1957

FOREST FIRE DANGER TABLES

1956

ALBERTA
EAST SLOPE

CANADA

Forestry
Branch

Department
of Northern
Affairs and
National
Resources

Ottawa
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PREFACE

This 1956 edition of the Forest Fire Danger Tables introduces a greatly simplified method of computing the Danger Index. Although these tables were derived in large measure from those of the 1948 edition, and retain their characteristic basic principles, modifications were made in some of them as a result of several years' research in areas for which field data had not previously been obtained.

Included in this edition are relative humidity tables, wind scale, Hazard Tables for some specific fuel types, and brief instructions. However, the Danger Index itself can be found by referring to only one set of facing pages once the few simple weather factors required have been recorded.

The change-over from use of the 1948 tables to the '56 tables may be accomplished at any time during the fire season, but all stations in one administrative area should make the change on the same date. New "Weather Record" forms and "Forest Fire Danger Charts" (see samples at back) have been prepared, but stocks of the old forms are quite satisfactory for use with the new tables.

Fire weather stations, weather observations, computations and uses of the Danger Index, and other matters relating to forest fire danger are discussed in detail in the "Forest Fire Danger Manual". Copies of both the tables and manual may be obtained from the Forestry Branch, Department of Northern Affairs and National Resources, Ottawa.

GENERAL INSTRUCTIONS

1. TIME OF OBSERVATIONS

It is important that all weather observations be made at noon. This refers to sun noon, which, on your watch, is 12:45 p.m. near Waterton Lakes and Banff and 1:00 p.m. near Jasper and Grand Prairie. Times quoted are for Mountain Standard Time but if Daylight Saving Time is used in your district, add one hour to the above figures. However, if it is impossible to make observations then because no observer is at the station, they should be made as soon as possible but not more than two hours later. If the delay is more than two hours, observations should be considered as missed and the procedure noted in paragraph 4, below, should be followed. The time of observations should always be noted to the nearest five minutes on the weather Record.

2. OBSERVATIONS REQUIRED

(a) Total rainfall in inches, should any have fallen since the previous observation. A trace of rain, that is, an amount less than .01 inch, is too small to have a measurable effect on fire danger and is not considered in the tables, though traces of rain are to be included on the chart by the letter T.

(b) Relative Humidity.

(c) Wind Velocity.

Record these observations in the Weather Record and then on the Forest Fire Danger Chart in the appropriate blocks.

3. RAIN

(a) In Table No. 2, "RAINFALL", "Depth of Rain in Inches" refers to the total rainfall measured since the last Danger Index was computed.

(b) When rain is falling at noon, wait until it stops, then make weather observations.

- If it stops before 2 p.m., compute the Danger Index.
- If it continues beyond 2 p.m., make no calculations until the following day and use the previous day's Danger Index as the "Starting Danger Index".

(c) If rain starts before 2 p.m. but after the noon Danger Index has been computed, cancel this Index and make a new set of observations when the rain stops.

- If it stops before 2 p.m., compute a new Danger Index.
- If it continues beyond 2 p.m., make no calculation until the following day and use the previous day's Danger Index as the "Starting Danger Index".

Similarly compute the Drought Index.

4. IF OBSERVATIONS ARE MISSED

All breaks in weather observations should be avoided except for those missed during rains, as noted in paragraph 3 above. If observations are missed for not more than three days, weather readings from the nearest weather station, if available, should be used to calculate the Danger Index on those days. If no rain has fallen on the intervening days, the Drought Index may be calculated directly. If rain has fallen, the amount in the rain-gauge at your station should be considered as having fallen in one rain and used to calculate the Drought Index. It is best to start again as at the beginning of the season if observations are missed for more than three days or if records for the period missed are not available from another station.

5. TO START RECORDS IN THE SPRING

Assume the Danger Index to be 8 and the Drought Index 3 on the third day after the snow has cleared enough to allow fires to run in the open, or on the third day after a good rain if the snow has already gone.

RELATIVE HUMIDITY TABLES

Wet-bulb Temperature	Dry-bulb Temperature																									Wet-bulb Temperature
	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	
23	4															94	88	83	77	72	67	63	59	55	51	47	44	41	38	35	49
24	12	7	3														94	88	83	77	72	68	63	59	56	52	48	45	42	39	50
25	19	14	9	5	1													94	88	83	78	73	68	64	60	56	52	49	45	42	51
26	27	21	16	12	7	3													94	88	83	78	73	69	65	61	57	53	49	46	52
27	34	29	24	19	14	10	6	2												94	89	83	78	74	69	65	61	57	54	50	53
28	42	36	31	26	21	16	12	8	4	1											94	89	84	79	74	70	66	62	58	54	54
29	50	44	38	33	28	23	18	14	10	7	3											94	89	84	79	74	70	66	62	59	55
30	58	52	46	40	34	29	25	20	16	12	9	6	3										94	89	84	79	75	71	67	63	56
31	67	60	53	47	42	36	31	27	22	18	15	11	8	5	2									95	90	85	80	75	71	67	57
32	75	68	61	55	49	43	38	33	28	24	20	17	13	10	7	4	1								95	90	85	80	76	72	58
33	83	76	69	62	56	50	45	39	34	30	26	22	18	15	12	9	6	3	1							95	90	85	80	76	59
34	92	84	77	69	63	57	51	46	41	36	32	27	23	20	16	13	10	8	5	3							95	90	85	81	60
35		92	84	77	70	64	58	52	47	42	37	33	29	25	21	18	15	12	9	7	4	2						95	90	85	61
36			92	84	77	70	64	59	53	48	43	38	34	30	26	23	20	16	14	11	8	6	4	2					95	90	62
37				92	85	78	71	65	59	54	49	44	39	35	31	28	24	21	18	15	12	10	8	5	3	1				95	63
38					92	85	79	72	66	60	55	50	45	40	36	33	29	26	22	19	17	14	11	9	7	5	3	1			
39						92	85	79	72	67	61	55	51	46	42	38	34	30	27	24	21	18	15	13	11	8	6	5	3	1	
40							93	86	79	73	67	61	57	52	47	43	39	35	32	28	25	22	19	17	14	12	10	8	6	4	
41								93	86	80	73	67	62	57	52	48	44	40	36	33	29	26	23	21	18	16	13	11	9	7	
42									93	86	80	73	68	63	58	53	49	45	41	36	34	31	28	25	22	19	17	15	13	11	
43										93	87	80	74	69	64	59	54	50	46	42	38	35	32	29	26	23	21	18	16	14	
44											93	87	81	75	69	64	60	55	51	47	43	39	36	33	30	27	24	22	19	17	
45												93	87	81	75	70	65	60	56	52	48	44	40	37	34	31	28	25	23	21	
46													93	87	81	76	71	66	61	57	53	49	45	41	38	35	32	29	26	24	
47														94	88	82	76	71	66	62	57	53	49	46	42	39	36	33	30	28	
48															94	88	82	77	71	67	62	58	54	50	46	43	40	37	34	31	

INSTRUCTIONS FOR USING THE RELATIVE HUMIDITY TABLES

1. Find the dry-bulb temperature in the top line of tables.

2. In the columns headed "Wet-bulb Temperature" find the wet-bulb temperature reading.

3. The figure in line with the wet-bulb reading and in the proper dry-bulb column is the relative humidity. If the wet-bulb and dry-bulb temperatures are the same the relative humidity is 100 per cent.

Examples

(i) Dry-bulb 49, wet-bulb 48, humidity is 94 per cent.

(ii) Dry-bulb 50, wet-bulb 49, humidity is 94 per cent.

(iii) Dry-bulb 80, wet-bulb 64, humidity is 44 per cent.

(iv) Dry-bulb 96, wet-bulb 90, humidity is 80 per cent.

Dry-bulb Temperature

Wet-bulb Temperature	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
41	6	3	2	1														
42	9	6	5	4	2	1												
43	12	9	8	7	5	4	2	1										
44	15	12	11	10	8	6	5	4	2	1								
45	18	16	14	13	11	9	8	6	5	4	2							
46	22	20	18	16	14	12	10	9	7	6	5	4						
47	25	23	21	19	17	15	13	12	10	9	7	6	5					
48	29	26	24	22	20	18	16	14	13	11	10	8	7	6				
49	32	30	27	25	23	21	19	17	15	14	12	11	9	8	7			
50	36	33	31	28	26	24	22	20	18	16	15	13	12	10	9	8	7	6
51	39	37	34	32	29	27	25	23	21	19	17	16	14	13	11	10	9	8
52	43	40	38	35	32	30	28	26	24	22	20	18	17	15	14	12	11	10
53	47	44	41	38	36	33	31	29	27	25	23	21	19	18	16	14	13	12
54	51	48	45	42	39	37	34	32	30	28	26	24	22	20	19	17	15	14
55	55	52	48	45	43	40	37	35	33	30	28	26	25	23	21	19	17	16
56	59	56	52	49	46	43	41	38	36	34	31	29	27	25	24	22	20	19
57	63	60	56	53	50	47	44	42	39	37	34	32	30	28	26	25	22	21
58	68	64	60	57	54	51	48	45	42	40	37	35	33	31	29	27	26	24
59	72	68	64	61	57	54	51	48	45	43	40	38	36	34	32	29	28	27
60	76	72	68	65	61	58	55	52	49	46	44	41	39	36	34	32	30	29
61	81	77	73	69	65	62	59	55	52	49	47	44	42	39	37	35	33	31
62	86	81	77	73	69	66	62	59	56	53	50	47	45	42	40	38	36	34
63	90	86	81	77	73	70	66	63	60	56	53	51	48	45	43	41	39	37
64	95	90	86	81	78	74	70	66	63	60	57	54	51	48	46	44	42	39
65		95	90	86	82	78	74	70	67	63	60	57	54	52	49	46	44	42
66			95	91	86	82	78	74	71	67	64	61	58	55	52	50	47	45
67				95	91	86	82	78	75	71	68	64	61	58	55	53	51	48
68					95	91	87	83	79	75	71	68	64	62	59	56	53	51
69						95	91	87	83	79	75	72	68	65	62	59	57	54
70							96	91	86	83	79	75	72	69	66	62	59	57
71								96	91	87	83	79	75	72	69	66	63	60
72									96	91	87	83	79	76	72	69	66	63
73										96	91	87	83	80	76	72	69	66
74											96	91	87	84	80	76	73	70
75												96	91	88	84	80	76	73
76													96	92	88	84	81	77
77														96	92	88	85	81
78															96	92	88	84
79																96	92	88
80																	96	92
81																		96

Dry-bulb Temperature

Wet-bulb Temperature	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
52	10	8	7	6	5	4	3	2										
53	11	10	9	8	7	6	5	4										
54	13	12	11	10	9	8	7	6	5	4	3							
55	15	14	13	12	11	10	9	8	7	6	5	4	3					
56	17	16	15	14	12	11	10	9	9	8	7	6	5	4	3	3		
57	20	19	18	16	14	13	12	11	10	10	9	8	7	6	5	4		
58	23	21	19	18	16	15	14	13	12	11	10	9	8	7	6	6	5	5
59	25	23	21	20	19	17	16	15	14	13	12	11	10	9	8	7	7	6
60	27	25	23	22	21	19	18	17	16	15	14	13	12	11	10	9	8	8
61	30	28	26	25	23	21	20	19	18	17	16	15	14	13	12	11	10	9
62	32	30	28	27	25	24	22	21	19	18	17	16	15	14	13	12	11	10
63	35	33	31	29	28	26	25	23	21	20	19	18	17	16	15	14	13	12
64	37	35	33	31	30	28	27	25	23	22	21	20	18	17	16	15	14	13
65	40	38	36	34	33	31	29	27	25	24	23	22	20	19	18	17	16	15
66	43	40	38	36	35	33	31	29	27	26	25	24	22	21	20	19	18	17
67	46	43	41	39	38	36	34	32	30	29	27	26	24	23	21	20	19	18
68	48	46	43	41	39	38	36	34	32	31	30	28	27	25	23	22	21	20
69	51	49	46	45	42	40	39	37	35	33	32	30	29	27	25	24	23	22
70	54	52	49	47	45	43	41	39	37	35	33	32	30	29	27	26	25	23
71	56	55	52	50	48	46	44	42	40	37	36	34	32	31	29	28	27	25
72	60	58	55	52	50	48	46	44	42	40	38	36	35	33	31	30	28	27
73	63	61	58	55	53	51	49	47	45	43	40	38	37	35	33	32	30	29
74	66	64	61	58	55	53	51	49	47	45	43	41	39	37	36	34	32	31
75	70	67	64	61	58	56	53	51	50	48	46	43	41	39	38	36	34	33
76	74	71	68	65	62	59	56	54	52	50	48	46	44	42	40	38	36	35
77	77	74	71	68	65	62	59	57	54	52	50	48	46	44	42	40	38	37
78	81	77	74	71	68	65	62	60	57	55	53	51	49	46	44	43	41	39
79	85	81	78	74	71	68	65	63	60	58	55	53	51	49	47	45	43	41
80	88	85	82	78	75	72	69	66	63	61	58	56	54	51	49	47	45	43
81	92	88	85	81	78	75	72	69	66	63	61	58	56	54	51	49	47	45
82	96	92	89	85	81	78	75	72	69	66	63	61	59	57	54	52	50	48
83		96	92	89	85	81	78	75	72	69	66	64	61	59	57	54	52	50
84			96	92	89	85	82	79	76	73	70	67	64	62	59	57	55	53
85				96	92	89	85	82	79	76	73	70	67	65	62	60	57	55
86					96	92	89	85	82	79	76	73	70	68	65	63	60	58
88							96	92	89	86	83	80	77	73	70	68	65	63
90									96	93	90	86	83	80	77	74	71	69
92											96	93	90	86	83	80	77	74
94													96	93	90	86	83	80
96															96	93	90	87
98																	96	93

Table No. 1 DROUGHT INDEX

Yesterday's Drought Index	Depth of Rain in Inches .00 to .05	.06 to .10	.11 to .14	.15 to .18	.19 to .22	.23 to .30	.31 to .38	.39 to .46	.47 to .54	.55 or more
	Today's Drought Index									
0	1	0	0	0	0	0	0	0	0	0
1	2	1	0	0	0	0	0	0	0	0
2	3	2	1	0	0	0	0	0	0	0
3	4	3	1	0	0	0	0	0	0	0
4	5	4	2	1	0	0	0	0	0	0
5	6	5	3	1	0	0	0	0	0	0
6	7	6	4	2	1	0	0	0	0	0
7	8	7	5	3	2	0	0	0	0	0
8	9	8	6	4	2	1	0	0	0	0
9	10	9	7	5	3	1	0	0	0	0
10	11	10	8	6	4	2	0	0	0	0
11	12	11	9	7	5	3	0	0	0	0
12	13	12	10	8	6	3	1	0	0	0
13	14	13	11	9	7	4	1	0	0	0
14	15	14	12	10	8	5	2	0	0	0
15	16	15	13	11	9	6	3	0	0	0
16	17	16	14	12	10	7	4	1	0	0
17	18	17	15	13	11	8	4	1	0	0
18	19	18	16	14	12	9	5	2	0	0
19	20	19	17	15	13	10	6	3	0	0
20	21	20	18	16	14	11	7	4	1	0
21	22	21	19	17	15	12	8	4	1	0
22	23	22	20	18	16	13	9	5	2	0
23	24	23	21	19	17	14	10	6	3	0
24	25	24	22	20	18	15	11	7	3	0
25	25	25	23	21	19	16	12	8	4	0

Table No. 2 RAINFALL

Starting Danger Index	Depth of Rain in Inches 0.0	.01 to .02	.03 to .04	.05 to .07	.08 to .12	.13 to .50	.51 or more
	Today's First Code Letter						
0	D	C	C	B	B	A	A
1	E	D	D	B	B	B	A
2	F	E	D	C	B	B	A
3	G	E	D	C	C	B	A
4	H	F	E	C	C	B	A
5	I	F	E	C	C	B	A
6	J	G	E	D	C	B	A
7	K	G	E	D	C	B	A
8	L	G	E	D	C	B	A
9	M	G	E	D	C	B	A
10	N	H	E	E	C	B	A
11	O	H	F	E	C	B	A
12	P	H	F	E	C	B	A
13	Q	I	F	E	C	B	A
14	R	I	G	E	C	B	A
15	S	L	G	E	C	B	A
16	T	L	G	E	C	B	A

Table No. 3 RELATIVE HUMIDITY and WIND

Today's First Code Letter	Relative Humidity 30% or less: Wind 0 to 4	5 to 8	9 to 12	13 to 17	18 or more	31% to 40%: Wind 0 to 4	5 to 8	9 to 12	13 to 17	18 or more	41% to 55%: Wind 0 to 4	5 to 8	9 to 12	13 to 17	18 or more	56% to 75%: Wind 0 to 4	5 to 8	9 to 12	13 to 17	18 or more	76% or more: Wind 0 to 4	5 to 8	9 to 12	13 to 17	18 or more
	Today's Final Code Letter																								
A	F	F	G	G	H	E	E	F	F	G	E	E	F	F	G	C	E	E	F	G	B	C	D	D	E
B	G	G	H	H	I	F	F	G	G	H	F	F	G	G	H	D	E	F	F	G	C	D	E	E	F
C	H	H	I	J	K	G	G	H	I	J	F	G	H	H	I	E	F	G	G	H	E	E	E	E	F
D	I	I	J	K	L	G	H	I	J	K	F	G	H	I	J	E	F	G	G	H	E	F	F	F	G
E	J	J	K	L	M	H	I	J	K	L	G	H	J	J	K	F	G	G	G	H	F	F	F	F	G
F	K	K	L	L	M	I	J	K	K	L	G	H	K	K	L	F	H	H	H	I	F	G	G	G	H
G	L	M	M	N	O	J	K	L	L	M	H	I	K	L	M	G	H	H	H	I	G	G	G	H	I
H	M	N	N	O	P	K	L	M	N	O	I	J	L	L	M	G	H	I	I	J	G	H	H	H	I
I	M	N	O	P	Q	K	L	M	N	O	J	K	M	M	N	H	I	J	J	K	G	H	H	I	J
J	N	O	P	Q	R	L	M	N	O	P	K	L	M	M	N	I	J	K	K	L	G	H	H	I	J
K	O	P	Q	R	S	M	N	O	O	P	K	L	M	M	N	I	J	K	K	L	G	H	H	I	J
L	Q	R	S	S	T	N	O	P	Q	R	K	L	N	N	O	J	K	K	L	M	H	I	I	J	K
M	R	S	T	T	T	O	P	Q	R	S	L	M	N	N	O	J	K	K	L	M	H	I	I	J	K
N	S	T	T	T	T	O	P	Q	R	S	L	M	N	N	O	K	L	L	M	N	I	J	J	J	K
O	T	T	T	T	T	P	Q	R	R	S	M	N	O	O	P	K	L	L	M	N	I	J	J	K	L
P	T	T	T	T	T	Q	R	R	S	S	M	N	O	O	P	L	M	M	N	O	J	K	K	K	L
Q	T	T	T	T	T	Q	R	S	S	T	N	O	P	P	Q	L	M	M	N	C	J	K	K	L	M
R	T	T	T	T	T	R	S	S	S	T	N	O	P	P	Q	M	N	N	N	O	K	L	L	L	M
S	T	T	T	T	T	R	S	T	T	T	O	P	P	Q	R	M	N	N	O	P	K	L	L	M	N
T	T	T	T	T	T	S	T	T	T	T	O	P	Q	Q	R	N	O	O	P	Q	L	M	M	N	O

East Slope

Table No. 4

FIRE DANGER TABLE

SPRING PERIOD

Today's Final Code Letter	Today's Drought Index: 0 to 3	4 to 6	7 to 10	11 to 16	17 to 24	25
	Today's Danger Index					
B	0	1	2	3	4	5
C	0	1	2	3	4	5
D	0	1	2	3	4	5
E	1	2	3	4	5	6
F	3	4	5	6	7	8
G	4	5	6	7	8	9
H	5	6	7	8	9	10
I	6	7	8	9	10	11
J	6	7	8	9	10	11
K	7	8	9	10	11	12
L	8	9	10	11	12	13
M	9	10	11	12	13	14
N	9	10	11	12	13	14
O	9	10	11	12	13	14
P	10	11	12	13	14	15
Q	10	12	12	13	14	15
R	11	12	13	14	15	16
S	12	13	14	15	16	16
T	12	13	14	15	16	16

SUMMER PERIOD

Today's Final Code Letter	Today's Drought Index: 0 to 1	2 to 3	4 to 5	6 to 7	8 to 9	10 to 12	13 to 15	16 to 19	20 to 24	25
	Today's Danger Index									
B	0	0	1	1	2	2	3	4	4	5
C	0	0	1	1	2	2	3	4	4	5
D	0	0	1	1	2	2	3	4	4	5
E	1	1	2	3	4	4	5	6	6	7
F	2	2	3	4	5	5	6	7	7	8
G	2	2	3	4	5	5	6	7	7	8
H	3	3	4	5	6	6	7	8	8	9
I	4	4	5	6	7	7	8	9	9	10
J	4	4	5	6	7	7	8	9	10	11
K	4	4	5	6	7	8	9	10	10	11
L	4	5	5	6	7	8	9	10	11	12
M	5	5	6	7	8	9	10	11	11	12
N	5	5	6	7	8	9	10	11	12	13
O	5	6	7	8	9	10	11	12	13	14
P	6	6	7	8	9	10	11	12	13	14
Q	6	7	8	9	10	11	12	13	14	15
R	7	8	9	10	11	12	13	14	15	16
S	7	8	9	10	11	12	13	14	15	16
T	8	9	10	11	12	13	14	15	16	16

FALL PERIOD

Today's Final Code Letter	Today's Drought Index: 0 to 3	4 to 6	7 to 10	11 to 16	17 to 24	25
	Today's Danger Index					
B	0	1	2	3	4	5
C	0	1	2	3	4	5
D	0	1	2	3	4	5
E	0	1	2	3	4	5
F	1	2	3	4	5	6
G	2	3	4	5	6	7
H	2	3	4	5	6	7
I	3	4	5	6	7	8
J	3	4	5	6	7	8
K	3	4	5	6	7	8
L	4	5	6	7	8	9
M	4	5	6	7	8	9
N	5	6	7	8	9	10
O	5	6	7	8	9	10
P	6	7	8	9	10	11
Q	7	8	9	10	11	12
R	8	9	10	11	12	13
S	9	10	11	12	13	14
T	10	11	12	13	14	15

INSTRUCTIONS FOR CALCULATING FOREST FIRE DANGER

EACH table is to be used EVERY day as follows:

Table No. 1 - Drought Index
- (i) In the first column on the left, locate yesterday's Drought Index.
- (ii) On the same line, in the proper column of "Depth of Rain in Inches", find today's Drought Index.
- (iii) Record the Drought Index on the Forest Fire Danger Chart.

Table No. 2 - Rainfall
- (i) In the first column on the left, headed "Starting Danger Index", find yesterday's Danger Index.
- (ii) On the same line, in the proper column of "Depth of Rain in Inches", find Today's First Code Letter.

Table No. 3 - Relative Humidity and Wind
- (i) In the first column on the left, find Today's First Code Letter.
- (ii) On the same line, in the correct "Relative Humidity" class and in the proper "Wind" column, find Today's Final Code Letter.

Table No. 4 - Fire Danger Table
- (i) Choose the proper section according to the season.
- (ii) In the first column on the left, find Today's Final Code Letter.
- (iii) On the same line in the proper "Drought Index" column find Today's Danger Index.
- (iv) Record Today's Danger Index on the Forest Fire Danger Chart.

CHANGE FROM SPRING TO THE SUMMER PERIOD:
- (a) When the first rain of .25 inch or more falls after the leaves are fully developed on the poplars and birches, or
- (b) Two weeks after the leaves are fully developed if no rain of as much as .25 inch falls during those two weeks.

CHANGE FROM THE SUMMER TO THE FALL PERIOD:

When one-quarter of the leaves on the poplars and birches have fallen, that is when a definite thinning out of the tree crowns first becomes noticeable.

To start records in the Spring, see para 5. of General Instructions.

East. Slope

Table No. 5

SLASH FIRE HAZARD TABLE

SPRING AND SUMMER PERIOD

Today's Danger Index	Today's Drought Index 0	1 to 3	4 to 10	11 or more
	Today's Hazard Index			
B*	0	0	0	0
C*	1	1	1	1
0	3	4	2	1
1	6	7	5	2
2	9	10	8	5
3	11	11	10	7
4	12	12	12	9
5	13	13	13	12
6	13	13	14	14
7	14	14	14	15
8	14	14	15	15
9	14	14	15	15
10	14	14	15	16
11	15	15	15	16
12	15	15	16	16
13 to 16	16	16	16	16

FALL PERIOD

Today's Danger Index	Today's Drought Index 0	1 to 3	4 to 10	11 or more
	Today's Hazard Index			
B*	0	0	0	0
C*	0	0	0	0
0	2	3	1	1
1	5	6	4	1
2	7	8	6	3
3	10	10	8	5
4	11	12	11	8
5	12	12	12	10
6	12	12	13	13
7	12	13	13	14
8	12	13	14	14
9 & 10	13	13	14	15
11 & 12	14	14	15	15
13 & 14	15	15	15	16
15 & 16	16	16	16	16

* When "Today's Final Code Letter" (Table 3) is either 'B' or 'C' use this letter in "Today's Danger Index" column instead of the Danger Index obtained in Table 4.

INSTRUCTIONS FOR CALCULATING SLASH FIRE HAZARD

1. Compute today's Fire Danger Index (Table No. 4).
2. Choose the proper section according to the season.
3. In the first column on the left, find today's Danger Index.
4. On the same line in the proper "Drought Index" column, find Today's Hazard Index.
5. Record Today's Hazard Index on the Forest Fire Danger Chart.

CHANGE FROM SPRING AND SUMMER TO THE FALL PERIOD on the same date that you start using the Fall Period of the Danger Index Table.

EXAMPLE:

Suppose that on May 23, the Danger Index computed for that day is 12 and the Drought Index 7.

Find 12 in the left-hand column of the Spring and Summer section of Table No. 5. On the same line and in the column for a Drought Index of 4 to 10 find the Hazard Index for May 23rd, 16.

Suppose that on May 24, 0.64 inch of rain fell at 11 a.m., and at noon the Relative Humidity is 89% and the wind speed 3 mph.

From Table No. 3 you will get the final code letter for May 24th, B. Find B in the left-hand column of Table No. 5. On the same line, in the column for a Drought Index of 0, find the Hazard Index 0.

4

East Slope

Table No. 6

FAST DRYING HAZARD TABLE

SPRING AND SUMMER PERIOD

Today's Danger Index	Today's Drought Index: 0	1	2 to 6	7 to 10	11 to 16	17 to 24	25
	Today's Hazard Index						
0	0	0	0				
1	0	1	1	1			
2	2	4	4	2			
3	4	5	6	4	3		
4	6	7	8	6	5	4	
5	7	8	9	7	6	5	4
6	9	9	10	9	8	7	6
7	10	10	11	10	9	8	8
8	11	11	12	11	11	10	10
9	12	12	13	12	12	11	11
10	13	13	14	13	13	12	12
11	14	14	14	14	14	13	13
12	15	15	15	15	15	14	14
13 & 14	16	16	16	16	16	15	15
15 & 16	16	16	16	16	16	16	16

FALL PERIOD

Today's Danger Index	Today's Drought Index: 0	1	2 to 6	7 to 10	11 to 16	17 to 24	25
	Today's Hazard Index						
0	0	0	0				
1	0	1	1	1			
2	1	2	2	2			
3	3	4	5	3	2		
4	5	6	8	6	4	2	
5	7	8	9	7	6	4	2
6	9	9	10	9	8	6	4
7	10	10	11	10	9	8	6
8	11	11	12	11	11	10	8
9	12	12	13	12	12	11	10
10	13	13	14	13	13	12	11
11	14	14	14	14	14	13	12
12	14	15	15	15	14	14	14
13	15	15	15	15	15	15	14
14	16	16	16	15	15	15	15
15 & 16	16	16	16	16	16	16	16

INSTRUCTIONS FOR CALCULATING FAST DRYING FIRE HAZARD

1. Compute today's Fire Danger Index.
2. Choose the proper section according to the season.
3. In the first column on the left, find Today's Danger Index.
4. On the same line, in the proper "Drought Index" column, find Today's Hazard Index.
5. Record Today's Hazard Index on the Forest Fire Danger Chart.

CHANGE FROM SPRING AND SUMMER TO THE FALL PERIOD on the same date that you start using the Fall Period of the Danger Index Tables.

EXAMPLE:

Suppose that on May 25 you calculate the Danger Index to be 5 and the Drought Index 1.

(i) Choose the section headed Spring and Summer.

(ii) In the left-hand column find a Danger Index of 5.

(iii) On the same line, in the column for Drought Index 1 find the Hazard Index 8.

INSTRUCTIONS FOR CALCULATING GRASS FIRE HAZARD

1. Choose the proper section according to the percentage of green grass* as last observed.
2. In the first column on the left of the page, find Today's Relative Humidity.
3. On the same line in the proper column for the time since rain, find Today's Uncorrected Hazard Index.
4. In the left-hand column of the Seasonal Correction Table, find Today's Uncorrected Hazard Index.
5. On the same line, in the proper column for the month, find Today's Hazard Index.
6. Record Today's Hazard Index on the Forest Fire Danger Chart.

NOTE:

Rains of less than 0.02 inch are not used in this table. Times of rainfall are used in the table as follows:

(i) Rain ending after 8 a.m. today - column "8 a.m. to noon".

(ii) Rain ending between 6 p.m. yesterday and 8 a.m. this morning - column "Before 8 a.m."

(iii) Rain ending yesterday before 6 p.m. - column "1 Day Since Rain".

EXAMPLE:

Suppose that on July 10, the relative humidity is 37%, the grass is 50% green and the last rain of 0.02 inch or more fell 3 days ago.

(i) Choose the section headed "Grass 46% Green or more".

(ii) In the left-hand column find a relative humidity of 37%.

(iii) On the same line in the column for 3 days since rain of 0.02 inch or more, find the Uncorrected Hazard Index of 7.

(iv) In the left-hand column of the Seasonal Correction Table, find Today's Uncorrected Hazard Index, 7.

(v) On the same line in the column headed MAY, JUNE, JULY, find Today's Corrected Hazard Index, 8.

*INSTRUCTIONS FOR ESTIMATING THE PERCENTAGE OF GREEN GRASS

Select a typical grass area that has not been burned, grazed, or mowed for at least three years, and make observations regularly once a week. To begin with it will be found helpful to break off a few handfuls of grass at ground level and to sort out the green and brown grass into two separate piles. If the amount in the two piles is equal the grass is 50% green. If one-quarter of the grass is in the green pile and three-quarters in the brown pile the grass is 25% green, and so on.

After a little practice, with care and judgement, you should be able to estimate the percentage of green grass without picking it up. The best method is to select several small 'plots' about two feet square, examine each plot carefully, and take the average. The grass must be pried apart to find the amount of dead material, not yet rotted away, under the present season's growth.

Table No. 7

GRASS FIRE HAZARD TABLE

GRASS 15% GREEN OR LESS

Today's Relative Humidity %	0.02 in. or more rain since 6 p.m. yesterday		Days Since Rain of 0.02 in. or more					
	8 a.m. to noon	Before 8 a.m.	1	2	3	4	5	6 or more
	Today's Uncorrected Hazard Index							
25 or less	10	14	16	16	16	16	16	16
26 to 35	8	12	14	15	15	16	16	16
36 to 45	6	10	12	13	14	14	14	14
46 to 55	4	8	10	11	12	12	12	12
56 to 65	3	6	7	9	10	10	10	10
66 to 75	2	4	5	7	8	8	8	8
76 to 85	1	3	4	6	6	6	6	6
86 or more	0	2	4	5	5	6	6	6

GRASS 16% to 25% GREEN

0.02 in. or more rain since 6 p.m. yesterday		Days Since Rain of 0.02 in. or more					
8 a.m. to noon	Before 8 a.m.	1	2	3	4	5	6 or more
Today's Uncorrected Hazard Index							
8	11	13	14	15	15	15	15
7	10	12	13	13	13	14	14
5	8	10	11	12	12	12	12
4	6	8	10	10	10	11	11
3	5	7	8	9	9	9	9
2	4	5	7	7	8	8	8
1	3	4	5	6	6	6	6
0	2	3	5	5	6	6	6

GRASS 26% to 45% GREEN

Today's Relative Humidity %	0.02 in. or more rain since 6 p.m. yesterday		Days Since Rain of 0.02 in. or more					
	8 a.m. to noon	Before 8 a.m.	1	2	3	4	5	6 or more
	Today's Uncorrected Hazard Index							
25 or less	6	8	9	11	11	12	12	12
26 to 35	5	7	8	10	10	11	11	11
36 to 45	4	6	8	9	9	10	10	10
46 to 55	3	6	7	8	9	9	9	9
56 to 65	2	4	6	7	8	8	8	8
66 to 75	2	3	5	6	7	7	7	7
76 to 85	1	3	4	5	6	6	6	6
86 or more	0	2	3	5	5	6	6	6

GRASS 46% GREEN OR MORE

0.02 in. or more rain since 6 p.m. yesterday		Days Since Rain of 0.02 in. or more					
8 a.m. to noon	Before 8 a.m.	1	2	3	4	5	6 or more
Today's Uncorrected Hazard Index							
4	5	6	8	8	9	9	9
3	5	6	7	8	8	8	8
3	4	6	7	7	8	8	8
2	4	5	6	7	7	7	7
2	4	5	6	6	7	7	7
1	3	4	5	6	6	6	6
1	3	4	5	6	6	6	6
0	2	3	5	5	5	5	5

SEASONAL CORRECTION TABLE

Uncorrected Hazard Index	APRIL	MAY JUNE JULY	AUGUST	SEPTEMBER and OCTOBER
	Today's Corrected Hazard Index			
0	0	0	0	0
1	1	2	0	0
2	2	3	1	0
3	3	4	2	0
4	4	5	3	1
5	5	6	4	2
6	6	7	5	3
7	7	8	6	4
8	8	9	7	5
9	9	10	8	6
10	10	11	9	7
11	11	12	10	8
12	12	13	11	9
13	13	14	12	10
14	14	15	13	12
15	15	16	14	13
16	16	16	15	14

NIGHT HUMIDITY CORRECTION TO THE FIRE DANGER INDEX

Today's Danger Index	Yesterday's Noon Relative Humidity: 25% or less — Highest Relative Humidity Last Night: 35% or less	36 to 45	46 to 55	56 to 65	66 to 75	76 to 85	86% or more	Yesterday's Noon Relative Humidity: 26% to 35% — Highest Relative Humidity Last Night: 45% or less	46 to 55	56 to 65	66 to 75	76 to 85	86% or more	Yesterday's Noon Relative Humidity: 36% to 45% — Highest Relative Humidity Last Night: 45% or less	46 to 55	56 to 75	76 to 85	86% or more
	Corrected Danger Index																	
0	3	3	3	3	2	1	0	3	3	2	2	1	0	3	2	2	1	0
1	4	4	4	4	3	2	1	4	4	3	3	2	1	4	3	3	2	1
2	5	5	5	5	4	3	2	5	5	4	4	3	2	5	4	4	3	2
3	6	6	6	6	5	4	3	6	6	5	5	4	3	6	5	5	4	3
4	7	7	7	7	6	5	4	7	7	6	6	5	4	7	6	6	5	4
5	9	9	8	8	7	7	5	9	8	8	7	6	5	8	8	7	6	5
6	10	10	9	9	8	8	6	10	9	9	8	7	6	9	9	8	7	6
7	11	11	10	10	9	9	7	11	10	10	9	8	7	10	10	9	8	7
8	12	12	11	11	10	9	8	12	11	11	10	9	8	11	11	10	9	8
9	14	13	13	12	11	11	9	13	13	12	11	10	9	12	12	11	10	9
10	15	14	14	13	12	12	10	14	14	13	12	11	10	13	13	12	11	10
11	16	15	15	14	13	13	11	15	15	14	13	12	11	14	14	13	12	11
12	16	16	16	15	14	14	12	16	16	15	14	13	12	15	15	14	13	12
13	16	16	16	16	15	15	13	16	16	16	15	14	13	16	16	15	14	13
14	16	16	16	16	16	16	14	16	16	16	16	15	14	16	16	16	15	14
15	16	16	16	16	16	16	15	16	16	16	16	16	15	16	16	16	16	15
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

Today's Danger Index	Yesterday's Noon Relative Humidity: 46% to 55% — Highest Relative Humidity Last Night: 55% or less	56 to 65	66 to 85	86% or more	Yesterday's Noon Relative Humidity: 56% to 65% — Highest Relative Humidity Last Night: 65% or less	66 to 75	76 to 85	86% or more	Yesterday's Noon Relative Humidity: 66% to 75% — Highest Relative Humidity Last Night: 75% or less	76 to 85	86% or more	Yesterday's Noon Relative Humidity: 76% to 85% — Highest Relative Humidity Last Night: 85% or less	86% or more	Yesterday's Noon Relative Humidity: 86% or more — Highest Relative Humidity Last Night: 85% or less	86% or more
	Corrected Danger Index														
0	2	2	1	0	1	0	0	0	0	0	0	0	0	0	0
1	3	3	2	1	2	1	1	1	1	1	1	1	1	1	1
2	4	4	3	2	3	2	2	2	2	2	2	2	2	2	2
3	5	5	4	3	4	3	3	3	3	3	3	3	3	3	3
4	6	6	5	4	5	4	4	4	4	4	4	4	4	4	4
5	8	7	6	5	7	6	5	5	6	5	5	5	5	5	5
6	9	8	7	6	8	7	6	6	7	6	6	6	6	6	6
7	10	9	8	7	9	8	7	7	8	7	7	7	7	7	7
8	11	10	9	8	10	9	8	8	9	8	8	8	8	8	8
9	12	11	10	9	11	10	10	9	10	9	9	9	9	9	9
10	13	12	11	10	12	11	11	10	11	10	10	10	10	10	10
11	14	13	12	11	13	12	12	11	12	12	11	12	11	11	11
12	15	14	13	12	14	13	13	12	13	13	12	13	12	12	12
13	15	15	14	13	15	14	14	13	14	14	13	14	13	14	13
14	16	16	15	14	16	15	15	14	15	15	14	15	14	15	14
15	16	16	16	15	16	16	16	15	16	16	15	16	15	16	15
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

How to Use the NIGHT HUMIDITY CORRECTION Table

Use this Table only if there has been no measurable rain since yesterday's readings.

Example: - Humidity at noon yesterday, 30%
- Highest humidity last night, 48%
- Danger Index at noon today, 11

Opposite 11 in the left-hand column, and in the section for Yesterday's Noon Relative Humidity 26% to 35%, under Highest Relative Humidity Last Night 46 to 55%, we find the correct Danger Index, 15.

SCALE FOR ESTIMATING WIND VELOCITY

For best results this Wind Scale should be used at a well-exposed open place near the forest, with suitable trees for observation. Estimates should be made over a period of at least 5 minutes - the longer the better. If the wind is gusty, estimate the average wind over the whole period.

Effects of Wind	Wind Velocity, miles per hour
Smoke rises vertically; no movement of leaves of bushes or trees.	Less than 1
Leaves of trembling aspen in constant motion; small branches of bushes sway; tall grasses and weeds sway and bend with wind; wind vane barely moves.	1 to 3
Trees of pole size in the open sway gently; wind is felt distinctly on face; loose scraps of paper move; wind flutters small flag.	4 to 7
Trees of pole size in the open sway very noticeably; large branches of trees in the open toss; tops of trees in dense stands sway; wind extends small flag; a few crested waves form on lakes.	8 to 12
Trees of pole size in open sway violently; whole trees in dense stands sway noticeably; dust is raised in road.	13 to 18
Branchlets are broken from trees; inconvenience is felt in walking against wind.	19 to 24
Tops and branches are broken from trees; walking against wind is difficult; structural damage; shingles are blown off.	25 to 38

Sample Weather Record and Forest Fire Danger Chart

The example in the following pages shows how weather records are kept and how fire danger charts are prepared.

Weather Record - The weather readings required for the danger index computation are entered in the section headed "Noon Readings" and the exact time noted. The rainfall, if any, is entered in the next line. Usually a hygrometer is used to determine the relative humidity. The dry bulb and wet bulb readings from this instrument are recorded next and, from them, the relative humidity is determined using the Relative Humidity Tables at the front of this book. The estimated or measured wind velocity is entered in the next line. These are all the weather values necessary to compute the fire danger index. Further information may be filled in according to the instructions of the local supervisor. Spaces are provided at the bottom of the page in which to note, if known, time of beginning and time of ending of rain.

Danger Chart - Rainfall is plotted in the top section of the Danger Chart. A short rain may be shown as an upright line, whereas a long rain is best plotted as a triangle indicating on the 0.00 line the time of beginning and time of ending of each rain. On occasion these times must be estimated. The actual depth of rain is clearly written just above the mark or triangle. Those weather values marked with an asterisk on the weather record are transferred to the Danger Chart and entered in the boxes provided.

The days' Danger Index can then be computed by referring in turn to Tables 1, 2, 3, and 4.

The Hazard Index is obtained by applying the computed danger index to the required Hazard Table.

In the example it is assumed that we are starting the records at the beginning of the fire season and that three days have passed since the snow melted enough to allow fires to run in the open. Therefore, according to the "General Instructions" we can assume that for May 6th the Drought Index is 3 and the Danger Index 8. Our first noon weather observations, made at 12:10 p.m. on Monday, May 7th, are entered as shown and we may proceed to compute the Danger and Hazard Indices following the instructions given with the tables.

The same procedure is followed every day except when noon weather readings cannot be taken because of rain. For example, on Friday rain was falling at noon and continued past 2 p.m. No weather observations therefore were taken and no index was computed. On Saturday, Thursday's Index, 5, must be used as the "Starting Danger Index" in Table No. 2.

WEATHER RECORD

Poplar Creek — Forest Weather Station

From May 7 (Month & Date) to May 13 (Month & Date) 19 56 Observer John Doe

Date	7 Mon.	8 Tues.	9 Wed.	10 Thur.	11 Fri.	12 Sat.	13 Sun.
8 A.M. READINGS: Time	8 AM	8 AM	8 AM	8 AM		8:15 AM	8:10 AM
Maximum Temperature	72	79	80	71		55	59
Minimum Temperature	38	50	55	53		49	48
Depth of Rain	—	—	—	—		0.12	—
Sky Condition	P. Cloudy	P. Cloudy	Cloudy	Clear		Cloudy	Clear
Visibility Distance	20	20	10	20		12	20
NOON READINGS: Time	12:10 PM	12:10 PM	12:15 PM	12:10 PM		12:10 PM	12:15 PM
* Depth of Rain	—	T	0.06	—		—	—
Hygrometer Dry Bulb	75	78	68	72		57	63
Hygrometer Wet Bulb	54	61	55	67		55	51
* Relative Humidity	26	39	45	78		89	45
* Wind Velocity	11	8	3	2		5	14
Wind Direction	SW	W	SE	SE		W	NW
Sky Condition	Clear	P. Cloudy	P. Cloudy	Cloudy		P. Cloudy	P. Cloudy
Visibility Distance	20	12	20	12		7	20
OTHER READINGS: Time					6:00 PM		
Maximum Temperature					74		
Minimum Temperature					50		
Depth of Rain					1.65		
Hygrometer Dry Bulb					53		
Hygrometer Wet Bulb					51		
Relative Humidity					88		
Wind Velocity					4		
Wind Direction					E		
Sky Condition					Cloudy		
Visibility Distance					10		
TIME RAIN BEGAN		11 45 A	8 45 A	7 10 P	—	During Night	
TIME RAIN ENDED		11 50 A	9 30 A	—	5 25 P	7 15 A	
REMARKS							

* Required for computing forest fire danger

F.B. 906

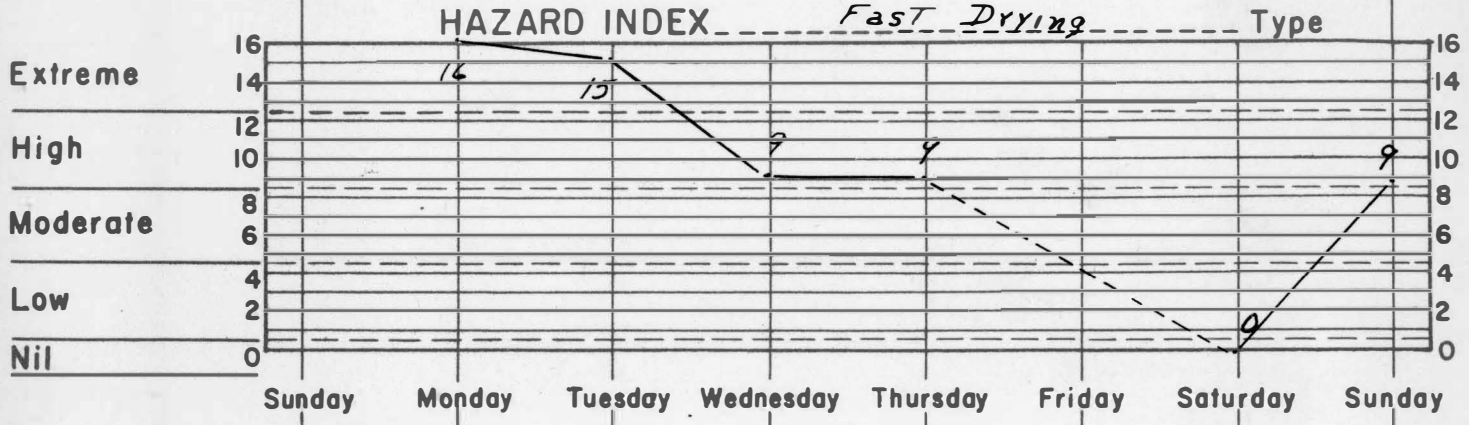
FOREST FIRE DANGER CHART

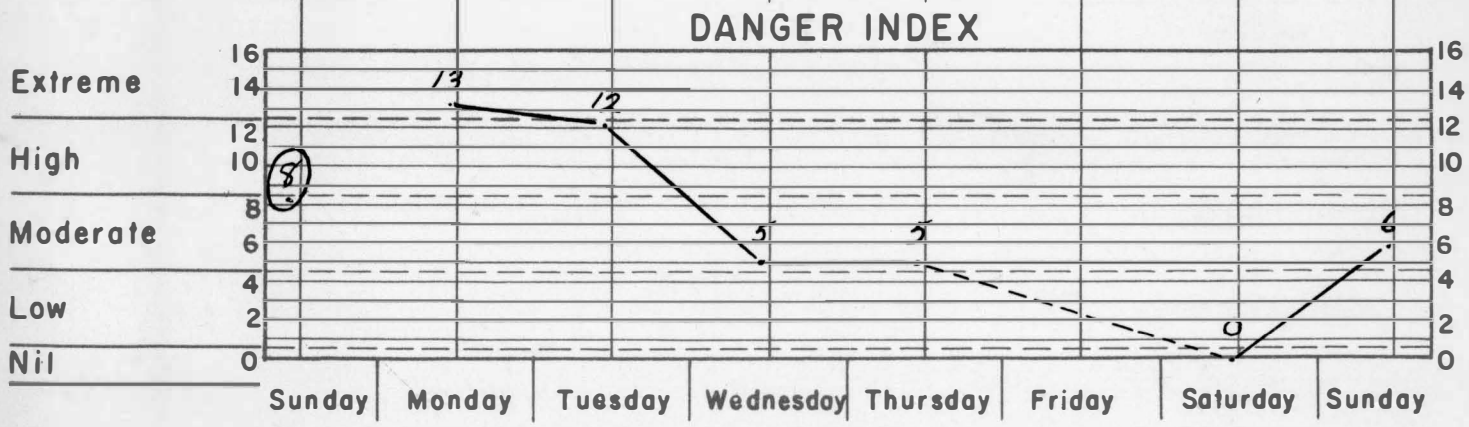
Poplar Creek FOREST WEATHER STATION

From May 6 to May 13 1956 Observer John Doe

(Month and date) (Month and date)

Date	6 Sunday A.M.	6 Sunday P.M.	7 Monday A.M.	7 Monday P.M.	8 Tuesday A.M.	8 Tuesday P.M.	9 Wednesday A.M.	9 Wednesday P.M.	10 Thursday A.M.	10 Thursday P.M.	11 Friday A.M.	11 Friday P.M.	12 Saturday A.M.	12 Saturday P.M.	13 Sunday A.M.	13 Sunday P.M.
Rainfall inches					T		0.06	1				1.65		0.12		
Relative Humidity %	–		26		39		45		78		–		89		45	
Wind. Vel. m.p.h.	–		11		8		3		2		–		5		14	
Drought Index	(3)		4		5		5		6		–		0		1	





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