

In this section, hydric soils are defined and described and the hydric soils in the survey area are listed. 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 each 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 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, 1995). These criteria are used to identify a phase of a soil series that normally is associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (USDA, 1999) and "Keys to Soil Taxonomy" (USDA, 1998) and in the "Soil Survey Manual" (USDA, 1993).

If soils are wet enough for a long enough period 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 in this survey area are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 1996).

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 in the Hydric Soil Interpretations table meet the definition of hydric soils and, in addition, have at least one of the hydric soil indicators. 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, 1996).

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

These map units, in general, do not meet the definition of hydric soils because they do not have one of the hydric soil indicators. A portion of these map units, however, may include hydric soils. Onsite investigation is recommended to determine whether hydric soils occur and the location of the included hydric soils.

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
017IN: IRWIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES, ERODED	IRWIN	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
017IR: IRWIN SILTY CLAY LOAM, 3 TO 5 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
017IS: IRWIN SILTY CLAY LOAM, 3 TO 5 PERCENT SLOPES, ERODED	IRWIN	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
031CS: CLARESON-SHIDLER SILTY CLAY LOAMS, 1 TO 8 PERCENT SLOPES	CLARESON	No	ridge	---	---	---	---
	SHIDLER	No	rim	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---
031DE: DENNIS SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES, ERODED	DENNIS	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
	OLPE	No	paleoterrace	---	---	---	---
031ES: ERAM-SHIDLER SILTY CLAY LOAMS, 4 TO 15 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	SHIDLER	No	rim	---	---	---	---
	OLPE	No	hillslope	---	---	---	---
031LU: LULA SILT LOAM, 0 TO 2 PERCENT SLOPES	LULA	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	KENOMA	No	hillslope	---	---	---	---
031SA: SUMMIT SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
031SC: SUMMIT SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
	LULA	No	hillslope	---	---	---	---
	SHIDLER	No	rim	---	---	---	---
073DN: DENNIS SILT LOAM, 4 TO 7 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
073DS: DENNIS SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	DENNIS	No	hillslope	---	---	---	---
073EC: ERAM SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	Unnamed soil	No	hillslope	---	---	---	---
127IN: IRWIN SOILS, 1 TO 3 PERCENT SLOPES, ERODED	IRWIN	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	LADYSMITH	No	paleoterrace	---	---	---	---
	UNNAMED HYDRIC SOIL (saturation)	Yes	hillslope, marsh	2B3	YES	NO	NO
127SN: SMOLAN SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	SMOLAN	No	paleoterrace	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
139EN: ERAM SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	ELMONT	No	hillslope	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
139LS: LEBO-SUMMIT SILTY CLAY LOAMS, 7 TO 12 PERCENT SLOPES	LEBO	No	hillslope	---	---	---	---
	SUMMIT	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	ROCK OUTCROP	Unranked	---	---	---	---	---
139LU: LULA SILT LOAM, 1 TO 3 PERCENT SLOPES	LULA	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	ERAM	No	hillslope	---	---	---	---
	KENOMA	No	divide	---	---	---	---
139SN: SUMMIT SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
139SO: SUMMIT SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	SUMMIT	No	hillslope	---	---	---	---
	CLARESON	No	hillslope	---	---	---	---
	LEBO	No	hillslope	---	---	---	---
	LULA	No	hillslope	---	---	---	---
197CM: CLIME SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	WAMEGO	No	hillslope	---	---	---	---
197EO: ELMONT SILT LOAM, 3 TO 7 PERCENT SLOPES	ELMONT	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	hillslope	---	---	---	---
	WAMEGO	No	hillslope	---	---	---	---
197ID: IRWIN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	KONZA	No	ridge	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	UNNAMED	Yes	flood plain, marsh	2B3	YES	NO	NO
	HYDRIC SOIL (saturation)						
197IX: IVAN SILTY CLAY LOAM, CHanneled	IVAN	No	flood plain	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	READING	No	stream terrace	---	---	---	---
	UNNAMED	Yes	flood plain, marsh	2B3	YES	NO	NO
	HYDRIC SOIL						
197LA: LABETTE SILTY CLAY LOAM, 2 TO 5 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
197WE: WAMEGO SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	WAMEGO	No	hillslope	---	---	---	---
	CLIME	---	hillslope	---	---	---	---
	ELMONT	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	---	---	---	---	---
197WF: WAMEGO SILTY CLAY LOAM, 7 TO 15 PERCENT SLOPES	WAMEGO	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	ELMONT	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	ROCK OUTCROP	---	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	Unranked	---	---	---	---	---
Ba: BATES LOAM, 3 TO 6 PERCENT SLOPES	BATES	No	hillslope	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Bb: BATES LOAM, 3 TO 6 PERCENT SLOPES, ERODED	BATES	No	hillslope	---	---	---	---
Bc: BATES-COLLINSVILLE COMPLEX, 3 TO 15 PERCENT SLOPES	BATES	No	hillslope	---	---	---	---
	COLLINSVILLE	No	hillslope	---	---	---	---
Ca: CHASE SILTY CLAY LOAM, OCCASIONALLY FLOODED	CHASE	No	flood plain	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
Cb: CLIME SILTY CLAY, 3 TO 7 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
Cc: CLIME SILTY CLAY, 3 TO 7 PERCENT SLOPES, ERODED	CLIME	No	hillslope	---	---	---	---
Cd: CLIME-SOGN COMPLEX, 5 TO 20 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
DE: DENNIS SILT LOAM, 1 TO 4 PERCENT SLOPES	DENNIS	No	hillslope	---	---	---	---
Ea: ELMONT SILT LOAM, 1 TO 4 PERCENT SLOPES	ELMONT	No	hillslope	---	---	---	---
Eb: ELMONT SILT LOAM, 4 TO 7 PERCENT SLOPES	ELMONT	No	hillslope	---	---	---	---
Ec: ELMONT SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	ELMONT	No	hillslope	---	---	---	---
Ed: ERAM SILT LOAM, 3 TO 6 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
Ee: ERAM SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES, ERODED	ERAM	No	hillslope	---	---	---	---
Ef: ERAM AND BATES SOILS, 6 TO 15 PERCENT SLOPES	ERAM	No	hillslope	---	---	---	---
	BATES	No	hillslope	---	---	---	---
Fa: FLORENCE-LABETTE COMPLEX, 2 TO 12 PERCENT SLOPES	FLORENCE	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
Ia: IVAN SILT LOAM, OCCASIONALLY FLOODED	IVAN	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	depression	3,4,2B3	YES	YES	YES
Ib: IVAN SILT LOAM, CHANNELED	IVAN	No	flood plain	---	---	---	---
INT: AQUOLLS	AQUOLLS	Yes	depression, terrace	3,2B3	YES	NO	YES
IR: IRWIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	DWIGHT	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	LADYSMITH	No	paleoterrace	---	---	---	---
	UNNAMED HYDRIC SOIL (saturation)	Yes	hillslope, marsh	2B3	YES	NO	NO
Ka: KENOMA SILT LOAM, 1 TO 3 PERCENT SLOPES	KENOMA	No	divide, terrace	---	---	---	---
	CATOOSA	No	ridge	---	---	---	---
	ZAAR	No	hillslope	---	---	---	---
Kb: KENOMA SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES, ERODED	KENOMA	No	divide, terrace	---	---	---	---

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Map symbol and map unit name	Component	Hydric	Local landform	Hydric soils criteria			
				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
Kc: KENOMA SILT LOAM, 3 TO 6 PERCENT SLOPES	KENOMA	No	divide, terrace	---	---	---	---
Kd: KENOMA SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES, ERODED	KENOMA	No	divide	---	---	---	---
La: LABETTE SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
Lb: LABETTE SILTY CLAY LOAM, 3 TO 6 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
Lc: LABETTE SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES, ERODED	LABETTE	No	hillslope	---	---	---	---
Ld: LABETTE-DWIGHT COMPLEX, 0 TO 2 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	DWIGHT	No	divide, hillslope	---	---	---	---
Le: LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	LADYSMITH	No	ridge	---	---	---	---
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	---	---	---	---	---	---
Ma: MARTIN SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	OSAGE DWIGHT	Yes No	flood plain hillslope	2B3 ---	YES ---	NO ---	NO ---
Mb: MARTIN SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
Mc: MARTIN SILTY CLAY, 3 TO 7 PERCENT SLOPES, ERODED	MARTIN	No	hillslope	---	---	---	---
MS: MASON SILT LOAM, RARELY FLOODED	MASON	No	stream terrace	---	---	---	---
	OSAGE DENNIS	Yes No	flood plain hillslope	2B3 ---	YES ---	NO ---	NO ---
Oa: OLPE-KENOMA COMPLEX, 3 TO 15 PERCENT SLOPES	OLPE	No	paleoterrace	---	---	---	---
	KENOMA	No	divide	---	---	---	---
Ob: ORTHENTS, CLAYEY	ORTHENTS	Unranked	---	---	---	---	---
Oc: OSAGE SILTY CLAY, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	CHASE SOLOMON	No Yes	flood plain flood plain	---	---	---	---
				2B3	YES	NO	NO
QUA: QUARRIES	QUARRIES	Unranked	---	---	---	---	---
Ra: READING SILT LOAM, 0 TO 2 PERCENT SLOPES, RARELY FLOODED	READING	No	stream terrace	---	---	---	---
Ta: TULLY SILTY CLAY LOAM, 2 TO 7 PERCENT SLOPES	TULLY	No	hillslope	---	---	---	---
Tb: TULLY SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	TULLY	No	hillslope	---	---	---	---
Tc: TULLY-CLIME COMPLEX, 7 TO 15 PERCENT SLOPES	TULLY	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
Va: VINLAND LOAM, 4 TO 10 PERCENT SLOPES	VINLAND	No	hillslope	---	---	---	---

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				Hydric criteria code	Meets saturation criteria	Meets flooding criteria	Meets ponding criteria
VB: VERDIGRIS SILT LOAM, OCCASIONALLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
VC: VERDIGRIS SILT LOAM, CHANNELED	OSAGE	Yes	flood plain	2B3,3	YES	NO	YES
	VERDIGRIS	No	flood plain	---	---	---	---
	BATES	No	hillside	---	---	---	---
	ERAM	No	hillside	---	---	---	---
	OSAGE	Yes	flood plain	4,2B3	YES	YES	NO
W: WATER WO: WOODSON SILT LOAM, 0 TO 2 PERCENT SLOPES	ROCK OUTCROP	No	---	---	---	---	---
	WATER	Yes	---	4,3	NO	YES	YES
	WOODSON	No	divide	---	---	---	---
	KENOMA SUMMIT	No No	divide hillslope	---	---	---	---
Za: ZAAR SILTY CLAY, 2 TO 5 PERCENT SLOPES	ZAAR	No	hillslope	---	---	---	---

FOOTNOTE: There may be small areas of included soils or miscellaneous areas that are significant to use and management of the soil; yet are too small to delineate on the soil map at the map's original scale. These may be designated as spot symbols and are defined in the published Soil Survey Report or the USDA-NRCS Technical Guide, Part II. Areas mapped as water or any map unit that contains one of the following conventional symbols is considered a hydric soil map unit: marshes or swamps; wet spots; depressions; streams, lakes and ponds.

1. All Histosols except Folists, or
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:
  - a. Somewhat poorly drained with a water table equal to 0.0 foot (ft) from the surface during the growing season, or
  - b. poorly drained or very poorly drained and have either:
    - (1) water table equal to 0.0 ft during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches (in), or for other soils
    - (2) water table at less than or equal to 0.5 ft from the surface during the growing season if permeability is equal to or greater than 6.0 in/hour (h) in all layers within 20 in, or
    - (3) water table at less than or equal to 1.0 ft from the surface during the growing season if permeability is less than 6.0 in/h in any layer within 20 in, or
3. Soils that are frequently ponded for long duration or very long duration during the growing season, or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.

