

MARCH ARB/RIVERSIDE CA

Latitude = 33.88 N

WMO No. 722860

Longitude = 117.20 W

Elevation = 1539 feet

Period of Record = 1967 to 1996

Average Pressure = 28.33 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	107	70	56	9.8	WNW
0.4% Occurrence	101	68	57	9.4	WNW
1.0% Occurrence	98	68	58	9.4	WNW
2.0% Occurrence	95	67	60	9.2	WNW
Mean Daily Range	27	-	-	-	-
97.5% Occurrence	38	35	26	1.4	N
99.0% Occurrence	35	32	23	1.2	N
99.6% Occurrence	32	29	20	1.0	NW
Median of Extreme Lows	27	25	15	0.6	N
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	75	95	101	9.1	NW
0.4% Occurrence	72	92	89	8.9	WNW
1.0% Occurrence	71	91	86	8.8	WNW
2.0% Occurrence	70	90	82	8.6	WNW
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	113	78	0.72	5.1	SSE
0.4% Occurrence	102	79	0.65	5.3	NW
1.0% Occurrence	95	79	0.60	5.6	WNW
2.0% Occurrence	89	76	0.56	4.9	NW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		294	1239	35	523

Other Site Data

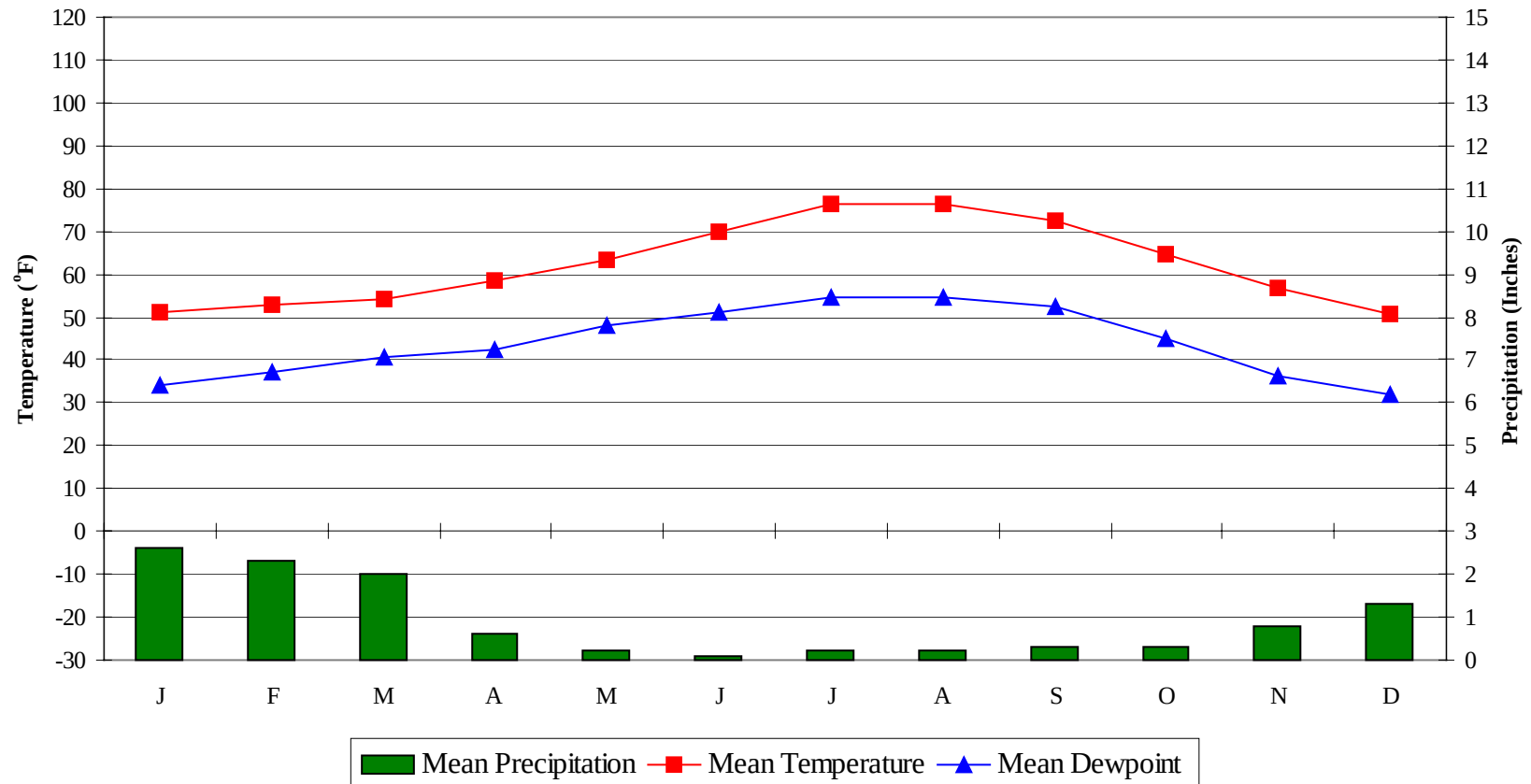
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
8	1.5	85	0.2 + 1.5
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
64.9	0	0	10

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

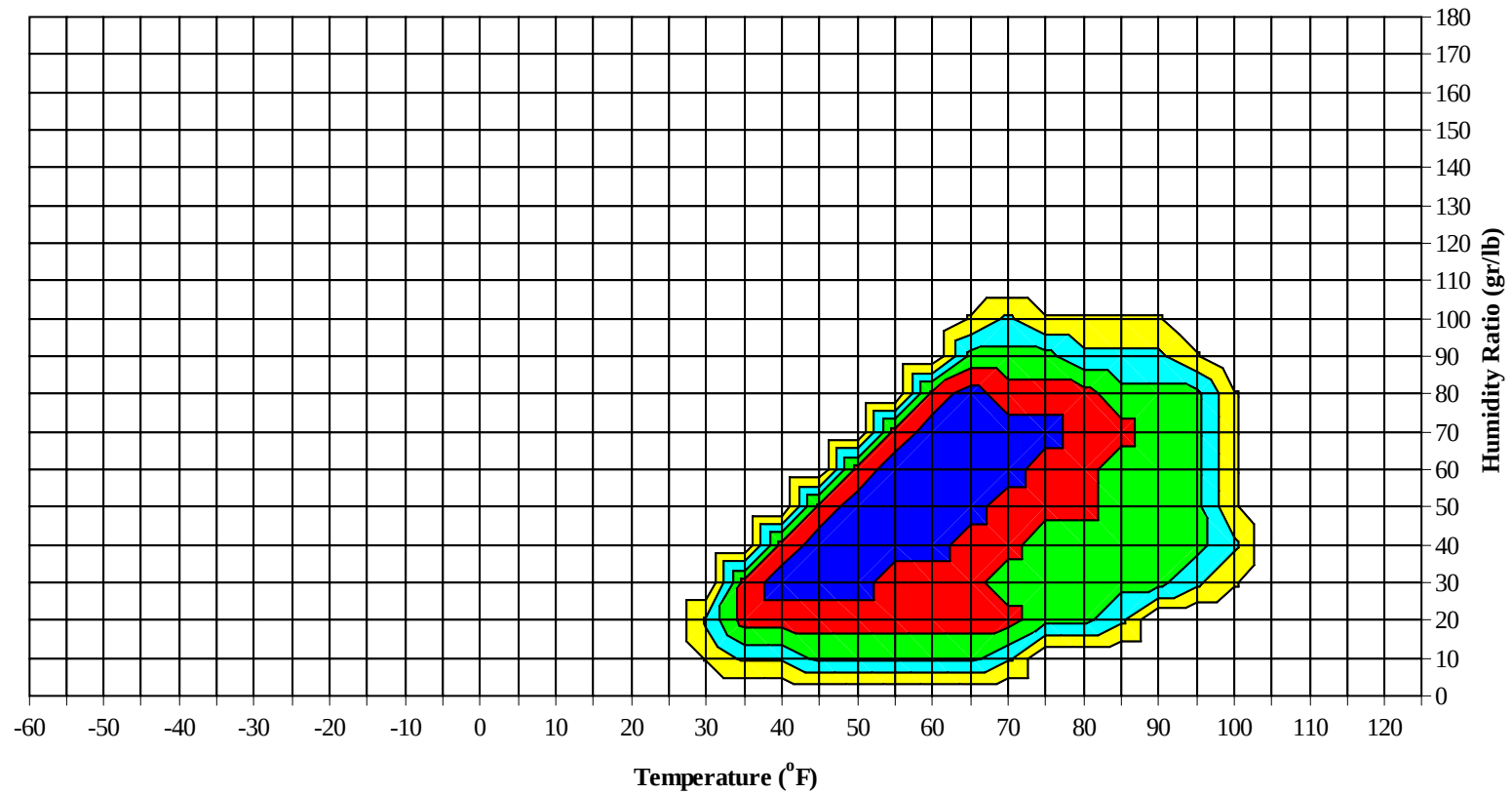
MARCH ARB/RIVERSIDE CA

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Average Annual Climate

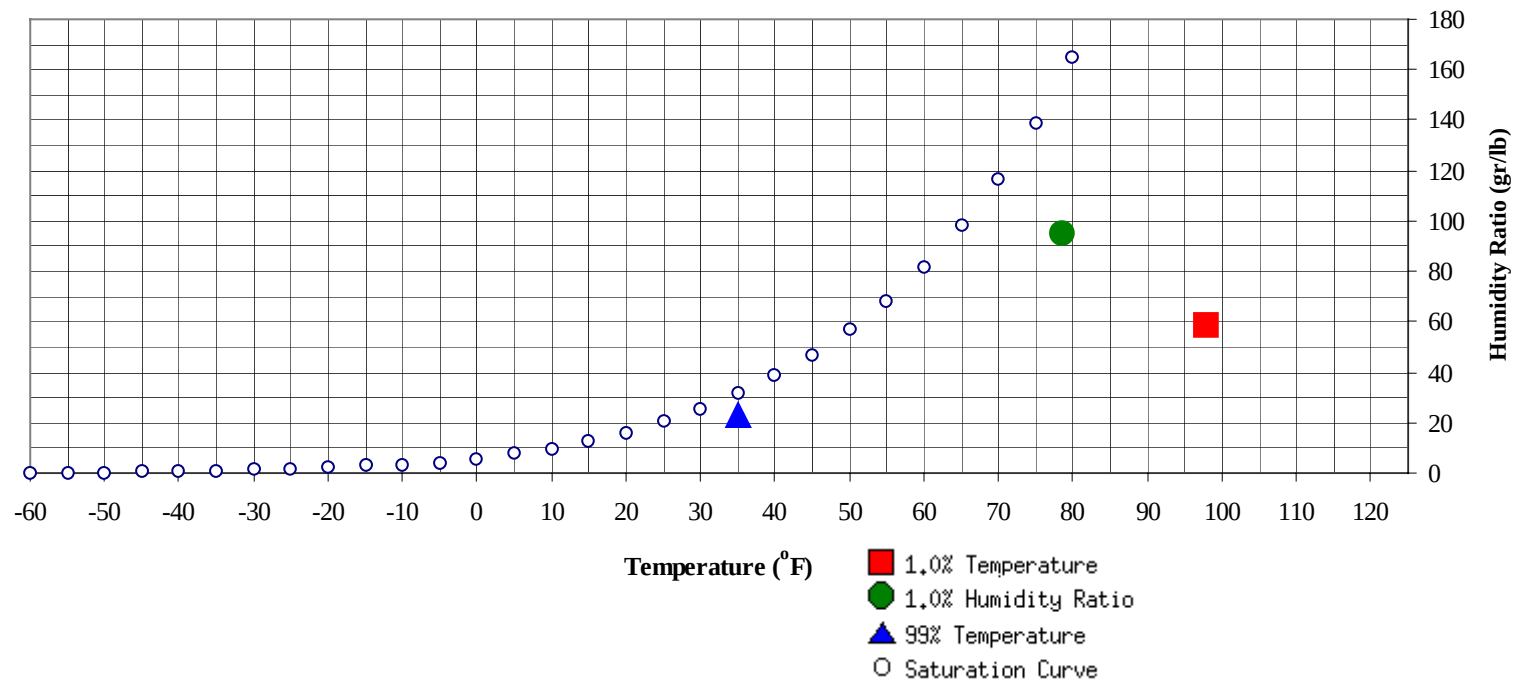


Long Term Psychrometric Summary



- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

Psychrometric Summary of Peak Design Values



	(°F)	MCHR	Enthalpy	1.0% Humidity Ratio	(gr/lb)	MCDB	MCWB	MC Dewpt	Enthalpy
		(gr/lb)	(btu/lb)			(°F)	(°F)	(°F)	(btu/lb)
99% Dry Bulb	35	23.1	12.0	Ratio	95.2	78.5	68.6	64.1	33.7

1.0% Dry Bulb	(°F)	MCHR	MCWB	Enthalpy
		(gr/lb)	(°F)	(btu/lb)
98	59	67.9	32.8	

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
110 / 114															
105 / 109															
100 / 104															
95 / 99												0		0	63.0
90 / 94												1	0	1	61.3
85 / 89		0		0	60.7		1		1	59.4		1	0	1	59.4
80 / 84		3	0	3	55.0		7	0	7	57.4		8	1	9	57.0
75 / 79		12	0	12	53.0		14	2	16	54.9	0	18	3	21	56.2
70 / 74		22	3	25	51.4	0	25	5	30	53.0	0	29	7	36	54.7
65 / 69	0	30	9	39	49.4	1	33	12	46	51.0	0	34	14	48	53.1
60 / 64	2	43	19	64	47.9	3	39	24	66	50.0	2	44	27	73	51.4
55 / 59	11	50	39	101	47.5	15	41	45	101	49.1	15	54	50	119	50.1
50 / 54	39	49	74	162	45.8	41	38	61	140	46.8	61	42	76	179	47.8
45 / 49	66	27	59	153	42.4	63	19	48	130	43.2	83	15	49	147	44.1
40 / 44	61	9	30	101	38.1	56	6	21	83	38.8	55	2	19	76	39.8
35 / 39	44	2	11	57	33.8	33	1	6	40	34.1	24	0	3	27	34.8
30 / 34	18	0	3	21	29.7	11	0	0	11	29.7	7		0	7	30.4
25 / 29	5	0	0	5	25.0	1			1	25.5					
20 / 24	1			1	21.0	0			0	24.0					
15 / 19	0			0	18.7										

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
110 / 114													0		0 68.0
105 / 109							0		0	67.0		1		1	67.2
100 / 104							1		1	65.2		6	0	6	65.9
95 / 99		1	0	1	62.4		5	0	5	63.4		19	2	21	65.7
90 / 94		4	0	4	61.7		10	1	11	62.6	0	31	5	36	65.4
85 / 89		11	1	12	60.1	0	21	3	24	62.5	1	40	10	51	64.4
80 / 84	0	22	4	26	58.2	0	33	7	40	61.4	3	38	19	60	63.1
75 / 79	0	31	7	38	56.9	1	39	14	54	60.4	6	35	27	68	61.8
70 / 74	1	37	15	53	56.0	3	41	24	68	58.7	11	28	38	77	60.1
65 / 69	3	40	24	67	54.5	9	37	36	82	56.6	25	20	46	91	58.2
60 / 64	11	42	38	91	52.6	28	36	56	120	54.7	62	16	54	132	56.3
55 / 59	38	33	55	125	50.8	86	21	64	171	52.7	96	4	33	133	53.8
50 / 54	70	16	56	142	48.1	85	4	36	125	49.3	32	0	5	37	50.1
45 / 49	65	4	30	99	44.2	29	0	6	35	44.8	4		0	4	45.4
40 / 44	38	1	10	49	40.0	6		1	7	40.5	0			0	43.1
35 / 39	12		1	13	35.3	1			1	36.3					
30 / 34	2		0	2	31.0										
25 / 29	0			0	27.0										
20 / 24															
15 / 19															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
110 / 114		0		0	71.5		0		0	73.0					
105 / 109		1		1	70.8		3	0	3	70.8		2		2	69.0
100 / 104		11	0	11	68.9		15	0	15	70.1		10	0	10	67.9
95 / 99		40	2	42	68.2		38	3	41	68.6	0	27	2	29	67.0
90 / 94	0	66	11	77	67.4	0	66	11	77	67.6	0	42	6	48	66.0
85 / 89	2	57	23	82	66.3	2	52	23	77	66.3	1	40	13	54	64.9
80 / 84	6	38	35	79	65.0	7	36	35	78	65.1	3	36	22	61	63.9
75 / 79	17	19	47	83	63.4	18	20	50	88	63.7	10	31	35	76	62.7
70 / 74	37	10	57	104	61.9	43	12	59	114	62.0	24	26	48	98	61.0
65 / 69	67	5	48	120	59.8	71	5	45	121	60.1	51	17	51	119	59.6
60 / 64	83	1	21	105	57.6	73	1	19	93	57.5	78	8	46	132	57.3
55 / 59	33		2	35	54.2	31		2	33	54.1	52	1	16	69	53.8
50 / 54	3		0	3	49.9	2		0	2	49.9	18		2	20	49.2
45 / 49											3		0	3	44.4
40 / 44															
35 / 39															
30 / 34															
25 / 29															
20 / 24															
15 / 19															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1967 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
110 / 114															
105 / 109		0		0	70.0										
100 / 104		2		2	65.7										
95 / 99		8	0	8	64.4										
90 / 94	0	16	1	17	62.2		1		1	60.8					
85 / 89	0	27	3	30	60.4		7		7	57.9		0		0	57.9
80 / 84	0	34	8	42	59.5		19	0	19	56.3		3		3	55.3
75 / 79	1	38	14	53	58.4		30	3	33	54.5		14	0	14	53.0
70 / 74	5	44	27	76	57.3	0	36	8	44	52.7	0	25	2	27	50.9
65 / 69	12	38	43	93	56.2	2	41	17	60	51.3	0	34	7	41	49.3
60 / 64	49	27	67	143	55.1	8	46	39	93	50.1	2	44	19	65	47.8
55 / 59	80	10	55	145	52.2	29	34	61	124	48.8	10	48	38	96	46.7
50 / 54	60	3	23	86	47.9	61	19	63	143	46.2	29	41	66	137	45.1
45 / 49	31	0	6	37	43.4	71	7	35	113	42.4	60	26	62	149	41.5
40 / 44	9		1	10	39.0	45	1	12	58	38.1	68	10	37	115	37.7
35 / 39	1		0	1	34.1	19	0	2	21	34.0	51	2	13	66	33.4
30 / 34						4		0	4	29.8	22	0	3	25	29.1
25 / 29						0			0	26.2	4	0	0	4	24.6
20 / 24											1		0	1	20.3
15 / 19															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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WMO No. 722860

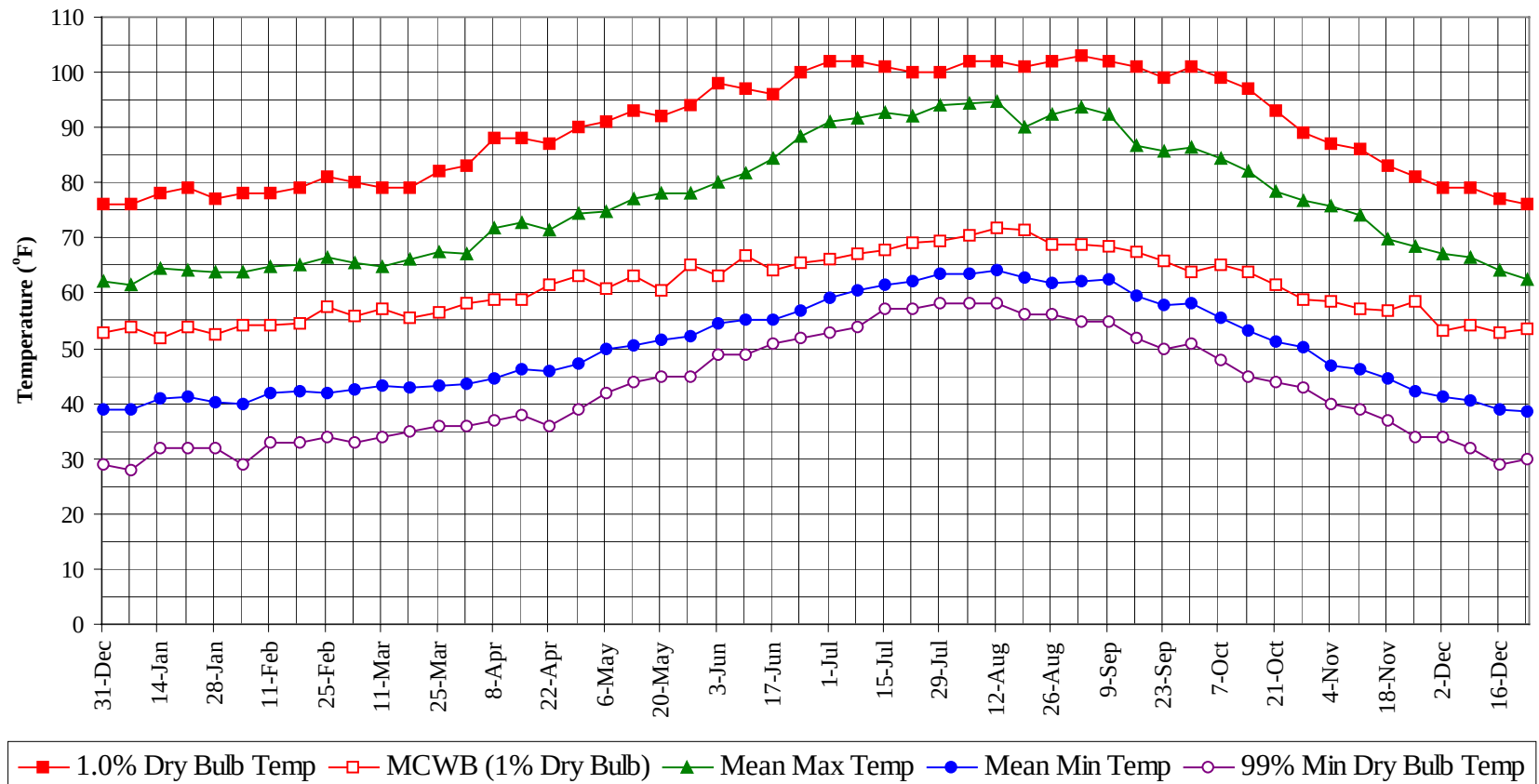
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1967 to 1996

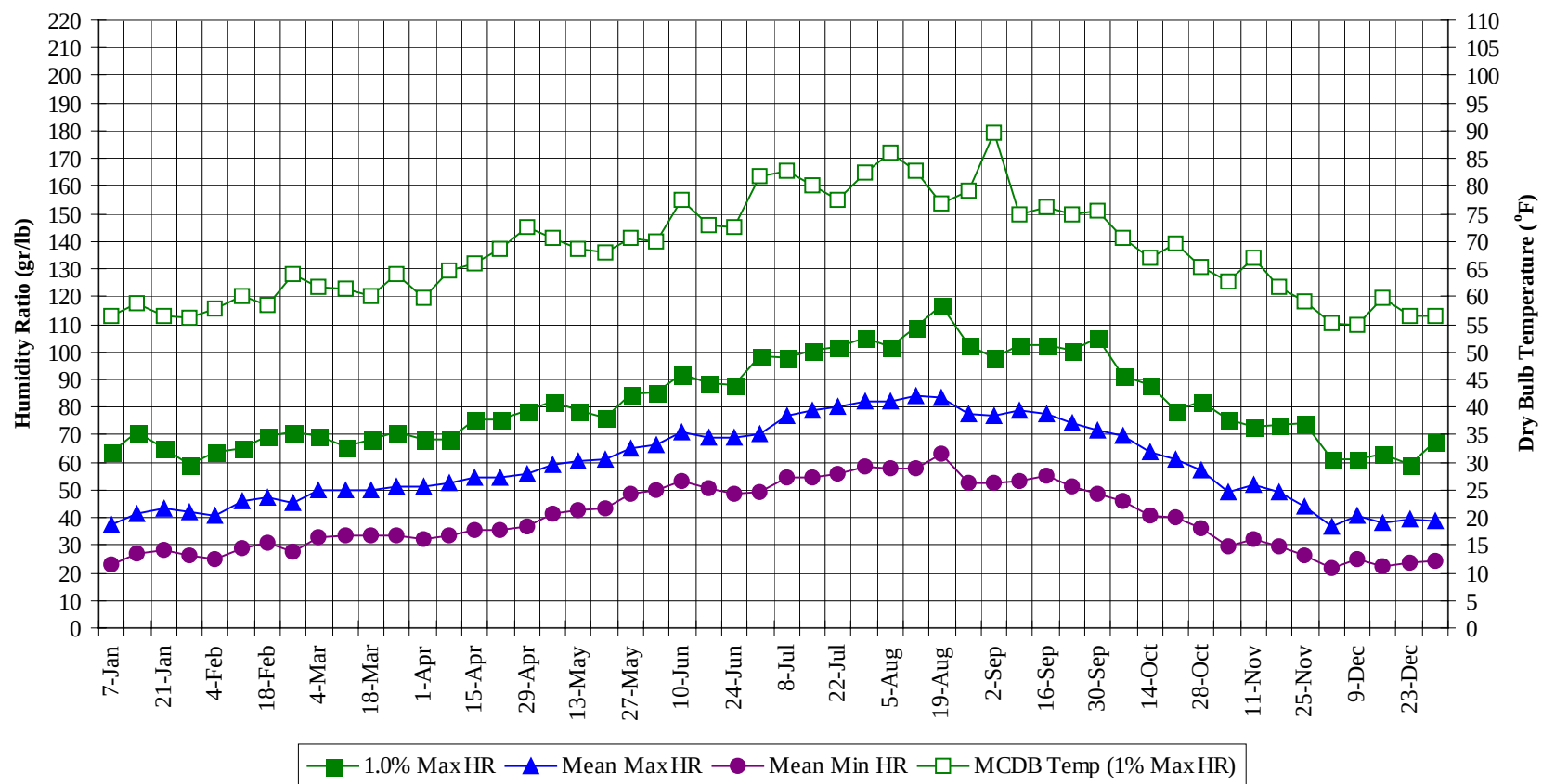
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
110 / 114	0			0	71.0
105 / 109	8			8	69.7
100 / 104	45			2	47
95 / 99	0	137	9	146	67.3
90 / 94	1	237	34	272	66.3
85 / 89	5	257	77	339	64.6
80 / 84	19	277	131	427	62.5
75 / 79	54	301	200	555	60.4
70 / 74	125	335	293	753	58.5
65 / 69	241	335	353	929	56.4
60 / 64	402	347	427	1176	54.0
55 / 59	494	296	460	1250	50.9
50 / 54	501	212	461	1174	47.2
45 / 49	475	97	298	870	43.0
40 / 44	339	29	131	499	38.6
35 / 39	185	6	37	228	34.0
30 / 34	64	1	7	72	29.6
25 / 29	11	0	1	12	24.9
20 / 24	2		0	2	20.6
15 / 19	0			0	18.7

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

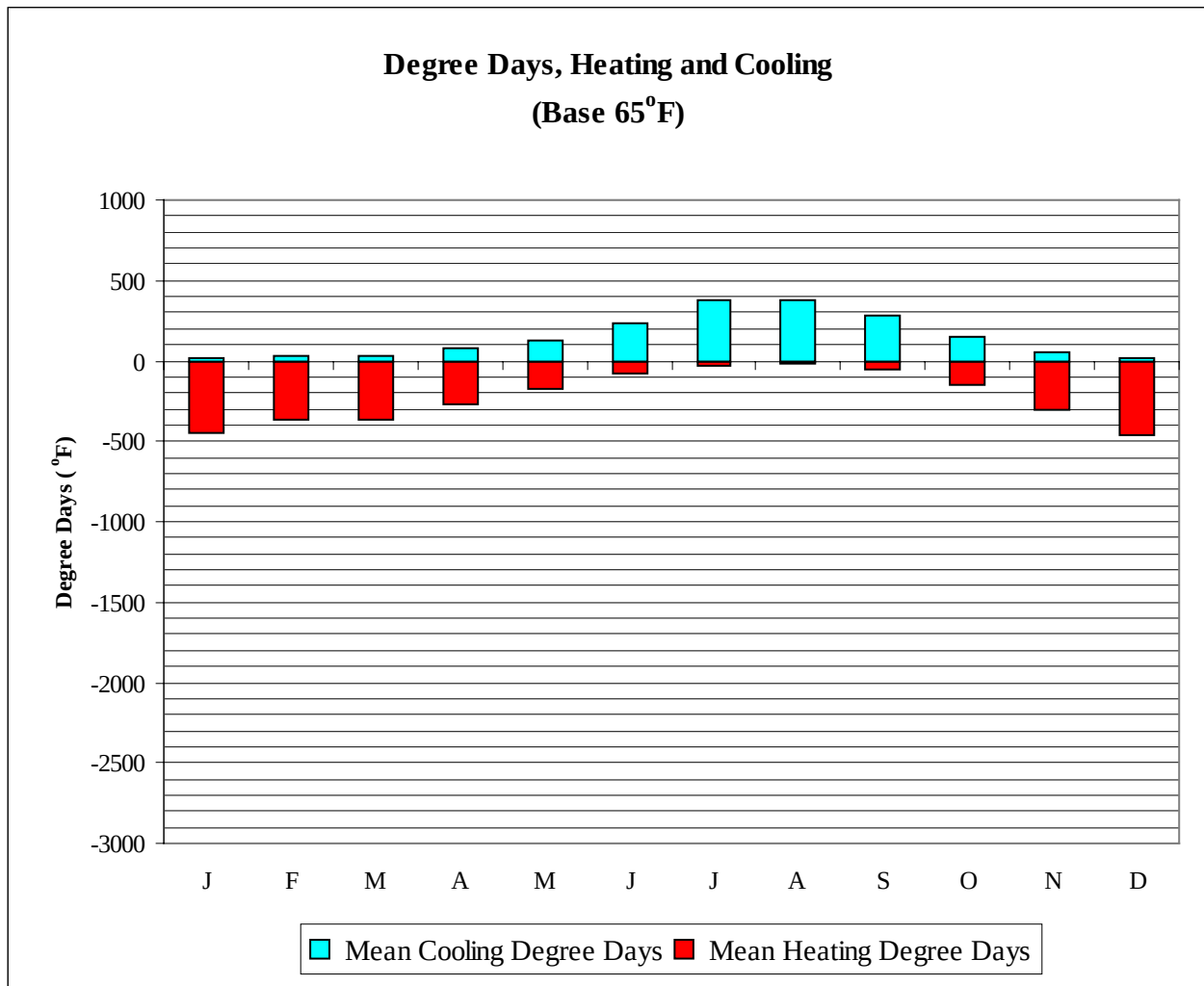


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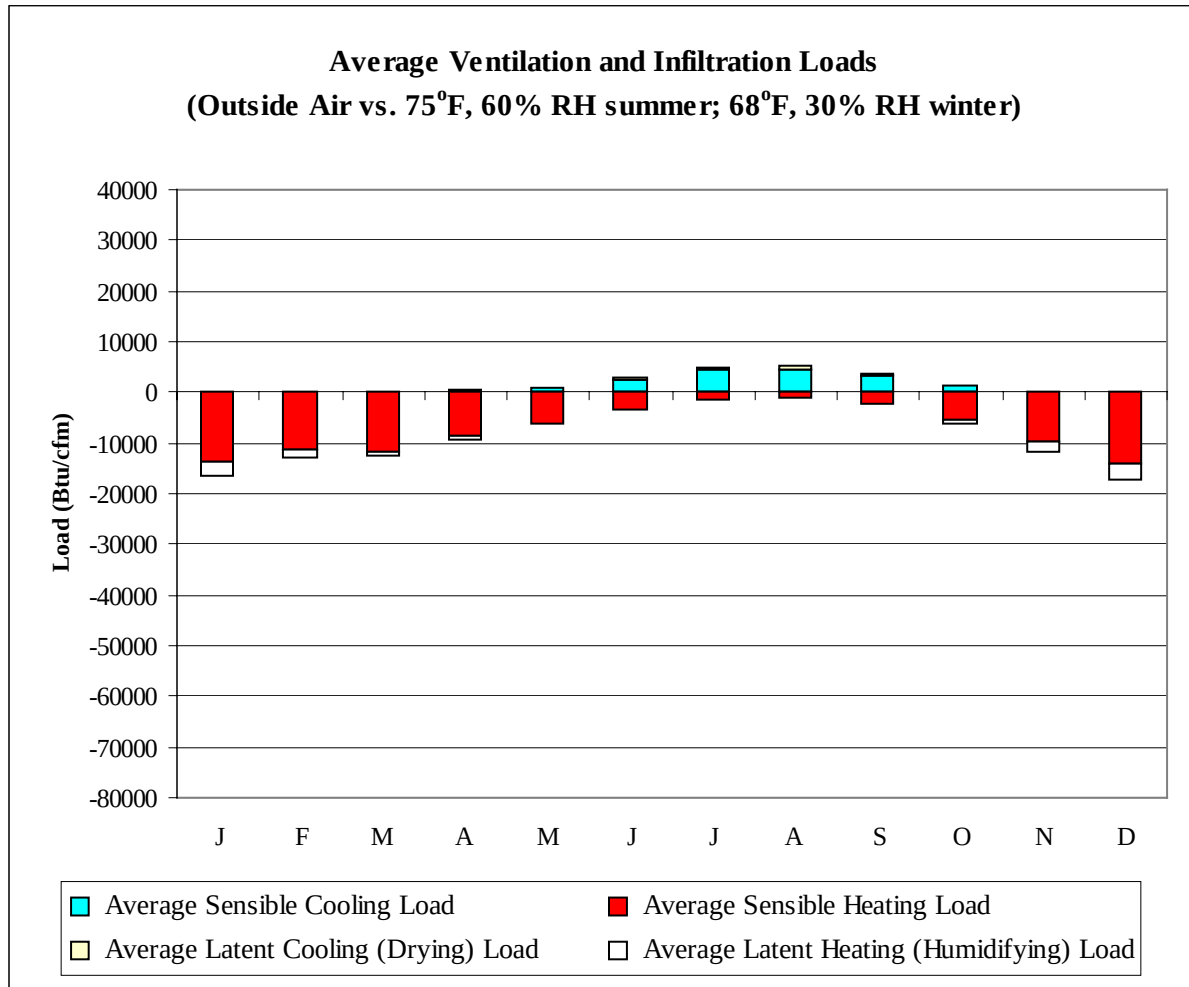
WMO No. 722860

Long Term Dry Bulb Temperature and Humidity Summary

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	76.0	53.9	61.6	38.9	28.0	63.7	56.6	37.3	23.2
14-Jan	78.0	51.9	64.6	40.9	32.0	70.7	58.6	41.3	26.9
21-Jan	79.0	53.8	64.3	41.2	32.0	65.1	56.4	43.2	28.4
28-Jan	77.0	52.7	63.9	40.3	32.0	58.8	56.3	41.8	26.2
4-Feb	78.0	54.3	63.8	40.0	29.0	63.7	57.7	40.9	25.1
11-Feb	78.0	54.2	64.7	41.9	33.0	65.1	60.2	46.1	29.2
18-Feb	79.0	54.5	65.3	42.3	33.0	69.3	58.5	47.5	30.6
25-Feb	81.0	57.4	66.4	41.8	34.0	70.7	63.9	45.4	27.8
4-Mar	80.0	55.7	65.4	42.5	33.0	69.3	61.7	50.0	32.5
11-Mar	79.0	57.2	65.0	43.4	34.0	65.8	61.5	49.9	33.3
18-Mar	79.0	55.5	66.3	42.8	35.0	68.6	60.2	50.1	33.2
25-Mar	82.0	56.5	67.6	43.2	36.0	70.7	64.0	51.1	33.3
1-Apr	83.0	58.1	67.2	43.6	36.0	68.6	59.8	50.9	32.1
8-Apr	88.0	58.8	71.7	44.5	37.0	68.6	64.6	52.4	33.8
15-Apr	88.0	58.8	72.9	46.1	38.0	75.6	66.1	54.3	35.1
22-Apr	87.0	61.4	71.4	45.7	36.0	75.6	68.5	54.2	35.4
29-Apr	90.0	63.1	74.5	47.2	39.0	79.1	72.5	55.9	36.5
6-May	91.0	60.8	74.8	49.8	42.0	81.9	70.6	59.0	41.2
13-May	93.0	63.1	77.0	50.6	44.0	79.1	68.8	60.5	42.5
20-May	92.0	60.6	78.2	51.5	45.0	76.3	68.0	61.2	43.2
27-May	94.0	65.2	78.2	52.3	45.0	84.7	70.7	65.3	48.6
3-Jun	98.0	63.3	80.2	54.4	49.0	85.4	70.0	66.2	49.8
10-Jun	97.0	66.9	81.8	55.3	49.0	91.7	77.6	70.9	53.2
17-Jun	96.0	64.3	84.4	55.3	51.0	88.9	73.0	69.0	50.3
24-Jun	100.0	65.5	88.3	56.8	52.0	88.2	72.7	69.2	48.6
1-Jul	102.0	66.2	91.0	59.1	53.0	98.7	81.7	70.4	49.1
8-Jul	102.0	67.2	91.6	60.4	54.0	98.0	82.6	76.6	54.3
15-Jul	101.0	67.7	92.8	61.4	57.0	100.8	80.2	78.6	54.6
22-Jul	100.0	69.2	92.2	62.2	57.0	101.5	77.4	80.3	56.0
29-Jul	100.0	69.5	94.1	63.4	58.0	105.0	82.4	82.4	58.2
5-Aug	102.0	70.6	94.5	63.5	58.0	101.5	86.1	81.8	57.5
12-Aug	102.0	71.7	94.6	64.3	58.0	109.2	82.7	84.1	58.0
19-Aug	101.0	71.5	90.1	62.7	56.0	116.9	76.9	83.6	62.8
26-Aug	102.0	68.9	92.3	61.9	56.0	102.2	79.2	77.7	52.3
2-Sep	103.0	68.9	93.8	62.2	55.0	98.0	89.7	77.0	52.4
9-Sep	102.0	68.4	92.4	62.5	55.0	102.2	74.9	79.0	53.2
16-Sep	101.0	67.6	86.9	59.6	52.0	102.2	76.3	77.3	55.2
23-Sep	99.0	65.8	85.9	57.7	50.0	100.8	74.8	74.0	51.5
30-Sep	101.0	63.9	86.5	58.0	51.0	105.0	75.5	71.6	48.9
7-Oct	99.0	65.0	84.5	55.6	48.0	91.0	70.5	69.3	46.0
14-Oct	97.0	63.7	82.1	53.0	45.0	88.2	66.9	63.6	40.4
21-Oct	93.0	61.5	78.3	51.2	44.0	79.1	69.5	61.2	40.2
28-Oct	89.0	58.8	76.9	50.0	43.0	81.9	65.5	57.0	36.2
4-Nov	87.0	58.6	75.6	47.0	40.0	75.6	62.9	49.4	29.5
11-Nov	86.0	57.1	74.0	46.3	39.0	72.8	67.0	52.0	31.9
18-Nov	83.0	56.9	69.7	44.7	37.0	73.5	61.8	49.3	29.7
25-Nov	81.0	58.6	68.5	42.3	34.0	74.2	59.1	44.1	26.2
2-Dec	79.0	53.3	67.2	41.1	34.0	60.9	55.3	37.0	21.8
9-Dec	79.0	54.3	66.6	40.5	32.0	60.9	55.0	40.4	24.6
16-Dec	77.0	52.8	64.3	38.9	29.0	63.0	59.8	38.2	22.3
23-Dec	76.0	53.4	62.4	38.4	30.0	58.8	56.6	39.4	23.5
31-Dec	76.0	52.9	62.3	38.8	29.0	67.9	56.3	39.1	24.3



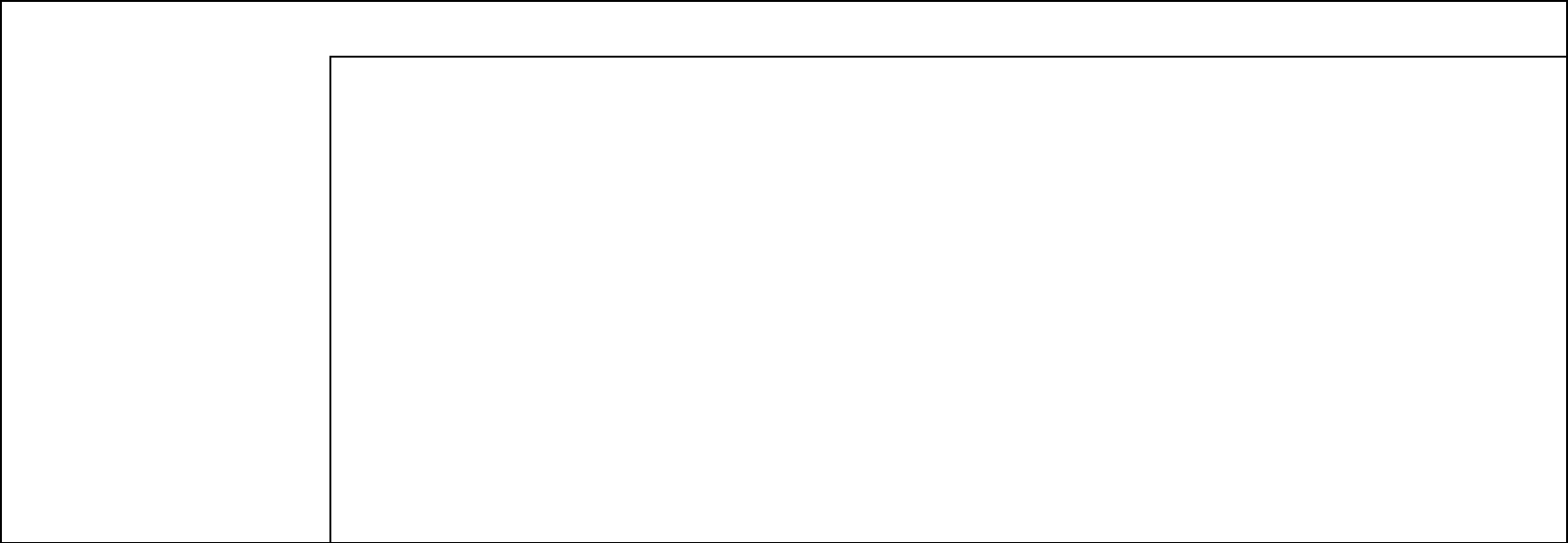
	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	18	447
FEB	25	363
MAR	32	370
APR	74	264
MAY	123	172
JUN	232	83
JUL	374	25
AUG	381	22
SEP	277	50
OCT	145	150
NOV	54	301
DEC	19	458
ANN	1755	2705



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	47	-13785	0	-2600
FEB	81	-11355	0	-1516
MAR	130	-11698	0	-876
APR	511	-8625	12	-598
MAY	1055	-6064	16	-112
JUN	2611	-3266	124	-45
JUL	4597	-1263	466	-11
AUG	4658	-1139	717	-19
SEP	3197	-2181	430	-118
OCT	1348	-5391	43	-853
NOV	302	-9688	0	-2101
DEC	47	-14063	0	-3053
ANN	18584	-88518	1808	-11902

Average Annual Solar Radiation – Nearest Available Site
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

No Solar Radiation
Data Available

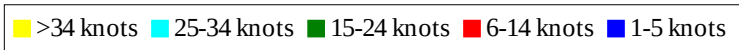
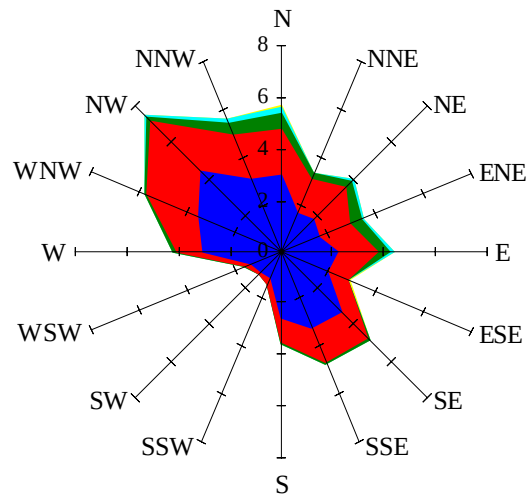


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

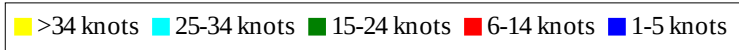
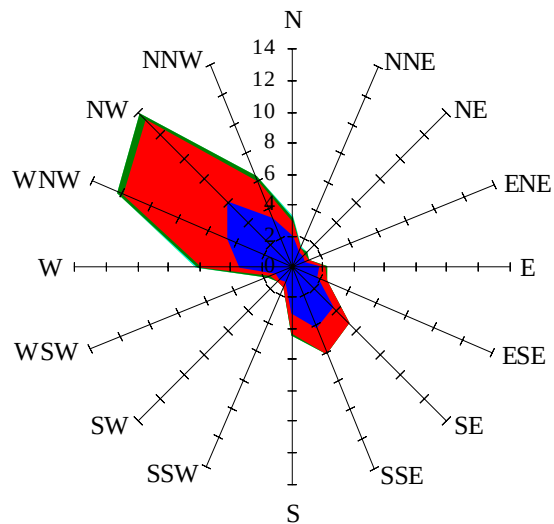
Labels of Percent Frequency on North Axis



Percent Calm = 36.44

Wind Summary - March, April, and May

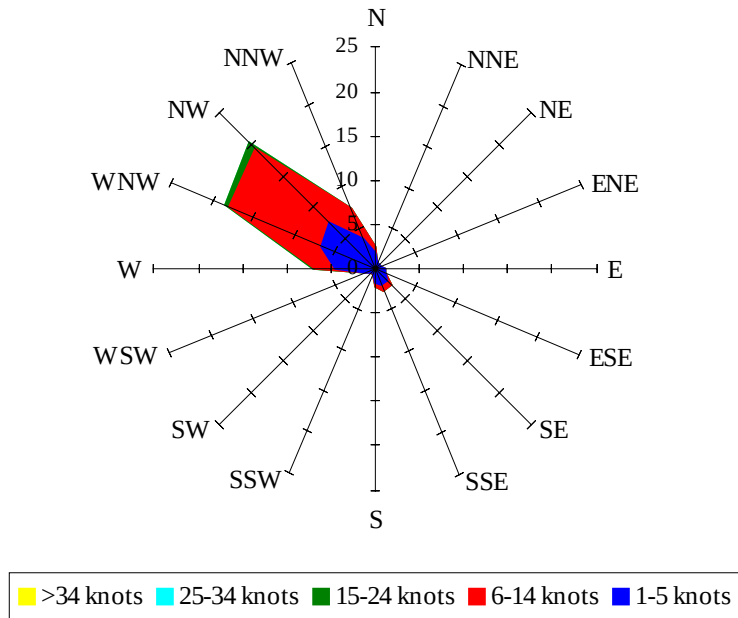
Labels of Percent Frequency on North Axis



Percent Calm = 30.34

Wind Summary - June, July, and August

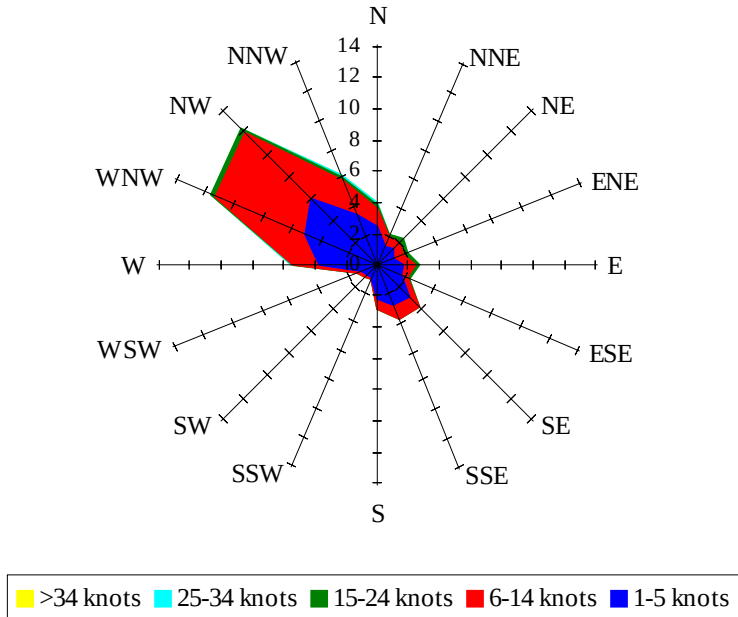
Labels of Percent Frequency on North Axis



Percent Calm = 30.48

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 36.17