

## II. EROSION PREDICTION MODELS

### A. Introduction

This subsection contains guidance, data, and NRCS approved techniques for predicting soil erosion that occurs in the area serviced by this office. Related materials on file in the office will be referenced here with their location indicated.

### B. Water Erosion – Sheet and Rill

Rainfall induced sheet and rill erosion is the most frequently predicted water erosion problem on sloping cropland fields. The Revised Universal Soil Loss Equation (RUSLE) is used to predict the average rate of soil erosion in tons per acre per year. RUSLE is currently available as a module in the Unix-based Field Office Computer System (FOCS), is also available in DOS format, and will soon be available in a WINDOWS-based version (called RUSLE2). Instructions, guidance and limitations on the use of RUSLE are in the *Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE) - USDA Agricultural Handbook 703*, and the *California Water Erosion Prediction Guide (USDA, NRCS)*.

For highly erodible land (HEL) determinations (as required by the 1985 Farm Bill), the Universal Soil Loss Equation (USLE) is used. Instructions on making HEL determinations is found in the *National Food Security Act Manual*. Background on the development of the USLE and instructions for its use are found in *USDA Agricultural Handbook 537 – Predicting Rainfall Erosion Losses*.

### C. Water Erosion – Ephemeral Gully

Rainfall induced ephemeral gullies occur on sloping cropland but are shallow enough to be erased by normal tillage. A method to predict soil losses from this form of concentrated flow water erosion is described in the *California Water Erosion Prediction Guide*.

### D. Water Erosion - Gully

Rainfall induced classic gullies may be found on all land uses and are too wide and deep to be erased by normal tillage. Predicting soil losses from this form of concentrated flow water erosion is described in the *California Erosion Prediction Guide*.

### E. Water Erosion - Irrigation

Irrigation induced soil erosion is primarily rill erosion in the irrigation furrows caused by a large furrow stream size. Current prediction methods include the FUSED procedure.

## F. Wind Erosion

Where wind erosion is a problem, the Wind Erosion Equation (WEQ) is used to predict average soil loss in tons per acre per year for the cropping sequence. The WEQ applies to cropland, pastureland, and rangeland and is described in the *California Wind Erosion Prediction Guide*.