

TECHNICAL NOTES

February 10, 2003

MO-1 Technical Note Number 27 (Revised)

Re: OSD - Soil Drainage Class Guide MO-1

Within the MO-1 region, there are currently noticeable inconsistencies in the drainage classes assigned to soils with similar aquic conditions and redox feature expression. These differences can be attributed to variations in drainage class interpretation criteria between states and even between soil survey project areas within states.

It has become very clear, that application of one standard set of criteria to every soil series within MO-1, would result in significant changes to existing pre-assigned drainage classes. The soils we map have become known on a political land use level as synonymous with their drainage class, capability class, etc. and therefore, significant changes to these interpretations must be carefully considered.

In order to facilitate a more consistent approach when assigning drainage classes within the MO-1 region to new series and yet reduce the overall number of existing series impacted or needing revision, the attached guide is recommended. This guide uses as its foundation, the natural drainage classes as defined in the Soil Survey Manual (pg. 98-99). As with any guide, it is not possible to define all variations of soil moisture state features (i.e., aquic condition depth, duration, etc.) and soil taxonomic classification links. This MO-1 guide uses two sets of criteria based in a large part, on historic approaches used in assigning drainage classes. They should, therefore, minimize any changes to existing series concepts. In addition, this guide may not be applicable for situations such as saline/sodic influenced soils which most often lack redox features. Unique scenarios will still require use of local guides, experience, plant communities, topography, etc. in assigning drainage classes. It is important to document the drainage class guide convention used for your survey project area, whether county or MLRA based.

A drainage class is a soil interpretation and therefore can and will change based on the criteria used to assign the rating. As a result, using a drainage class to define or compete a series is not recommended. Rather, use depth to aquic conditions and redox depletions, concretions, nodules, etc. These are soil morphological characteristics and should always have a defined range. They will not vary based on interpretation criteria. These redox features should also fit within the taxonomic classification.

In addition, the NASIS soil moisture status data - wet as populated in the Component Month and Component Soil Moisture tables, should fall within the range defined in the official series description and map unit for the depth to high water table and redox features (refer to Technical Note 21).

SOIL DRAINAGE CLASS GUIDE

MO-1
3/00

DRAINAGE CLASS	DEPTH TO AQUIC CONDITIONS <u>1/</u> MLRA's A-1, A-2, A-3, A-4, A-5	CONDITIONS <u>1/</u> MLRA's B-6, B-7, B-8, B-9, B-10, B-11, B-12, B-13, E-43 (OR,WA)	SOIL TAXONOMY LINK	DURATION OF SATURATION <u>2/</u>	NOTES
Excessively drained	>60 inches	> 60 inches	Typically Udic, Ustic, Xeric, Aridic, or Typic subgroup class	Absent	Water is removed very rapidly. The occurrence of internal free water commonly is very rare or very deep. The soils are commonly coarse textured and have very high hydraulic conductivity. Coarse sands and sands, loamy sand and sands with rock fragments.
Somewhat excessively drained	> 60 inches	> 60 inches	Typically Udic, Ustic, Xeric, Aridic, or Typic subgroup class	Absent	Water is removed rapidly. The occurrence of internal free water is very rare or very deep. The soils are commonly moderately coarse and coarse textured with high saturated hydraulic conductivity. Medium sand, fine sand, loamy fine sands.
Well drained	40 to 60 inches	> 60 inches	Typically Udic, Ustic, Xeric, Aridic, or Typic subgroup class	Absent-Transitory (0 to 6 months)	Water is removed readily but not rapidly. The occurrence of internal free water is deep or very deep. Wetness does not inhibit growth of roots for significant periods during most growing seasons. The soils commonly have medium to fine textures. Very fine sandy loams, fine sandy loams, loams, silt loams, silty clay loams, clay loams, sandy clay, silty clay.
Moderately well drained	20 to 40 inches	40 to 60 inches	Typically Typic or Oxyaquic Subgroup may include Aquic subgroup.	Transitory-Common (1 to 6 months)	Water is removed somewhat slowly. The occurrence of internal free water is moderately deep or deep. The soils are wet for only a short time within the rooting depth during the growing season, but long enough that most mesophytic crops are affected. They commonly have a moderately low or lower saturated hydraulic conductivity.
Somewhat poorly drained	10 to 20 inches	20 to 40 inches	Typically Aquic Subgroups may include Oxyaquic subgroup.	Transitory-Persistent (1 to 12 months)	Water is removed slowly. The occurrence of internal free water commonly is shallow to moderately deep. Wetness restricts growth of mesophytic crops, unless artificial drainage is provided. They commonly have moderately low to very low saturated hydraulic conductivity.
Poorly drained	0 to 10 inches	10 to 20 inches	Typically Aquic Suborder	Common-Persistent (3 to 12 months)	Water is removed so slowly that the soil is wet at or near the surface periodically during the growing season. The occurrence of internal free water is shallow to very shallow. Most mesophytic crops cannot be grown without drainage, but the soil is not continuously wet directly below the plow pan. They commonly have low or very low saturated hydraulic conductivity.
Very poorly drained	+ to 6 inches	+ to 10 inches	Typically Aquic Suborder	Persistent-Permanent (12 months to continuous)	Water is removed so slowly that the soil is wet at or near the surface during much of the growing season. The occurrence of internal free water very shallow. Most mesophytic crops cannot be grown, and soils are frequently ponded.

1/ Aquic conditions by definition is indicated by the presence of redoximorphic features and can be verified by measuring saturation and reduction. Generally speaking, depth to aquic conditions will equate to the uppermost limit of the water table and chroma of 2 or less with/without redox concentrations. The Oxyaquic subgroup may or may not need chroma of 2 or less.

2/ Duration of saturation is defined in the Soil Survey Manual, page 101.