

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
027KS: KIPSON-SOGN SILTY CLAY LOAMS, 5 TO 20 PERCENT SLOPES	KIPSON	No	hillslope	---	---	---	---
	SOGN UNNAMED HYDRIC SOIL	No Yes	hillslope hillslope, marsh	---	---	---	---
027LH: LANCASTER-HEDVILLE COMPLEX, 5 TO 30 PERCENT SLOPES	LANCASTER	No	hillslope	---	---	---	---
	HEDVILLE	No	hillslope	---	---	---	---
	EDALGO	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOIL	Yes	drainageway, marsh	2B3	YES	NO	NO
	UNNAMED HYDRIC SOILS	Yes	hillslope, marsh	2B3	YES	NO	NO
061CF: CLIME-SOGN SILTY CLAY LOAMS, 5 TO 20 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	TUTTLE	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	KONZA	No	ridge	---	---	---	---
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
	HAYNIE	No	flood plain	---	---	---	---
061HE: HAYNIE SILT LOAM, FREQUENTLY FLOODED	Unnamed stratified soils (fine-silty)	No	flood plain	---	---	---	---
	Unnamed stratified soils (fine)	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
	Unnamed stratified soils (sandy)	No	flood plain	---	---	---	---
	KONZA	No	ridge	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
061KO: KONZA SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	LABETTE	No	hillslope	---	---	---	---
	LADYSMITH	No	ridge	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	MCCOOK	No	stream terrace	---	---	---	---
061MK: MCCOOK-SMOKYHILL SILT LOAMS, OCCASIONALLY FLOODED	SMOKYHILL	No	depression, flood plain	---	---	---	---
	MCCOOK sandy substratum	No	flood plain	---	---	---	---
	SUTPHEN	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO

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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
061TN: TULLY SILTY CLAY LOAM, 1 TO 4 PERCENT SLOPES	TULLY	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	READING	No	flood plain	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
061TO: TULLY SILTY CLAY LOAM, 3 TO 8 PERCENT SLOPES	TULLY	No	hillslope	---	---	---	---
	KAHOLA	No	flood plain	---	---	---	---
	READING	No	flood plain	---	---	---	---
	BENFIELD	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	FLORENCE	No	hillslope	---	---	---	---
	calcareous, fine-loamy, cumulic hapludolls	No	flood plain	---	---	---	---
061WE: WELLS-ORTELO COMPLEX, 1 TO 4 PERCENT SLOPES	WELLS	No	hillslope	---	---	---	---
	ORTELO	No	hillslope	---	---	---	---
	LONGFORD	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	VALENTINE	No	dune	---	---	---	---
115CM: CLIME SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
115CS: CLIME-SOIGN SILTY CLAY LOAMS, 3 TO 20 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOIGN	No	hillslope	---	---	---	---
	LABETTE	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
115LM: LADYSMITH SILTY CLAY LOAM, 0 TO 2 PERCENT SLOPES	LADYSMITH	No	ridge	---	---	---	---
	KONZA	No	ridge	---	---	---	---
115LV: LANCASTER-HEDVILLE COMPLEX, 3 TO 20 PERCENT SLOPES	LANCASTER	No	hillslope	---	---	---	---
	HEDVILLE	No	hillslope	---	---	---	---
	CASS	No	flood plain	---	---	---	---
127TS: TULLY SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	EDALGO	No	hillslope	---	---	---	---
	TULLY	No	hillslope	---	---	---	---
	READING	No	stream terrace	---	---	---	---
169CR: CRETE SILT LOAM, 0 TO 2 PERCENT SLOPES	SMOLAN	No	paleoterrace	---	---	---	---
	CRETE	No	---	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	depression	3, 2B3, 2A	YES	NO	YES
169CS: CRETE SILT LOAM, 2 TO 5 PERCENT SLOPES	CRETE	No	---	---	---	---	---
169DE: DETROIT SILTY CLAY LOAM, RARELY FLOODED	DETROIT	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOILS	Yes	depression, terrace	2B3, 3	YES	NO	YES
169KC: KIPSON-CLIME COMPLEX, 6 TO 20 PERCENT SLOPES	KIPSON	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
169OT: ORTELO FINE SANDY LOAM, 2 TO 6 PERCENT SLOPES	ORTELO	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
169TO: TOBIN SILT LOAM, OCCASIONALLY FLOODED	TOBIN	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL	Yes	flood plain, marsh	2B3	YES	NO	NO
	UNNAMED HYDRIC SOILS	Yes	depression, flood plain	3	NO	NO	YES
	Unnamed wet soils	Yes	depression	2A, 3, 2B3, 4	YES	YES	YES
AED: ARENTS, EARTHEN DAM	ARENTS, EARTHEN DAM	Unranked	---	---	---	---	---
Ca: CARWILE LOAM, 0 TO 1 PERCENT SLOPES	CARWILE	Yes	depression	2A	YES	NO	NO
	ORTELLO VALENTINE	No	hillslope	---	---	---	---
Cb: CLIME SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	IRWIN CRETE	No	hillslope	---	---	---	---
Cc: CLIME SILTY CLAY LOAM, 6 TO 15 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	CRETE IRWIN SOGN	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
Cd: CLIME-SOGN COMPLEX, 5 TO 20 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	SOGN	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	CRETE UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Ce: CRETE SILTY CLAY LOAM, 0 TO 1 PERCENT SLOPES	CRETE	No	ridge	---	---	---	---
Cf: CRETE SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	CLIME	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	CLIME HOBBS WELLS	No	hillslope	---	---	---	---
Cg: CRETE SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	CRETE	No	hillslope	---	---	---	---
	CLIME HOBBS	No	hillslope	---	---	---	---
Da: DETROIT SILT LOAM, RARELY FLOODED	DETROIT	No	stream terrace	---	---	---	---
	MCCOOK	No	stream terrace	---	---	---	---
	MUIR SUTPHEN	No	flood plain	---	---	---	---
Ea: ELSMERE FINE SANDY LOAM, RARELY FLOODED	ELSMERE	No	terrace	---	---	---	---
Fa: FLUVAQUENTS, CLAYEY, FREQUENTLY FLOODED	HOBBS	No	flood plain	---	---	---	---
	FLUVAQUENTS	Yes	ephemeral oxbow lake	2B3, 3, 4	YES	YES	YES
	SOLOMON	Yes	depression, flood plain	3	NO	NO	YES
Ga: GEARY SILT LOAM, 2 TO 7 PERCENT SLOPES	GEARY	No	hillslope	---	---	---	---
	CRETE IRWIN	No	hillslope	---	---	---	---
Ha: HOBBS SILT LOAM, OCCASIONALLY FLOODED	HOBBS	No	flood plain	---	---	---	---
	SUTPHEN UNNAMED HYDRIC SOIL (ponding)	Yes	flood plain, depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO

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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
Hb: HOBBS SILT LOAM, CHANNELED	HOBBS	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Ia: IRWIN SILTY CLAY LOAM, 1 TO 3 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
Ib: IRWIN SILTY CLAY LOAM, 3 TO 7 PERCENT SLOPES	IRWIN	No	hillslope	---	---	---	---
	CLIME	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
La: LANCASTER-HEDVILLE LOAMS, 3 TO 15 PERCENT SLOPES	LANCASTER	No	hillslope	---	---	---	---
	HEDVILLE	No	hillslope	---	---	---	---
	WELLS	No	hillslope	---	---	---	---
	CRETE	No	hillslope	---	---	---	---
	IRWIN	No	hillslope	---	---	---	---
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
M-W: MISCELLANEOUS WATER	MISCELLANEOUS WATER	Unranked	---	---	---	---	---
Ma: MCCOOK SILT LOAM, OCCASIONALLY FLOODED	MCCOOK	No	stream terrace	---	---	---	---
	MUIR	No	flood plain	---	---	---	---
	SUTPHEN SOLOMON	No Yes	flood plain flood plain depression, flood plain	3	NO	NO	YES
Mb: MUIR SILT LOAM, RARELY FLOODED	MUIR	No	flood plain	---	---	---	---
	DETROIT	No	stream terrace	---	---	---	---
	HOBBS	No	flood plain	---	---	---	---
Oa: ORTELLO-WELLS FINE SANDY LOAMS, 1 TO 6 PERCENT SLOPES	SUTPHEN	No	flood plain	---	---	---	---
	ORTELLO	No	hillslope	---	---	---	---
	WELLS	No	hillslope	---	---	---	---
Qa: QUARRIES	CARWILE	Yes	depression	2A	YES	NO	NO
	ELSMERE	No	terrace	---	---	---	---
	VALENTINE	No	hillslope	---	---	---	---
Sb: SOLOMON SILTY CLAY, OCCASIONALLY FLOODED	QUARRIES	Unranked	---	---	---	---	---
Sc: SUTPHEN SILTY CLAY LOAM, OCCASIONALLY FLOODED	SOLOMON	Yes	flood plain, meander scar	3	NO	NO	YES
	SUTPHEN	No	flood plain	---	---	---	---
	MCCOOK	No	stream terrace	---	---	---	---
	SUTPHEN	No	flood plain	---	---	---	---
	DETROIT	No	stream terrace	---	---	---	---
	MUIR	No	flood plain	---	---	---	---
	UNNAMED	Yes	depression, flood plain	3	NO	NO	YES
	HYDRIC SOIL (ponding)						
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO

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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
Sd: SUTPHEN SILTY CLAY, OCCASIONALLY FLOODED	SUTPHEN	No	flood plain	---	---	---	---
	DETROIT	No	stream terrace	---	---	---	---
	MUIR	No	flood plain	---	---	---	---
	UNNAMED HYDRIC SOIL (ponding)	Yes	depression, flood plain	3	NO	NO	YES
	UNNAMED HYDRIC SOIL (saturation)	Yes	flood plain, marsh	2B3	YES	NO	NO
Va: VALENTINE LOAMY FINE SAND, 5 TO 15 PERCENT SLOPES	VALENTINE	No	hillslope	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
	ELSMERE	No	terrace	---	---	---	---
Vb: VALENTINE LOAMY FINE SAND, 1 TO 5 PERCENT SLOPES	WELLS	No	hillslope	---	---	---	---
	VALENTINE	No	hillslope	---	---	---	---
	CARWILE	Yes	depression	2A	YES	NO	NO
	ELSMERE	No	terrace	---	---	---	---
W: WATER	WELLS	No	hillslope	---	---	---	---
	WATER	Yes	---	4,3	NO	YES	YES
	WELLS	No	hillslope	---	---	---	---
	LANCASTER	No	hillslope	---	---	---	---
Wa: WELLS LOAM, 3 TO 7 PERCENT SLOPES	HEDVILLE	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.

