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SOIL AND WATER MANAGEMENT AND CONSERVATION: WIND EROSION*

E. L. Skidmore

THE WIND EROSION PROBLEM

Extensive aeolian deposits from past geologic eras give evidence that wind erosion is not a recent phenomenon. In recent years satellite photographs have revealed much about the origin and extent of duststorms.[1]

General areas most susceptible to wind erosion on agricultural land include much of North Africa and the Near East, parts of southern and eastern Asia, Australia, and southern South America, and the semiarid and arid portions of North America.[2] In addition, such agricultural areas as the Siberian Plain and others in the U.S.S.R. have a potential for wind erosion.

Wind erosion is the dominant problem on about 30 million ha of land in the U.S.[3] About 2 million ha are moderately to severely damaged each year. Wind erosion can be a problem whenever the following soil, vegetative, and climatic conditions exist: (1) the soil is loose, dry, and reasonably finely divided; (2) the soil surface is smooth and vegetative cover is absent or sparse; (3) the field is sufficiently large; and (4) the wind is strong enough to move soil. Those conditions more often prevail in semiarid areas when precipitation is inadequate, but they are sometimes present in subhumid and humid areas, especially on noncohesive soils.

Soil erosion by wind occurs when wind exerts enough force on the surface of the ground that the most easily detachable soil particles or sand grains dislodge and are transported by the wind. Bagnold[4] described the initial motion: "surface grains, previously at rest, began to be rolled along the surface by the direct pressure of the wind . . . gathered sufficient speed to start bouncing off the ground." Others[5,6] observed that as the "fluid threshold" was approached, some particles began to vibrate or rock back and forth. Erodible particles vibrated with increasing intensity as wind speed increased and then left the surface instantaneously as if ejected.

Particles 0.1 to 0.5 mm in diameter rise almost vertically, travel 10 to 15 times their height of rise, and then return to the surface with an angle of descent of about 6 to 12° from the horizontal.[7-9] On striking the surface, the particles either rebound and continue their movement by striking and then rebounding from the surface, which is called saltation, or they impart most of their energy by striking other particles, causing the particles struck to rise upward or roll along the surface.

The rolling or sliding of larger particles with energy from saltating particles is called creep. Bagnold[4] observed that at low wind speeds the grains move in jerks, a few millimeters at a time, but as the wind speed increases, the distance particles move increases and more particles are set in motion until, in high winds, the whole surface appears to be creeping forward.

Particles smaller than about 0.1 mm may enter suspension and be carried to great heights by eddies of the erosive winds. The impact of particles in saltation usually starts movement of these fine particles. Although most of the soil eroded by wind is moved by saltation and surface creep, that moved by suspension is the most spectacular and easily recognized from a distance. Bennett[10] estimated that a single dust storm

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occurring on May 12, 1934 carried 272 million metric tons of topsoil out of the Great Plains. Hagen and Woodruff[11] estimated that eroding lands of the Great Plains contributed 220 and 70 million metric tons of dust per year to the atmosphere in the 1950s and 1960s, respectively.

Wind erosion sorts many soils. The fine and porous particles are removed, leaving behind the coarser and denser particles,[12-14] Of those removed, the coarsest particles usually end up in a soil drift and the remainder enter suspension to be transported, often great distances, before they are deposited.[15] Wind erosion sometimes virtually removes the entire surface soil.[12,16,17] This nonselective removal by wind is associated primarily with loess sorted and deposited from the atmosphere during past geologic eras.

Wind erosion physically removes from the field the most fertile portion of the soil and, therefore, lowers productivity.[18] Dust obscures visibility and pollutes the air, causes traffic hazards, fouls machinery, and imperils animal and human health.

Blowing soil fills road ditches, reduces seedling survival and growth, lowers the marketability of vegetable crops like asparagus, green beans, and lettuce, increases susceptibility of plants to certain types of stress including disease, and contributes to transmission of some plant pathogens.[19-21]

FACTORS AFFECTING SOIL EROSION BY WIND

Studies to understand the mechanics of the wind erosion process, to identify major factors influencing wind erosion, and to develop wind erosion control methods led to the development of a wind erosion equation.[7,22] The equation here is used as an outline to discuss the major factors affecting wind erosion. The general functional relationship between the independent variable, E (the potential average annual soil loss), and the equivalent variables or major factors is $E = f(I, K, C, L, V)$, where I is a soil erodibility index, K is a soil ridge-roughness factor, C is a climatic factor, L is field length along the prevailing wind erosion direction, and V is equivalent vegetative cover.

Soils

Soils vary greatly in the ease with which they are detached and transported by wind (erodibility). The noncohesive sandy soils have a very fragile structure; they are essentially single grains and, as such, are already detached. The particles of the finer-textured cohesive soils form into compound particles or aggregates of various size and stability.

Chepil[23] determined from wind tunnel studies that mineral soil aggregates larger than greater than 0.84 mm, as determined by dry sieving, is used to indicate erodibility of soil by wind. The erodibility of soils with different percentages of nonerodible fractions exceeding 0.84 mm is listed in Table 1.

Percentages of dry soil fractions greater than 0.84 mm are obtained by standard dry sieving in the field or the laboratory.[24] In practice, to avoid sampling in the field and sieving, soil erodibility is often estimated by grouping soils according to predominant soil textural class.

Actual erodibility of most soils is extremely dynamic and varies seasonally, annually, and with management practices. In a study on the effects of season on soil erodibility, Chepil[25] found that erodibility was higher in the spring than in the previous fall in all cases where the soil had been intermittently moist during the winter, but the increases were not of the same magnitude in all soils. The greatest increase in erodibility from fall to spring occurred in the finest-textured soils, the least in the coarsest. Sandy loam was highly erodible in both fall and spring. Clay was least erodible in the fall but was

Table 1
SOIL ERODIBILITY I FOR SOILS WITH DIFFERENT PERCENTAGES OF NONERODIBLE FRACTIONS AS DETERMINED BY STANDARD DRY SIEVING

Percentage of dry soil fractions > 0.84 mm

	Units (metric tons/ha)									
Tens	0	1	2	3	4	5	6	7	8	9
0	—	695	560	493	437	404	381	359	336	314
10	300	294	287	280	271	262	253	244	238	228
20	220	213	206	202	197	193	186	182	177	170
30	166	161	159	155	150	146	141	139	134	130
40	126	121	117	114	112	108	105	101	96	92
50	85	80	75	70	65	61	28	54	52	49
60	47	45	43	40	38	36	36	34	31	29
70	27	25	22	18	16	13	9	7	7	4
80	4	—	—	—	—	—	—	—	—	—

From Woodruff, N. P. and Siddoway, F. H., *Soil Sci. Soc. Am. Proc.*, 29, 602, 1965. With permission.

about as highly erodible as sandy loam in the spring. The intermediate-textured soils had an intermediate erodibility in both spring and fall.

Ridge Roughness

Forming soil having nonerodible clods and aggregates into ridges reduces erosion.[26] The experimentally derived relationship between relative quantity of eroded material and ridge roughness shows that ridging may reduce wind erosion up to 50%.[22]

The soil ridge-roughness factor K as influenced by ridge spacing and ridge height is given in Table 2. Ridge-spacing combinations that yield soil ridge-roughness factors of 0.5 and 0.6 approximate ridged surfaces; 0.7 and 0.8, semiridged; and 0.9 and 1.0, smooth surfaces. The Soil Conservation Service (SCS) evaluates fields as smooth, semiridged, or ridged and then assigns 1.0, 0.75, and 0.5, respectively, as soil ridge-roughness factors.[27]

Climate

Before wind erosion can occur, the wind must exert a shear stress on the ground surface that is greater than the forces tending to keep the particles at rest. When soil particles are loose and dry, the minimum or threshold wind speed required to initiate soil movement is about 5.0 m/sec at 30 cm height.[15,28,29] Several investigators[4,30,31] found that when wind speed was greater than that required to barely move the soil, the rate of soil movement was directly proportional to the friction velocity cubed. The friction velocity squared is directly proportional to the vertical flux of horizontal momentum or surface shear stress.

Water in the soil forms a cohesive bonding between particles. The force between the soil particles must be overcome by the force of the wind before erosion can occur. Chepil[32] found the resistance due to cohesion (γ) of the adsorbed water films was proportional to the square of the water content:

$$\gamma = 6\left(\frac{\text{soil water content}}{\text{soil water content at 15 bars suction}}\right)^2$$

Table 2
SOIL RIDGE ROUGHNESS FACTOR K

Ridge spacing (cm)	Ridge height (cm)															
	1	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
1	0.6	0.6	0.8													
4	0.9	0.6	0.6	0.8												
8	0.9	0.7	0.5	0.6	0.8											
12	1.0	0.8	0.5	0.5	0.7	0.8										
16	1.0	0.9	0.6	0.5	0.6	0.8										
20	1.0	0.9	0.6	0.5	0.5	0.6	0.8									
24	1.0	0.9	0.6	0.5	0.5	0.6	0.7	0.8								
28	1.0	0.9	0.7	0.5	0.5	0.5	0.7	0.8								
32	1.0	0.9	0.7	0.5	0.5	0.5	0.6	0.7	0.8							
36	1.0	0.9	0.7	0.6	0.5	0.5	0.6	0.7	0.8							
40	1.0	0.9	0.8	0.6	0.5	0.5	0.5	0.6	0.8							
44	1.0	0.9	0.8	0.6	0.5	0.5	0.5	0.6	0.7	0.8						
48	1.0	1.0	0.8	0.6	0.5	0.5	0.5	0.6	0.7	0.8						
52	1.0	1.0	0.8	0.6	0.5	0.5	0.5	0.5	0.6	0.8						
56	1.0	1.0	0.8	0.6	0.5	0.5	0.5	0.5	0.6	0.7	0.8					
60	1.0	1.0	0.8	0.6	0.6	0.5	0.5	0.5	0.6	0.7	0.8					
64	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.8				
68	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.7	0.8				
72	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.7	0.8				
76	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.7	0.8				
80	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8			
84	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8			
88	1.0	1.0	0.9	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8			
92	1.0	1.0	0.9	0.8	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8			
96	1.0	1.0	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8		
100	1.0	1.0	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8		
104	1.0	1.0	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8		
108	1.0	1.0	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8		
112	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	
116	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8	
120	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8	

On the basis that erodibility of a soil varies inversely with the equivalent moisture in the surface soil particles and is proportional to wind speed cubed, Chepil et al.[33] proposed a wind erosion climatic factor, C. For example, the wind erosion climatic factor relative to Garden City, Kan. is expressed as follows:

$$C = \frac{1}{2.9} \frac{U^3}{(P\text{-}E)^2}$$

where U is mean annual wind speed for a standard height of 9.1 m (30 ft), P-E is moisture index, and 2.9 is the approximate average value of $U^3/(P\text{-}E)^2$ for Garden City, Kan. The annual climatic factor for much of the U.S. is shown in Figure 1.

Field Width

Soil movement on an eroding field surrounded by stubble field strips begins with zero on the windward side and increases with distance downwind.[34] The cumulative rate of soil movement with distance away from the windward edge of eroding fields was the main cause of increasing abrasion and gradual decrease in surface roughness along the direction of wind.[35] Chepil[35] called the increase in rate of soil flow with distance downwind "avalanching".

If the fields are large enough, the rate of particle flow reaches a maximum that a wind of a given velocity can carry. Beyond that point the rate of flow remains essentially constant.[36]

Vegetative Cover

Vegetation, both living and as residue from harvested crops, protects the soil against wind erosion. Standing crop residues provide nonerodible elements that absorb much of the shear stress in the boundary layer. When vegetation and crop residues are sufficiently high and dense to prevent the intervening soil surface drag from exceeding the threshold drag, soil will not erode. Flattened stubble, though not so effective as standing, also protects the soil from wind erosion.[37]

Studies[37-39] to quantify specific properties of vegetative covers influencing wind erosion led to the relationship developed by Woodruff and Siddoway[22] showing the influence of an equivalent vegetative cover of small grain and sorghum stubble for various orientations and heights.

Research efforts have continued to evaluate the protective role of additional crops,[40,42] range grasses,[41] feedlot manure,[43] and the protective requirements of equivalent residue needed to control wind erosion.[44,45]

WIND EROSION CONSERVATION PROGRAMS

Soil conservation planning for wind erosion control is based on predicting potential average annual soil loss with the wind erosion equation.[22] When the potential soil loss is greater than the considered "tolerable soil loss," the equation can be used to determine the field conditions (soil cloddiness, roughness, vegetative cover, sheltering by barriers, or width and orientation of field) necessary to reduce potential erosion to an acceptable level.

The SCS has used the Woodruff and Siddoway[22] equation extensively to plan wind erosion control practices and to determine crop tolerance to wind erosion.[20,21,27,46] The equation also is a useful guide to wind erosion control principles.[47-49] Other uses of the equation include: (1) determining spacing for barriers in narrow strip-barrier systems,[50] (2) estimating fugitive dust emissions from agricultural and subdivision lands,[51,52] (3) predicting horizontal soil fluxes for comparison with vertical aerosol

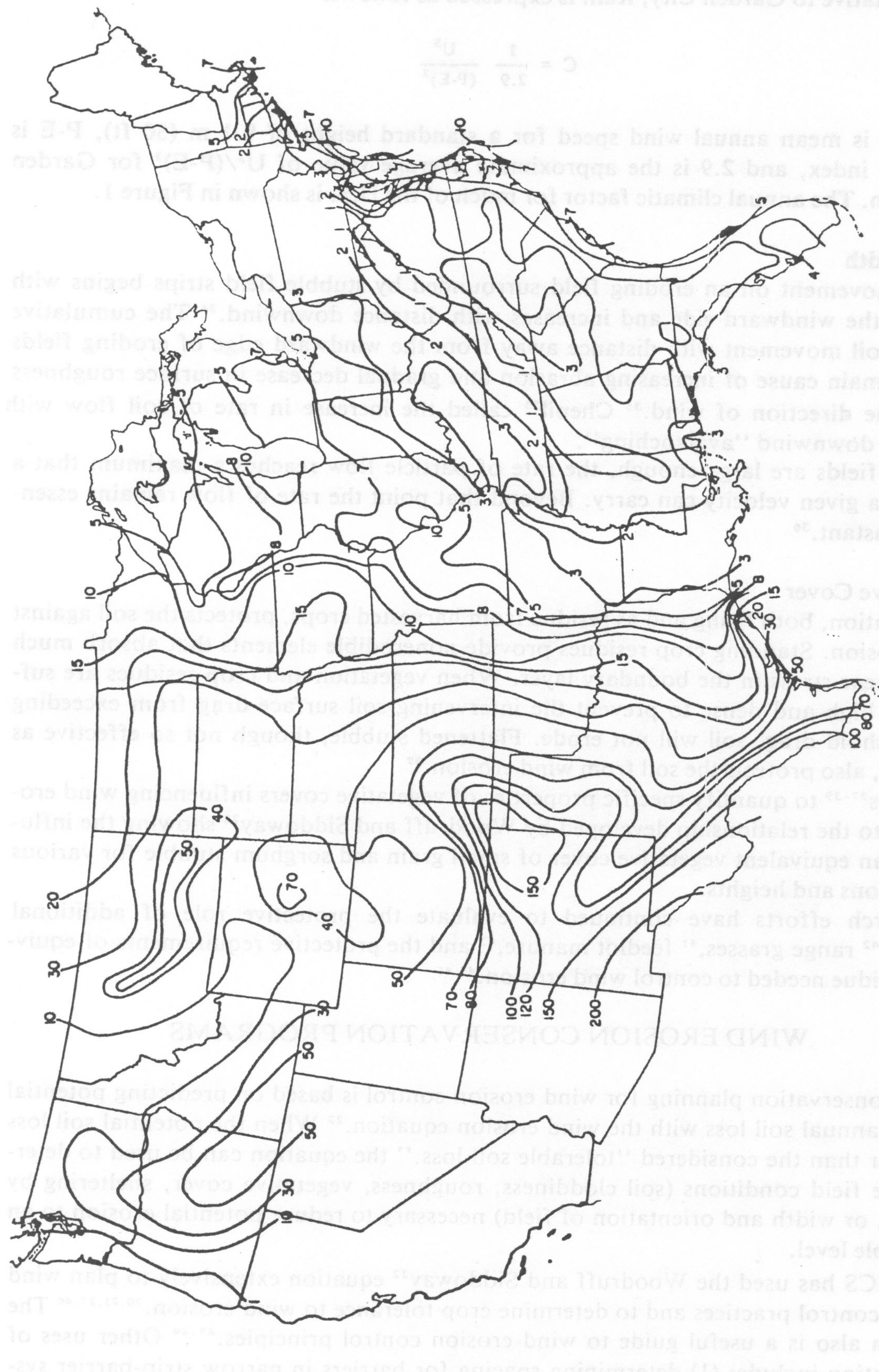

FIGURE 1. Annual climatic factor C. (Original drawing April 17, 1968, by D. V. Armbrust. Arkansas, Iowa, Kentucky, Louisiana, Tennessee, and West Virginia added November 24, 1971, by N. P. Woodruff.)

fluxes,[53] (4) estimating effects of wind erosion on productivity,[54,55] (5) evaluating stubble requirements in field strips to trap windblown soil,[56] and (6) delineating cropland where residues might be removed without exposing the soil to wind erosion.[45]

Those not familiar with the literature on conservation planning for wind erosion control may wish to consult the following references. These include reviews,[7,57] wind erosion equation,[22] information helpful in using the wind erosion equation,[58] use of computer to solve the wind erosion equation,[59,60] and a guide to wind erosion contol practices.[49]

Example

Suppose one wished to know the average annual potential soil loss from a field 400 m wide with 1000 kg/ha of flat wheat stubble in northwestern Kansas. The field has ridges 76 cm apart and 10 cm high.

Sieving showed that 25% of the soil aggregates were greater than 0.84 mm. Table 1 shows that soil erodibility I is 193 metric tons/ha. Table 2 shows that for 76-cm ridge spacing and 10-cm ridge height, the soil ridge-roughness factor is 0.5. Figure 1 shows that the climatic factor in northwestern Kansas is 50.

Table 3 shows that for Goodland (northwestern Kansas), the prevailing wind erosion direction (February and March) is 338° (NNW) with a preponderance of 2.5. Then from Table 4, wind erosion direction factor is 1.33. Field width of 400 m times wind erosion direction factor gives 530 m for median unsheltered distance across the field.

The procedure to determine potential average annual soil loss, E = f(I, K, C, L, V), from those data follows. E_1, E_2, E_3, and E_4 are solutions at intermediate steps in solving the final answer.

1. $E_1 = I = 193$ metric tons/ha
2. Determine $E_2 = IK = (193 \text{ metric tons/ha}) (0.5) = 96.5$ metric tons/ha
3. Determine $E_3 = IKC = (E_2) (C) = (96.5) (0.5) = 48.3$ metric tons/ha
4. Determine $E_4 = IKC (L)$ for $L = 530$ m. Use Table 5. Find $E_2 = 90$ in first column and follow the row right to column with heading of 610 m and read 1.90. Interpolate between 305 and 610 m for L and between 90 and 112 for E_2 to obtain 2.8 divisions for curve deviation. Find E_3 of approximately 48.3 at the bottom of Table 5. Then move right 2.8 scale divisions to obtain $E_4 = 37$ metric tons/ ha.
5. Determine E. In the left column of Figure 2, find the row for equivalent flat small grain residue of 1000 kg/ha and move right to where E_4 or IKCL = 37; then move vertically down to IKCLV = 8.4 metric tons/ ha/year.

If in Step 4 residue is given as something different than flat small grain residue, convert to flat small grain residue using Figures 3 and 4 or variations thereof. Research is in progress to obtain the data needed to convert more kinds of vegetative material to equivalent flat small grain residue.

Other procedures are available to solve the wind erosion equation for potential average annual soil loss. These include graphical,[22,58] slide rule,[61] and computer.[59,60] Potential average annual soil loss is shown for a few combinations of variables in Table 6.

Table 3
PREVAILING WIND EROSION DIRECTION* AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[58]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alaska												
Anchorage	22	22	0	180	180	180	180	180	180	180	180	0
	2.0	3.4	2.7	2.7	3.4	3.1	2.7	3.2	3.1	3.2	3.1	3.1
Fairbanks	45	225	45	225	45	247	247	247	247	247	225	45
	2.6	2.9	2.5	1.3	1.9	2.1	2.2	2.4	2.0	2.5	1.3	3.3
Arizona												
Ajo	180	180	337	225	225	203	225	180	202	180	180	180
	1.9	2.1	1.2	1.2	1.4	1.8	1.3	1.2	1.6	1.5	1.7	1.4
Douglas	201	203	225	247	248	225	337	315	90	90	90	180
	1.3	1.6	1.5	1.4	1.5	1.6	1.4	1.4	1.5	1.8	1.0	1.0
Kingman	225	203	203	225	225	225	225	225	225	225	225	0
	2.9	1.7	2.6	2.8	2.7	3.6	2.4	2.9	1.9	1.5	2.0	1.6
Phoenix	90	293	292	90	157	135	180	135	158	180	180	337
	1.5	1.4	1.6	1.7	1.4	1.5	1.5	1.7	1.7	1.6	1.0	1.4
Prescott	202	202	225	203	203	225	225	203	203	202	202	202
	1.7	1.4	1.7	2.0	2.7	2.3	1.9	1.6	2.0	2.1	2.2	1.5
Tucson	113	292	292	90	248	292	113	113	113	113	113	113
	2.6	1.7	1.6	1.4	1.7	1.2	1.5	1.6	2.1	2.3	3.4	2.6
Yuma	0	0	337	293	135	157	157	157	158	337	0	0
	2.6	2.1	1.5	1.5	1.7	2.2	3.0	2.5	1.9	1.4	2.4	2.7
California												
Arcata	135	315	315	315	315	315	315	315	315	336	135	135
	2.3	2.8	3.3	3.9	4.4	6.6	6.9	5.0	3.6	2.1	3.1	2.5
Bishop	0	0	0	0	0	180	158	180	180	180	0	0
	4.1	4.0	3.2	2.6	2.0	2.4	2.1	2.3	2.5	3.6	5.7	3.9
Blythe	0	0	0	225	180	225	180	180	180	203	0	337
	2.3	2.4	2.2	2.3	1.4	2.1	1.9	3.9	1.8	1.9	4.2	1.9
China Lake	203	225	225	225	225	225	225	203	225	225	225	225
	1.6	1.7	1.7	1.6	1.8	2.0	2.1	2.4	2.4	1.9	1.6	1.7

* Clockwise from the north through 360°.

Table 3 (continued)
PREVAILING WIND EROSION DIRECTION[a] AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[58]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Connecticut												
Bridgeport	293	315	293	293	90	225	270	247	45	248	337	293
	1.2	1.3	1.2	1.5	1.2	1.6	1.3	1.7	1.5	1.3	1.6	1.4
Hartford	315	315	315	338	0	180	180	180	180	0	315	315
	1.8	1.8	1.5	2.0	1.5	1.6	1.4	1.5	1.8	1.4	1.3	1.6
Stratford	315	293	293	225	225	202	—	204	225	247	292	270
	1.3	2.3	1.4	1.4	1.6	1.6	—	1.3	2.5	2.5	1.5	1.6
Windsor Locks	315	315	337	315	180	180	180	180	0	315	337	315
	1.8	4.6	1.3	1.9	2.1	2.0	1.6	1.7	1.7	1.5	1.9	2.0
Delaware												
Wilmington	315	293	315	315	338	315	158	180	180	68	315	293
	1.7	2.0	1.8	1.3	1.1	1.2	1.4	1.3	1.4	1.1	1.7	1.4
Florida												
Avon Park	338	22	180	45	67	270	337	68	68	45	0	0
	1.5	1.6	1.2	1.6	2.0	1.2	1.2	1.7	1.8	2.1	1.5	2.4
Cape Canaveral	337	315	157	135	112	135	135	135	90	45	337	335
	1.5	1.4	1.4	1.4	1.3	1.3	1.6	1.3	1.1	1.4	1.3	1.4
Daytona Beach	202	225	225	68	68	68	90	67	67	45	0	0
	1.2	1.2	1.1	1.3	1.6	1.7	1.6	1.7	1.7	2.0	1.4	1.3
Fort Myers	23	225	45	67	68	90	281	68	67	45	45	22
	1.4	1.3	1.3	1.4	2.0	1.2	1.2	1.6	1.7	1.9	1.8	2.1
Homestead	112	112	90	90	90	90	112	90	90	65	67	112
	1.2	1.4	1.3	2.0	2.4	2.5	2.5	2.5	1.7	2.2	1.6	1.3
Jacksonville	225	247	270	270	270	68	90	45	45	45	225	225
	1.3	1.5	1.5	1.6	1.8	1.7	1.5	1.5	1.9	1.9	1.2	1.3
Key West	0	135	135	113	112	113	135	112	90	45	45	23
	1.1	1.3	1.6	1.3	2.1	1.8	1.7	2.2	1.2	1.9	1.5	1.5
Orlando	315	315	315	114	270	270	158	270	69	67	0	338
	1.2	1.1	1.1	1.1	1.4	1.2	1.1	1.3	1.3	1.3	1.4	1.2
Pensacola	180	202	180	135	158	180	180	203	22	157	0	337
	1.6	1.5	1.8	1.6	1.6	1.8	1.5	1.3	1.1	1.6	2.0	1.5
Perry Field	180	203	225	202	225	225	225	225	225	315	338	180
	1.8	3.8	1.6	3.0	3.2	4.0	2.5	2.2	2.2	1.3	2.3	1.3

El Centro	248	248	248	248	248	270	270	270	270	270	270	248
	1.6	2.0	2.9	3.6	3.8	3.7	2.1	2.3	2.6	4.1	1.6	1.4
Fort Bragg	113	315	315	315	337	315	338	337	337	135	113	135
	2.3	2.3	2.3	4.3	4.1	4.5	3.9	3.7	4.5	3.6	1.7	1.6
Fresno	157	315	315	315	315	293	293	293	315	158	135	315
	2.7	2.9	3.1	2.6	2.2	4.6	4.2	3.1	2.4	1.9	2.0	2.0
Marysville	157	135	315	135	135	135	135	157	315	135	315	338
	3.3	4.3	3.0	3.2	6.4	4.6	3.6	3.2	4.9	4.6	9.3	1.9
Merced	135	135	337	337	337	337	337	337	337	337	315	135
	3.8	3.5	3.3	4.2	3.3	3.6	4.0	4.0	3.6	3.6	3.5	4.1
Palmdale	247	225	247	225	225	225	225	225	225	225	248	225
	1.8	2.1	1.6	2.0	2.4	4.2	5.7	5.0	4.3	2.4	1.9	1.7
Riverside	23	338	293	293	293	293	315	293	293	293	67	69
	1.2	1.2	1.6	2.0	2.5	2.8	3.6	3.7	3.1	2.3	1.1	1.4
Salinas	135	135	135	293	292	292	292	315	315	315	135	135
	6.8	4.5	3.5	2.8	3.0	3.3	3.4	3.2	4.2	3.0	4.2	5.3
San Diego	180	180	180	202	248	203	293	248	293	203	180	337
	1.5	1.5	1.4	1.3	1.1	1.2	1.3	1.1	1.5	1.4	1.4	1.3
San Miguel I	157	157	337	337	315	315	293	315	315	293	294	337
	2.8	4.0	2.6	4.0	3.2	4.1	5.4	2.6	2.6	4.6	3.5	3.6
Santa Rosa	315	0	202	315	202	159	180	158	180	180	180	0
	3.1	1.9	1.6	1.6	1.4	1.4	2.7	2.1	1.6	1.7	1.5	4.8
Stockton	235	316	315	315	270	270	270	270	292	315	135	135
	4.0	2.2	2.5	2.0	1.7	2.4	3.1	2.9	2.5	3.7	2.1	2.3
Thermal	337	157	337	337	337	337	337	157	337	337	337	315
	2.4	2.6	2.3	4.3	3.0	4.4	3.7	4.3	4.1	2.6	2.8	3.4
Victorville	193	270	251	270	270	225	180	180	180	248	248	248
	1.1	1.2	1.3	1.4	1.3	1.1	2.0	1.8	1.4	1.2	1.3	1.4
Colorado												
Denver	315	315	293	338	338	159	338	0	158	0	270	0
	1.2	1.1	1.0	1.2	1.2	1.2	1.8	1.3	1.6	1.1	1.3	1.3
La Junta	248	292	247	0	45	225	67	203	46	248	0	270
	1.5	1.1	1.3	1.1	1.1	1.5	1.0	1.4	1.3	1.3	1.3	1.3
Pueblo	293	337	270	202	225	203	0	337	23	293	292	293
	1.6	1.2	1.6	1.3	1.4	1.3	1.2	1.1	1.2	1.1	1.4	1.5

• Clockwise from the north through 360°.

Sarasota	0	0	22	202	249	225	337	203	45	22	22	0
	1.6	1.6	1.6	1.3	1.4	1.3	1.3	1.3	2.3	1.7	1.6	1.6
Tallahassee	338	180	180	180	180	180	180	247	45	0	338	338
	1.8	1.5	1.7	1.7	1.4	1.2	1.5	1.2	1.5	1.2	1.9	2.1
Tampa	0	338	202	248	270	270	292	248	45	45	23	22
	1.3	1.2	1.0	1.1	1.3	1.3	1.2	1.3	1.4	2.0	1.7	1.6
Vero Beach	113	112	135	68	67	68	270	47	67	67	67	292
	1.5	1.2	1.3	1.3	1.6	1.6	1.6	1.1	1.8	2.4	1.1	1.2
W. Palm Beach	113	113	135	113	90	112	113	112	68	67	68	90
	1.3	1.5	1.6	1.6	1.6	1.5	2.3	1.8	1.8	2.1	1.4	1.3
Georgia												
Albany	178	180	158	135	222	247	225	225	45	45	293	296
	1.3	1.2	1.3	1.2	1.1	1.4	1.4	1.2	1.6	1.5	1.3	1.1
Athens	270	90	112	248	248	248	225	247	67	67	90	270
	1.4	1.4	1.5	1.4	1.6	1.3	1.5	1.5	2.0	1.8	1.5	1.4
Bainbridge	225	160	158	225	67	157	225	225	67	45	315	270
	1.1	1.0	1.4	1.2	1.1	1.1	1.5	1.3	1.9	1.3	1.5	1.2
Marietta	315	293	315	293	295	292	270	293	90	293	315	293
	1.5	1.5	1.5	1.5	1.3	1.4	1.2	1.4	1.5	1.5	1.9	1.7
Savannah	292	270	270	112	270	270	203	113	68	45	270	270
	1.5	1.6	1.3	1.2	1.2	1.2	1.2	1.1	1.2	1.9	1.3	1.4
Valdosta	270	225	180	203	247	68	225	45	67	67	270	247
	1.2	1.0	1.1	1.2	1.2	1.4	1.4	1.7	2.3	1.6	1.3	1.3
Waycross	293	293	90	90	113	90	0	67	67	67	0	23
	1.3	1.7	1.2	1.2	1.7	1.7	1.2	3.0	2.6	2.1	2.1	1.2
Idaho												
Boise	135	315	315	315	315	315	315	293	315	113	135	135
	3.4	4.9	2.9	3.1	2.6	2.7	2.2	1.7	2.7	2.3	3.5	3.0
Mountain Home	113	135	293	113	113	113	113	135	113	135	113	113
	2.2	2.6	2.4	2.5	2.3	2.0	2.1	2.1	2.3	3.0	2.4	2.3
Pocatello	180	203	247	247	247	225	225	225	247	247	225	203
	2.0	1.5	2.2	2.6	1.8	1.6	1.3	1.3	2.1	1.5	1.3	1.6
Illinois												
Belleville	315	315	293	315	315	90	248	338	2	338	315	315
	1.9	1.9	1.6	1.3	1.4	1.0	1.1	1.0	1.1	1.3	1.4	1.6
Glenview	225	246	23	203	23	203	23	23	203	203	203	225

Table 3 (continued)
PREVAILING WIND EROSION DIRECTION[a] AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[58]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	1.3	1.1	1.7	1.7	2.3	2.0	2.0	2.5	2.0	1.8	1.4	1.3
Lawrenceville	315	338	225	315	203	203	225	35	180	22	157	292
	1.3	1.2	1.6	1.1	1.8	1.7	1.8	1.6	1.8	1.3	1.2	1.2
Park Ridge	90	292	270	248	225	225	247	225	225	247	270	248
	1.2	1.3	1.4	1.2	1.4	1.2	1.3	1.5	1.2	1.4	1.2	1.2
Peoria	337	293	270	293	180	202	180	180	180	338	315	315
	1.3	1.4	1.2	1.3	1.2	1.3	1.3	1.5	1.7	1.5	1.3	1.2
Rantoul	203	315	248	203	202	224	225	202	202	180	180	158
	1.1	1.1	1.1	1.2	1.4	1.3	1.5	1.6	1.5	1.4	1.2	1.2
Rockford	247	270	248	248	225	247	248	203	203	203	244	292
	1.2	1.4	1.6	1.3	1.2	1.9	1.3	1.6	1.4	1.1	1.1	1.2
Indiana												
Bunker Hill	248	270	225	247	225	224	225	203	203	238	247	226
	1.3	1.7	1.5	1.3	1.5	1.4	1.6	1.6	1.4	1.3	1.5	1.4
Columbus	0	202	248	180	202	203	225	23	180	180	315	180
	1.3	1.1	1.0	1.1	1.5	1.4	1.2	1.4	1.6	1.6	1.1	1.1
Madison	249	270	292	248	158	202	248	202	338	338	247	270
	1.5	1.4	1.4	1.1	1.1	1.2	1.4	1.3	1.5	1.2	1.2	1.6
South Bend	225	270	90	315	338	338	338	0	180	180	225	225
	1.2	1.2	1.3	1.1	1.1	1.3	1.2	1.3	1.3	1.2	1.4	1.2
Iowa												
Burlington	293	293	270	293	248	202	225	0	315	202	315	292
	1.8	1.3	1.2	1.4	1.3	1.3	1.2	1.3	1.2	1.6	1.3	1.1
Des Moines	315	315	315	315	338	203	315	338	315	337	315	315
	1.5	1.1	1.4	1.6	1.3	1.1	1.3	1.2	1.1	1.5	1.7	1.3
Kansas												
Dodge City	0	0	0	0	180	180	180	180	180	180	0	0
	2.1	2.0	2.4	1.7	2.2	2.4	2.1	2.5	2.8	2.5	2.2	2.3
Goodland	338	338	338	338	180	180	180	180	180	158	337	338
	2.0	2.5	2.5	2.1	1.9	1.9	2.0	2.2	2.7	2.4	2.3	2.4

Olathe	180	180	180	180	180	202	202	202	180	180	180	180
	1.7	1.6	1.6	1.3	1.6	1.8	2.2	1.9	2.0	2.0	1.6	1.5
Salina	0	0	0	180	180	180	180	180	180	180	338	0
	2.0	1.9	1.8	1.6	1.8	2.0	2.1	2.0	2.7	2.1	1.8	1.7
Topeka	180	338	180	338	225	0	0	338	180	180	338	180
	1.5	1.5	1.6	1.4	1.2	1.7	1.5	1.2	2.0	2.2	1.5	1.6
Wichita	0	180	180	180	180	180	180	180	180	180	180	180
	2.5	2.1	1.6	2.1	2.1	2.3	2.1	1.9	2.3	2.9	2.1	1.8
Maine												
Bangor	337	337	337	338	338	0	338	337	338	338	338	315
	1.9	1.7	1.7	1.5	1.6	1.6	1.5	1.4	1.6	1.6	1.7	1.9
Brunswick	0	338	338	0	180	202	180	202	202	0	0	0
	1.9	1.6	1.5	1.6	1.9	1.8	1.5	1.8	2.0	1.5	1.4	1.5
Caribou	293	292	293	293	315	315	293	293	292	293	292	292
	1.8	1.6	1.9	1.7	1.5	1.2	1.3	1.4	1.3	1.6	1.6	1.6
Maryland												
Aberdeen	315	315	315	315	0	202	202	22	22	0	315	315
	1.3	1.9	1.6	1.3	1.3	1.3	1.6	1.7	1.4	1.4	1.5	1.5
Annapolis	315	315	315	338	180	180	180	180	180	180	315	315
	1.8	1.9	1.7	1.5	1.5	1.8	2.0	2.0	2.0	1.2	1.4	1.7
Frederick	293	315	315	315	315	315	293	315	315	315	293	293
	2.6	2.9	4.0	2.1	1.9	1.9	2.3	1.3	1.8	1.8	2.6	2.8
Massachusetts												
Bedford	293	293	292	292	270	247	225	225	23	248	293	292
	1.4	1.5	1.3	1.2	1.1	1.4	1.4	1.3	1.2	1.3	1.1	1.5
Chicopee Falls	337	315	338	338	0	180	180	180	0	0	0	315
	1.5	2.0	1.6	1.6	1.6	1.9	2.1	2.1	1.9	1.7	1.5	1.6
Nantucket	315	293	292	23	225	225	225	204	23	45	315	292
	1.4	1.4	1.3	1.3	1.6	1.9	1.9	1.6	1.5	1.3	1.2	1.3
Worcester	248	248	67	270	248	225	248	45	45	67	248	248
	1.9	2.1	1.5	1.7	1.7	1.8	1.8	2.2	3.2	2.2	1.4	1.6
Michigan												
Battle Creek	248	248	248	270	247	248	248	270	270	225	225	225
	1.4	1.4	1.6	1.4	1.5	1.5	1.5	1.3	1.3	1.2	1.3	1.5
Cadillac	248	248	292	292	225	225	247	225	246	203	203	247
	1.4	1.3	1.2	1.5	1.4	1.2	1.3	1.4	1.2	1.4	1.2	1.5

Table 3 (continued)

PREVAILING WIND EROSION DIRECTION• AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[58]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flint	225	270	248	248	247	248	248	225	225	225	225	225
	1.4	1.4	1.6	1.4	1.3	1.6	1.4	1.8	1.2	1.2	1.6	1.5
Marquette	0	338	0	0	0	180	202	0	180	180	180	180
	1.8	1.8	1.9	1.7	2.1	1.8	1.9	2.9	1.7	2.0	1.8	1.8
Mt. Clemens	225	225	225	203	180	201	202	180	180	202	203	225
	1.5	1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.6	1.5	1.4	1.4
Muskegon	248	270	248	225	205	225	225	203	203	203	225	270
	1.7	1.6	1.4	1.2	1.5	1.7	1.4	2.3	1.4	1.4	1.5	1.1
Oscoda	338	315	270	239	227	270	202	225	248	224	226	315
	1.2	1.2	1.2	1.3	1.1	1.1	1.1	1.3	1.2	1.2	1.1	1.0
Pellston	270	270	270	270	270	248	248	248	248	248	292	270
	1.4	1.7	1.6	1.5	1.5	1.6	2.0	1.7	1.5	1.3	1.4	1.4
Sault Ste. Marie	292	293	293	293	293	293	293	293	293	293	293	292
	1.8	2.3	2.5	2.9	2.5	2.6	3.1	2.2	2.3	2.3	1.9	2.1
Traverse City	203	202	202	202	203	225	203	203	202	202	180	225
	1.3	1.3	1.4	1.4	1.6	1.7	1.6	1.6	1.5	1.7	1.7	1.3
Ypsilanti	248	270	270	270	270	270	270	270	270	248	248	248
	1.5	1.6	1.9	1.8	1.5	1.6	1.6	1.3	1.5	1.3	1.6	1.5
Minnesota												
Duluth	292	270	293	90	90	248	270	68	270	248	293	293
	1.9	1.6	1.3	1.7	1.7	2.0	1.7	1.5	1.8	1.3	1.6	1.7
Int. Falls	292	270	293	292	292	293	292	315	315	293	293	292
	1.4	1.5	1.3	1.4	1.3	1.4	1.5	1.3	1.3	2.3	1.5	1.9
Minneapolis	315	293	292	293	292	293	180	180	315	315	315	293
	1.5	1.7	1.4	1.5	1.3	1.3	1.0	1.2	1.4	1.6	1.7	1.4
Rochester	337	315	315	315	157	158	157	180	180	157	315	337
	2.0	1.9	1.7	1.8	1.6	1.8	1.7	2.1	2.0	2.1	1.6	1.6

Montana												
Billings	203	202	315	0	315	0	0	338	338	338	316	291
	1.4	1.2	1.3	1.3	1.3	1.1	1.4	1.4	1.5	1.2	1.0	1.2
Cut Bank	270	270	270	270	270	247	270	270	270	270	248	270
	4.5	3.3	2.2	2.3	1.9	1.3	2.5	2.5	2.1	1.9	2.6	4.4
Glasgow	293	294	293	293	293	112	292	113	293	293	293	293
	2.9	3.0	2.8	2.1	2.2	2.2	2.3	2.3	2.6	3.9	3.6	3.6
Great Falls	225	225	225	247	248	248	247	248	247	225	225	225
	3.2	3.3	1.9	1.6	1.8	1.6	1.6	1.5	1.9	2.1	3.5	3.6
Helena	180	270	292	293	292	292	293	293	293	270	248	293
	1.4	1.8	1.6	1.5	1.6	1.8	1.4	1.4	1.7	1.2	1.3	1.2
Lewistown	270	270	270	292	293	293	315	292	293	293	225	226
	1.7	1.4	2.1	1.9	2.7	2.0	1.5	2.1	1.6	1.5	1.5	1.6
Miles City	315	293	293	315	293	292	315	315	315	293	293	293
	1.8	1.7	2.1	2.6	2.0	1.8	1.6	1.6	1.9	2.3	3.1	2.5
Missoula	112	292	292	248	270	270	293	315	315	338	293	113
	1.5	1.4	1.5	1.4	1.2	1.3	1.5	1.2	1.2	1.5	1.6	1.6
Nebraska												
Grand Island	338	338	338	0	180	180	180	180	180	158	338	338
	2.2	2.1	1.6	1.6	1.7	2.0	1.6	1.9	2.2	2.4	1.9	2.1
Lincoln	338	337	338	158	337	158	158	158	158	338	337	338
	2.4	1.5	1.5	1.6	1.6	1.6	1.8	1.5	1.8	1.7	2.1	2.1
North Platte	338	338	338	338	338	158	158	158	180	338	338	338
	2.3	2.6	2.1	2.6	2.2	2.4	2.0	2.6	2.4	3.1	3.0	3.4
Omaha	337	337	337	315	180	158	169	158	158	338	337	338
	2.9	1.7	1.7	1.9	1.7	1.6	1.7	1.3	2.0	1.9	2.1	2.1
Scottsbluff	292	293	315	315	337	294	135	315	0	315	337	292
	2.1	2.0	1.9	1.6	1.7	1.6	1.4	1.8	1.3	2.3	2.9	2.7
Nevada												
Fallon	225	203	247	270	270	292	292	248	315	247	159	180
	1.6	1.5	1.2	1.4	1.2	1.8	1.5	1.5	1.1	1.5	1.2	1.5
Las Vegas	180	0	203	225	203	225	225	203	225	203	22	0
	1.8	1.4	1.7	1.9	2.2	2.6	2.0	2.0	2.6	1.9	1.8	1.8
Mercury	180	0	202	180	202	180	181	180	180	180	180	180
	2.8	2.1	2.2	2.2	2.3	2.9	1.3	3.2	2.8	2.8	3.2	3.7

Table 3 (continued)
PREVAILING WIND EROSION DIRECTION[a] AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[58]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Reno	180	180	158	157	293	293	293	292	315	158	180	180
	2.2	2.1	1.3	1.6	1.6	2.4	2.4	2.7	1.2	1.5	2.1	2.2
Tonopah	157	315	315	315	315	157	158	180	158	315	315	337
	3.0	3.0	3.2	2.7	2.3	2.3	2.1	2.6	2.6	2.5	3.1	2.6
New Hampshire												
Concord	315	315	315	315	315	315	315	315	315	315	315	315
	2.8	2.8	2.2	2.0	2.2	1.8	2.1	1.8	1.6	1.9	2.0	3.0
Manchester	315	315	294	293	315	315	158	315	337	337	315	292
	1.7	1.6	1.4	1.6	1.3	1.2	1.3	1.5	1.4	1.5	1.5	1.8
Portsmouth	315	293	293	293	293	292	315	337	158	315	315	315
	1.4	1.9	1.6	1.4	1.4	1.2	1.4	1.2	1.1	1.4	1.4	1.4
New Jersey												
Atlantic City	292	292	292	292	293	304	180	202	315	270	293	293
	2.2	2.0	1.9	1.6	1.3	1.2	1.2	1.3	1.2	1.1	1.7	1.6
Lakehurst	270	270	270	248	248	247	225	225	225	247	248	270
	1.8	2.0	1.9	1.5	1.7	1.8	2.1	1.7	1.7	1.8	1.6	1.8
Trenton	292	293	292	292	292	249	225	225	22	67	293	292
	1.2	1.6	1.4	1.2	1.2	1.2	1.4	1.1	1.4	1.2	1.5	1.4
New Mexico												
Albuquerque	112	293	293	113	112	135	135	113	113	135	112	113
	1.8	1.6	1.5	1.4	1.3	1.5	1.4	1.9	1.4	1.3	1.4	1.5
Hobbs	248	270	247	270	247	180	180	202	203	202	225	247
	1.8	1.5	2.1	1.3	1.2	1.3	1.6	1.8	2.7	1.8	1.7	1.3
Roswell	202	190	203	202	180	180	180	158	180	180	202	180
	1.6	1.5	1.3	1.7	1.6	2.0	2.2	2.0	2.6	2.2	1.4	1.5
New York												
Geneva	315	293	157	0	337	338	202	180	180	180	180	180
	2.0	1.9	1.8	2.4	2.4	1.8	2.8	2.1	2.3	2.1	1.8	1.4
New York	292	292	292	292	292	157	158	180	158	270	270	292
	1.6	1.9	1.7	1.5	1.1	1.4	1.4	1.2	1.1	1.1	1.5	1.7

Niagara	247	247	226	225	225	225	225	225	225	225	225	247
	1.7	1.5	1.6	2.0	1.6	1.8	2.1	2.2	1.7	1.7	1.8	2.0
Plattsburgh	293	315	315	315	135	135	315	135	157	135	157	157
	1.3	1.3	1.6	1.6	2.0	1.8	1.6	2.1	1.8	2.1	1.3	1.5
Rome	292	293	293	293	293	315	293	293	293	315	293	292
	2.7	3.1	2.6	2.5	2.5	2.1	1.7	2.1	1.9	1.7	2.2	2.5
Schenectady	293	293	293	293	293	292	292	293	293	293	292	293
	5.6	2.8	2.4	1.6	2.6	2.2	2.5	1.9	1.5	2.1	2.0	2.7
West Hampton	315	293	292	248	225	225	225	225	225	67	0	292
	1.2	1.5	1.2	1.2	1.2	1.4	1.8	1.6	1.6	1.3	1.1	1.2
North Carolina												
Cherry Point	23	203	203	203	203	203	203	23	23	23	23	23
	1.7	1.7	2.0	2.6	2.9	2.5	2.8	2.2	2.5	2.3	2.0	1.7
Hatteras	0	22	202	202	203	203	203	203	23	23	0	22
	1.2	1.5	1.4	1.8	2.8	2.6	2.9	1.6	1.7	1.9	1.6	1.3
Jacksonville	337	315	225	207	203	180	203	45	26	23	1	0
	1.3	1.3	1.2	1.6	1.9	1.5	2.1	2.0	1.7	2.4	1.2	1.3
Weeksville	22	202	225	203	225	23	45	45	45	22	338	23
	1.9	2.0	1.5	2.7	1.7	1.6	3.1	2.4	3.8	2.0	3.1	1.6
Wilmington	180	180	338	202	202	180	202	202	0	0	0	0
	1.4	1.5	1.1	1.3	2.0	2.1	2.5	1.6	1.4	2.0	2.0	1.4
Winston-Salem	225	247	225	225	225	45	225	45	45	45	45	225
	1.2	1.2	1.2	1.4	2.3	2.2	2.2	2.3	2.8	2.2	1.5	1.3
North Dakota												
Bismarck	315	293	325	315	315	293	315	157	315	315	315	315
	1.7	2.0	1.3	1.7	1.8	1.7	1.5	1.4	2.1	2.0	2.4	2.4
Fargo	337	337	337	315	337	315	157	158	315	315	337	337
	2.5	2.0	1.9	1.7	1.5	1.2	1.7	1.6	1.6	1.9	2.4	2.2
Grand Forks	338	337	338	337	337	270	337	158	315	337	337	337
	3.2	2.5	2.1	2.0	1.5	1.2	1.4	1.7	1.3	1.8	2.5	2.5
Minot	315	315	315	315	315	293	315	337	293	315	315	315
	1.7	1.8	1.7	1.5	1.5	1.3	1.5	1.4	1.7	1.8	2.2	1.6
Ohio												
Cincinnati	203	225	247	225	225	225	225	225	225	225	225	225
	1.5	1.3	1.3	1.6	1.6	1.8	1.7	1.8	1.8	1.7	1.5	1.6
Cleveland	248	270	247	247	203	225	203	293	202	203	247	225
	1.3	1.2	1.3	1.3	1.3	1.2	1.4	1.1	1.2	1.4	1.3	1.2

Table 3 (continued)
PREVAILING WIND EROSION DIRECTION[a] AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[38]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Columbus	315	270	247	225	203	202	202	0	180	180	225	203
	1.1	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2
Dayton	292	270	270	248	247	225	246	225	203	224	247	225
	1.1	1.3	1.4	1.3	1.3	1.3	1.4	1.2	1.2	1.2	1.2	1.1
Toledo	247	247	248	247	247	225	204	225	248	225	220	225
	1.4	1.5	1.4	1.6	1.7	1.4	1.1	1.3	1.4	1.5	1.6	2.0
Youngstown	248	270	248	248	248	247	225	202	225	225	247	247
	1.4	1.5	1.6	1.4	1.2	1.1	1.3	1.3	1.3	1.3	2.0	1.7
Oklahoma												
Oklahoma City	0	180	180	180	180	180	180	180	180	180	180	180
	2.6	2.4	1.7	2.4	2.1	2.1	2.1	2.0	2.1	3.1	2.6	2.5
Tulsa	0	180	0	0	180	180	180	180	180	0	0	180
	2.6	2.8	1.8	2.2	2.2	2.7	2.0	1.9	2.8	2.7	2.7	2.1
Oregon												
Astoria	203	202	203	202	315	315	315	315	180	203	202	203
	1.6	1.6	1.5	1.2	1.3	1.7	3.1	2.1	1.4	2.3	2.1	1.8
Klamath Falls	180	158	157	157	337	320	337	337	158	159	158	158
	1.8	1.8	1.3	1.5	1.6	1.3	2.0	1.8	1.4	1.9	2.0	1.4
Medford	157	136	157	315	315	293	315	315	315	157	152	158
	1.5	1.5	1.5	1.6	2.3	1.7	1.7	2.2	1.7	1.7	1.9	2.6
Pendleton	248	270	270	270	270	270	270	270	270	270	270	270
	1.2	2.0	3.1	4.1	4.8	4.2	3.2	3.9	3.7	3.1	2.7	1.7
Portland	180	202	202	180	180	158	315	315	180	180	180	180
	1.1	1.5	1.2	1.5	1.4	1.3	1.8	1.8	1.2	1.6	1.1	1.2
Redmond	180	158	315	315	315	315	315	315	337	180	180	180
	1.6	1.8	1.6	1.7	2.6	1.9	2.7	2.7	3.2	1.7	1.5	2.4
Salem	180	180	180	180	180	202	0	0	180	180	180	180
	6.6	5.4	3.8	2.1	1.6	1.4	1.7	1.8	2.6	4.5	5.6	5.5
Rhode Island												
Quonset Point	0	338	0	0	202	202	202	180	0	22	0	338
	1.6	1.3	1.5	1.6	2.0	2.2	2.2	2.1	2.2	2.0	1.5	1.3
South Carolina												
Beaufort	247	270	292	180	270	23	202	225	45	45	202	225

	1.2	1.7	1.6	1.3	1.4	1.5	1.9	1.3	1.6	2.3	1.2	1.3
Florence	203	225	225	225	225	203	203	203	45	23	23	225
	2.1	2.3	1.6	1.5	1.4	2.3	1.8	2.2	1.8	2.1	1.9	1.8
Greenville	45	45	225	225	45	45	45	45	45	45	45	45
	2.0	2.4	2.0	1.9	2.4	2.1	2.0	2.3	3.3	2.7	2.3	2.3
Myrtle Beach	225	225	225	203	203	202	203	202	225	45	247	247
	1.3	1.2	1.2	1.3	1.8	1.7	2.3	2.0	1.4	1.3	1.2	1.4
Sumter	225	225	225	225	225	203	225	45	45	45	225	225
	1.7	1.8	1.5	1.6	1.6	1.4	1.9	1.7	3.1	2.3	1.9	1.7
South Dakota												
Huron	337	337	337	337	157	158	158	158	158	315	315	315
	2.9	2.6	2.6	1.8	1.8	1.9	2.3	2.6	2.0	2.4	2.5	2.7
Rapid City	337	337	337	337	337	337	337	337	337	337	337	315
	2.7	2.9	3.0	2.4	2.0	2.4	2.4	2.3	2.7	2.6	3.0	2.9
Sioux Falls	337	338	315	337	315	315	158	158	337	338	315	337
	2.2	1.5	1.5	1.9	1.4	1.4	1.6	1.6	1.6	1.7	2.3	2.0
Texas												
Amarillo	203	0	225	203	203	202	180	202	202	202	202	23
	1.9	1.7	1.3	1.4	1.3	1.9	1.4	1.9	2.1	2.0	1.7	1.8
Austin	0	0	346	0	180	180	180	0	0	0	0	0
	2.3	1.8	1.7	1.8	2.1	1.9	1.7	1.9	1.9	2.1	2.4	1.8
Brownsville	157	157	157	135	135	135	135	135	157	135	337	158
	3.6	2.6	2.1	2.1	3.1	3.0	3.7	2.5	1.4	1.7	3.2	2.9
Corpus Christi	158	157	158	157	157	157	157	135	135	157	158	338
	3.1	3.0	2.4	2.3	2.3	3.4	2.7	1.8	1.3	1.7	2.5	2.3
Dalhart	225	225	225	203	225	203	202	202	203	203	203	23
	2.4	2.2	2.3	1.8	2.0	2.2	2.3	2.3	2.8	2.6	2.0	2.2
Dallas	180	158	158	180	180	180	180	180	180	180	180	178
	2.9	2.2	1.9	2.3	2.2	2.6	2.1	1.9	1.9	2.5	1.8	2.1
Galveston	337	337	337	135	157	158	180	180	41	135	0	338
	1.9	1.5	1.4	1.3	1.9	2.2	2.3	1.5	1.4	1.2	2.0	1.3
Houston	158	158	158	157	157	180	180	158	45	68	0	338
	1.9	1.6	1.6	1.8	1.7	1.9	1.8	1.6	1.2	1.4	1.6	1.6
Laredo	155	135	135	135	135	135	135	135	135	135	157	157
	1.9	1.8	1.7	2.4	2.9	3.5	3.8	3.2	1.7	2.2	1.8	2.0
Lubbock	227	247	248	225	202	180	180	180	202	203	214	248
	1.3	1.2	1.5	1.1	1.3	1.9	2.0	1.5	2.0	1.6	1.2	1.2

Table 3 (continued)
PREVAILING WIND EROSION DIRECTION[a] AND PREPONDERANCE OF PREVAILING WIND EROSION FORCES IN THE PREVAILING WIND EROSION DIRECTION[58]

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Midland	247	270	225	293	180	180	180	180	180	180	225	0
	1.6	1.1	1.2	1.1	1.5	1.8	1.7	1.5	1.8	1.9	1.4	1.1
Port Arthur	315	180	180	158	158	180	180	22	23	338	158	158
	1.5	1.6	2.2	2.1	2.3	1.6	1.2	1.3	1.3	1.3	1.4	1.4
San Angelo	225	225	204	203	180	180	180	180	202	202	23	225
	1.5	1.3	1.1	1.5	1.8	2.0	2.8	1.6	1.8	1.7	2.1	2.7
San Antonio	23	337	338	21	135	135	135	135	45	22	0	0
	1.6	1.3	1.2	1.1	1.7	1.6	1.9	1.7	1.2	1.5	2.1	1.6
Waco	0	0	180	180	180	180	202	202	202	22	0	0
	2.5	2.4	2.5	2.4	2.5	3.0	2.4	2.3	2.0	2.4	2.5	2.6
Wichita Falls	1	0	338	180	158	180	180	180	180	180	338	0
	1.9	1.6	1.5	1.8	1.9	2.3	1.5	1.4	1.8	2.1	1.6	1.6
Utah												
Dugway	180	0	0	0	0	180	180	180	0	180	0	180
	4.0	3.2	2.8	1.9	2.0	2.1	1.8	2.2	2.0	2.2	2.6	2.6
Ogden	180	45	180	23	67	67	68	67	68	68	67	22
	1.4	1.3	1.3	1.2	1.3	1.2	1.9	1.6	2.1	2.2	1.3	1.1
Salt Lake City	158	157	158	180	337	157	180	157	158	157	158	158
	2.6	2.5	1.7	1.6	1.7	1.7	1.6	1.9	2.4	1.5	2.4	2.4
Wendover	338	315	315	315	315	337	338	157	315	315	315	315
	1.4	1.9	1.9	2.1	1.6	1.5	1.4	1.3	1.6	1.9	1.8	1.9
Virginia												
Blackstone	221	225	203	225	225	225	221	203	203	23	203	225
	1.8	1.2	1.2	1.6	1.9	1.8	2.3	1.6	1.8	1.7	1.5	1.3
Chincoteague	315	293	292	182	225	228	203	203	45	45	315	301
	1.4	1.3	1.3	1.1	1.2	1.1	1.5	1.3	1.7	1.4	1.3	1.3
Hampton	0	0	22	0	202	203	203	22	22	0	0	0
	1.5	1.3	1.4	1.5	1.5	1.7	1.9	1.7	2.1	2.1	1.6	1.5
Oceana	0	353	225	203	225	45	225	67	45	22	338	0
	1.7	1.1	1.1	1.4	1.2	1.5	2.2	1.4	1.5	1.4	1.5	1.3

Quantico	337	337	315	180	180	180	180	180	180	349	338	337
	1.7	1.4	1.3	1.2	1.4	1.2	1.6	1.5	1.7	1.3	1.5	1.5
Washington												
Everett	158	158	158	158	158	338	0	338	338	158	158	158
	2.5	2.4	2.7	2.3	2.7	3.5	2.9	3.1	4.0	2.8	2.5	2.6
Kelso	158	158	158	158	338	338	338	338	0	158	158	158
	7.7	6.3	3.8	2.3	1.8	1.6	1.9	1.8	3.3	4.5	9.2	9.2
Moses Lake	0	180	225	227	270	225	270	0	0	180	0	180
	2.5	1.9	1.3	1.1	1.1	1.2	1.1	1.2	1.3	1.6	1.6	1.9
Olympia	202	203	203	225	247	225	225	225	225	202	203	203
	3.1	2.9	2.3	2.3	2.2	2.3	2.3	2.3	2.3	2.6	2.8	3.1
Spokane	203	203	225	225	225	203	203	203	225	202	203	203
	4.1	2.8	2.5	3.1	3.4	2.1	1.9	1.6	2.6	3.4	3.9	3.5
Tacoma	203	203	203	225	225	225	225	225	203	203	202	202
	2.4	2.6	2.1	2.0	1.9	1.8	1.4	1.4	2.2	2.3	2.2	2.4
Walla Walla	202	180	202	225	225	225	225	225	225	180	180	180
	2.6	2.4	1.8	2.8	2.7	2.9	2.7	2.4	2.7	2.4	2.3	5.5
Whidbey Island	135	135	135	135	270	270	225	270	135	135	135	135
	2.7	2.5	1.9	1.7	1.4	1.7	1.6	1.2	2.2	2.7	2.8	2.8
Yakima	203	223	221	293	293	315	337	315	293	180	180	203
	2.3	1.0	1.1	1.2	1.7	1.8	1.7	2.0	1.5	1.1	1.1	1.4
Wisconsin												
Green Bay	292	228	225	247	225	225	225	225	225	225	270	227
	1.2	1.3	1.4	1.2	1.4	1.5	1.3	1.9	1.7	1.3	1.3	1.2
La Crosse	315	315	315	315	329	157	336	225	315	315	315	338
	1.6	1.9	1.8	1.8	1.1	1.2	1.4	1.2	1.5	1.5	1.9	1.0
Madison	315	270	250	270	248	247	248	225	247	247	270	248
	1.2	1.3	1.4	1.5	1.3	1.3	1.3	1.3	1.3	1.1	1.4	1.2
Milwaukee	225	225	23	225	225	203	202	225	203	180	225	247
	1.2	1.2	1.3	1.1	1.2	1.2	1.7	1.3	1.2	1.2	1.4	1.1
Wyoming												
Cheyenne	270	270	270	315	292	293	337	315	292	293	292	270
	2.4	1.7	1.2	1.5	1.4	1.3	1.5	1.2	1.4	1.7	1.9	2.3
Sheridan	315	315	315	315	315	315	315	315	315	246	315	292
	3.4	2.5	3.0	3.1	2.7	3.1	2.4	2.5	3.0	3.2	3.4	2.3

Table 4
WIND EROSION DIRECTION FACTOR

Preponderance	Angle of deviation (°)										
	0	5	10	15	20	25	30	35	40	45	50
1.0	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
1.2	1.55	1.57	1.60	1.65	1.70	1.74	1.77	1.81	1.84	1.88	1.92
1.4	1.40	1.43	1.46	1.51	1.55	1.60	1.65	1.71	1.78	1.86	1.95
1.6	1.30	1.34	1.38	1.42	1.46	1.51	1.55	1.64	1.73	1.85	1.97
1.8	1.23	2.26	3.30	2.35	1.40	1.44	1.48	1.59	1.70	1.85	2.00
2.0	1.19	1.24	1.30	1.32	1.35	1.39	1.44	1.55	1.67	1.85	2.04
2.2	1.17	1.22	1.27	1.30	1.33	1.37	1.41	1.53	1.66	1.87	2.08
2.4	1.15	1.20	1.25	1.28	1.31	1.35	1.40	1.52	1.65	1.88	2.12
2.6	1.13	1.18	1.23	1.27	1.31	1.35	1.40	1.53	1.67	1.91	2.16
2.8	1.11	1.16	1.22	1.26	1.30	1.36	1.41	1.56	1.71	1.96	2.22
3.0	1.09	1.14	1.20	1.25	1.30	1.36	1.43	1.59	1.75	2.02	2.29
3.2	1.08	1.14	1.19	1.25	1.31	1.38	1.45	1.64	1.82	2.09	2.37
3.4	1.07	1.13	1.19	1.25	1.31	1.40	1.48	1.68	1.89	2.18	2.47
3.6	1.06	1.12	1.18	1.25	1.32	1.42	1.52	1.76	2.00	2.31	2.62
3.8	1.05	1.11	1.18	1.25	1.33	1.45	1.57	1.84	2.11	2.45	2.78
4.0	1.04	1.10	1.17	1.26	1.35	1.48	1.61	1.91	2.22	2.59	2.95

Table 5

DEVIATIONS OF CURVE OF E_2 vs L FROM REFERENCE FOR USE IN DETERMINING E_4 (50)

SOIL LOSS, E_2 TONS/A./YR. and TONS/HA./YR.		MEDIAN UNSHELTERED DISTANCE ACROSS FIELD, L (METERS AND FEET)																		
		3,048	2,438	1,829	1,219	914	610	305	244	183	122	91	61	30	24	18	12	9	6	3
METRIC	ENGLISH	10,000	8,000	6,000	4,000	3,000	2,000	1,000	800	600	400	300	200	100	80	60	40	30	20	10
672	300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	1.00	2.75	3.50	4.90	6.90	8.50	11.00	15.50
650	290	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.75	1.25	3.00	3.75	5.10	7.00	8.75	11.50	16.00
628	280	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.75	1.50	3.50	4.25	5.80	7.90	9.50	12.00	16.50
605	270	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.80	1.80	3.90	4.70	6.00	8.10	10.00	12.50	17.00
583	260	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.00	1.80	3.70	4.50	6.00	8.20	10.10	12.80	17.50
560	250	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.00	2.00	4.00	5.00	6.50	8.75	10.60	13.00	17.60
538	240	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.75	1.10	2.10	4.20	5.20	7.00	9.00	11.00	13.50	18.20
516	230	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.95	1.50	2.50	4.80	5.90	7.50	9.75	11.50	14.00	18.60
493	220	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.00	1.60	2.80	5.00	6.10	7.90	10.00	11.80	14.30	18.80
471	210	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.75	1.50	2.00	3.30	5.90	6.90	8.20	10.40	12.20	14.50	18.90
448	200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.80	1.50	2.10	3.40	6.00	7.00	8.75	10.90	12.50	15.00	19.40
426	190	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.80	1.00	2.00	2.80	4.00	6.10	7.00	8.80	11.00	12.60	15.10	19.75
403	180	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.50	1.00	1.90	2.50	3.90	6.50	7.50	9.20	11.40	12.70	15.80	20.00
381	170	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.75	1.10	2.00	3.00	4.25	7.00	8.00	9.80	11.80	13.00	16.00	20.00
359	160	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.90	1.40	2.40	3.10	4.80	7.40	8.50	10.10	12.30	14.00	16.50	20.60
336	150	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.90	1.50	2.50	3.50	5.00	7.75	8.90	10.50	12.60	14.50	17.00	21.00
314	140	0.00	0.00	0.00	0.00	0.00	0.00	0.75	1.00	1.80	2.90	3.60	5.20	8.00	9.00	10.60	12.90	14.50	17.00	21.00
291	130	0.00	0.00	0.00	0.00	0.00	0.00	0.80	1.00	1.95	3.00	3.90	5.40	8.00	9.20	11.00	13.00	14.90	17.30	21.10
269	120	0.00	0.00	0.00	0.00	0.00	0.25	1.10	1.80	2.60	3.80	4.75	6.20	9.00	10.00	11.80	13.80	15.50	17.75	21.50
247	110	0.00	0.00	0.00	0.00	0.00	0.30	1.50	1.95	2.90	4.00	5.00	6.75	9.50	10.60	12.30	14.50	16.20	18.60	22.50
224	100	0.00	0.00	0.00	0.00	0.00	0.30	1.50	2.00	3.00	4.25	5.40	7.00	10.00	11.00	13.00	15.00	16.50	19.20	23.00
202	90	0.00	0.00	0.00	0.00	0.00	0.50	1.80	2.25	3.30	4.80	5.90	7.60	10.60	11.50	13.45	15.75	17.50	19.80	24.00
179	80	0.00	0.00	0.00	0.00	0.20	0.75	2.00	2.50	3.60	4.90	6.00	7.60	10.70	11.90	13.60	16.00	17.50	20.00	24.00
157	70	0.00	0.00	0.00	0.50	0.80	1.00	2.75	3.20	4.00	5.25	6.20	8.00	10.80	12.00	13.75	16.00	18.00	20.50	26.10
134	60	0.00	0.00	0.00	0.25	0.60	1.20	2.90	3.30	4.40	5.70	6.80	8.45	11.50	12.70	14.75	17.00	19.00	21.70	26.50
112	50	0.00	0.00	0.00	0.50	0.90	1.50	3.00	3.75	4.80	6.00	7.10	9.00	12.40	13.55	15.60	18.00	20.10	23.00	28.00
90	40	0.00	0.00	0.00	0.60	1.00	1.90	3.50	4.20	5.20	6.80	7.90	9.80	13.10	14.50	16.50	19.20	21.00	-1.00	-1.00
78	35	0.00	0.00	0.25	0.80	1.40	2.10	3.95	4.50	5.60	7.00	8.10	10.10	13.90	15.25	17.40	20.50	-1.00	-1.00	-1.00
67	30	0.00	0.00	0.25	0.90	1.30	2.20	4.00	4.80	6.00	7.50	8.90	11.00	15.00	16.40	19.00	-1.00	-1.00	-1.00	-1.00
56	25	0.00	0.00	0.40	1.00	1.80	2.50	4.50	5.30	6.75	8.25	9.90	12.00	16.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
45	20	0.00	0.00	0.50	1.00	1.80	2.50	5.00	5.80	7.10	9.10	10.80	13.80	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
34	15	0.00	0.25	0.75	1.20	2.00	3.25	5.50	6.50	8.00	10.10	12.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
22	10	0.00	0.25	0.50	1.50	2.00	3.10	5.75	6.80	8.60	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
11	5	0.00	0.60	1.00	2.00	2.75	3.75	6.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00

SCALE USED WITH TABLE ABOVE FOR DETERMINING SOIL LOSS E_4

SCALE DIVISIONS

SOIL LOSS E_3 = I'K'C' OR E_4 = I'K'C' f(L') (TONS/A./YR. AND TONS/HA./YR.)

ENGLISH	420	380	340	300	280	260	240	220	200	180	160	140	120	100	90	80	70	60	50	40	30	25	20	15	10	5	2	1	.05
METRIC	941	852	762	672	628	583	538	493	448	403	359	314	269	224	202	179	157	134	112	90	67	56	45	34	22	11	4		

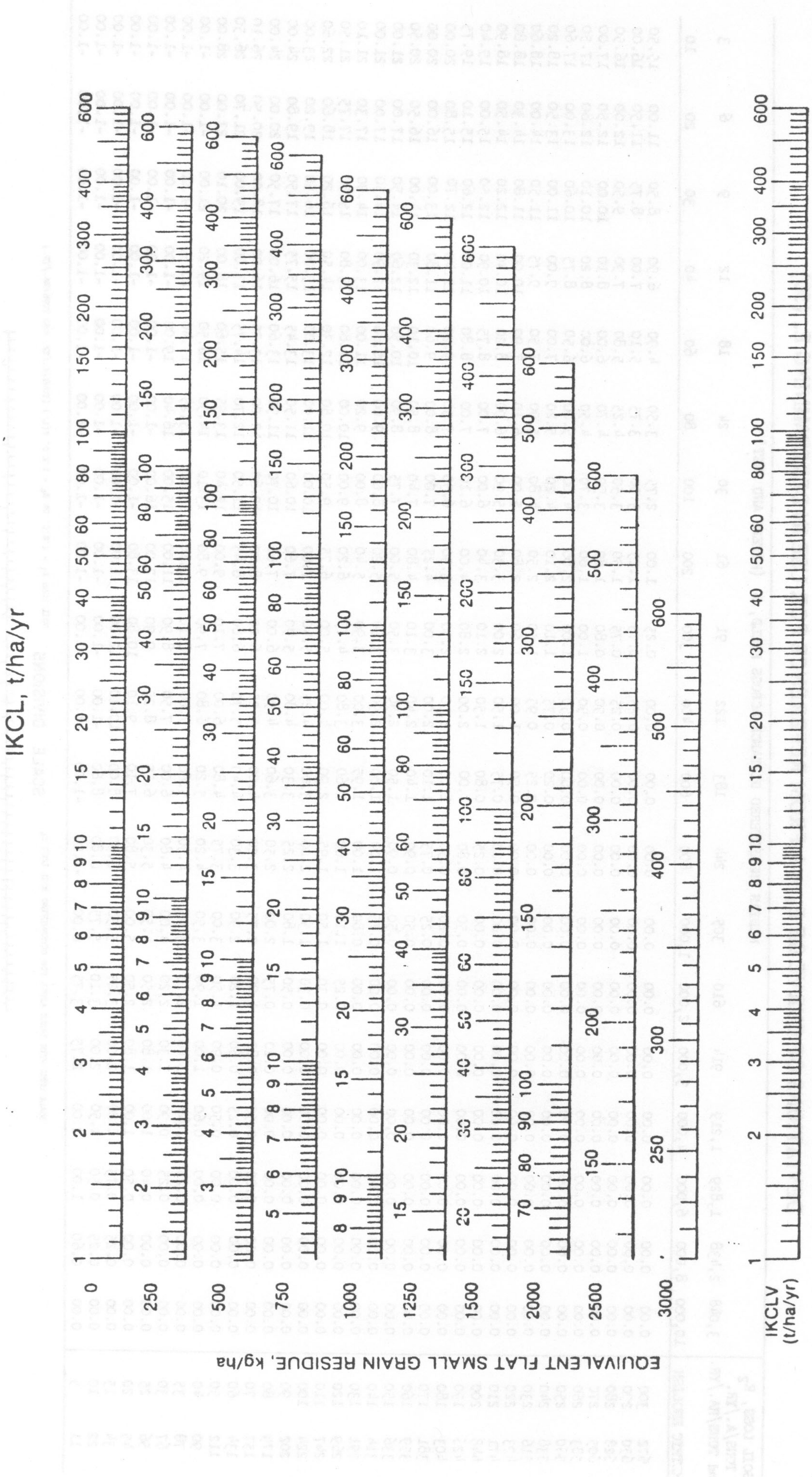

FIGURE 2. Chart for determining soil loss E = IKCLV from soil loss E_r = IKCL and from equivalent flat small grain residue.

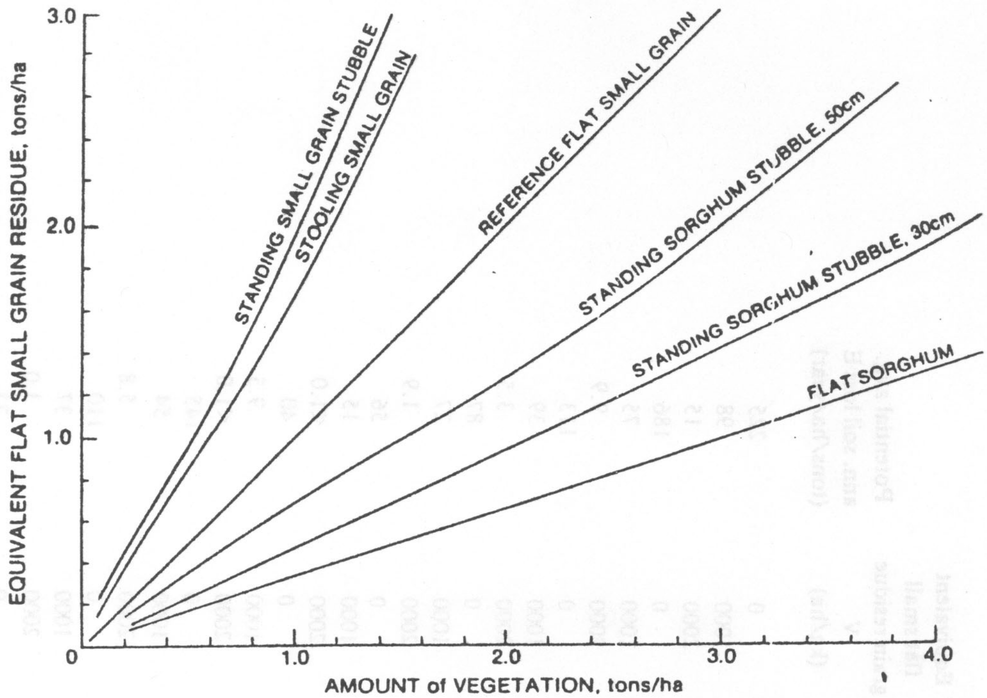

FIGURE 3. Wind erosion protection of small grain and sorghum stubble compared with flat small grain residue. (Adapted from Woodruff, N. P. and Siddoway, F. H.[22])

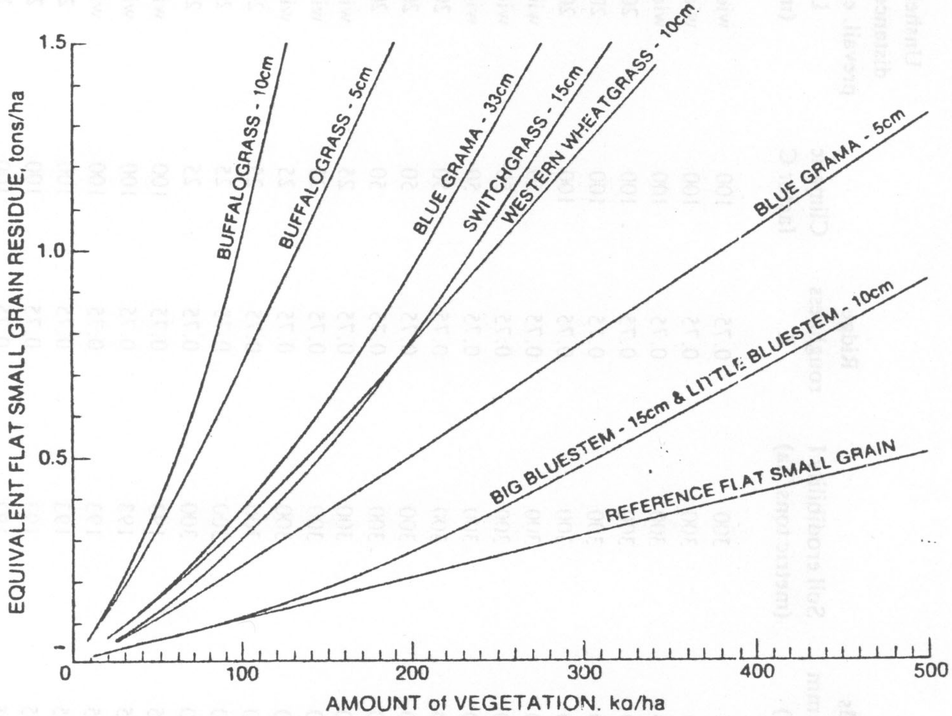

FIGURE 4. Wind erosion protection of various range grasses compared with flat small grain residue. (Adapted from Lyles, L. and Allison, B. E.[41])

Table 6
POTENTIAL AVERAGE ANNUAL SOIL LOSS AS INDICATED BY SOLVING THE WIND EROSION EQUATION FOR INDICATED LEVELS OF THE FACTORS INFLUENCING WIND EROSION

Clods >0.84 mm (%)	Soil erodibility I (metric tons/ha)	Ridge roughness K	Climatic factor C	Unsheltered distance along prevail. erod. dir. L (m)	Equivalent flat small grain residue V (kg/ha)	Potential avg. ann. soil loss E (tons/ha/year)
10	300	0.75	100	wide*	0	225
10	300	0.75	100	wide	1000	98
10	300	0.75	100	wide	2000	15
10	300	0.75	100	200	0	186
10	300	0.75	100	200	1000	75
10	300	0.75	100	200	2000	9.9
10	300	0.75	50	wide	0	113
10	300	0.75	50	wide	1000	39
10	300	0.75	50	wide	2000	3.5
10	300	0.75	50	200	0	87
10	300	0.75	50	200	1000	27
10	300	0.75	50	200	2000	1.9
10	300	0.75	25	wide	0	56
10	300	0.75	25	wide	1000	15
10	300	0.75	25	wide	2000	<1.0
10	300	0.75	25	200	0	40
10	300	0.75	25	200	1000	9.5
10	300	0.75	25	200	2000	<1.0
25	193	0.75	100	wide	0	145
25	193	0.75	100	wide	1000	54
25	193	0.75	100	wide	2000	5.8
25	193	0.75	100	200	0	110
25	193	0.75	100	200	1000	37
25	193	0.75	100	200	2000	3.0
25	193	0.75	50	wide	0	73
25	193	0.75	50	wide	1000	21

25	193	0.75	50	wide	2000	1.3
25	193	0.75	50	200	0	56
25	193	0.75	50	200	1000	15
25	193	0.75	50	200	2000	<1.0
25	193	0.75	25	wide	0	36
25	193	0.75	25	wide	1000	8.2
25	193	0.75	25	wide	2000	<1.0
25	193	0.75	25	200	0	22.4
25	193	0.75	25	200	1000	4.4
25	193	0.75	25	200	2000	<1.0
40	126	0.75	100	wide	0	95
40	126	0.75	100	wide	1000	30
40	126	0.75	100	wide	2000	2.4
40	126	0.75	100	200	0	63
40	126	0.75	100	200	1000	17
40	126	0.75	100	200	2000	<1.0
40	126	0.75	50	wide	0	47
40	126	0.75	50	wide	1000	12
40	126	0.75	50	wide	2000	<1.0
40	126	0.75	50	200	0	27
40	126	0.75	50	200	1000	5.6
40	126	0.75	50	200	2000	<1.0
40	126	0.75	25	wide	0	24
40	126	0.75	25	wide	1000	8
40	126	0.75	25	wide	2000	<1.0
40	126	0.75	25	200	0	9.6
40	126	0.75	25	200	1000	1.4
40	126	0.75	25	200	2000	<1.0

• Any further increase in field width would not increase the wind erosion hazard. This condition usually occurs in a field between 500 and 1000 m wide.

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