

## 2.0 Calendar Year 2002 Summary

This section summarizes weather conditions for calendar year 2002 (Table 2.1). More detailed information can be found in Section 3.0 – Temperature Climatology, Section 4.0 – Precipitation Climatology, and Section 5.0 – Wind Climatology.

The 2001-2002 winter season (December 2001, January and February 2002) was warmer than normal, averaging 37.0°F, 3.2° above normal (33.8°F). The warmest winter, 1966-1967, averaged 40.6°F, while the coldest winter, 1948-1949, averaged 24.2°F. Winter season precipitation totaled 1.89 inches, 71% of normal (2.66 inches). The wettest winter, 1996-1997, received 5.45 inches, while the driest, 1946-1947, received 0.70 inch.

Spring 2002 (March, April and May) was cooler than normal, averaging 51.9°F, 1.9° below normal (53.8°F). The warmest spring, in 1992, averaged 58.2°F, while the coolest, in 1955, averaged 48.0°F. Spring season precipitation totaled 0.64 inch, 40% of normal (1.58 inches). The wettest spring (1955) received 3.28 inches, while the driest (1968) received only 0.09 inch.

The 2002 summer season (June, July and August) was warmer than normal, averaging 75.7°F, 2.0° above normal (73.7°F). The warmest summer (1958) averaged 78.2°F, while the coolest, in 1980, averaged 70.2°F. The summer's warmest temperature was 113°F on July 13. This was a record high maximum for the month of July and tied the all-time maximum temperature for Hanford (previously recorded on August 4, 1961). Precipitation for the summer totaled 0.82 inch, 86% of normal (0.95 inch). The wettest summer (1950) received 2.99 inches, while the driest (1973) received only 0.03 inch.

Autumn 2002 (September, October and November) was slightly cooler than normal, averaging 52.6°F, 0.4° below normal (53.0°F). The warmest autumn (1990) averaged 57.1°F, while the coolest (1985) averaged 44.5°F. Autumn precipitation totaled 0.50 inch, 28% of normal (1.80 inches). The wettest autumn (1973) received 4.79 inches, while the driest (1976) received only 0.04 inch.

The following are some additional statistics for 2002:

Category	Number of Days	Normal	Record	
			Maximum	Minimum
Maximum temperatures $\geq 100^{\circ}\text{F}$	16	13	28 (1958)	1 (1954)
Maximum temperatures $\geq 90^{\circ}\text{F}$	59	52	79 (1967)	29 (1980)
Maximum temperatures $\leq 32^{\circ}\text{F}$	7	24	58 (1984-85)	2 (1966-67)
Minimum temperatures $\geq 70^{\circ}\text{F}$	11	7	21 (1958)	0 (1954)
Minimum temperatures $\leq 32^{\circ}\text{F}$	108	105	143 (1984-85)	70 (1991-92)
Minimum temperatures $\leq 0^{\circ}\text{F}$	0	3	18 (1949-50)	0 (2001-02)
Thunderstorms	8	10	23 (1948)	3 (1949)
Fog (visibility $\leq 6$ mi)	46	47	84 (1985-86)	22 (1948-49)
Dense fog (visibility $\leq 0.25$ mi)	28	24	42 (1950-51)	9 (1948-49)
Peak wind gusts $\leq 12$ mph	50	50	87 (1952)	28 (1973)
Peak wind gusts $\geq 25$ mph	187	156	192 (1999)	123 (1952)
Peak wind gusts $\geq 40$ mph	32	27	57 (1990)	10 (1978)
Peak wind gusts $\geq 50$ mph	7	5	18 (1990)	0 (1985)

Table 2.1. 2002 Climatological Data Summary

Month	Temperatures, °F								Degree Days Base 65, °F				Precipitation, inches								Relative Humidity, %	
	Averages				Extremes								Snow, Ice Pellets, inches									
	Daily Maximum	Daily Minimum	Monthly	Departure <sup>(a)</sup>	Highest	Date	Lowest	Date	Heating	Departure <sup>(a)</sup>	Cooling	Departure <sup>(a)</sup>	Total	Departure <sup>(a)</sup>	Greatest in 24 Hours	Date	Total	Departure <sup>(a)</sup>	Greatest in 24 Hours	Date	Average	Departure <sup>(a)</sup>
J	45.2	29.9	37.6	+5.8	63	7	13	29	854	-174	0	0	0.42	-0.45	0.26	2	0.6	-3.6	0.6	16	73.1	-4.2
F	49.6	27.2	38.4	+0.5	68	21	16	27 <sup>(b)</sup>	745	-22	0	0	0.67	-0.01	0.53	7	0.2	-2.4	0.2	3	67.7	-2.8
M	53.6	31.2	42.4	-3.7	70	31	18	3	698	+111	0	0	0.19	-0.39	0.12	6	1.4	+1.0	1.4	6	57.0	+0.4
A	66.6	39.7	53.2	-0.3	80	30	29	4	359	+9	1	-4	0.29	-0.15	0.09	26-27	0	-T <sup>(c)</sup>	0	-	46.0	-1.3
M	73.5	46.7	60.1	-1.7	86	27	32	8	181	+25	28	-29	0.16	-0.39	0.16	27	0	0	0	-	42.5	-0.5
J	85.9	57.2	71.6	+2.3	104	26	46	8 <sup>(b)</sup>	28	-5	224	+61	0.65	+0.24	0.35	8-9	0	0	0	-	40.4	+0.8
J	95.7	63.6	79.6	+3.3	113	13	50	4	1	-3	456	+101	0.16	-0.11	0.16	7-8	0	0	0	-	32.1	-1.3
A	90.4	60.6	75.5	+0.1	103	14	50	17	1	-4	327	+1	0.01	-0.26	0.01	23	0	0	0	-	34.5	-1.1
S	81.7	50.8	66.3	+0.4	96	22	38	22	54	-21	94	-9	T <sup>(c)</sup>	-0.33	T <sup>(c)</sup>	29 <sup>(b)</sup>	0	0	0	-	38.8	-3.5
O	65.4	35.4	50.4	-2.6	81	6	7	31	454	+78	1	-3	0.12	-0.37	0.08	3	0	-0.1	0	-	50.1	-5.3
N	50.6	31.5	41.0	+0.9	67	19	11	2 <sup>(b)</sup>	714	-33	0	0	0.38	-0.60	0.16	7-8	T <sup>(c)</sup>	-2.3	T	28	72.7	-1.0
D	41.6	32.7	37.2	+5.5	56	16	23	22	865	-167	0	0	2.36	+1.25	0.63	13-14	0.6	-5.2	0.3	24	88.7	+8.6
Year Total	66.6	42.2	54.4	+0.8	113	Jul 13	7	Oct 31	4,954	-206	1,131	+118	5.41	-1.57	0.63	Dec 13-14	2.8	-12.6	1.4	Mar 6	53.6	-1.0

**Table 2.1. (contd)**

Month	Mean Sky Cover, Tenths		Solar Radiation, Langleys						50-ft Wind					Number of Days							
	Average	Departure <sup>(a)</sup>	Average Daily Total	Departure <sup>(a)</sup>	Greatest Daily Total	Date	Least Daily Total	Date	Average Speed, mph	Departure <sup>(a)</sup>	Peak Gusts			Thunderstorms	Heavy Fog	Precipitation ≥0.10 in.	Snowfall ≥1 in.	Maximum Temperature, °F		Minimum Temperature, °F	
											Speed, mph	Direction	Date					≥90°F	≤32°F	≤32°F	≤0°F
J	7.6	-0.3	84	-23	163	27	17	7	8.2	+1.9	57	W	12	0	5	1	0	0	0	19	0
F	6.2	-1.3	185	+1	287	25	48	7	6.1	-1.0	44	SW	21	0	3	1	0	0	0	22	0
M	7.5	+0.7	262	-58	448	30	100	20	8.9	+0.7	60	SW	11	1	0	1	1	0	0	20	0
A	5.0	-1.4	428	-22	590	23	197	9	9.0	+0.2	50	WSW	14	2	0	0	0	0	0	7	0
M	6.1	+0.2	482	-67	657	30	238	29	9.1	+0.3	52	W	5	0	0	1	0	0	0	1	0
J	5.0	-0.2	555	-52	685	19	288	28	9.0	-0.1	47	NW	7	0	0	2	0	11	0	0	0
J	2.5	-0.5	608	-22	694	1	431	23	9.3	+0.7	53	NW	7	4	0	1	0	24	0	0	0
A	2.0	-1.3	523	-15	635	2	405	4	8.2	+0.2	41	NW	10	3	0	0	0	17	0	0	0
S	3.4	-0.5	378	-26	484	2	217	16	7.6	+0.1	39	WNW	15	0	0	0	0	7	0	0	0
O	2.1	-3.5	260	+6	351	1	105	27	6.2	-0.4	43	NNE	29	0	1	0	0	0	0	10	0
N	6.6	-0.9	117	-7	217	1	19	30	5.7	-0.6	36	SSW	16	0	9	1	0	0	4	14	0
D	9.0	+0.9	39	-45	121	29	6	11	5.7	-0.3	63	SW	27	0	10	7	0	0	3	15	0
Year Total	5.2	-0.7	327	-27	694	Ju1 1	6	Dec 11	7.8	+0.2	63	SW	Dec 27	8	28	15	1	59	7	108	0

(a) Departure columns indicate positive or negative departure of meteorological parameters from 30-year (1971-2000) climatological normals.  
 (b) Latest date of multiple occurrences.  
 (c) Trace of snowfall is normal; no occurrence in April.  
 T = Trace.

## 2.1 Temperature

Calendar year 2002 was warmer than normal at the Hanford Meteorology Station. The average temperature was 54.4°F, 0.8° above normal (53.6°F). The warmest years on record are 1992 and 1998, which averaged 56.4°F; the coldest year on record is 1985, which averaged 49.6°F. The hottest temperature of 2002 was 113°F on July 13, which tied the hottest temperature ever recorded (also having occurred on August 4, 1961); the coldest was 7°F on October 31. Calendar year 2002 recorded 59 days with maximum temperatures  $\geq 90^\circ\text{F}$  compared to a normal of 52 days, a maximum of 79 days in 1967, and a minimum of 29 days in 1980. There were 16 days with maximum temperatures  $\geq 100^\circ\text{F}$  compared to a normal of 13 days, a maximum of 28 days in 1958, and a minimum of 1 day in 1954.

Eight months during the year were warmer than normal, and 4 months cooler than normal. Three months departed from normal by more than 3°, with January 5.8° above normal, December 5.5° above normal, and July 3.3° above normal. March 2002 was 3.7° below normal.

The average temperature for January 2002 was much warmer than normal, averaging 37.6°F, 5.8° above normal (31.8°F). The warmest January occurred in 1953 and averaged 42.5°F, while the coldest, in 1950, averaged 12.1°F. Twenty-six days during January had above normal average temperatures.

The average temperature for February 2002 was slightly warmer than normal, averaging 38.4°F, 0.5° above normal (37.9°F). The warmest February occurred in 1958 and averaged 44.5°F, while the coldest, in 1956, averaged 25.6°F.

The 2001-2002 winter season (December 2001, January and February 2002) was warmer than normal, averaging 37.0°F, 3.2° above normal (33.8°F). The warmest winter, 1966-1967, averaged 40.6°F, while the coldest winter, 1948-1949, averaged 24.2°F.

The average temperature for March 2002 was much cooler than normal, averaging 42.4°F, 3.7° below normal (46.1°F). The warmest March occurred in 1992 and averaged 51.5°F, while the coldest, in 1955, averaged 39.3°F. Only 9 days during March 2002 had above normal average temperatures.

The average temperature for April 2002 was slightly cooler than normal, averaging 53.2°F, 0.3° below normal (53.5°F). The warmest April occurred in 1994 and averaged 58.2°F, while the coolest, in 1955, averaged 47.5°F.

The average temperature for May 2002 was cooler than normal, averaging 60.1°F, 1.7° below normal (61.8°F). The warmest May occurred in 1947 and averaged 68.7°F, while the coolest, in 1984, averaged 56.0°F.

Spring 2002 (March, April, and May) was cooler than normal, averaging 51.9°F, 1.9° below normal (53.8°F). The warmest spring, in 1992, averaged 58.2°F, while the coolest, in 1955, averaged 48.0°F.

The average temperature for June 2002 was warmer than normal, averaging 71.6°F, 2.3° above normal (69.3°F). The warmest June occurred in 1992 and averaged 76.8°F, while the coolest, in 1953,

averaged 63.0°F. There were 11 days with maximum temperatures  $\geq 90^\circ\text{F}$  in June, compared to a normal of 9 days; and 3 days  $\geq 100^\circ\text{F}$ , compared to a normal of 2.

The average temperature for July 2002 was much warmer than normal, averaging 79.6°F, 3.3° above normal (76.3°F). The warmest July occurred in 1985 and averaged 82.2°F, while the coolest, in 1993, averaged 70.5°F. The high temperatures for July 11-13 were the 3 hottest consecutive days ever recorded at the Hanford Meteorological Station. The high temperature of 113°F on July 13 established an all-time high temperature for July, and tied the all-time high temperature at the Hanford Meteorology Station. August 4, 1961 also reached 113°F. There were 24 days with maximum temperatures  $\geq 90^\circ\text{F}$  in July, compared to a normal of 19 days; and 11 days  $\geq 100^\circ\text{F}$ , compared to a normal of 6.

The average temperature for August 2002 was very nearly normal, averaging 75.5°F, 0.1° above normal (75.4°F). The warmest August occurred in 1967 and averaged 81.5°F, while the coolest, in 1964, averaged 69.8°F. There were 17 days with maximum temperatures  $\geq 90^\circ\text{F}$  in August, which is normal, and 2 days  $\geq 100^\circ\text{F}$ , compared to a normal of 5.

The 2002 summer season (June, July, and August) was warmer than normal, averaging 75.7°F, 2.0° above normal (73.7°F). The warmest summer (1958) averaged 78.2°F, while the coolest, in 1980, averaged 70.2°F. The summer's warmest temperature was 113°F on July 13. This was a record high maximum for the month of July and tied the all-time maximum temperature for Hanford (previously recorded on August 4, 1961).

The average temperature for September 2002 was slightly above normal, averaging 66.3°F, 0.4° above normal (65.9°F). The warmest September occurred in 1990 and averaged 72.4°F, while the coolest, in 1985, averaged 58.8°F. There were 7 days with maximum temperatures  $\geq 90^\circ\text{F}$  in September, which was 2 above normal. The yearly total was 59, compared to a normal of 52. The annual total of days  $\geq 100^\circ\text{F}$  was 16, compared to a normal of 13.

The average temperature for October 2002 was colder than normal, averaging 50.4°F, 2.6° below normal (53.0°F). The warmest October occurred in 1988 and averaged 59.6°F, while the coldest, in 1984, averaged 47.9°F. The period from October 23-31 averaged 9.1° below normal, including the coldest minimum temperature (7°F recorded on October 31) ever recorded in the month of October. The difference between the month's highest temperature (81°F on October 6) and the minimum mentioned above was 74°, the largest monthly October temperature range ever recorded. The previous largest range for October was 72° in 1971. The greatest monthly range ever recorded for any month was 86° in February 1950 (-23°F to +63°F).

The average temperature for November 2002 was slightly warmer than normal, averaging 41.0°F, 0.9° above normal (40.1°F). The warmest November occurred in 1990 and averaged 46.5°F, while the coldest, in 1985, averaged 24.8°F. The month was much cooler than normal during the first and last six days, and much warmer than normal during the middle of the month.

Autumn 2002 (September, October, and November) was slightly cooler than normal, averaging 52.6°F, 0.4° below normal (53.0°F). The warmest autumn (1990) averaged 57.1°F, while the coolest (1985) averaged 44.5°F.

The average temperature for December 2002 was much warmer than normal, averaging 37.2°F, 5.5° above normal (31.7°F). The warmest December occurred in 1957 and averaged 38.5°F, while the coldest, in 1985, averaged 21.0°F. Except for the first 4 days of the month, every other day had average temperatures that were normal or above normal.

Table 2.2 lists the daily temperature records for 2002 along with the previous record and year of occurrence. Table 2.1 lists the monthly and annual totals for numerous meteorological variables for 2002. Table 2.3 lists the 2002 monthly and seasonal temperature and precipitation compared to normals and extremes. Table 2.4, Table 2.5, and Table 2.6 list the 2002 monthly and annual average temperature, precipitation, and wind speed, respectively, from the Hanford Meteorological Monitoring Network.

Figure 2.1 depicts the 2002 observed daily maximum and minimum temperatures and the normal maximum, minimum, and mean daily temperatures for the Hanford Meteorology Station.

**Table 2.2. 2002 Daily Temperature Records (previous record and year of occurrence in parentheses)**

Date	Maximum (°F)		Minimum (°F)	
	High	Low	High	Low
Jan 7	63 <sup>(a)</sup> (63, 1962)			
Jan 8	59 (56, 1983 <sup>[b]</sup> )			
Jan 24			45 (43, 1958)	
Feb 22	66 (62, 1995 <sup>[b]</sup> )		44 (42, 1999 <sup>[b]</sup> )	
Mar 8				20 <sup>(a)</sup> (20, 1976)
Mar 11			44 <sup>(a)</sup> (44, 1995)	
Mar 20		38 (49, 1950)		
Jun 26	104 (103, 1987)			
Jul 11	109 <sup>(a)</sup> (109, 1990)			
Jul 12	112 (110, 1990)			
Jul 13	113 <sup>(c)</sup> (108, 1961)		80 (73, 1990 <sup>[b]</sup> )	
Aug 4		78 <sup>(b)</sup> (78, 1964 <sup>[b]</sup> )		
Aug 5		78 (80, 1996 <sup>[b]</sup> )		
Sep 12	96 <sup>(a)</sup> (96, 1969)			
Oct 12				29 (34, 1985 <sup>[b]</sup> )
Oct 24				24 (26, 1975)
Oct 25				23 (26, 1978)
Oct 30				16 (20, 1972)
Oct 31				7 <sup>(d)</sup> (12, 1984)
Nov 1				11 (20, 1995)
Nov 2				11 (17, 1995)
Nov 3				14 (17, 1995)
Nov 4				15 (16, 1973)
Nov 19	67 <sup>(a)</sup> (67, 1962)		47 (44, 1954)	

(a) Ties record.

(b) Most recent of several occurrences.

(c) All-time record for July (previous record 112°F on July 27, 1998), ties all-time record for any month (also recorded on August 4, 1961).

(d) All-time record low for October (previous record 12°F on October 31, 1984).

**Table 2.3. 2002 Monthly and Seasonal Temperature and Precipitation**

Month/ Season	Average Temperature, °F	Departure <sup>(a)</sup>	Normal, °F	Warmest of Record, °F	Year	Coollest of Record, °F	Year	Precipitation, in.	Percent of Normal	Normal	Wettest of Record, in.	Year	Driest of Record, in.	Year
Jan	37.6	+5.8	31.8	42.5	1953	12.1	1950	0.42	48	0.87	2.47	1970	0.08	1977
Feb	38.4	+0.5	37.9	44.5	1958	25.6	1956	0.67	98	0.68	2.10	1961	T	1988 <sup>(b)</sup>
Mar	42.4	-3.7	46.1	51.5	1992	39.4	1955	0.19	33	0.58	1.86	1957	0.02	1968
Apr	53.2	-0.3	53.5	58.2	1994	47.5	1955	0.29	66	0.44	1.54	1995	T	1999 <sup>(b)</sup>
May	60.1	-1.7	61.8	68.7	1947	56.0	1984	0.16	29	0.55	2.03	1972	T	1992 <sup>(b)</sup>
Jun	71.6	+2.3	69.3	76.8	1992	63.0	1953	0.65	158	0.41	2.92	1950	T	1986 <sup>(b)</sup>
Jul	79.6	+3.3	76.3	82.2	1985	70.5	1993	0.16	59	0.27	1.76	1993	T	1980 <sup>(b)</sup>
Aug	75.5	+0.1	75.4	81.5	1967	69.8	1964	0.01	4	0.27	1.36	1977	0	1988 <sup>(b)</sup>
Sep	66.3	+0.4	65.9	72.4	1990	58.8	1985	T	0	0.33	1.34	1947	0	1999 <sup>(b)</sup>
Oct	50.4	-2.6	53.0	59.6	1988	47.9	1984	0.12	24	0.49	2.72	1957	T	1987 <sup>(b)</sup>
Nov	41.0	+0.9	40.1	46.5	1990	24.8	1985	0.38	39	0.98	2.67	1996	T	1976
Dec	37.2	+5.5	31.7	38.5	1957	21.0	1985	2.36	213	1.11	3.69	1996	0.07	1999
Winter <sup>(c)</sup>	37.0	+3.2	33.8	40.6	1966-67	24.2	1948-49	1.89	71	2.66	5.45	1996-97	0.70	1946-47
Spring	51.9	-1.9	53.8	58.2	1992	48.0	1955	0.64	40	1.58	3.28	1995	0.09	1968
Summer	75.7	+2.0	73.7	78.2	1958	70.2	1980	0.82	86	0.95	2.99	1950	0.03	1973
Autumn	52.6	-0.4	53.0	57.1	1990	44.5	1985	0.50	28	1.80	4.79	1973	0.04	1976
Calendar Year Total	54.4	+0.8	53.6	56.4	1998 <sup>(b)</sup>	49.6	1985	5.41	78	6.98	12.31	1995	2.99	1976

(a) Departure indicates positive or negative departure from 30-year (1971-2000) climatological normals.

(b) Latest of multiple occurrences.

(c) Winter is December 2001, January and February 2002.

T = Trace.

**Table 2.4. 2002 Monthly and Annual Average Temperatures (°F) from the Hanford Meteorological Monitoring Network**

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1 PROS	38.2	37.9	42.6	53.1	59.9	71.2	79.1	74.6	64.8	47.9	40.8	37.8	54.2
2 EOC	38.3	39.6	42.4	52.6	58.3	70.6	78.8	74.9	66.7	51.3	41.5	38.3	54.5
3 ARMY	38.7	38.8	42.8	53.9	60.6	70.7	80.2	76.1	66.3	49.6	40.6	38.0	54.8
4 RSPG	38.5	38.2	42.4	52.9	59.7	70.8	78.8	74.9	65.5	49.0	39.9	37.4	54.1
5 EDNA	37.5	37.5	41.7	52.5	59.7	71.0	78.9	74.3	64.8	48.2	39.4	37.8	53.7
6 200E	38.7	39.7	43.2	54.5	61.0	72.1	80.4	76.4	67.4	51.7	41.5	37.9	55.5
7 200W	38.1	37.9	42.4	53.5	60.2	71.1	79.3	75.3	65.5	48.3	39.3	37.3	54.1
8 BVLY	38.2	39.4	42.1	53.6	60.3	70.2	77.4	74.3	65.0	49.9	41.4	38.1	54.2
9 FFTF	38.3	38.8	42.6	53.5	59.8	70.9	79.1	74.6	65.9	49.9	40.7	37.6	54.2
10 YAKB	37.9	38.7	42.1	53.3	60.3	71.5	82.2	76.0	66.7	50.5	40.4	37.1	54.3
11 300A	38.7	38.5	43.3	53.4	59.9	70.7	78.4	74.1	64.8	48.9	40.5	38.6	54.2
12 WYEB	38.1	38.6	42.8	53.6	60.3	71.5	79.7	75.4	65.9	49.9	40.6	37.7	54.6
13 100N	37.6	37.8	41.5	52.4	59.7	70.3	78.2	74.4	65.1	49.6	40.2	37.7	53.8
14 WPPS	37.8	37.5	42.3	52.7	59.7	71.0	78.9	74.8	65.2	48.7	40.1	37.9	54.0
15 FRNK	37.7	38.6	42.1	52.5	58.0	67.9	74.6	70.9	62.9	49.0	40.5	37.2	52.7
16 GABL	38.2	39.7	42.1	53.1	59.3	70.3	78.8	75.1	67.0	52.5	41.7	37.1	54.7
17 RING	37.8	37.8	42.0	52.1	58.4	68.6	75.3	70.8	62.5	47.2	39.9	38.1	52.6
18 RICH	40.0	39.8	44.3	54.4	60.4	71.2	78.8	74.6	65.9	50.4	41.9	39.0	55.1
19 PFP	38.2	38.6	42.5	53.7	60.4	71.4	79.6	75.8	66.5	50.4	40.4	37.2	54.7
20 RMTN	30.2	32.5	32.5	43.0	49.0	60.5	69.8	65.9	59.0	45.6	37.7	30.6	46.4
21 HMS	37.6	38.4	42.4	53.2	60.1	71.6	79.6	75.5	66.3	50.4	41.0	37.2	54.4
22 PASC	39.1	38.8	43.9	54.2	60.6	71.3	78.7	74.1	65.0	49.0	41.2	39.2	54.7
23 GABW	37.1	37.3	41.3	52.2	59.6	70.7	78.9	74.6	64.6	47.6	38.8	37.0	53.4
24 100F	37.7	37.6	41.7	52.6	60.0	71.0	78.8	74.6	65.0	48.5	39.6	37.7	53.8
25 VERN	39.0	39.6	42.6	53.8	60.8	71.1	79.2	76.0	67.1	51.1	41.3	38.7	55.1
26 BENT	37.5	39.1	42.1	52.6	58.5	68.6	76.5	72.1	64.1	50.1	40.2	37.7	53.4
27 VSTA	39.9	40.1	44.4	54.7	57.2	70.0	76.3	74.9	66.1	50.8	42.4	39.8	54.7
28 SURF	39.3	40.1	43.1	52.9	60.0	70.3	78.1	74.2	66.4	51.3	41.7	39.7	54.8
29 100K	37.9	38.3	41.9	52.8	60.3	71.1	79.2	75.1	65.5	49.4	40.2	37.8	54.2
30 HAMR	39.1	38.9	43.7	53.8	60.1	70.8	78.6	74.5	65.3	49.6	40.9	38.4	54.6

**Table 2.5. 2002 Monthly and Annual Precipitation (inches) from the Hanford Meteorological Monitoring Network<sup>(a)</sup>**

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1 PROS	0.33	0.60	0.13	0.23	0.12	0.60	0.04	0.00	0.00	0.01	0.15	1.88	4.09
2 EOC	0.73	0.98	0.16	0.45	0.11	0.72	0.06	0.00	0.03	0.20	0.39	2.76	6.59
3 ARMY	<sup>(b)</sup>	<sup>(b)</sup>	<sup>(b)</sup>	0.06	0.27	0.60	0.19	0.00	0.03	0.06	0.21	1.03	<sup>(c)</sup>
4 RSPG	0.56	0.73	0.21	0.53	0.23	0.50	0.23	0.00	0.04	0.02	0.18	2.09	5.32
6 200E	0.41	0.69	0.17	0.25	0.20	0.70	0.17	0.01	0.00	0.11	0.35	1.74	4.80
7 200W	0.39	0.50	0.04	0.29	0.19	0.36	0.27	0.00	0.00	0.12	0.30	1.98	4.44
8 BVLY	0.31	0.48	0.02	0.60	0.25	0.55	0.13	0.00	0.00	0.16	0.23	1.74	4.47
9 FFTF	0.07	0.38	0.10	0.13	0.15	0.47	0.00	0.00	0.00	0.01	0.16	1.24	2.71
10 YAKB	0.39	0.75	0.06	0.39	0.20	0.42	0.18	0.05	0.02	0.16	0.23	2.07	4.92
11 300A	0.26	0.71	0.15	0.23	0.20	0.72	0.17	0.00	0.01	0.01	0.16	1.79	4.41
12 WYEB	0.35	0.49	0.14	0.15	0.12	0.47	0.01	0.00	0.02	0.06	0.26	1.89	3.96
13 100N	0.36	0.48	0.20	0.41	0.12	0.52	0.12	0.05	0.00	0.06	0.27	1.64	4.23
14 WPPS	0.35	0.47	0.03	0.20	0.23	0.74	0.03	0.02	0.03	0.06	0.30	1.28	3.74
17 RING	0.34	0.37	0.36	0.19	0.18	0.75	0.09	0.01	0.02	0.07	0.43	1.93	4.74
18 RICH	0.20	0.86	0.13	0.27	0.09	0.62	0.07	0.03	0.00	0.05	0.16	1.47	3.95
20 RMTN	0.69	0.42	0.22	0.36	0.26	0.90	0.22	0.02	0.01	0.16	0.32	1.90	5.48
21 HMS	0.42	0.67	0.19	0.29	0.16	0.65	0.16	0.01	0.00	0.12	0.38	2.36	5.41
22 PASC	0.29	0.83	0.32	0.32	0.22	0.95	0.21	0.19	0.01	0.15	0.31	1.89	5.69
24 100F	0.47	0.37	0.22	0.36	0.31	0.66	0.03	0.04	0.00	0.06	0.35	2.19	5.06
26 BENT	0.57	0.79	0.03	0.17	0.38	0.73	0.08	0.01	0.05	0.04	0.32	2.86	6.03
27 VSTA	0.27	0.82	0.22	0.11	0.18	0.48	0.23	0.08	0.00	0.07	0.04	1.78	4.28
28 SURF	0.68	0.72	0.64	0.46	0.38	0.47	0.04	0.00	0.00	0.20	0.37	2.92	6.88
29 100K	0.47	0.59	0.26	0.35	0.15	0.75	0.00	0.00	0.00	0.00	0.01	1.57	4.15

(a) Stations 5, 15, 16, 19, 23, and 25 are solar powered; therefore, insufficient power is available to operate the heated tipping-bucket precipitation gauges.

(b) Missing data.

(c) Incomplete data.

**Table 2.6. 2002 Monthly and Annual Average Wind Speed (mph) from the Hanford Meteorological Monitoring Network**

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1 PROS	9.0	6.6	9.4	8.3	7.5	8.4	7.8	7.1	6.4	5.5	6.2	6.3	7.4
2 EOC	13.2	8.8	12.2	10.4	9.0	9.0	8.3	7.9	7.9	6.8	8.7	7.4	9.2
3 ARMY	8.4	6.7	8.6	8.2	8.0	7.9	7.7	7.1	6.7	5.1	5.0	5.2	7.1
4 RSPG	8.7	7.6	8.8	9.2	8.5	8.4	8.1	7.7	7.8	7.5	6.8	4.7	7.8
5 EDNA	6.4	5.8	7.6	7.4	7.3	7.7	7.6	6.7	6.1	4.9	4.5	5.0	6.4
6 200E	7.9	7.2	9.0	8.7	9.1	8.4	9.3	8.3	7.6	6.1	4.7	5.0	7.6
7 200W	8.0	5.9	8.3	8.2	8.2	7.9	7.7	7.0	6.3	4.6	4.2	4.2	6.7
8 BVLY	5.2	6.1	7.3	7.2	7.4	7.1	7.6	6.2	5.5	4.7	3.9	4.6	6.1
9 FFTF	9.6	7.6	10.0	9.0	8.2	9.0	8.2	8.0	7.3	6.4	6.6	6.5	8.0
10 YAKB	8.3	6.9	9.0	9.0	9.5	9.4	10.0	8.7	7.9	6.3	5.4	5.1	8.0
11 300A	9.4	7.1	9.5	8.7	8.0	8.5	8.0	7.2	6.6	5.3	6.3	6.3	7.6
12 WYEB	8.1	6.9	8.7	8.1	8.0	8.5	8.1	7.3	6.9	6.1	5.5	5.8	7.3
13 100N	5.7	5.2	7.1	7.5	7.8	7.8	7.6	6.7	6.0	4.5	3.7	4.5	6.2
14 WPPS	8.0	6.3	8.7	7.8	7.4	8.0	7.4	7.1	6.3	5.3	5.3	5.7	6.9
15 FRNK	8.8	7.2	9.0	7.7	6.6	6.9	6.5	6.1	5.6	4.8	5.8	5.7	6.7
16 GABL	11.7	10.6	13.3	12.6	12.5	12.7	12.9	11.9	10.9	9.0	7.5	7.9	11.1
17 RING	7.1	6.1	8.4	7.4	6.9	7.1	6.5	5.5	5.6	5.3	5.1	5.0	6.3
18 RICH	8.1	5.6	8.8	7.6	6.6	6.9	6.2	5.6	5.1	4.1	5.3	5.1	6.3
19 PFP	5.9	4.6	6.4	6.3	6.1	6.0	5.7	5.1	4.8	3.6	3.3	3.4	5.1
20 RMTN	25.3	19.7	23.1	19.4	16.7	17.7	14.2	14.3	15.3	14.5	16.6	18.0	17.9
21 HMS	8.2	6.1	8.9	9.0	9.1	9.0	9.3	8.2	7.6	6.2	5.7	5.7	7.8
22 PASC	6.8	4.8	7.6	6.4	5.6	6.0	5.3	4.4	4.3	3.4	4.5	4.4	5.3
23 GABW	6.3	6.0	7.2	7.3	8.1	8.3	8.4	7.3	6.5	5.0	3.9	4.4	6.6
24 100F	6.3	5.5	7.2	7.1	7.5	7.7	7.2	6.4	5.9	4.8	3.9	4.0	6.1
25 VERN	7.0	6.9	7.9	8.2	9.3	9.4	10.3	8.5	7.5	6.1	4.5	5.6	7.6
26 BENT	7.7	6.8	8.7	8.2	6.3	6.8	6.1	5.9	5.8	6.0	5.3	4.8	6.5
27 VSTA	7.8	5.4	8.4	7.2	6.2	6.7	5.8	5.0	5.0	3.9	5.1	4.8	5.9
28 SURF	9.9	7.6	11.9	11.8	11.7	12.8	12.9	11.1	9.5	7.8	5.7	6.1	9.9
29 100K	5.7	5.4	7.0	7.2	8.2	8.0	8.5	7.0	6.1	4.7	3.6	4.0	6.3
30 HAMR	8.5	6.4	8.9	8.1	7.3	7.8	7.1	6.7	6.1	5.1	6.0	5.7	7.0

# Daily Temperatures - 2002 Hanford Meteorological Station

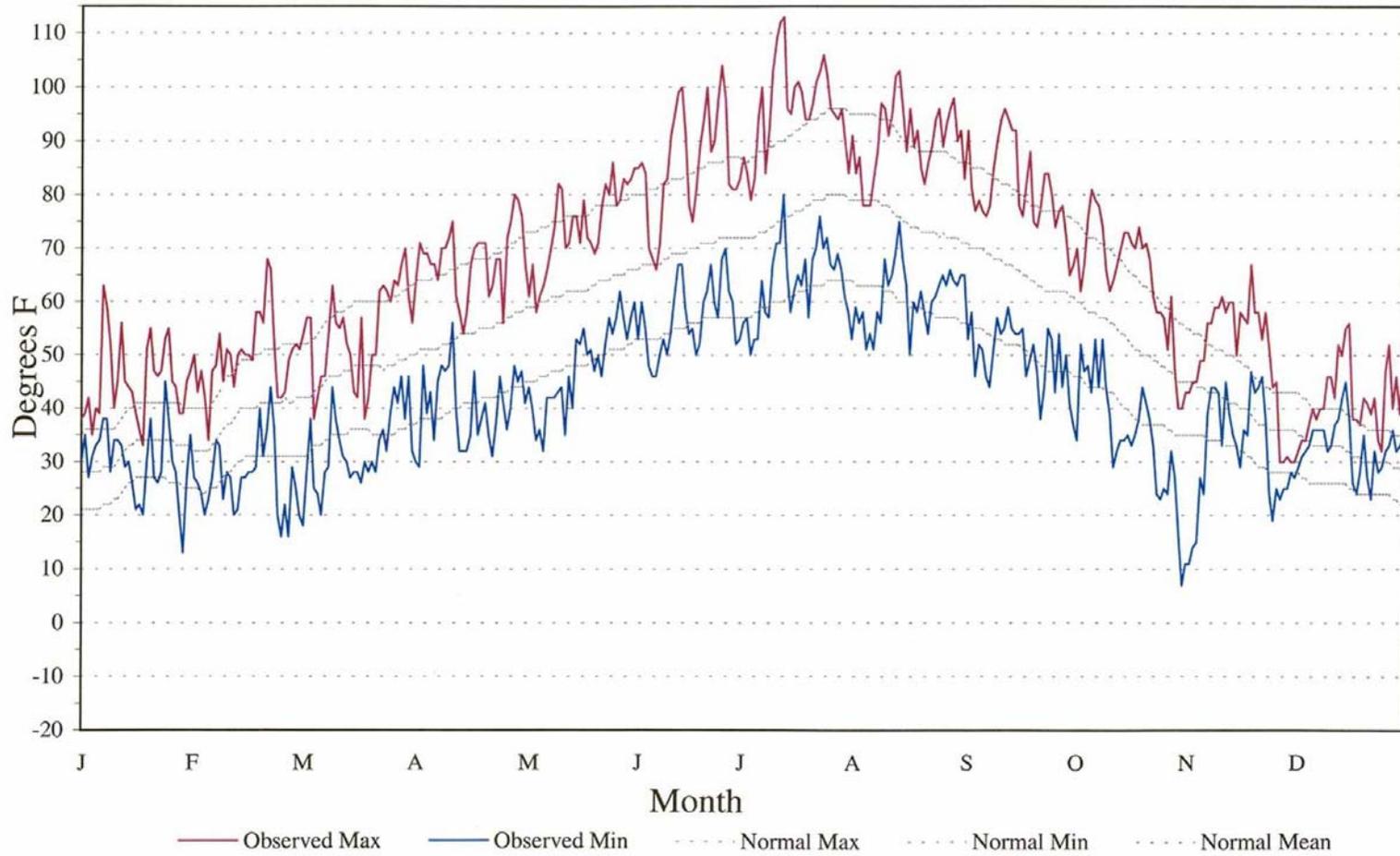


Figure 2.1. 2002 Observed Daily Temperatures from the Hanford Meteorology Station

## **2.2 Precipitation**

Precipitation for 2002 totaled 5.41 inches, 78% of normal (6.98 inches). The wettest year was 1995 with 12.31 inches; the driest was 1976 with only 2.99 inches. Calendar year snowfall totaled only 2.8 inches, compared to an annual normal snowfall of 15.4 inches. The greatest calendar year snowfall was 57.5 inches (1996); the least was 0.6 inch (1999).

Precipitation for January 2002 was 0.42 inch, 48% of normal (0.87 inch). The wettest January, in 1970, received 2.47 inches, while the driest, in 1977, received only 0.08 inch. Snowfall for January totaled 0.6 inch, compared to a normal of 4.2 inches. The greatest snowfall total for January was 23.4 inches in 1950, while January 1994 received no snow. Total snowfall for the 2001-2002 snow season (through January) was 9.1 inches, compared to a normal (through January) of 12.4 inches.

Precipitation for February 2002 was 0.67 inch, 98% of normal (0.68 inch). The wettest February, in 1961, received 2.10 inches, while the driest, in 1988 and earlier years, received only a trace. Snowfall for February totaled 0.2 inch, compared to a normal of 2.6 inches. The greatest snowfall total for February was 17.0 inches in 1989, while many February's (as recently as 1991) have not received snow. Total snowfall for the 2001-2002 snow season (through February) is 9.3 inches, compared to a normal (through February) of 15.0 inches.

Precipitation for the 2001-2002 winter season (December 2001, January, and February 2002) totaled 1.89 inches, 71% of normal (2.66 inches). The wettest winter, 1996-1997, received 5.45 inches, while the driest, 1946-1947, received 0.70 inch.

Precipitation for March 2002 was 0.19 inch, 33% of normal (0.58 inch). The wettest March, in 1957, received 1.86 inches, while the driest, in 1968, received 0.02 inch. Snowfall for March totaled 1.4 inches, compared to a normal of 0.4 inch. The greatest snowfall total for March was 4.2 inches in 1951, while March frequently receives no snowfall. Total snowfall for the 2001-2002 snow season was 10.7 inches, compared to a normal of 15.4 inches. The most snowfall in a season was 56.1 inches (1992-1993), while the least was 0.3 inch (1957-1958).

Precipitation for April 2002 was 0.29 inch, 66% of normal (0.44 inch). The wettest April, in 1995, received 1.54 inches, while the driest, in 1999 and earlier years, received only a trace amount. No snowfall was recorded in April. The greatest snowfall total for any April was 1.0 inch in 1982, while April usually receives no snowfall. Total snowfall for the 2001-2002 snow season was 10.7 inches, compared to a normal of 15.4 inches. The most snowfall in a season was 56.1 inches (1992-1993), while the least was 0.3 inch (1957-1958).

Precipitation for May 2002 was 0.16 inch, 29% of normal (0.55 inch). The wettest May, in 1972, received 2.03 inches, while the driest, in 1992 and earlier years, received only a trace amount.

Precipitation for the 2002 spring season (March, April, and May) totaled 0.64 inch, 40% of normal (1.58 inches). The wettest spring (1955) received 3.28 inches, while the driest (1968) received only 0.09 inch.

Precipitation for June 2002 was 0.65 inch, 158% of normal (0.41 inch). The wettest June, in 1950, received 2.92 inches, while the driest, in 1986 and earlier years, received only a trace amount.

Precipitation for July 2002 was 0.16 inch, 59% of normal (0.27 inch). The wettest July, in 1993, received 1.76 inches, while the driest, in 1980 and earlier years, received only a trace amount.

Precipitation for August 2002 was 0.01 inch, 4% of normal (0.27 inch). The wettest August, in 1977, received 1.36 inches, while the driest, in 1988 and earlier years, received no precipitation.

Precipitation for the 2002 summer season (June, July, and August) totaled 0.82 inch, 86% of normal (0.95 inch). The wettest summer (1950) received 2.99 inches, while the driest (1973) received only 0.03 inch.

Precipitation for September 2002 was only a trace, 0% of normal (0.33 inch). The wettest September, in 1947, received 1.34 inches, while the driest, in 1999 and earlier years, received no precipitation.

Precipitation for October 2002 was 0.12 inch, 24% of normal (0.49 inch). The wettest October, in 1957, received 2.72 inches, while the driest, in 1987 and earlier years, received only a trace.

Precipitation for November 2002 was 0.38 inch, 39% of normal (0.98 inch). The wettest November, in 1996, received 2.67 inches, while the driest, in 1976, received only a trace. There was a trace of snow recorded in November, compared to a November normal of 2.3 inches.

Precipitation for the 2002 autumn season (September, October, and November) totaled 0.50 inch, 28% of normal (1.80 inches). The wettest autumn (1973) received 4.79 inches, while the driest (1976) received only 0.04 inch.

Precipitation for December 2002 was 2.36 inches, 213% of normal (1.11 inches). This was the second wettest December on record. The wettest, in 1996, received 3.69 inches, while the driest, in 1976, received 0.11 inch. Snowfall for December 2002 totaled 0.6 inch, compared to a normal of 5.8 inches. Total snow season snowfall is only 0.6 inch, compared to a normal through December of 8.2 inches.

## **2.3 Wind**

The average wind speed for 2002 was 7.8 miles per hour (mph), which was 0.2 mph above normal (7.6 mph). The windiest year was 1999, which averaged 8.8 mph, while 1957 was the year with the lightest winds, averaging 6.3 mph. The peak gust for 2002 was 63 mph on December 27.

The average wind speed for January 2002 was 8.2 mph, 1.9 mph above normal (6.3 mph). The windiest January on record averaged 10.2 mph (1972), while the January with the lightest winds (1985) averaged 2.9 mph. The peak gust for the month was 57 mph on January 12. The record wind gust for January was 80 mph in 1972.

The average wind speed for February 2002 was 7.2 mph, nearly normal (7.1 mph). The windiest February on record averaged 11.1 mph (1999), while the February with the lightest winds (1963) averaged 4.6 mph. The peak gust for the month was 44 mph on February 21. The record wind gust for February was 65 mph in 1971.

The average wind speed for March 2002 was 8.9 mph, 0.9 mph above normal (8.0 mph). The windiest March on record averaged 10.7 mph (1977 and earlier years), while the March with the lightest winds (1958) averaged 5.9 mph. The peak gust for the month was 60 mph on March 11. The record wind gust for March was 70 mph in 1956.

The average wind speed for April 2002 was 9.0 mph, 0.2 mph above normal (8.8 mph). The windiest April on record averaged 11.1 mph (1972), while the April with the lightest winds (1989 and earlier years) averaged 7.4 mph. The peak gust for the month was 50 mph on April 14. The record wind gust for April was 73 mph in 1972.

The average wind speed for May 2002 was 9.1 mph, 0.2 mph above normal (8.9 mph). May 2002 established new records for numbers of days with peak gusts  $\geq 35$  mph with 13 (the previous record was 10 in 2000 and earlier years), and days with peak gusts  $\geq 40$  mph with 7 (the previous record was 6 in 2000 and earlier years). The windiest May on record averaged 10.7 mph (1983), while the May with the lightest winds (1957) averaged 5.8 mph. The peak gust for the month was 52 mph on May 5. The record wind gust for May was 71 mph in 1948.

The average wind speed for June 2002 was 9.0 mph, which is normal (9.0 mph). The windiest June on record averaged 10.7 mph (1983 and earlier years), while the June with the lightest winds (1950 and earlier years) averaged 7.7 mph. The peak gust for the month was 47 mph on June 7. The record wind gust for June was 72 mph in 1957.

The average wind speed for July 2002 was 9.3 mph, 0.7 mph above normal (8.6 mph). The windiest July on record averaged 10.7 mph (1983), while the July with the lightest winds (1955) averaged 6.8 mph. The peak gust for the month was 53 mph on July 7. The record wind gust for July was 69 mph in 1979.

The average wind speed for August 2002 was 8.2 mph, 0.2 mph above normal (8.0 mph). The windiest August on record averaged 9.5 mph (1996), while the August with the lightest winds (1956) averaged 6.0 mph. The peak gust for the month was 41 mph on August 10. The record wind gust for August was 66 mph in 1961.

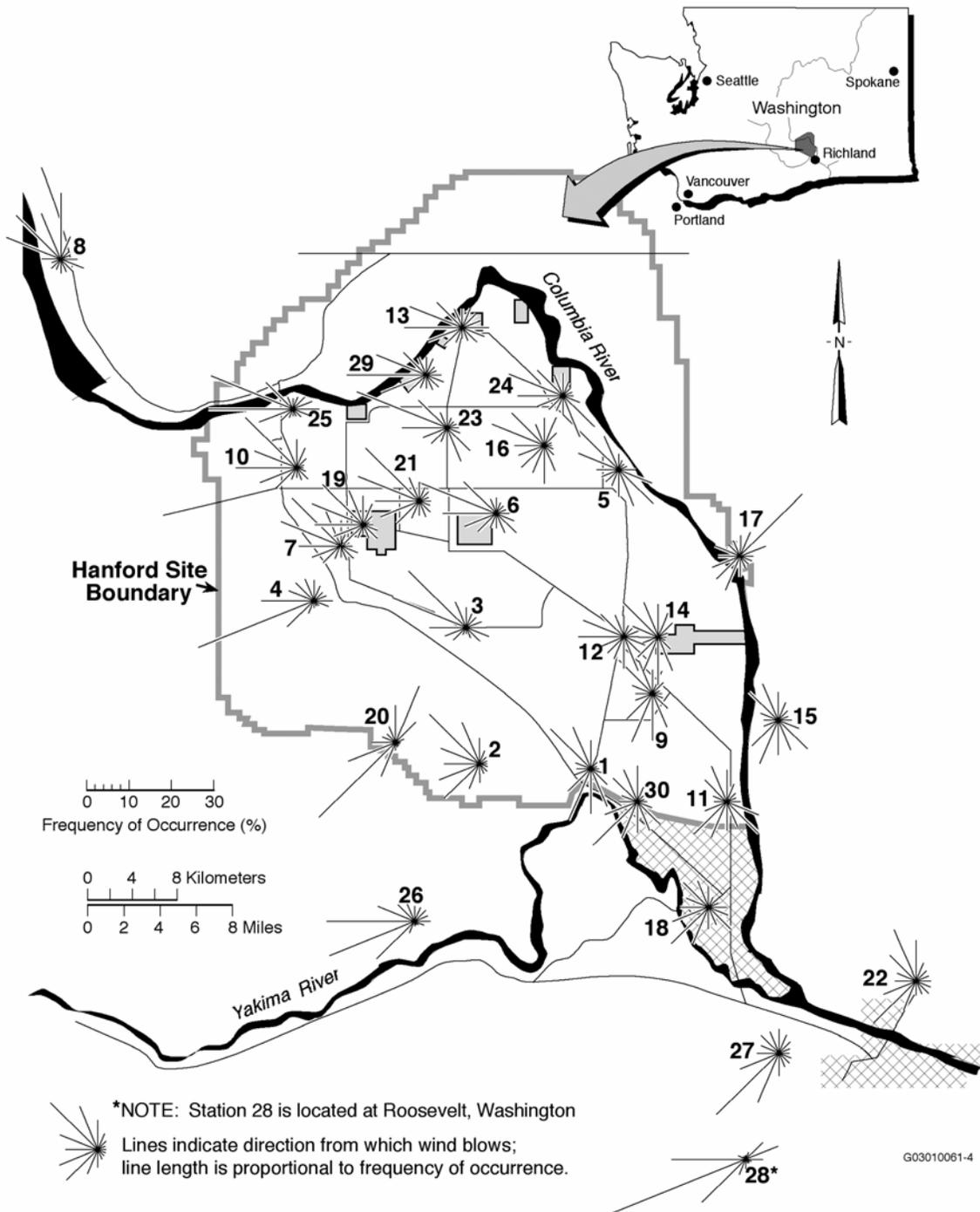
The average wind speed for September 2002 was 7.6 miles per hour (mph), 0.3 mph above normal (7.3 mph). The windiest September on record averaged 9.2 mph (1961), while the September with the lightest winds (1957) averaged 5.4 mph. The peak gust for the month was 39 mph on September 15. The record wind gust for September was 65 mph in 1953.

The average wind speed for October 2002 was 6.2 mph, 0.3 mph below normal (6.5 mph). The windiest October on record averaged 9.1 mph (1946), while the October with the lightest winds (1952) averaged 4.4 mph. The peak gust for the month was 43 mph on October 29. The record wind gust for October was 72 mph in 1997.

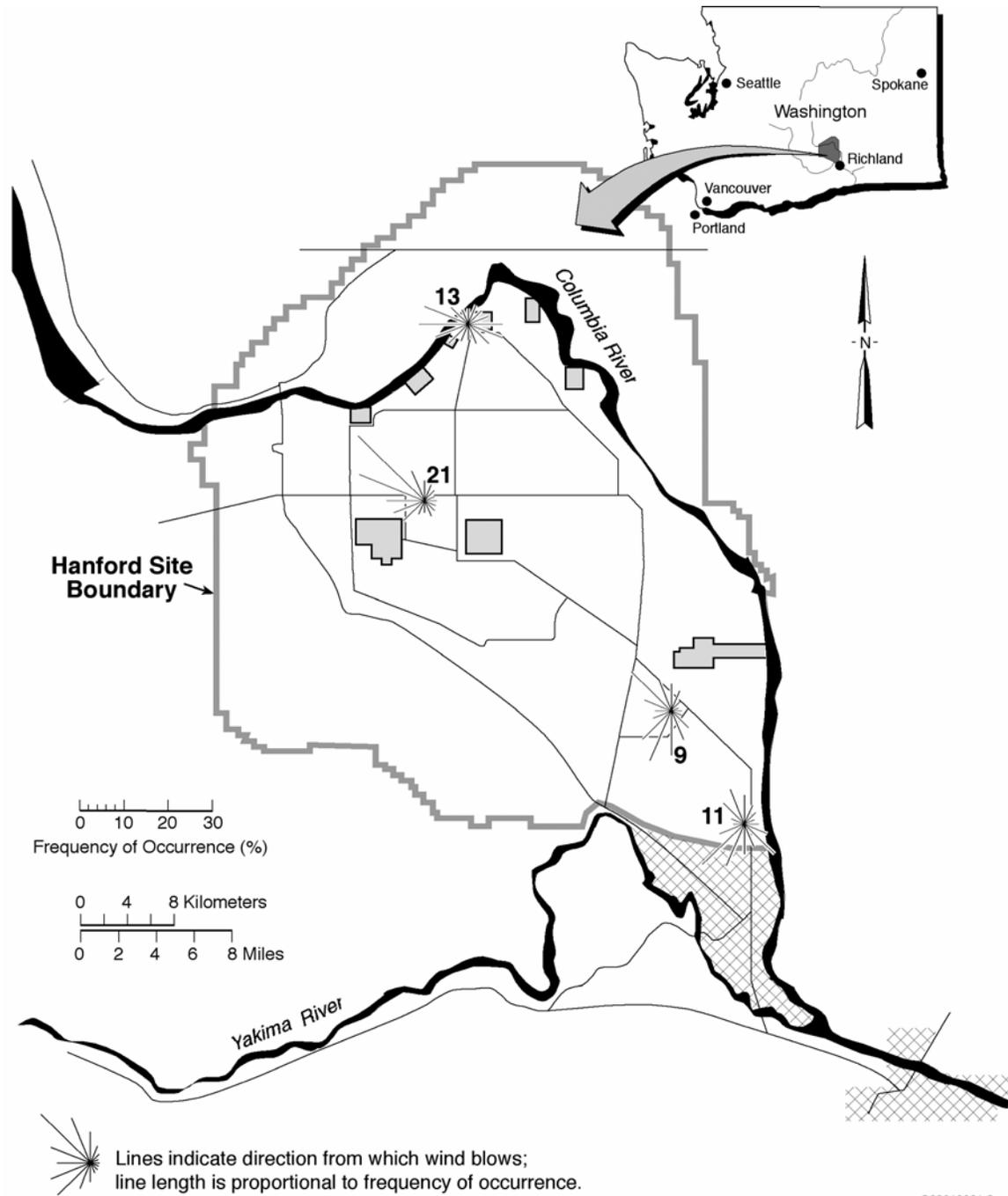
The average wind speed for November 2002 was 5.7 mph, 0.8 mph below normal (6.5 mph). The windiest November on record averaged 10.0 mph (1990), while the November with the lightest winds (1956) averaged 2.9 mph. The peak gust for the month was 36 mph on November 16. The record wind gust for November was 67 mph in 1993.

The average wind speed for December 2002 was 5.7 mph, 0.3 mph below normal (6.0 mph). The windiest December on record averaged 8.3 mph (1968), while the December with the lightest winds (1985) averaged 3.3 mph. The peak gust for the month was 63 mph on December 27. The record wind gust for December was 71 mph in 1955.

Figure 2.2 and Figure 2.3 give a composite of the wind roses (at the 30-foot and 60-meter levels, respectively) from the Hanford Meteorological Monitoring Network for 2002. The Appendix A gives the individual 2002 wind roses from the Hanford Meteorological Monitoring Network stations.



**Figure 2.2. 2002 Hanford Meteorological Monitoring Network Wind Roses at 30 Feet (Refer to Table 1.1 for the names of the numbered locations on this map; see Appendix A for station-specific wind rose.)**



G03010061-2

**Figure 2.3. 2002 Hanford Meteorological Monitoring Network Wind Roses at 60-Meter Level (Refer to Table 1.1 for the names of the numbered locations on this map; see Appendix A for station-specific wind rose.)**