

Hydric Soils

Nicollet County, Minnesota

[This report lists only those map unit components that are rated as hydric. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the report]

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
35: Blue Earth mucky silt loam	Blue Earth	90	Depressions, Moraines	Yes	2B3, 3
	Canisteo	4	Rims	Yes	2B3
	Essexville	3	Rims	Yes	2B3
	Harps	3	Rims	Yes	2B3
41B: Estherville sandy loam, 1 to 6 percent slopes	Estherville	90	Hills, Stream terraces	No	---
	Dickman	4	Stream terraces	No	---
	Essexville	3	Drainageways	Yes	2B3
	Linder	3	Stream terraces	No	---
84: Brownton silty clay	Brownton	90	Flats, Moraines	Yes	2B3
	Okoboji	4	Depressions	Yes	2B3, 3
	Glencoe	3	Depressions	Yes	2B3, 3
	Rolfe	2	Depressions	Yes	2B3, 3
	Nicollet	1	Rises	No	---
86: Canisteo clay loam	Canisteo	90	Depressions, Flats, Moraines, Rims	Yes	2B3
	Glencoe	4	Depressions	Yes	2B3, 3
	Okoboji	3	Depressions	Yes	2B3, 3
	Crippen	2	Rises	No	---
	Nicollet	1	Rises	No	---

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
94B:					
Terril loam, 1 to 6 percent slopes	Terril	85	Hills, Moraines, Stream terraces	No	---
	Clarion	5	Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Lester	5	Moraines	No	---
94C:					
Terril loam, 6 to 12 percent slopes	Terril	85	Hills, Moraines, Stream terraces	No	---
	Clarion	5	Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Lester	5	Moraines	No	---
100B:					
Copaston loam, 1 to 6 percent slopes	Copaston	85	Hills, Stream terraces	No	---
	Joliet	10	Drainageways	Yes	2B3
	Tilfer	5	Depressions	Yes	2B3
102B:					
Clarion loam, 2 to 6 percent slopes	Clarion	90	Hills, Moraines	No	---
	Nicollet	4	Moraines	No	---
	Storden	3	Moraines	No	---
	Webster	3	Drainageways	Yes	2B3
106B:					
Lester loam, 2 to 6 percent slopes	Lester	90	Hills, Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Le Sueur	5	Moraines	No	---

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
106C2:					
Lester loam, 6 to 12 percent slopes, eroded	Lester, eroded	85	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Le Sueur	5	Moraines	No	---
	Storden	5	Moraines	No	---
109:					
Cordova clay loam	Cordova	90	Flats, Moraines, Swales	Yes	2B3
	Glencoe	4	Depressions	Yes	2B3, 3
	Le Sueur	3	Rises	No	---
	Rolfe	3	Depressions	Yes	2B3, 3
110:					
Marna silty clay loam	Marna	90	Flats, Moraines, Swales	Yes	2B3
	Le Sueur	5	Rises	No	---
	Okoboji	5	Depressions	Yes	2B3, 3
112:					
Harps clay loam	Harps	85	Depressions, Moraines, Rims	Yes	2B3
	Crippen	5	Rises	No	---
	Glencoe	5	Depressions	Yes	2B3, 3
	Okoboji	5	Depressions	Yes	2B3, 3
113:					
Webster clay loam	Webster	85	Flats, Moraines, Swales	Yes	2B3
	Glencoe	5	Depressions	Yes	2B3, 3
	Nicollet	5	Rises	No	---
	Rolfe	5	Depressions	Yes	2B3, 3

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
114: Glencoe silty clay loam	Glencoe	90	Depressions, Moraines	Yes	2B3, 3
	Canisteo	4	Rims	Yes	2B3
	Blue Earth	3	Depressions	Yes	2B3, 3
	Harps	3	Rims	Yes	2B3
118: Crippin loam	Crippin	85	Moraines, Rises	No	---
	Nicollet	5	Moraines	No	---
	Canisteo	4	Rims	Yes	2B3
	Harps	3	Rims	Yes	2B3
	Storden	3	Moraines	No	---
130: Nicollet clay loam	Nicollet	85	Moraines, Rises	No	---
	Webster	5	Drainageways	Yes	2B3
	Clarion	4	Moraines	No	---
	Canisteo	3	Rims	Yes	2B3
	Harps	3	Rims	Yes	2B3
134: Okoboji silty clay loam	Okoboji	90	Depressions, Moraines	Yes	2B3, 3
	Canisteo	4	Rims	Yes	2B3
	Blue Earth	3	Depressions	Yes	2B3, 3
	Harps	3	Rims	Yes	2B3
196: Joliet silty clay loam	Joliet	90	Flats, Stream terraces, Swales	Yes	2B3
	Copaston	10	Terraces	No	---

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
221:					
Canisteo silty clay loam, depressional	Canisteo, depressional	90	Depressions, Moraines	Yes	2B3, 3
	Canisteo	5	Rims	Yes	2B3
	Harps	5	Rims	Yes	2B3
239:					
Le Sueur clay loam	Le Sueur	90	Moraines, Rises	No	---
	Cordova	5	Drainageways	Yes	2B3
	Lester	5	Moraines	No	---
269:					
Millington clay loam	Millington, occasionally flooded	90	Flats, Flood plains, Swales	Yes	2B3
	Tilfer	4	Flood plains	Yes	2B3
	Du Page	3	Flood plains	Yes	2B3
	Minneiska	3	Flood plains	No	---
317:					
Oshawa silty clay loam	Oshawa, frequently flooded	90	Flood plains, Oxbows	Yes	2B3, 3, 4
	Klossner	5	Flood plains	Yes	1, 3, 4
	Millington	5	Flood plains	Yes	2B3
321:					
Tilfer silty clay loam	Tilfer	90	Flats, Stream terraces, Swales	Yes	2B3
	Copaston	5	Terraces	No	---
	Joliet	3	Flood plains	Yes	2B3
	Le Sueur	2	Moraines	No	---

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
327A:					
Dickman sandy loam, 0 to 2 percent slopes	Dickman	90	Flats, Stream terraces	No	---
	Dickinson	4	Stream terraces	No	---
	Biscay	3	Depressions	Yes	2B3
	Linder	3	Stream terraces	No	---
327B:					
Dickman sandy loam, 2 to 6 percent slopes	Dickman	90	Hills, Stream terraces	No	---
	Dickinson	4	Stream terraces	No	---
	Biscay	3	Depressions	Yes	2B3
	Linder	3	Stream terraces	No	---
329:					
Chaska loam	Chaska, occasionally flooded	90	Flats, Flood plains	No	---
	Minneiska	5	Flood plains	No	---
	Oshawa	5	Flood plains	Yes	2B3, 3
336:					
Delft clay loam	Delft	85	Drainageways, Moraines, Swales	Yes	2B3
	Glencoe	10	Depressions	Yes	2B3, 3
	Terril	5	Moraines	No	---
386:					
Okoboji mucky silty clay loam	Okoboji	90	Depressions, Moraines	Yes	2B3, 3
	Canisteo	4	Rims	Yes	2B3
	Blue Earth	3	Depressions	Yes	2B3, 3
	Harps	3	Rims	Yes	2B3

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
463A:					
Minneiska sandy loam, 0 to 2 percent slopes	Minneiska, occasionally flooded	90	Flats, Flood plains	No	---
	Millington	4	Flood plains	Yes	2B3
	Chaska	3	Flood plains	No	---
	Oshawa	3	Flood plains	Yes	2B3, 3
463B:					
Minneiska loam, 1 to 4 percent slopes	Minneiska, rarely flooded	90	Flats, Flood plains, Hills	No	---
	Millington	4	Flood plains	Yes	2B3
	Chaska	3	Flood plains	No	---
	Dickinson	2	Stream terraces	No	---
	Terril	1	Moraines	No	---
525:					
Muskego muck	Muskego	95	Depressions, Moraines	Yes	1, 3
	Glencoe	3	Depressions	Yes	2B3, 3
	Canisteo	2	Rims	Yes	2B3
574:					
Du Page loam	Du Page, occasionally flooded	90	Flats, Flood plains	No	---
	Millington	4	Flood plains	Yes	2B3
	Minneiska	3	Flood plains	No	---
	Nishna	3	Flood plains	Yes	2B3
575:					
Nishna silty clay loam	Nishna, occasionally flooded	90	Flats, Flood plains, Swales	Yes	2B3
	Minneiska	5	Flood plains	No	---
	Nishna	5	Flood plains	Yes	2B3, 3

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
851:					
Chaska-Minneiska-Urban land complex	Chaska	33	Flats, Flood plains	No	---
	Minneiska	32	Flats, Flood plains	No	---
	Urban land	30	Flood plains		---
	Oshawa	5	Flood plains	Yes	2B3, 3
854:					
Cordova-Urban land complex	Cordova	50	Flats, Moraines	Yes	2B3
	Urban land	40	Hills, Moraines		---
	Canisteo	4	Rims	Yes	2B3
	Glencoe	3	Depressions	Yes	2B3, 3
	Le Sueur	3	Moraines	No	---
920B:					
Clarion-Storden-Hawick complex, 2 to 6 percent slopes	Clarion	35	Hills, Moraines	No	---
	Hawick	25	Hills, Moraines	No	---
	Storden	25	Hills, Moraines	No	---
	Webster	10	Drainageways	Yes	2B3
	Nicollet	5	Moraines	No	---
920C2:					
Clarion-Storden-Hawick complex, 6 to 12 percent slopes, eroded	Clarion, eroded	35	Hills, Moraines	No	---
	Hawick, eroded	25	Hills, Moraines	No	---
	Storden, eroded	25	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Nicollet	5	Moraines	No	---
	Terril	5	Moraines	No	---

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
921B:					
Clarion-Storden complex, 2 to 6 percent slopes	Clarion	60	Hills, Moraines	No	---
	Storden	30	Hills, Moraines	No	---
	Nicollet	5	Moraines	No	---
	Webster	5	Drainageways	Yes	2B3
921C2:					
Clarion-Storden complex, 6 to 12 percent slopes, eroded	Clarion, eroded	60	Hills, Moraines	No	---
	Storden, eroded	30	Hills, Moraines	No	---
	Delft	4	Drainageways	Yes	2B3
	Nicollet	3	Moraines	No	---
	Terril	3	Moraines	No	---
944F:					
Lester-Storden-Estherville complex, 18 to 70 percent slopes	Lester	45	Hills, Moraines	No	---
	Estherville	20	Hills, Moraines	No	---
	Storden	20	Hills, Moraines	No	---
	Copaston	5	Terraces	No	---
	Delft	5	Drainageways	Yes	2B3
	Terril	5	Moraines	No	---
945D2:					
Lester-Storden complex, 12 to 18 percent slopes, eroded	Lester, eroded	60	Hills, Moraines	No	---
	Storden, eroded	30	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Terril	5	Moraines	No	---

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
945F:					
Lester-Storden complex, 18 to 70 percent slopes	Lester	60	Hills, Moraines	No	---
	Storden	30	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Terril	5	Moraines	No	---
960D2:					
Storden-Clarion complex, 12 to 18 percent slopes, eroded	Storden, eroded	50	Hills, Moraines	No	---
	Clarion, eroded	40	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Terril	5	Moraines	No	---
960F:					
Storden-Clarion complex, 18 to 50 percent slopes	Storden	60	Hills, Moraines	No	---
	Clarion	25	Hills, Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
	Hawick	5	Moraines	No	---
	Terril	5	Moraines	No	---
978:					
Cordova-Rolfe complex	Cordova	60	Flats, Moraines, Swales	Yes	2B3
	Rolfe	30	Depressions, Moraines	Yes	2B3, 3
	Le Sueur	10	Rises	No	---
1030:					
Udorthents-Pits, gravel complex	Udorthents	50	Moraines, Stream terraces	No	---
	Pits, gravel	40	Moraines, Stream terraces		---
	Biscay	10	Depressions	Yes	2B3, 3

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
1075:					
Klossner and Muskego soils, ponded	Klossner, ponded	55	Depressions, Moraines	Yes	1, 3
	Muskego, ponded	35	Depressions, Moraines	Yes	1, 3
	Canisteo	5	Rims	Yes	2B3
	Harps	5	Rims	Yes	2B3
1083:					
Le Sueur-Urban land complex	Le Sueur	50	Moraines, Rises	No	---
	Urban land	40	Moraines		---
	Cordova	5	Drainageways	Yes	2B3
	Lester	5	Moraines	No	---
1901B:					
Le Sueur-Lester complex, 1 to 6 percent slopes	Le Sueur	60	Moraines, Rises	No	---
	Lester	30	Hills, Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Storden	5	Moraines	No	---
1917:					
Nishna silty clay, ponded	Nishna, ponded	90	Backswamps, Flood plains	Yes	2B3, 3, 4
	Millington	10	Flood plains	Yes	2B3
1931:					
Essexville sandy loam	Essexville	90	Beach ridges, Moraines	Yes	2B3
	Canisteo	5	Rims	Yes	2B3
	Glencoe	5	Depressions	Yes	2B3, 3

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
1999:					
Minneiska-Kalmarville complex, frequently flooded	Minneiska, frequently flooded	60	Flats, Flood plains	No	---
	Kalmarville, frequently flooded	30	Flats, Flood plains, Meanders	Yes	2B3
	Millington	10	Flood plains	Yes	2B3
L13A:					
Klossner muck, depressional, 0 to 1 percent slopes	Klossner, drained	80	Depressions, Moraines	Yes	1
	Mineral soil, drained	15	Depressions, Moraines	Yes	2B3
	Houghton, drained	5	Depressions, Moraines	Yes	1
L83A:					
Webster clay loam, 0 to 2 percent slopes	Webster	65	Flats, Moraines, Swales	Yes	2B3
	Glencoe, depressional	14	Depressions, Moraines	Yes	2B3, 3
	Canisteo	8	Depressions, Flats, Moraines, Rims	Yes	2B3
	Nicollet	8	Flats, Moraines, Rises	No	---
	Poorly drained soil	5	Flats, Moraines, Swales	Yes	2B3
L84A:					
Glencoe clay loam, depressional, 0 to 1 percent slopes	Glencoe, depressional	80	Depressions, Moraines	Yes	2B3, 3
	Very poorly drained muck	10	Depressions, Moraines	Yes	2B3
	Canisteo	5	Depressions, Flats, Moraines, Rims	Yes	2B3
	Harps	5	Depressions, Rims	Yes	2B3
L85A:					
Nicollet clay loam, 1 to 3 percent slopes	Nicollet	85	Flats, Moraines, Rises	No	---
	Clarion	10	Hills, Moraines	No	---
	Webster	5	Flats, Moraines, Swales	Yes	2B3

Hydric Soils

Nicollet County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
L107A:					
Canisteo-Glencoe, depressional complex, 0 to 2 percent slopes	Canisteo	50	Moraines, Rims	Yes	2B3
	Glencoe, depressional	35	Depressions, Moraines	Yes	2B3, 3
	Harps	9	Moraines, Rims	Yes	2B3
	Canisteo, depressional	3	Depressions, Moraines	Yes	2B3
	Crippin	3	Flats, Moraines, Rises	No	---

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
 - 2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
 - 3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

References:

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. Version 5.0, 2002. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
- Soil Survey Staff. 2003. Keys to soil taxonomy, 9th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.