CHOOSING THE PLANNING AREA OF A FIELD FOR SHEET AND RILL EROSION TREATMENT

When Conservation Planning involves sheet and rill erosion resource problems, NRCS requires the use of the Revised Universal Soil Loss Equation to estimate the erosion rate on the field or conservation treatment unit and to compare erosion rates of alternative treatment systems to the soil loss tolerance value.

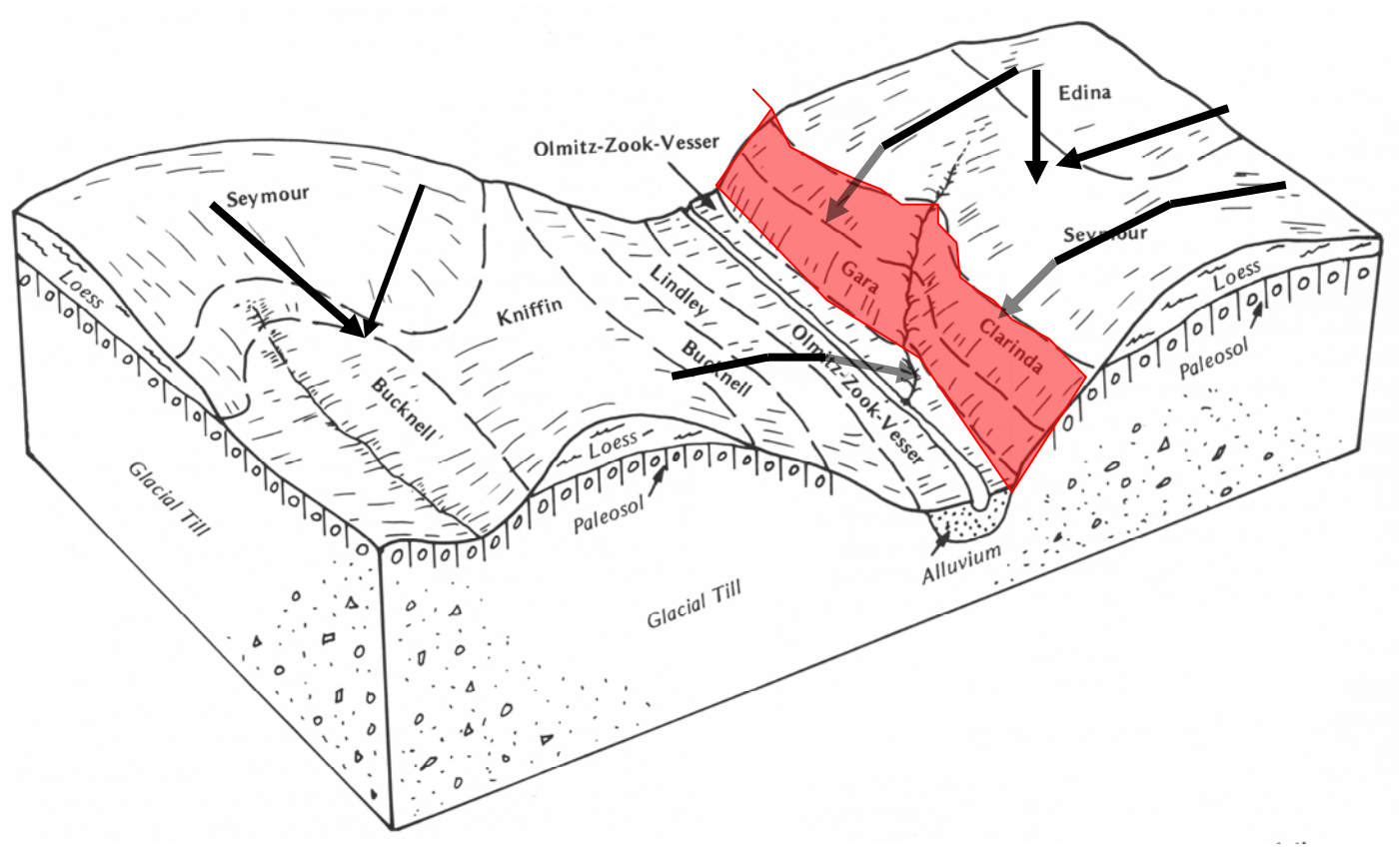
Fields rarely are comprised of a single soil map unit with uniform topography. Thus, a method is needed to evaluate the field to choose the “dominant critical area” or “significant critical area” of the field to use as a basis for erosion calculations. The “dominant critical area” or “significant critical area” would then be used to develop conservation treatment to address the sheet and rill erosion concerns in the field or conservation treatment Unit (CTU).

Producers typically farm a whole field to the same cropping sequence (rotation) and residue management (tillage) system so we often plan the treatment for the whole field rather than splitting the field up into small tracts with different treatments. Supporting practices such as terraces, contouring or contour buffer strips may be planned for specific parts of the field to supplement the crop rotation and tillage system.

To insure that the treatment system is adequate for the significant landscapes of the field the “dominant critical area” needs to be identified.

Planners typically observe the field from a prominent location and together with the soil map, mentally divide the field into several landscapes and make an estimate of the size of each landscape

or the percentage each landscape comprises of the total field. Fields typically have flat upland landscape areas, sloping landscape areas and depositional landscape areas or bottomland landscape areas all in the same field. Obviously, the erosion rates are different in each of these landscapes with the sloping landscape having the higher erosion rates. Since erosion rates are different on different landscapes, the planning decisions need to address the quality criteria or soil loss tolerance “T” value for the "dominant or significant" eroding landscape areas.



Some fields may also have a small insignificant landscape area of 10% or less of the field or less than a couple of acres that is much steeper and more erosive. These areas are usually not dominant and it would be impractical to plan the treatment system for this

area and apply it to the whole field. This would significantly over treat the field and may be impractical to the producer. Opportunities exist to split out this landscape area and develop a different treatment for these small areas if needed to address the resource concerns and the landuser objectives.
Like wise, it is improper to plan the treatment for the largest common landscape in cases where it is the flattest and least erosive. In this case the other sloping landscape areas will be under treated. Additionally, planning to average slope or weighted average slope in the field is improper. Using average slopes or weighted average slopes misrepresents the actual field landscapes (slopes, length of slope, and soil types) in the field and would result in treatment systems that do not represent actual field landscapes. Average slopes and weighted average slopes are not appropriate for the use of RUSLE2 for conservation planning purposes.

The “dominant critical area” or “significant critical area” of the field or CTU is the landscape that if treated to the quality criteria level for sheet and rill erosion will adequately treat most of the field or CTU to the sheet and rill erosion quality criteria level (approximately 90% of the field or CTU).

The objective during the conservation planning process is to identify the “dominant or “significant critical landscapes” to use the RUSLE2 erosion prediction procedure and develop treatment alternatives with the landuser.