearly Impacts	Conc(ug/m3)	0.41136	0.61414	0.83049	0.40336	0.62774	0.88071	0.39542	0.63664	0.91302
for PM25 NAAQS	UTM-X(m)	408980.00	408980.00	408980.00	408980.00	408980.00	408960.00	408980.00	408980.00	408960.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3741360.00	3741340.00	3741340.00	3741360.00	3741340.00	3741320.00	3741360.00	3741340.00	3741320.00
	Elev(m)	22.01	22.01	22.01	22.01	22.01	22.01	22.01	22.01	22.01
Annual Maximum Impacts	Conc(ug/m3)	0.20153	0.29759	0.40126	0.19780	0.30395	0.42535	0.19409	0.30815	0.44077
for CAAQS and NO2/SO2/PM10 NAAQS	UTM-X(m)	409020.00	409000.00	409000.00	409020.00	409000.00	409000.00	409020.00	409000.00	409000.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3741360.00	3741340.00	3741340.00	3741360.00	3741340.00	3741340.00	3741360.00	3741340.00	3741340.00
	Elev(m)	22.01	22.01	22.01	22.01	22.01	22.01	22.01	22.01	22.01
	Period	06123124	06123124	06123124	06123124	06123124	06123124	06123124	06123124	06123124
Max 5-Year Avg/Annual Impacts	Conc(ug/m3)	0.18504	0.27238	0.36686	0.18161	0.27813	0.38881	0.17819	0.28192	0.40278
for PM25 NAAQS & SIL	UTM-X(m)	409000.00	409000.00	408980.00	409000.00	409000.00	408980.00	409000.00	409000.00	408980.00
(ug/m3 for 1 g/s/turbine)	UTM-Y(m)	3741360.00	3741360.00	3741340.00	3741360.00	3741360.00	3741340.00	3741360.00	3741360.00	3741340.00
	Elev(m)	22.01	22.01	22.01	22.01	22.01	22.01	22.01	22.01	22.01
Permitted Short-Term Stack Emissions (each CT) - Normal Ops										
NO_X, @ 15% O_2	ppmvd	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**	**2.5**
CO, @ 15% O_2	ppmvd	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**
VOC, as CH_4 @ 15% O2	ppmvd	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
NH_3 Slip, @ 15% O_2	ppmvd	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**	**5.0**
NO_X, as NO_2	lb/hr	4.151	2.505	1.670	4.297	2.547	1.634	4.459	2.612	1.640
CO	lb/hr	4.044	2.441	1.627	4.186	2.482	1.592	4.344	2.544	1.598
VOC, as CH_4	lb/hr	0.579	0.350	0.233	0.599	0.355	0.228	0.622	0.364	0.229
Maximum Total PM_{10}	lb/hr	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Annual Average Total PM_{10}	lb/hr	1.870	1.140	0.760	1.930	1.160	0.750	2.000	1.190	0.750
NH_3	lb/hr	3.073	1.855	1.237	3.181	1.886	1.210	3.302	1.934	1.214
Maximum SO_2	lb/hr	0.954	0.578	0.389	0.986	0.590	0.382	1.019	0.606	0.384
Annual Average SO_2	lb/hr	0.318	0.193	0.130	0.329	0.197	0.127	0.340	0.202	0.128
NO_X, as NO_2	g/s/turbine	0.5230	0.3156	0.2104	0.5414	0.3209	0.2059	0.5618	0.3291	0.2066
CO	g/s/turbine	0.5095	0.3076	0.2050	0.5274	0.3127	0.2006	0.5473	0.3205	0.2013
Maximum Total PM_{10}	g/s/turbine	0.3780	0.3780	0.3780	0.3780	0.3780	0.3780	0.3780	0.3780	0.3780
Annual Average Total PM_{10}	g/s/turbine	0.2356	0.1436	0.0958	0.2432	0.1462	0.0945	0.2520	0.1499	0.0945
Maximum SO_2	g/s/turbine	0.1202	0.0728	0.0490	0.1242	0.0743	0.0481	0.1284	0.0764	0.0484
Annual Average SO_2	g/s/turbine	0.0401	0.0243	0.0164	0.0415	0.0248	0.0160	0.0428	0.0255	0.0161

Table 5.1B-4 Facility Impact/Model Results Summary (2 pages)

Stack Ht= 70.7' above grade elevation of 72' amsl = 21.549m & 21.946m

Stanton 2x0

Combustion Turbine AERMOD Screening Analysis

		Hot Ambient Conditions			Average Ambient Conditions			Cold Ambient Conditions		
		Case 100	Case 101	Case 102	Case 103	Case 104	Case 105	Case 106	Case 107	Case 108
		Base	Mid	Min	Base	Mid	Min	Base	Mid	Min
Short-Term Pollutant Impacts (ug/m^3) - Normal Operations										
1-hour NOx CAAQS	Conc(ug/m3)	1.45040	1.21521	1.87805	1.47402	1.25338	1.80418	1.50066	1.29844	**1.89155**
1-hour NOx NAAQS SIL	Conc(ug/m3)	1.30931	1.11440	0.97547	1.33162	1.15104	0.99097	**1.35676**	1.19161	1.01998
1-hour NOx NAAQS	Conc(ug/m3)	0.93162	0.80508	0.71286	0.94875	0.83323	0.73299	**0.96796**	0.86468	0.75694
1-hour NO2 CAAQS	Conc(ug/m3)	1.16032	0.97217	1.50244	1.17922	1.00270	1.44335	1.20053	1.03875	**1.51324**
1-hour NO2 NAAQS SIL	Conc(ug/m3)	1.04745	0.89152	0.78038	1.06529	0.92083	0.79277	**1.08541**	0.95329	0.81598
1-hour NO2 NAAQS	Conc(ug/m3)	0.74530	0.64407	0.57029	0.75900	0.66659	0.58639	**0.77437**	0.69174	0.60555
Annual NOx	Conc(ug/m3)	0.10540	0.09392	0.08443	0.10709	0.09754	0.08758	**0.10904**	0.10141	0.09106
Annual NO2	Conc(ug/m3)	0.07905	0.07044	0.06332	0.08032	0.07315	0.06568	**0.08178**	0.07606	0.06830
1-hour CO	Conc(ug/m3)	1.41296	1.18440	1.82985	1.43590	1.22135	1.75774	1.46193	1.26451	**1.84302**
8-hour CO	Conc(ug/m3)	0.80285	0.67766	0.58053	0.81722	0.70065	0.59723	**0.83343**	0.72581	0.61543
24-hour PM25 CAAQS & PM10	Conc(ug/m3)	0.21391	0.31766	0.45978	0.21057	0.32709	0.49337	0.20725	0.33372	**0.51455**
24-hour PM25 NAAQS SIL	Conc(ug/m3)	0.18757	0.27609	0.36784	0.18471	0.28161	0.38887	0.18183	0.28518	**0.40217**
24-hour PM25 NAAQS	Conc(ug/m3)	0.15549	0.23214	0.31393	0.15247	0.23729	0.33291	0.14947	0.24065	**0.34512**
Annual PM25/PM10	Conc(ug/m3)	0.04748	0.04273	0.03844	0.04810	0.04444	0.04020	**0.04891**	0.04619	0.04165
5-year PM25	Conc(ug/m3)	0.04360	0.03911	0.03515	0.04417	0.04066	0.03674	**0.04490**	0.04226	0.03806
1-hour SO2	Conc(ug/m3)	0.33334	0.28031	0.43738	0.33815	0.29020	0.42147	0.34298	0.30143	**0.44313**
3-hour SO2	Conc(ug/m3)	0.28775	0.23470	0.23760	0.29291	0.24275	0.26122	**0.29817**	0.25156	0.26967
24-hour SO2	Conc(ug/m3)	0.06802	0.06118	0.05960	0.06919	0.06429	0.06278	**0.07040**	0.06745	0.06588
Annual SO2	Conc(ug/m3)	0.00808	0.00723	0.00658	0.00821	0.00754	0.00681	**0.00831**	0.00786	0.00710
Permitted Stack Emissions (each CT) - Startup/Shutdown Conditions										
1-hour NO_X, as NO_2	lb/hr	6.68	6.68	6.68	6.68	6.68	6.68	6.68	6.68	6.68
1-hour CO	lb/hr	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23
8-hour CO	lb/hr	7.68	7.68	7.68	7.68	7.68	7.68	7.68	7.68	7.68
1-hour NO_X, as NO_2	g/s/turbine	0.8417	0.8417	0.8417	0.8417	0.8417	0.8417	0.8417	0.8417	0.8417
1-hour CO	g/s/turbine	1.6670	1.6670	1.6670	1.6670	1.6670	1.6670	1.6670	1.6670	1.6670
8-hour CO	g/s/turbine	0.9677	0.9677	0.9677	0.9677	0.9677	0.9677	0.9677	0.9677	0.9677
Pollutant Impacts (ug/m^3) - Startup/Shutdown Conditions										
1-hour NOx CAAQS	Conc(ug/m3)	2.33423	3.24094	7.51308	2.29162	3.28753	7.37534	2.24832	3.32086	**7.70628**
1-hour NOx NAAQS SIL	Conc(ug/m3)	2.10716	2.97208	3.90234	2.07023	3.01909	4.05098	2.03273	3.04764	**4.15544**
1-hour NOx NAAQS	Conc(ug/m3)	1.49932	2.14714	2.85177	1.47500	2.18552	2.99639	1.45022	2.21149	**3.08383**
1-hour NO2 CAAQS	Conc(ug/m3)	1.86738	2.59275	6.01047	1.83330	2.63002	5.90027	1.79866	2.65669	**6.16502**
1-hour NO2 NAAQS SIL	Conc(ug/m3)	1.68573	2.37766	3.12187	1.65618	2.41527	3.24079	1.62618	2.43811	**3.32435**
1-hour NO2 NAAQS	Conc(ug/m3)	1.19946	1.71771	2.28142	1.18000	1.74841	2.39711	1.16017	1.76919	**2.46706**
1-hour CO	Conc(ug/m3)	4.62297	6.41873	14.87978	4.53859	6.51100	14.60697	4.45284	6.57702	**15.26240**
8-hour CO	Conc(ug/m3)	1.52486	2.13190	2.74039	1.49947	2.16828	2.88108	1.47362	2.19147	**2.95854**
Permitted Stack Emissions (each CT) - Annual Totals										
Annual NO_X, as NO_2 (total, both turbines)	tons/year	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89	3.89
Annual PM (total for both turbines)	tons/year	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08
Annual SO2 (total for both turbines)	tons/year	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Annual NO_X, as NO_2	lb/hr/turbine	0.4441	0.4441	0.4441	0.4441	0.4441	0.4441	0.4441	0.4441	0.4441
Annual PM	lb/hr/turbine	0.2374	0.2374	0.2374	0.2374	0.2374	0.2374	0.2374	0.2374	0.2374
Annual SO2	lb/hr/turbine	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400	0.0400
Annual NO_X, as NO_2	g/s/turbine	0.0560	0.0560	0.0560	0.0560	0.0560	0.0560	0.0560	0.0560	0.0560
Annual PM	g/s/turbine	0.0299	0.0299	0.0299	0.0299	0.0299	0.0299	0.0299	0.0299	0.0299
Annual SO2	g/s/turbine	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Pollutant Impacts (ug/m^3) - Annual Periods										
Annual NOx	Conc(ug/m3)	0.01129	0.01667	0.02247	0.01108	0.01702	0.02382	0.01087	0.01726	**0.02468**
Annual NO2	Conc(ug/m3)	0.00846	0.01250	0.01685	0.00831	0.01277	0.01786	0.00815	0.01294	**0.01851**
Annual PM25/PM10	Conc(ug/m3)	0.00603	0.00890	0.01200	0.00591	0.00909	0.01272	0.00580	0.00921	**0.01318**
5-year PM25	Conc(ug/m3)	0.00553	0.00814	0.01097	0.00543	0.00832	0.01163	0.00533	0.00843	**0.01204**
Annual SO2	Conc(ug/m3)	0.00101	0.00149	0.00201	0.00099	0.00152	0.00213	0.00097	0.00154	**0.00220**
Stack Emissions (each CT) - Commissioning Activities										
1-hour NO_X, as NO_2	lb/hr	42.81	42.81	42.81	42.81	42.81	42.81	42.81	42.81	42.81
1-hour CO	lb/hr	55.30	55.30	55.30	55.30	55.30	55.30	55.30	55.30	55.30
8-hour CO	lb/hr	55.30	55.30	55.30	55.30	55.30	55.30	55.30	55.30	55.30
1-hour NO_X, as NO_2	g/s/turbine	5.3941	5.3941	5.3941	5.3941	5.3941	5.3941	5.3941	5.3941	5.3941
1-hour CO	g/s/turbine	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678
8-hour CO	g/s/turbine	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678	6.9678
Pollutant Impacts (ug/m^3) - Commissioning Activities										
1-hour NOx CAAQS	Conc(ug/m3)	14.95908	20.76982	48.14817	14.68603	21.06838	47.26542	14.40856	21.28199	**49.38628**
1-hour NOx NAAQS SIL	Conc(ug/m3)	13.50391	19.04678	25.00845	13.26722	19.34810	25.96105	13.02691	19.53101	**26.63046**
1-hour NOx NAAQS	Conc(ug/m3)	9.60851	13.76013	18.27580	9.45267	14.00605	19.20262	9.29382	14.17251	**19.76296**
1-hour NO2 CAAQS	Conc(ug/m3)	11.96726	16.61586	38.51853	11.74882	16.85471	37.81234	11.52685	17.02559	**39.50902**
1-hour NO2 NAAQS SIL	Conc(ug/m3)	10.80313	15.23743	20.00676	10.61378	15.47848	20.76884	10.42153	15.62481	**21.30436**
1-hour NO2 NAAQS	Conc(ug/m3)	7.68681	11.00811	14.62064	7.56214	11.20484	15.36209	7.43505	11.33801	**15.81037**
1-hour CO	Conc(ug/m3)	19.32331	26.82930	62.19514	18.97060	27.21497	61.05486	18.61218	27.49090	**63.79446**
8-hour CO	Conc(ug/m3)	10.97958	15.35048	19.73183	10.79675	15.61240	20.74481	10.61064	15.77942	**21.30259**

Worst-Case Operating Scenarios are **bolded/highlighted**.

5-year impacts are the average of annual impacts for PM2.5 NAAQS. Annual impacts are used for the CAAQS and the NO2/PM10/SO2 NAAQS.

NO2 impacts shown reflect the NO2 Ambient Ratio Method (ARM) USEPA-default values of 0.80 (80%) for 1-hour and 0.75 (75%) for annual averages.

Table 5.1B-5 Fumigation Modeling Results (1 page)
SERC Turbine Fumigation Impacts - Case 103

AERSCREEN Unitized Impacts -	Dist(m)	1-hour	3-hour	8-hour	24-hour	Annual
Fumigation - **Turbine***	7850m	**2.465**	**2.465**	**2.219**	**1.479**	**0.2465**
AERSCREEN Max Normal - **Turbine**	213m	**5.032**	**5.032**	**4.529**	**3.019**	**0.5032**
AERMOD Unitized Impacts -		1-hour	3-hour	8-hour	24-hour	Annual
2 Turbines	#N/A	**2.72261**	**2.35836**	**1.54952**	**0.55707**	**0.19780**
Ratioed **1 Turbine**	#N/A	1.36131	1.17918	0.77476	0.27854	0.09890
	Emissions					
NOx 1-hour Impacts - Normal Ops	(g/s)					
Fumigation - **2 Turbines***	1.0828	2.669				
AERSCREEN Max Normal - **2 Turbines**	1.0828	5.449				
AERMOD Max - **2 Turbines**	1.0828	1.474				
SOx 1-hour/3-hour/24-hour Impacts - Normal Ops						
Fumigation - **2 Turbines***	0.2484	0.612	0.612		0.367	
AERSCREEN Max Normal - **2 Turbines**	0.2484	1.250	1.250		0.750	
AERMOD Max - **2 Turbines**	0.2484	0.338	0.293		0.069	
CO 1-hour/8-hour Impacts - Normal Ops						
Fumigation - **2 Turbines***	1.0548	2.600		2.341		
AERSCREEN Max Normal - **2 Turbines**	1.0548	5.308		4.777		
AERMOD Max - **2 Turbines**	1.0548	1.436		0.817		
PM 24-hour Impacts - Normal Ops						
Fumigation - **2 Turbines***	0.7560				1.118	
AERSCREEN Max Normal - **2 Turbines**	0.7560				2.282	
AERMOD Max - **2 Turbines**	0.7560				0.211	
NOx 1-hour Impacts - Startup/Shutdown Conditions						
Fumigation - **2 Turbines***	1.6834	4.150				
AERSCREEN Max Normal - **2 Turbines**	1.6834	8.471				
AERMOD Max - **2 Turbines**	1.6834	2.292				
CO 1-hour/8-hour Impacts - Startup/Shutdown Conditions			8-hr(g/s)	8-hr(ug/m3)		
Fumigation - **2 Turbines***	3.3340	8.218	1.9354	4.295		
AERSCREEN Max Normal - **2 Turbines**	3.3340	16.777	1.9354	8.765		
AERMOD Max - **2 Turbines**	3.3340	4.539	1.9354	1.499		

NOTE: For fumigation maxima less than the AERSCREEN regular dispersion maxima for 1-hour averaging times, additional averaging times do NOT need to be considered consistent with past USEPA guidance for SCREEN3.

Table 5.1B-6 Deposition Modeling Results (1 page)

SERC Deposition Modeling Analyses

Calculated Nitrogen Emission Rates

	Regular Fenceline-Coarse AERMOD Receptors		250m-Spaced AERMOD Receptors in Seal Beach NWR	
Deposition Modeling Emissions:	**NOx as NO2**	**NH3**	**NOx as NO2**	**NH3**
Emissions (per turbine):	3.90 tons/year		3.90 tons/year	
	x 2000 lbs/ton	2753.88 lbs/year	x 2000 lbs/ton	2753.88 lbs/year
	/ 8760 hrs/year	/ 8760 hrs/year	/ 8760 hrs/year	/ 8760 hrs/year
	= 0.8904 lbs/hr	= 0.3144 lbs/hr	= 0.8904 lbs/hr	= 0.3144 lbs/hr
	x 0.126 (g/s)/(lb/hr)	x 0.126 (g/s)/(lb/hr)	x 0.126 (g/s)/(lb/hr)	x 0.126 (g/s)/(lb/hr)
Pollutant Emissions:	= 0.1122 g/s	= 0.0396 g/s	= 0.1122 g/s	= 0.0396 g/s
Mol.Wt N	x 14 lbs/lb-mole	x 14 lbs/lb-mole	x 14 lbs/lb-mole	x 14 lbs/lb-mole
Mol.Wt NO2/NH3	/ 46 lbs/lb-mole	/ 17 lbs/lb-mole	/ 46 lbs/lb-mole	/ 17 lbs/lb-mole
Nitrogen Emissions:	= 0.0341 g/s	= 0.0326 g/s	= 0.0341 g/s	= 0.0326 g/s
Total Nitrogen Emissions:	= 0.0668 g/s		= 0.0668 g/s	

Modeled Nitrogen Deposition Rates*

	Regular Fenceline-Coarse AERMOD Receptors		250m-Spaced AERMOD Receptors in Seal Beach NWR	
	Nitrogen (NOx and NH3)		Nitrogen (NOx and NH3)	
Modeled Deposition Rates:	**Maximum Impact**	**Average Impacts****	**Maximum Impact**	**Average Impacts**
Deposition* at 1 g/s/turb:	0.28122 g/sq.m/yr	0.05366 g/sq.m/yr	0.01785 g/sq.m/yr	0.01580 g/sq.m/yr
	x 0.0668 g/s	x 0.0668 g/s	x 0.0668 g/s	x 0.0668 g/s
Pollutant Deposition:	= 0.01877 g/sq.m/yr	= 0.00358 g/sq.m/yr	= 0.00119 g/sq.m/yr	= 0.00105 g/sq.m/yr
	x 10,000 sq.m/hectare	x 10,000 sq.m/hectare	x 10,000 sq.m/hectare	x 10,000 sq.m/hectare
	/ 1000 g/kg	/ 1000 g/kg	/ 1000 g/kg	/ 1000 g/kg
	= 0.1877 kg/hectare/yr	= 0.0358 kg/hectare/yr	= 0.0119 kg/hectare/yr	= 0.0105 kg/hectare/yr

*Modeled Depositions Rates are 5-year averages, i.e., the mean of the 1-year annual-average values.

**Average Impacts are EXTREMELY conservative for the regular AERMOD receptors as these are the arithmetic averages of the all the receptors - which are HEAVILY weighted by the larger number of downwash/intermediate grid receptors near the facility with greater impacts than the coarse grid receptors.

Table 5.1B-7 Construction Impact/Modeling Summary (1 page)

Modeling Inputs/Results for SERC Construction Impacts (Combustion Sources as Point Sources) - 10m Fence + 20m Downwash Recs. - FASTAREA

Short Term Impacts (24 hrs and less)						Long Term Impacts (annual)					
	NOx	CO	SOx	PM10	PM2.5		NOx	CO	SOx	PM10	PM2.5
Combustion (lbs/day)	35.48	27.35	0.0641	2.251	2.231	Combustion (tons/year)	4.684	3.610	0.00847	0.2972	0.2945
Combustion (days/month)	22	22	22	22	22	Combustion (days/year)*	264	264	264	264	264
Combustion (hrs/day)	8	8	8	8	8	Combustion (hrs/day)	8	8	8	8	8
Combustion (lbs/hr)	4.44	3.42	0.01	0.28	0.28	Combustion (lbs/hr)*	3.21	2.47	0.01	0.20	0.20
Combustion (g/sec)	5.59E-1	4.31E-1	1.01E-3	3.55E-2	3.51E-2	Combustion (g/sec)	4.04E-1	3.12E-1	7.31E-4	2.56E-2	2.54E-2
Construction Dust (lbs/day)				5.279	0.753	Construction Dust (tons/year)				0.6968	0.09942
Construction Dust (days/month)				22	22	Construction Dust (days/year)				264	264
Construction Dust (hrs/day)				8	8	Construction Dust (hrs/day)				8	8
Construction Dust (lbs/hr)				0.66	0.09	Construction Dust (lbs/hr)*				0.477	0.068
Construction Dust (g/sec)	3.17 acres			8.31E-2	1.19E-2	Construction Dust (g/sec)	3.17 acres			6.01E-2	8.58E-3
AERMOD Inputs	**12,840 m^2**			**37 Pt.Srcs**			**12,840 m^2**			**37 Pt.Srcs**	
Combustion (g/s/src)	*1.510E-2*	*1.164E-2*	*2.729E-5*	*9.582E-4*	*9.497E-4*	Combustion (g/s/src)	*1.093E-2*	*8.420E-3*	*1.976E-5*	*6.932E-4*	*6.869E-4*
Construction Dust (g/s/m^2)				*6.476E-6*	*9.237E-7*	Construction Dust (g/s/m^2)				*4.684E-6*	*6.683E-7*
AERMOD Results (ug/m^3)											
Combustion Only						Combustion Only					
1-hour Max	36.777	28.349	0.066	2.33326							
3-hour Max			0.031	1.08825							
8-hour Max		13.680		1.12594							
24-hour Max			0.011	0.37732	0.37397	Annual	1.340		0.002	0.08501	0.08424
All Particulate Sources						All Particulate Sources					
24-hour Max				27.43745	3.93816	Annual				7.64782	1.15215
1-hour NO2 w/ ARM	29.421	based on ARM Ratio of:		80%		Annual NO2 w/ ARM	1.005	based on ARM Ratio of:		75%	
Background (ug/m^3)	152.6	CAAQS				Background (ug/m^3)					
1-hour Max	116.6	3910	23.1								
3-hour Max			23.1								
8-hour Max		2889									
24-hour Max			3.7	84	27.7	Annual	50.9		0.8	26.7	10.5
Total + Background (ug/m^3)	182.0	CAAQS				Total + Background (ug/m^3)					
1-hour Max	146.0	3938	23.17								
3-hour Max			23.13								
8-hour Max		2903									
24-hour Max			3.71	111.4	31.6	Annual	51.9		0.8	34.3	11.7

Maximum NOx/CO/SO2 impacts ratioed from PM10 combustion source impact.

*Even for construction projects taking less than 12-months or 7 days/wk, the hourly emissions for modeling are still based on total tons (for projects<12 months) or annualized tons/year (for projects>12months) divided by 365 days since all days in the met dataset (i.e., all 12 months and all 365 days - i.e., 7 days/week) are modeled.

Total Construction Period	NOx	CO	SOx	PM10	PM2.5
Combustion (lbs/month)	780.6	601.7	1.411	49.53	49.08
Fugitives (lbs/month)				116.13	16.57

FIGURE 5.1B-1a
ANNUAL WIND ROSE OF
2006-2009 & 2012 ANAHEIM SURFACE DATA
FROM SCAQMD AERMOD METEOROLOGY WEBSITE

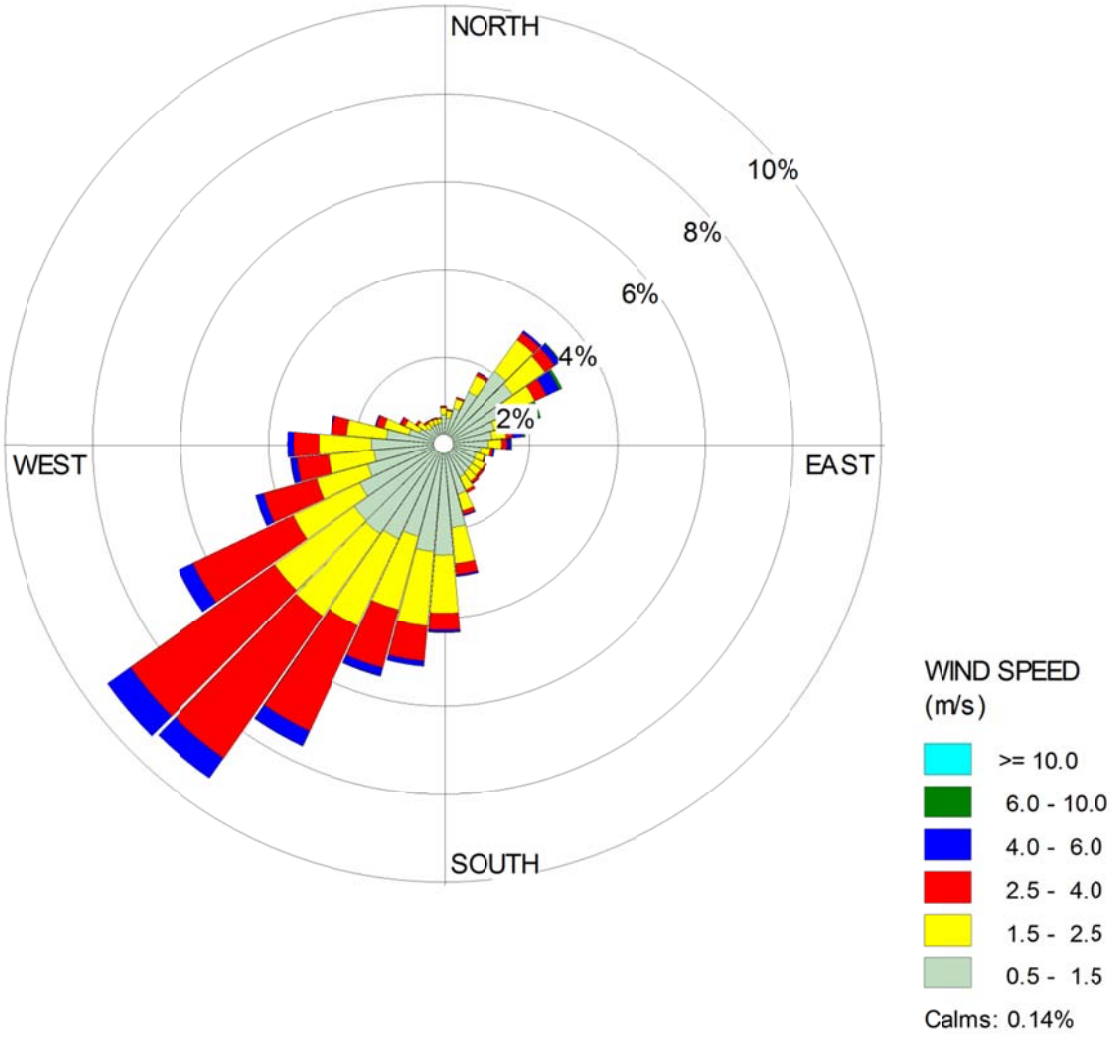

FIGURE 5.1B-1b
1ST QUARTER (JANUARY-MARCH) WIND ROSE OF
2006-2009 & 2012 ANAHEIM SURFACE DATA
FROM SCAQMD AERMOD METEOROLOGY WEBSITE

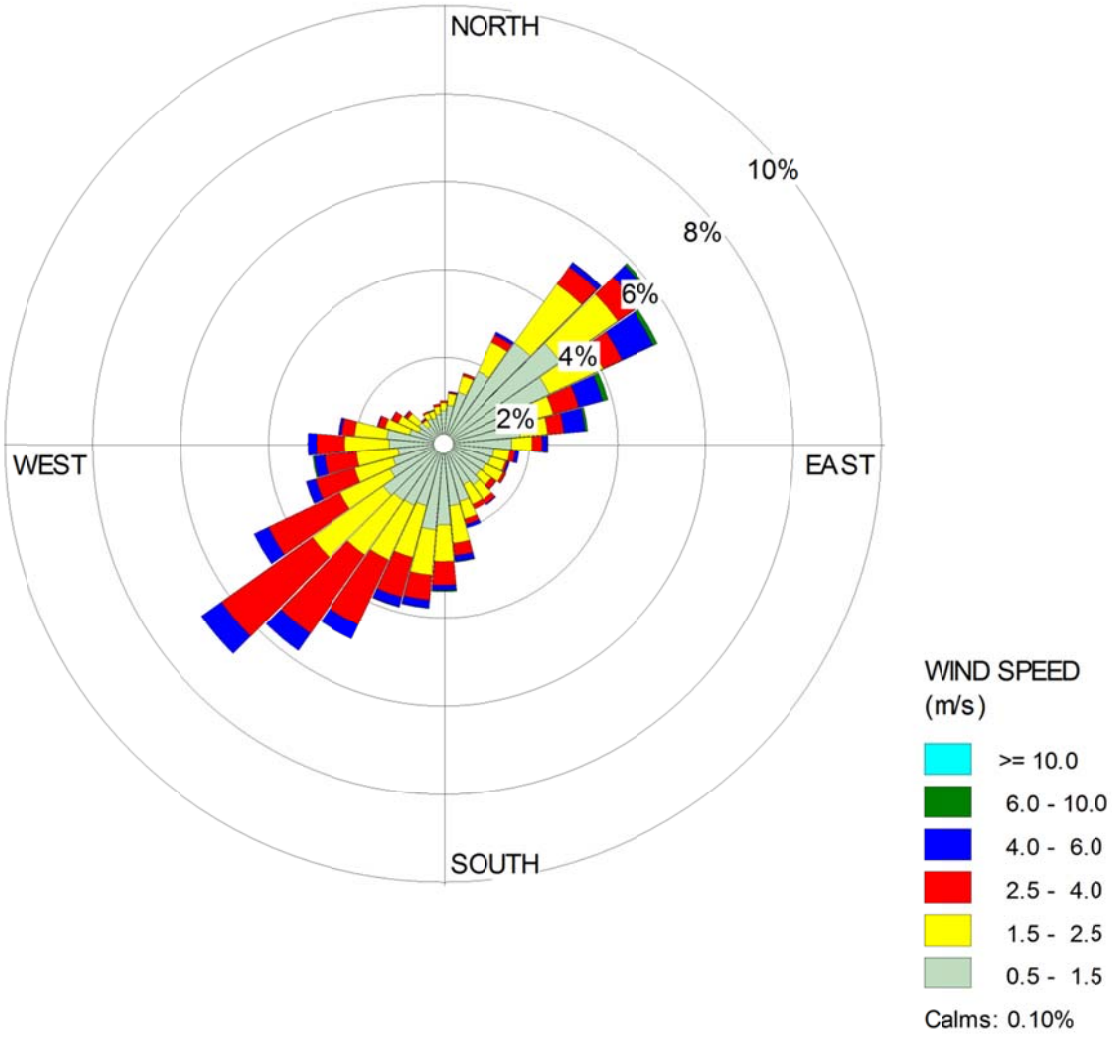

FIGURE 5.1B-1c
2ND QUARTER (APRIL-JUNE) WIND ROSE OF
2006-2009 & 2012 ANAHEIM SURFACE DATA
FROM SCAQMD AERMOD METEOROLOGY WEBSITE

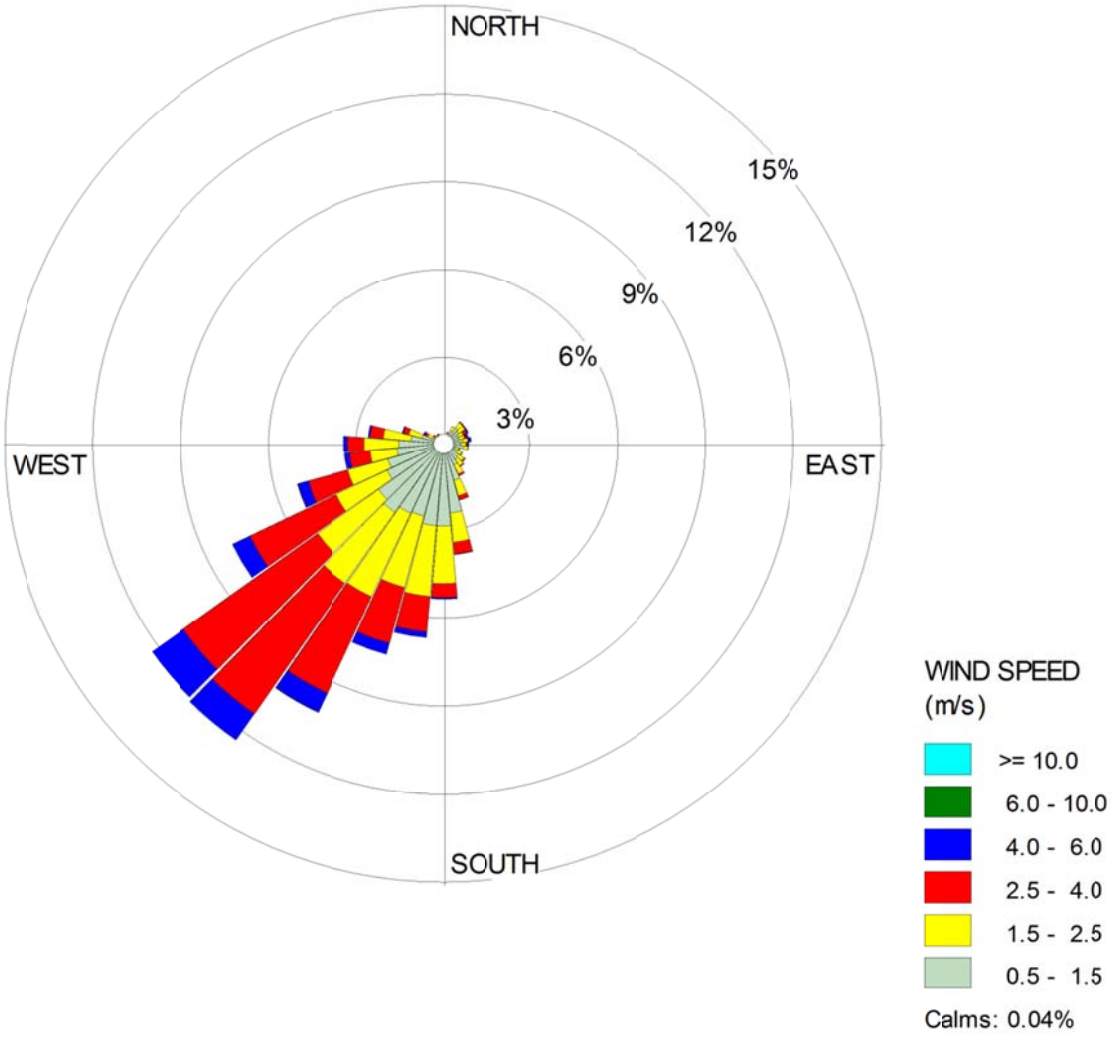

FIGURE 5.1B-1d
3RD QUARTER (JULY-SEPTEMBER) WIND ROSE OF
2006-2009 & 2012 ANAHEIM SURFACE DATA
FROM SCAQMD AERMOD METEOROLOGY WEBSITE

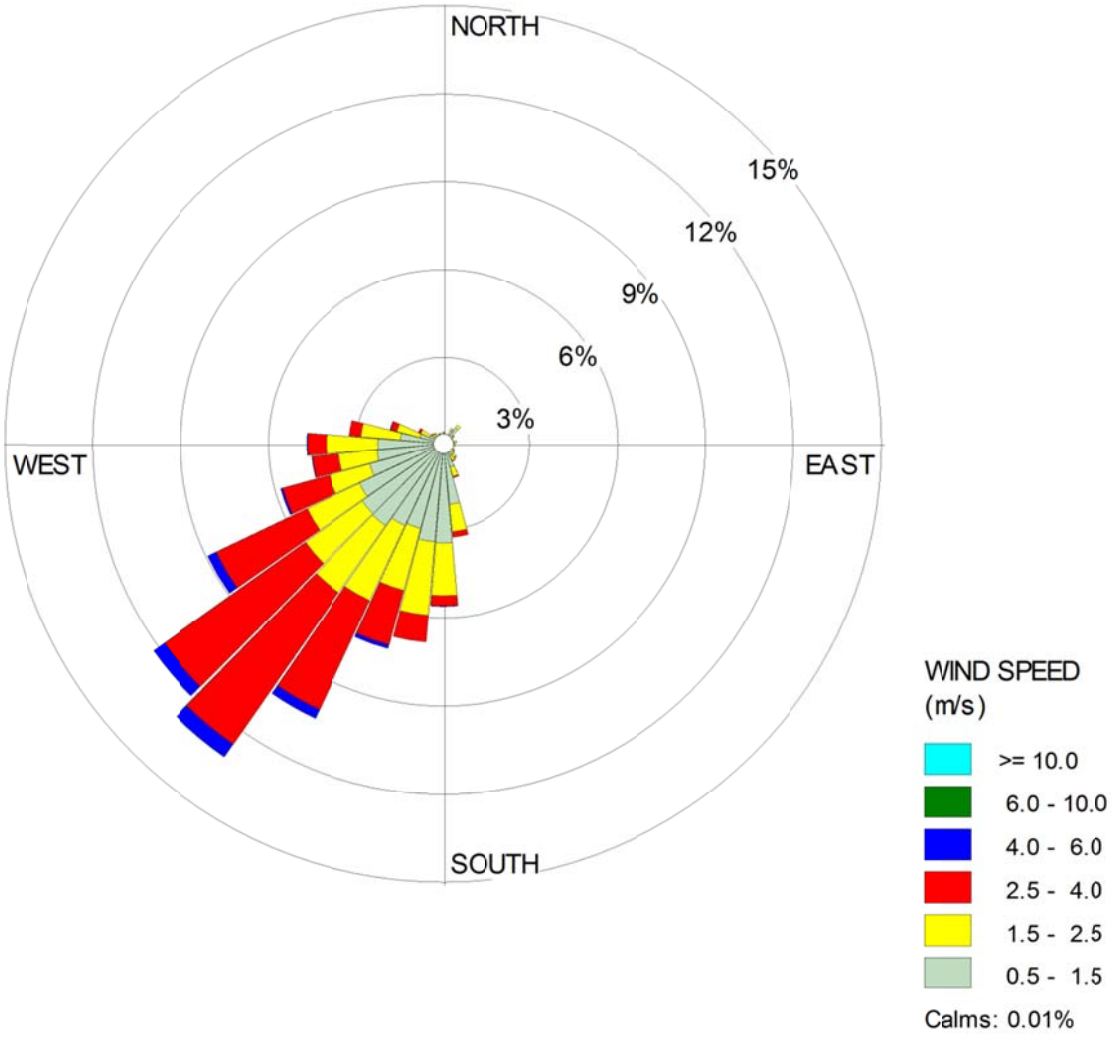

FIGURE 5.1B-1e
4TH QUARTER (OCTOBER-DECEMBER) WIND ROSE OF
2006-2009 & 2012 ANAHEIM SURFACE DATA
FROM SCAQMD AERMOD METEOROLOGY WEBSITE

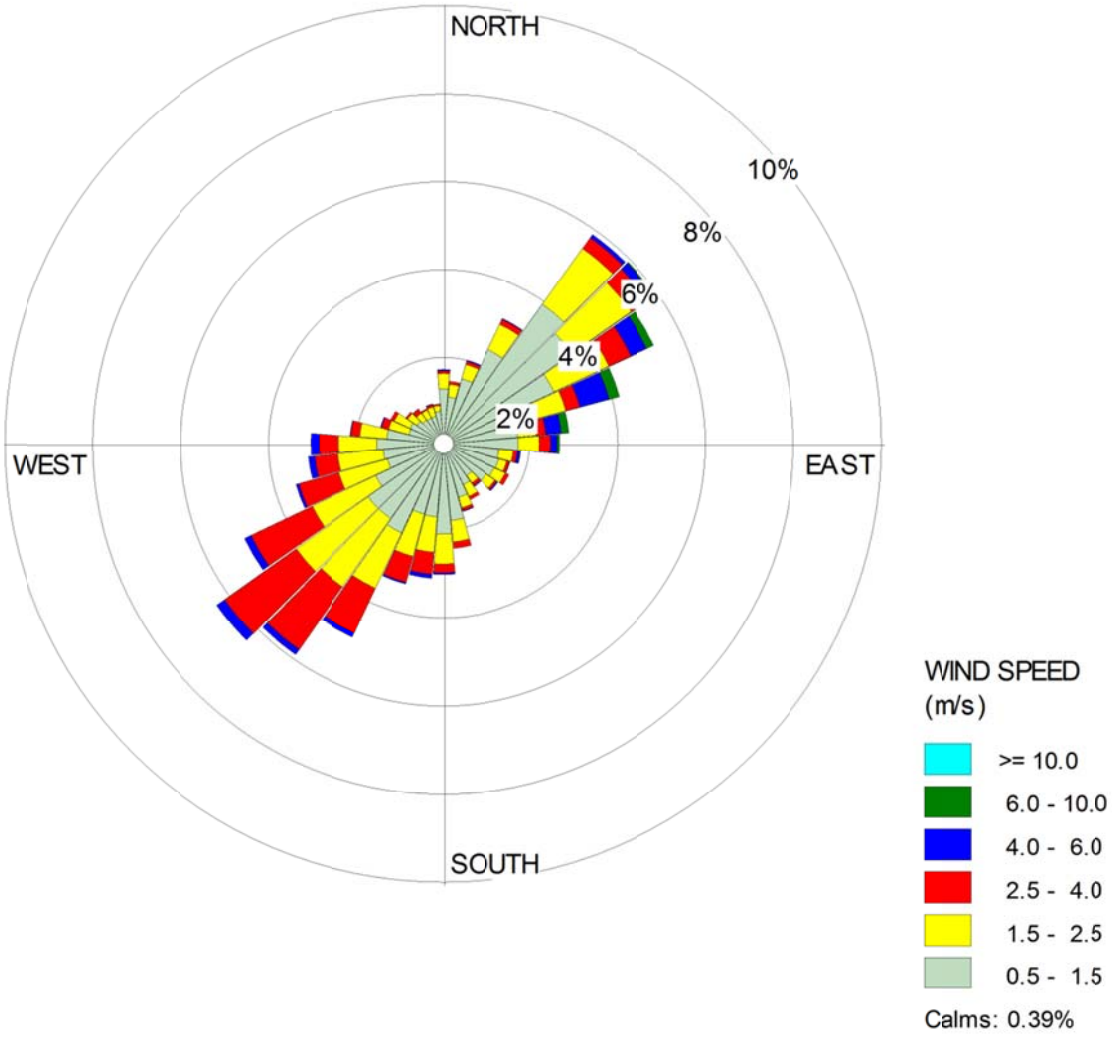

FIGURE 5.1B-2


Deposition Modeling for
Seal Beach National Wildlife Refuge
UTM North (meters-NAD83/Zone11)
3738000
3737500
3737000
3736500
3736000
3735500
3735000
3734500
3734000
3733500
3733000
3732500
3732000
3731500
3731000
3730500
3730000
398000
399000
400000
401000
402000
403000
UTM East (meters-NAD83/Zone11)
N
0m
1000m
2000m
FWS Boundary Shown in Blue
250-meter Spaced Receptors Shown in Red