

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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All mapunits are displayed regardless of hydric status and are listed in alpha-numeric order by mapunit symbol. The "Hydric Soils Criteria" columns indicate the conditions that caused the mapunit component to be classified as "Hydric" or "Non-Hydric". These criteria are defined in "Hydric Soils of the United States" (USDA Miscellaneous Publication No. 1491, June, 1991). See the "Criteria for Hydric Soils" endnote to determine the meaning of these columns. Spot symbols are footnoted at the end of the table.

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
015CS: CLIME-SOIGN COMPLEX, 3 TO 15 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOIGN rock outcrop	No	hillslope	---	---	---	---
015FC: FLORENCE CHERTY SILT LOAM, 5 TO 10 PERCENT SLOPES	FLORENCE	No	hillslope	---	---	---	---
	DWIGHT	No	hillside	---	---	---	---
	LABETTE	No	hillside	---	---	---	---
	TULLY	No	hillside	---	---	---	---
015LC: LABETTE SILTY CLAY LOAM, 3 TO 5 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	IRWIN	No	hillside	---	---	---	---
	TULLY	No	hillside	---	---	---	---
015LS: LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	LADYSMITH	No	ridge	---	---	---	---
015NS: NORGE SILT LOAM, 3 TO 5 PERCENT SLOPES	NORGE	No	hillslope	---	---	---	---
	OLPE	No	paleoterrace	---	---	---	---
	TULLY	No	hillside	---	---	---	---
015NT: NORGE SILTY CLAY LOAM, 3 TO 5 PERCENT SLOPES, ERODED	NORGE	No	hillslope	---	---	---	---
015ON: OLPE-NORGE COMPLEX, 2 TO 7 PERCENT SLOPES	OLPE	No	paleoterrace	---	---	---	---
	NORGE	No	terrace	---	---	---	---
015VE: VERDIGRIS SOILS, FREQUENTLY FLOODED	VERDIGRIS	No	flood plain	---	---	---	---
	TULLY	No	hillside	---	---	---	---
019MB: MARTIN SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	DWIGHT	No	hillslope	---	---	---	---
049FM: FLORENCE-MARTIN COMPLEX, 2 TO 12 PERCENT SLOPES	FLORENCE	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	CLIME	No	hillside	---	---	---	---
	DWIGHT	No	hillside	---	---	---	---
049IV: IVAN SILT LOAM, CHANNELED	IVAN	No	flood plain	---	---	---	---
	DENNIS	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	OSAGE	Yes	flood plain	2B3	YES	NO	NO
191MB: MILAN LOAM, 1 TO 3 PERCENT SLOPES	MILAN	No	paleoterrace	---	---	---	---
191MC: MILAN LOAM, 3 TO 6 PERCENT SLOPES	MILAN	No	paleoterrace	---	---	---	---
191PX: PRATT LOAMY FINE SAND, 3 TO 8 PERCENT SLOPES	PRATT	No	dune, paleoterrace	---	---	---	---
	CARWILE	Yes	depression, paleoterrace	2A	YES	NO	NO
	Unnamed wet soils	Yes	depression	2A, 2B3, 3	YES	NO	YES
191RO: ROSEHILL CLAY LOAM, 1 TO 3 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
191RS: ROSEHILL CLAY LOAM, 3 TO 6 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
191TV: TIVOLI FINE SAND, 8 TO 20 PERCENT SLOPES	TIVOLI	No	dune, paleoterrace	---	---	---	---

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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
191US: USTIFLUVENTS, CHANNELED	USTIFLUVENTS	No	---	---	---	---	---
	Unnamed wet soils	Yes	drainageway	2A, 2B3, 4, 2B 2	YES	YES	NO
Aa: ATTICA LOAMY FINE SAND, 3 TO 6 PERCENT SLOPES	ATTICA	No	divide	---	---	---	---
	MILAN	No	hillslope	---	---	---	---
Ab: ATTICA-TIVOLI LOAMY FINE SANDS, 3 TO 15 PERCENT SLOPES	ATTICA	No	divide	---	---	---	---
	TIVOLI	No	hillslope	---	---	---	---
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	Unranked	---	---	---	---	---
Ba: BETHANY SILT LOAM, 0 TO 1 PERCENT SLOPES	BETHANY	No	ridge	---	---	---	---
Bb: BETHANY SILT LOAM, 1 TO 3 PERCENT SLOPES	BETHANY	No	hillslope	---	---	---	---
	VANOSS	No	hillslope	---	---	---	---
Bc: BREWER SILTY CLAY LOAM, RARELY FLOODED	BREWER	No	flood plain	---	---	---	---
	OSAGE VERDIGRIS	Yes No	flood plain flood plain	2B3 ---	YES ---	NO ---	NO ---
Ca: CANADIAN FINE SANDY LOAM, RARELY FLOODED	CANADIAN	No	flood plain	---	---	---	---
	DALE LESHO	No No	stream terrace flood plain	---	---	---	---
Cb: CLIME-ROCK OUTCROP COMPLEX, 15 TO 35 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	ROCK OUTCROP SOGN	Unranked No	hillslope hillslope	---	---	---	---
Cc: CLIME-SOGN COMPLEX, 2 TO 15 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN MARTIN	No No	hillslope hillslope	---	---	---	---
	ROCK OUTCROP	Unranked	hillslope	---	---	---	---
Da: DALE SILT LOAM, RARELY FLOODED	DALE	No	stream terrace	---	---	---	---
	CANADIAN LESHO	No No	flood plain flood plain	---	---	---	---
Db: DWIGHT SILT LOAM, 0 TO 2 PERCENT SLOPES	DWIGHT	No	hillslope	---	---	---	---
	IRWIN LABETTE	No No	hillslope hillslope	---	---	---	---
Fa: FLORENCE CHERTY SILT LOAM, 5 TO 15 PERCENT SLOPES	FLORENCE	No	hillslope	---	---	---	---
	DWIGHT LABETTE	No No	hillslope hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Ia: IRWIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	DWIGHT ROSEHILL SMOLAN	No No No	hillslope hillslope hillslope	---	---	---	---
Ib: IVAN SILT LOAM, OCCASIONALLY FLOODED	IVAN	No	flood plain	---	---	---	---
	BREWER READING VERDIGRIS	No No No	flood plain terrace flood plain	---	---	---	---
INT: AQUOLLS	AQUOLLS	Yes	depression, terrace	3, 2B3	YES	NO	YES

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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
La: LABETTE SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	DWIGHT IRWIN	No No	hillslope hillslope	---	---	---	---
Lb: LABETTE SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	MARTIN SOGN	No No	hillslope hillslope	---	---	---	---
Lc: LABETTE SILTY CLAY LOAM, 2 TO 7 PERCENT SLOPES, ERODED	LABETTE	No	hillslope	---	---	---	---
	Unnamed soil MARTIN	No No	hillslope hillslope	---	---	---	---
Ld: LABETTE-DWIGHT COMPLEX, 1 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	DWIGHT IRWIN ROCK OUTCROP	No No Unranked	hillslope hillslope hillslope	---	---	---	---
Le: LABETTE-SOGN SILTY CLAY LOAMS, 2 TO 8 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	SOGN ROCK OUTCROP	No Unranked	hillslope ---	---	---	---	---
Lf: LESHO CLAY LOAM, OCCASIONALLY FLOODED	LESHO	No	flood plain	---	---	---	---
	CANADIAN DALE	No No	flood plain stream terrace	---	---	---	---
Lg: LINCOLN-TIVOLI COMPLEX, 0 TO 10 PERCENT SLOPES	LINCOLN	No	flood plain	---	---	---	---
	TIVOLI CANADIAN ATTICA	No No No	hillslope flood plain divide	---	---	---	---
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	Unranked	---	---	---	---	---
Ma: MARTIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	LABETTE TABLER	No No	hillside hillside	---	---	---	---
Mb: MARTIN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	CLIME LABETTE	No No	hillside hillside	---	---	---	---
Mc: MARTIN SILTY CLAY LOAM, 2 TO 7 PERCENT SLOPES, ERODED	MARTIN	No	hillslope	---	---	---	---
	CLIME LABETTE	No No	hillslope hillslope	---	---	---	---
MCC: MARTIN SILTY CLAY LOAM, 4 TO 7 PERCENT SLOPES	MARTIN	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
Md: MARTIN-FLORENCE COMPLEX, 2 TO 12 PERCENT SLOPES	FLORENCE	No	hillslope	---	---	---	---
	MARTIN FLORENCE DWIGHT LABETTE ROCK OUTCROP	No No No No Unranked	hillslope hillslope hillslope hillslope ---	---	---	---	---
Me: MILAN FINE SANDY LOAM, 1 TO 5 PERCENT SLOPES	MILAN	No	hillslope	---	---	---	---
	MINCO NORGE	No No	hillslope 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
Mf: MINCO SILT LOAM, 3 TO 7 PERCENT SLOPES	MINCO	No	hillslope	---	---	---	---
	VANOSS	No	hillslope	---	---	---	---
Mg: MINCO SILT LOAM, 7 TO 15 PERCENT SLOPES	MINCO	No	hillslope	---	---	---	---
	ATTICA	No	divide	---	---	---	---
	ROCK OUTCROP	Unranked	hillslope	---	---	---	---
	VANOSS	No	hillslope	---	---	---	---
Na: NORGE SILT LOAM, 1 TO 3 PERCENT SLOPES	NORGE	No	hillslope	---	---	---	---
	MINCO	No	hillslope	---	---	---	---
	SMOLAN	No	hillslope	---	---	---	---
Nb: NORGE SILT LOAM, 3 TO 7 PERCENT SLOPES	NORGE	No	hillslope	---	---	---	---
	MINCO	No	hillslope	---	---	---	---
	SMOLAN	No	hillslope	---	---	---	---
Nc: NORGE SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	NORGE	No	hillslope	---	---	---	---
	MINCO	No	hillslope	---	---	---	---
	SMOLAN	No	hillslope	---	---	---	---
Oa: OLPE GRAVELLY SILT LOAM, 2 TO 12 PERCENT SLOPES	OLPE	No	paleoterrace	---	---	---	---
	NORGE	No	hillslope	---	---	---	---
	SMOLAN	No	hillslope	---	---	---	---
Ob: OSAGE SILTY CLAY, OCCASIONALLY FLOODED	OSAGE	Yes	flood plain	2B3	YES	NO	NO
	BREWER	No	flood plain	---	---	---	---
	VERDIGRIS	No	flood plain	---	---	---	---
Ra: READING SILT LOAM, 0 TO 2 PERCENT SLOPES, RARELY FLOODED	READING	No	terrace	---	---	---	---
	BREWER	No	flood plain	---	---	---	---
	IVAN	No	flood plain	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
Rb: ROSEHILL SILTY CLAY, 1 TO 3 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	TABLER	No	hillslope	---	---	---	---
Rc: ROSEHILL SILTY CLAY, 3 TO 6 PERCENT SLOPES	ROSEHILL	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
Sa: SMOLAN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	SMOLAN	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	NORGE	No	hillslope	---	---	---	---
Sb: SMOLAN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	SMOLAN	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	NORGE	No	hillslope	---	---	---	---
Sc: SMOLAN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES, ERODED	SMOLAN	No	hillslope	---	---	---	---
	MARTIN	No	hillslope	---	---	---	---
	NORGE	No	hillslope	---	---	---	---
Sd: SOGN SILTY CLAY LOAM, 0 TO 10 PERCENT SLOPES	SOGN	No	hillslope	---	---	---	---
	CLIME	No	hillside	---	---	---	---
	LABETTE	No	hillside	---	---	---	---
Ta: TABLER SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES	TABLER	No	hillslope	---	---	---	---
	VANOSS	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
Tb: TABLER SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	TABLER	No	hillslope	---	---	---	---
Va: VANOSS SILT LOAM, 0 TO 1 PERCENT SLOPES	VANOSS	No	hillslope	---	---	---	---
Vb: VANOSS SILT LOAM, 1 TO 3 PERCENT SLOPES	TABLER	No	hillslope	---	---	---	---
	VANOSS	No	hillslope	---	---	---	---
Vc: VANOSS SILT LOAM, 3 TO 7 PERCENT SLOPES	MINCO	No	hillslope	---	---	---	---
	VANOSS	No	hillslope	---	---	---	---
Vd: VERDIGRIS SILT LOAM, OCCASIONALLY FLOODED	MINCO	No	hillslope	---	---	---	---
	VERDIGRIS	No	flood plain	---	---	---	---
W: WATER	BREWER	No	flood plain	---	---	---	---
Wa: WAURIKA SILT LOAM, 0 TO 1 PERCENT SLOPES	WATER AREAS	Unranked	---	---	---	---	---
	WAURIKA	No	depression, divide	---	---	---	---

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.

