Natural drainage

Drainage is defined as a soil's capacity to eliminate excess water from the profile while continuing to hold enough water for normal plant growth. It is determined by (1) water content in excess of field capacity, and (2) duration of the period of water saturation (0 -100 cm). In the field, soil morphology is, in general, a good indication of soil drainage. But while soil morphology is a valid discriminant criterion, it cannot be used as an absolute criterion because of alterations resulting from human action (such as ditches, irrigation systems, subsoiling, subsurface drains and the like) (Agriculture Canada, 1973).

Seven drainage classes are distinguished: very rapid, rapid, good, moderately good, imperfect, poor and very poor (see Day and McMenamin (1983) for definitions of these classes). They are based on morphological criteria such as matrix colour, presence or absence of mottling, texture, depth, soil water-holding capacity and soil water withdrawal rate.

Drainage is an important property that affects a number of other soil qualities, such as degradation vulnerability. In interpretation models, natural drainage is useful in estimating drainage needs, bank instability and soil vulnerability to ferric clogging.

The map shows the distribution of drainage classes. Soils with rapid drainage (e.g. Sainte-Hélène series), good drainage (e.g. Saint-Thomas series) and moderately good drainage (e.g. Fleury series) account for 3% of the study area, soils with imperfect drainage (e.g. Sainte-Julie series) account for 5.8%, while soils with poor and very poor drainage account for 86.7% and 4.5% of the study area respectively.
The reason for the predominance of poorly drained soils is that the relief of the study area is relatively flat.