

SECTION II A. SOILS INFORMATION

3. HEL (Highly Erodible Land) INTERPRETATIONS

General

This subsection contains the official Highly Erodible Land (HEL) Soils Lists that were generated in response to the conservation provisions of the 1985 Farm Bill known as the Food Security Act (FSA) of 1985. Separate lists were prepared for each Soil Survey Area found within the Field Office service area. These lists were officially frozen as of January 1, 1990.

The primary use of each list is for performing HEL Determinations in response to AD-1026 requests from the USDA Farm Service Agency. They are the official source of USLE "K" and "T" and WEQ "I" factors (with the exception of I = 310) used to make HEL Determinations.^{1/}

The basis for identifying highly erodible land (HEL) 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 estimated 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 $RKLS/T$. A soil map unit is highly erodible (HEL) if the LS factor for the shortest length and minimum percent of slope is used and the $RKLS/T$ value equals or exceeds 8.

A soil map unit is potentially highly erodible (PHEL) if: (1) the $RKLS/T$ value using the minimum LS factor is less than 8, and (2) the $RKLS/T$ value using the maximum LS factor is equal to or greater than 8.

^{1/} Soil scientists were instructed to use the highest "I" value for soil mapping units placed in Wind Erodibility Group 1. Therefore, assigned "I" values of 310 need to be adjusted to 160 if the soil texture is coarse sand and to 220 if the soil texture is fine sand or sand. The 310 value applies if the soil texture is very fine sand.

Wind Erosion

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

1. climatic characterization of windspeed 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 CI/T . A soil map unit is highly erodible if the CI/T value equals or exceeds 8.

HEL Lists

Each HEL list contains all the soil mapping units in a Soil Survey Area. When a soil mapping unit symbol is listed more than once, it indicates that it is a complex or an association and there are special instructions on handling these during HEL Determinations. All of the possible HEL classifications of a soil mapping unit may not appear on the list.

Some soil mapping units extend into several USLE "R" zones and also across several WEQ "C" zones. The most representative "R" and "C" values for a soil mapping unit in that soil survey area were used for some Lists. The highest "R" value and highest "C" value for each of the soil mapping units were used for other lists. Supplemental HEL Soils Lists covering additional "R" zones have been developed for some soil survey areas.

HEL Determinations are based on the site-specific "R" value or, in the case of wind erosion, on the site-specific "C" value. Use of the site-specific "LS" value is also permitted.

Map units such as "Miscellaneous areas" - e.g. sandy alluvial land, and units classified at higher categoric levels of taxa - e.g. (xerorthents) - have highly variable soil characteristics. For these map units a default "Error" value or a value of (2) on the HEL soils list indicates the soil map unit is too variable to classify. An on-site evaluation is made for these units to determine their classification. Site specific HEL Determinations are made when a soil mapping unit is:

- a) rated PHEL Class 2.
- b) rated HEL Class 1 and the site-specific "R" value or "C" value or "I" value is lower.
- c) rated HEL Class 3 and the site-specific "R" value or "C" value or "I" value is higher.
- d) rated ERROR or ERRO

An explanation of the codes used in classifying mapping units follows:

NHEL - Soil does not meet the requirements for Highly Erodible Lands.

PHEL - Range of soil characteristics for the soil as mapped fall within and outside of the requirements for Highly Erodible Land.

HEL - Soil meets the requirements for Highly Erodible Lands.

This subsection contains:

HEL and PHEL soil mapping units (Available through local USDA-NRCS Service Centers)