

Ponds and Embankments

Madison County, Tennessee

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ar:							
Arents	50	Not limited		Not rated		Not rated	
Urban land	50	Not limited		Not rated		Not rated	
Ca:							
Calhoun	50	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.03	Depth to saturated zone	1.00	Slow refill	0.97
				Piping	0.86	Cutbanks cave	0.10
Henry	50	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.03	Thin layer	1.00		
				Piping	1.00		
Co:							
Calloway	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.95	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Piping	1.00		
				Thin layer	0.95		
Cs:							
Collins	100	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Piping	1.00	Cutbanks cave	0.50
				Depth to saturated zone	0.98	Slow refill	0.30
						Depth to saturated zone	0.01
DuB:							
Dulac	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.99	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Thin layer	0.99		
				Piping	0.59		
DuB3:							
Dulac	100	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.03	Thin layer	1.00		
				Piping	0.74		

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DuC3:							
Dulac	100	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.03	Thin layer	1.00		
				Piping	0.74		
DuD3:							
Dulac	100	Very limited		Very limited		Very limited	
		Depth to cemented pan	1.00	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.03	Thin layer	1.00		
				Piping	0.81		
EuE:							
Eustis	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.11	Depth to water	1.00
		Slope	0.21				
Fa:							
Falaya	91	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
				Piping	1.00	Cutbanks cave	0.10
GrA:							
Grenada	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.88	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Piping	0.99		
				Thin layer	0.88		
GrB:							
Grenada	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.88	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Piping	0.99		
				Thin layer	0.88		
GrB3:							
Grenada	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.99	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Piping	0.99		
				Thin layer	0.99		

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GrC3:							
Grenada	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.99	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Thin layer	0.99		
				Piping	0.99		
lu:							
luka	100	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Piping	1.00	Cutbanks cave	0.10
				Depth to saturated zone	0.86	Depth to saturated zone	0.06
LeB:							
Lexington	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.75	Depth to water	1.00
LeB3:							
Lexington	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.80	Depth to water	1.00
LeC:							
Lexington	100	Very limited		Not rated		Very limited	
		Seepage	1.00			Depth to water	1.00
LeC3:							
Lexington	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.85	Depth to water	1.00
				Seepage	0.01		
LeD:							
Lexington	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.89	Depth to water	1.00
				Seepage	0.01		
LeD3:							
Lexington	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.85	Depth to water	1.00
LeE:							
Lexington	100	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.85	Depth to water	1.00
		Slope	0.05				
LgC:							
Lexington	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.75	Depth to water	1.00

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LgC:							
Urban land	50	Not limited		Not rated		Not rated	
LmE3:							
Lexington	50	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Piping	0.91	Depth to water	1.00
		Slope	0.03				
Smithdale	50	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.98	Depth to water	1.00
		Slope	0.21				
LoB:							
Loring	100	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	Depth to water	1.00
		Depth to cemented pan	0.70	Piping	0.76		
				Thin layer	0.70		
LoB3:							
Loring	100	Somewhat limited		Very limited		Very limited	
		Seepage	0.70	Depth to saturated zone	0.99	Depth to water	1.00
		Depth to cemented pan	0.56	Piping	0.71		
				Thin layer	0.56		
LoC3:							
Loring	100	Somewhat limited		Very limited		Very limited	
		Depth to cemented pan	0.98	Depth to saturated zone	1.00	Depth to water	1.00
		Seepage	0.70	Thin layer	0.98		
				Piping	0.80		
Ma:							
Mantachie	100	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Slow refill	0.30
				Piping	1.00	Cutbanks cave	0.10
MeA:							
Memphis	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.94	Depth to water	1.00
MeB:							
Memphis	100	Somewhat limited		Somewhat limited		Very limited	
		Seepage	0.70	Piping	0.95	Depth to water	1.00

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MeB2:							
Memphis	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.97	Very limited Depth to water	1.00
MeC3:							
Memphis	100	Somewhat limited Seepage	0.70	Somewhat limited Piping	0.99	Very limited Depth to water	1.00
Oc:							
Ochlockonee	100	Very limited Seepage	1.00	Very limited Piping	1.00	Somewhat limited Depth to saturated zone Cutbanks cave	0.81 0.10
PrB:							
Providence	100	Somewhat limited Depth to cemented pan Seepage	0.86 0.70	Very limited Depth to saturated zone Thin layer Piping	1.00 0.86 0.77	Very limited Depth to water	1.00
PrC3:							
Providence	100	Somewhat limited Depth to cemented pan Seepage	0.99 0.70	Very limited Depth to saturated zone Thin layer Piping	1.00 0.99 0.88	Very limited Depth to water	1.00
PrD3:							
Providence	100	Very limited Depth to cemented pan Seepage	1.00 0.03	Very limited Depth to saturated zone Thin layer Piping	1.00 1.00 0.91	Very limited Depth to water	1.00
SmE:							
Smithdale	100	Very limited Seepage Slope	1.00 0.03	Not limited		Very limited Depth to water	1.00
SmF:							
Smithdale	100	Very limited Seepage Slope	1.00 0.28	Not limited		Very limited Depth to water	1.00
SwD:							
Sweatman	100	Somewhat limited Seepage	0.03	Somewhat limited Hard to pack	0.17	Very limited Depth to water	1.00

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		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
SwE:							
Sweatman	100	Somewhat limited		Somewhat limited		Very limited	
		Slope	0.10	Hard to pack	0.17	Depth to water	1.00
		Seepage	0.03				
Vk:							
Vicksburg	100	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Piping	1.00	Depth to saturated zone	0.87
						Cutbanks cave	0.50
						Slow refill	0.30
Wa:							
Waverly	100	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Cutbanks cave	0.50
				Piping	1.00	Slow refill	0.30
Wf:							
Waverly	100	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Ponding	1.00	Cutbanks cave	0.50
				Depth to saturated zone	1.00	Slow refill	0.30
				Piping	1.00		

Ponds and Embankments

This table gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

"Pond reservoir areas" hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the saturated hydraulic conductivity (Ksat) of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

"Embankments, dikes, and levees" are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

"Aquifer-fed excavated ponds" are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, Ksat of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.