

US EPA ARCHIVE DOCUMENT

APPENDIX C
Comparison of Meteorological Data

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Chandler, Arizona Municipal Airport and Phoenix Sky Harbor International
Airport

ENVIRON International Corporation (ENVIRON) had proposed using hourly surface meteorological data collected at the Chandler, Arizona, Municipal Airport (1995 to 1999) in the technical memorandum submitted to the United States Environmental Protection Agency (USEPA) (August 4, 2005) describing the proposed methodology for emissions estimation and dispersion modeling to be used in the Romic (Chandler, Arizona) Health Risk Assessment (HRA). Evaluation of the available meteorological data from Chandler resulted in the assessment that the data did not meet the USEPA modeling meteorological data completeness criteria. As see in Table C.1, the Chandler data does not have five consecutive years of “complete data”. Five quarters between 1995 and 2001 do not meet the completeness criteria of 90%.

In addition, it appears that the meteorological data set is missing the required data to calculate the stability class (stability class is a necessary parameter for the dispersion model). Nor does it have hourly temperatures (the ones in the data set appear to be dummy values).

Based on this information, ENVIRON proposed to use the Phoenix airport data (1994-1998) with upper air data from Tucson (as originally proposed). This data is the most commonly used data for regulatory modeling for the Greater Phoenix area. Upon examination of the wind roses (graphic depictions of the windspeed/wind direction data) for each met set, we find that they show similar trends with respect to wind direction and wind speed categories (see windrose attachments to this appendix). This is expected since the Chandler airport and the Phoenix airport are fairly close to each other, and are approximately equidistant to the facility (between 13.9 from Chandler versus 15.5 miles from Phoenix Airport).

Reference:

ENVIRON International Corporation (ENVIRON). 2005e. Technical Memorandum - *Proposed Methodology for Estimating Operational Emissions and Exposure Concentrations, Romic Environmental Technologies Corporation (Southwest)*. August 8.

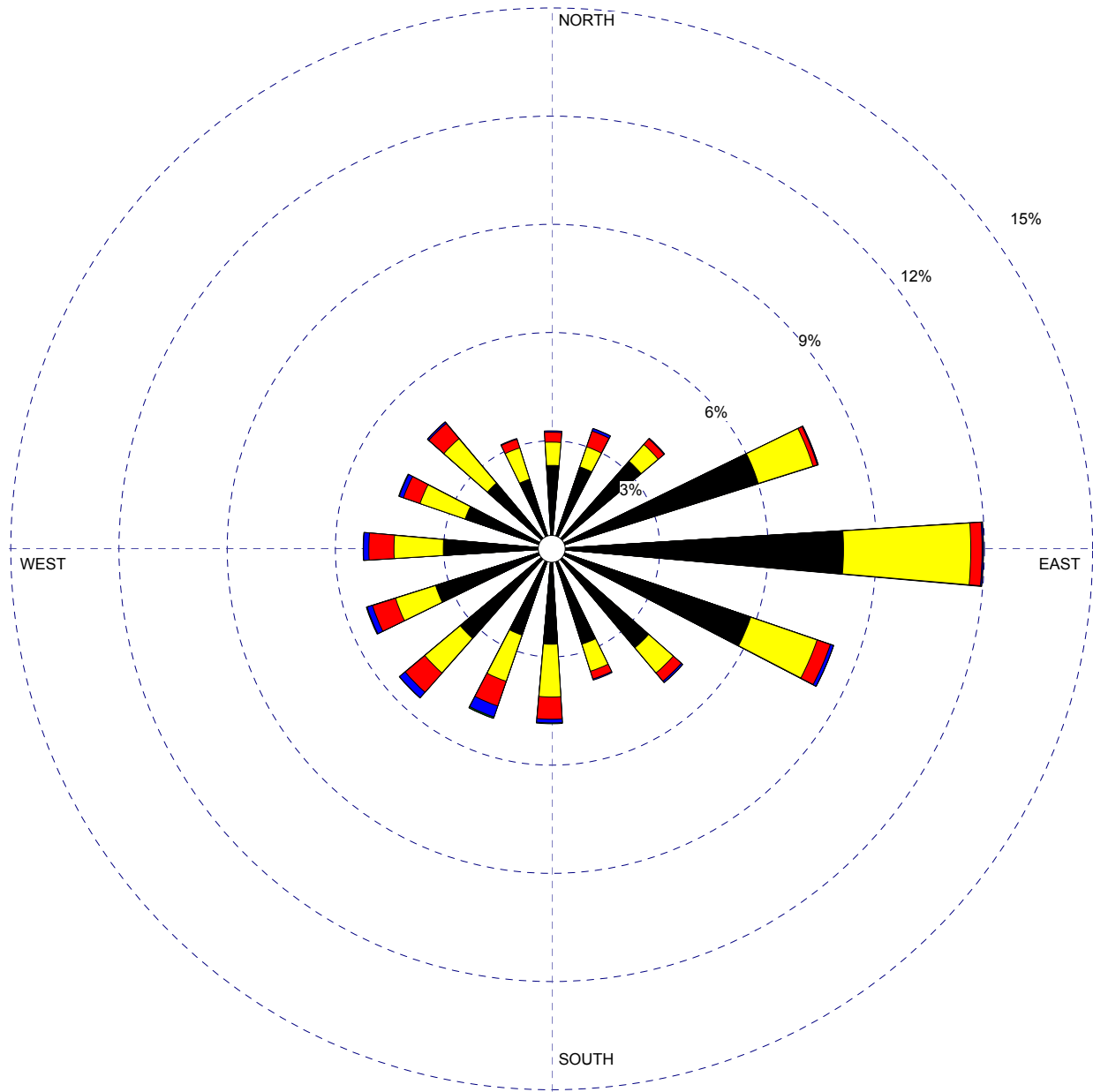
TABLES

TABLE C.1
Chandler Met Data Completeness Analysis
Romic Facility - Chandler, Arizona

Year		Quarter Number				Total
		1	2	3	4	
1995	Number of missing values	448	317	38	104	907
	Number of total values	2160	2184	2208	2208	8760
	% completeness	79.3%	85.5%	98.3%	95.3%	89.6%
1996	Number of missing values	6	20	156	285	467
	Number of total values	2184	2184	2208	2208	8784
	% completeness	99.7%	99.1%	92.9%	87.1%	94.7%
1997	Number of missing values	19	11	107	35	172
	Number of total values	2160	2184	2208	2208	8760
	% completeness	99.1%	99.5%	95.2%	98.4%	98.0%
1998	Number of missing values	79	3	147	6	235
	Number of total values	2160	2184	2208	2208	8760
	% completeness	96.3%	99.9%	93.3%	99.7%	97.3%
1999	Number of missing values	33	2	1	31	67
	Number of total values	2160	2184	2208	2208	8760
	% completeness	98.5%	99.9%	100.0%	98.6%	99.2%
2000	Number of missing values	18	361	1646	16	2041
	Number of total values	2184	2184	2208	2208	8784
	% completeness	99.2%	83.5%	25.5%	99.3%	76.8%
2001	Number of missing values	287	4	0		291
	Number of total values	2160	2184	2208		6552
	% completeness	86.7%	99.8%	100.0%		95.6%

ATTACHMENTS
Windroses for Chandler and Phoenix/Sky
Harbor International Airport

WIND ROSE PLOT:
Chandler Airport
1995-1998 Meteorological Data



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

DATA PERIOD:
1998 1995 1996 1997
Jan 1 - Dec 31
00:00 - 23:00

COMMENTS:

TOTAL COUNT:

35064 hours

CALM WINDS:

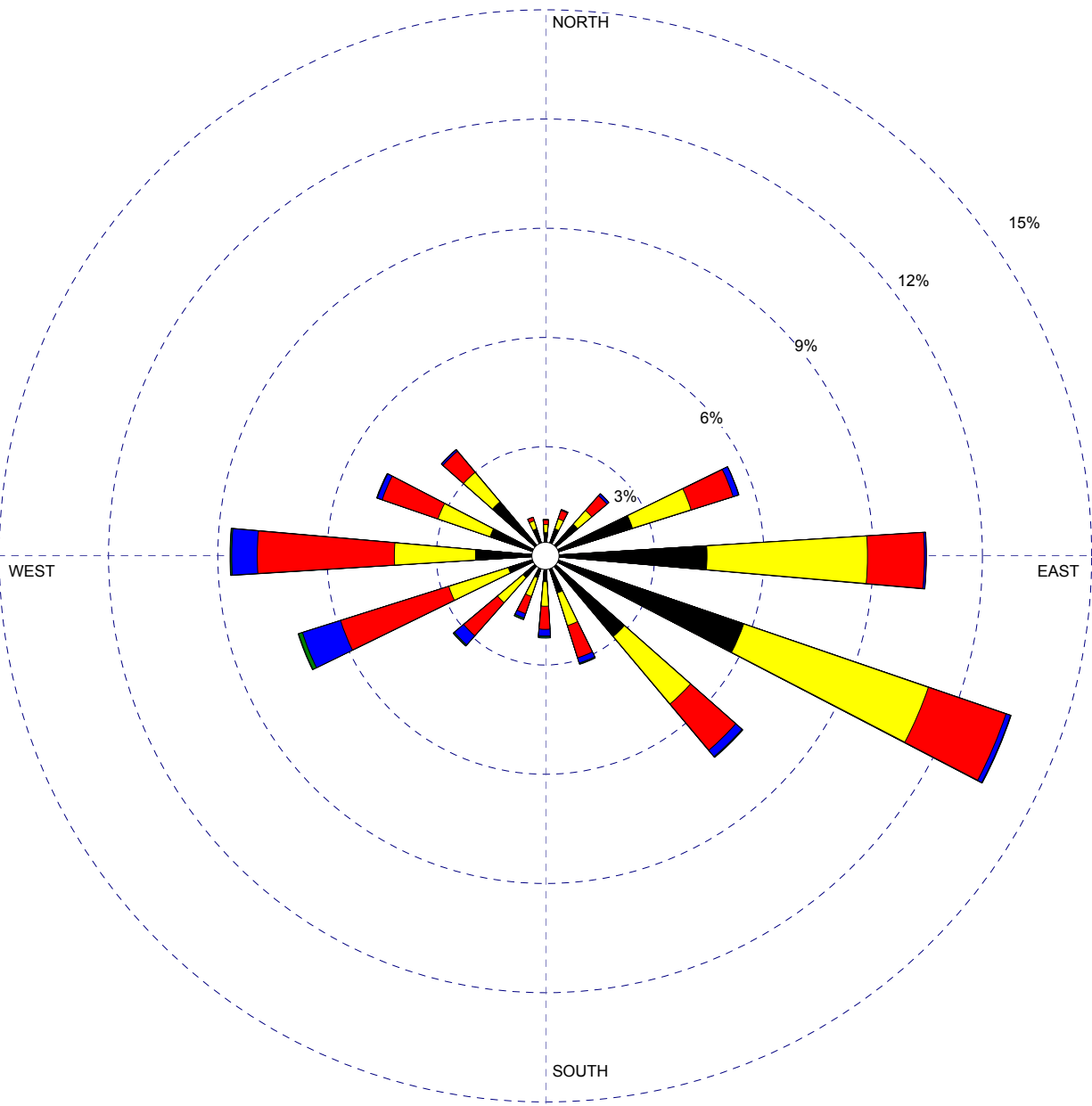
14.39%

AVG. WIND SPEED:

1.98 m/s

PROJECT NO.:

WIND ROSE PLOT:
Phoenix/Sky Harbor International Airport
1995-1998 Meteorological Data



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

DATA PERIOD:
1995 1996 1997 1998
Jan 1 - Dec 31
00:00 - 23:00

COMMENTS:

TOTAL COUNT:
35064 hours

CALM WINDS:
22.62%

AVG. WIND SPEED:
3.05 m/s

PROJECT NO.: