

HIGHLY ERODIBLE LAND

INTRODUCTION

General

The basis for identifying highly erodible land is the erodibility index of a soil map unit. The erodibility index of a soil is determined by dividing the potential erodibility for each soil by the soil loss tolerance (T) value established for the soil. The T value represents the maximum annual rate of soil erosion that could take place without causing a decline in long-term productivity. A soil map unit with an erodibility index of 8 or more is a highly erodible soil map unit.

Water Erosion

Potential erodibility for sheet and rill erosion is calculated by multiplying the following factors of the Universal Soil Loss Equation (USLE):

1. Rainfall and runoff factor (R)
2. Susceptibility of the soil to water erosion (K)
3. Combined effects of slope length and steepness (LS)

The erodibility index for sheet and rill erosion is represented by the formula $R*K*LS/T$. For complex map units, the factors for the primary map unit are used.

- A soil map unit is highly erodible if the $R*K*LS/T$ value using the minimum LS factor is equal to or greater than 8.
- A soil map unit is potentially highly erodible if the $R*K*LS/T$ value using the minimum LS factor is less than 8 and the $R*K*LS/T$ value using the maximum LS factor is equal to or greater than 8.
- A soil map unit is not highly erodible if the $R*K*LS/T$ value using the maximum LS factor is less than 8.

Wind Erosion

Potential erodibility for wind erosion is calculated by multiplying the following factors of the Wind Erosion Equation (WEQ):

1. Climatic characterization of wind speed and surface soil moisture (C)
2. The susceptibility of the soil to wind erosion (I)

The erodibility index for wind erosion is represented by the formula $C*I/T$. For complex map units, the factors for the primary map unit are used.

- A soil map unit is highly erodible if the $C*I/T$ value is equal to or greater than 8.
- A soil map unit is not highly erodible if the $C*I/T$ value is less than 8.

Key to 1990 Frozen Factors

The USLE and WEQ factors in effect as of January 1, 1990 are used as a basis of determining erodibility.

- C = Climatic factor from Wind Erosion Equation (WEQ)

- R = Rainfall factor from Universal Soil Loss Equation (USLE)
- T = Soil loss tolerance
- I = Erodibility factor from Wind Erosion Equation (WEQ)
- K = Erodibility factor from Universal Soil Loss Equation (USLE)

Key to Highly Erodible Land Classification

1. HEL = Highly Erodible Land
 2. PHEL = Potentially Highly Erodible Land
 3. NHEL = Not Highly Erodible Land
- Wind = highly erodible classification due to wind erosion
 - Water = highly erodible classification due to sheet and rill erosion
 - Map Unit = combined Wind and Water highly erodible classification as follows:
 - 1 Either Wind is 1, Water is 1, or both Wind and Water are 1
 - 2 Wind is 3 and Water is 2 or both Wind and Water are 2
 - 3 Both Wind and Water are 3

Status of HEL Reports

All HEL reports have been updated to show all applicable frozen factors (as of January 1, 1990) and HEL classification together. District Conservationists are authorized to approve offsite determinations on PHEL map units as follows:

1. Document a minimum of 20 onsite conditions for a PHEL map unit. Documentation of findings must be maintained in applicable case files with summary information and reference of specific site findings maintained in correspondence file 180-12-5 labeled "PHEL Documentation".
2. If at least 85% of any given PHEL map unit is either HEL or NHEL, the respective classification can be used for all offsite determinations for that map unit.
3. If at least 85% of the any given PHEL map unit is not either HEL or NHEL, onsite determinations for that map unit must be completed when that map unit will affect the HEL determination for a field.
4. LS is the only factor that can be determined on site. LS can be checked onsite for any map unit. For example, the actual LS for a HEL map unit could result in that map unit being NHEL within a specific field and vice versa.