Hydric Soils

Carver 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
AA:					
Kasota sandy loam, 0 to 2 percent slopes	Kasota	85	Stream terraces	No	---
	Dickinson	8	---	No	---
	Estherville	7	---	No	---
AB2:					
Kasota sandy loam, 2 to 6 percent slopes, eroded	Kasota, eroded	85	Stream terraces	No	---
	Dickinson	8	---	No	---
	Estherville	7	---	No	---
AD:					
Hawick sandy loam, 18 to 25 percent slopes	Hawick	90	Stream terraces	No	---
	Estherville	10	---	No	---
AE:					
Hawick loamy sand, 18 to 40 percent slopes	Hawick	90	Stream terraces	No	---
	Estherville	10	---	No	---
BA:					
Kasota loam, 0 to 2 percent slopes	Kasota	85	Stream terraces	No	---
	Dickinson	8	---	No	---
	Estherville	7	---	No	---
BB2:					
Kasota loam, 2 to 6 percent slopes, eroded	Kasota, eroded	85	Stream terraces	No	---
	Dickinson	8	---	No	---
	Estherville	7	---	No	---
BH:					
Blue Earth mucky silt loam	Blue Earth	90	Depressions, Flood plains, Moraines	Yes	2B3, 3, 4
	Canisteo	10	Swales	Yes	2B3

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
BY:					
Biscay loam	Biscay	90	Drainageways, Stream terraces	Yes	2B3
	Biscay, depressional	10	Drainageways	Yes	2B3
CC3:					
Lester clay loam, 6 to 12 percent slopes, severely eroded	Lester, severely eroded	100	Moraines	No	---
CD3:					
Lester clay loam, 12 to 18 percent slopes, severely eroded	Lester, severely eroded	100	Moraines	No	---
CE3:					
Lester clay loam, 18 to 25 percent slopes, severely eroded	Lester, severely eroded	100	Moraines	No	---
CH:					
Chaska loam, occasionally flooded	Chaska, occasionally flooded	90	Flood plains	No	---
	Minneiska	5	---	No	---
	Oshawa	5	Flood plains	Yes	2B3, 4
CL:					
Coland clay loam, occasionally flooded	Coland, occasionally flooded	90	Flats, Flood plains	Yes	2B3
	Minneiska	5	---	No	---
	Oshawa	5	Flood plains	Yes	2B3
CO:					
Cordova clay loam	Cordova	90	Drainageways, Moraines	Yes	2B3
	Glencoe	8	Drainageways	Yes	2B3
	Le Sueur	2	---	No	---
CS:					
Canisteo silty clay loam, depressional	Canisteo, depressional	85	Depressions, Moraines	Yes	2B3, 3
	Cordova	9	Depressions	Yes	2B3
	Glencoe	6	Depressions, Drainageways	Yes	2B3

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
CT:					
Canisteo clay loam	Canisteo	85	Flats, Moraines	Yes	2B3
	Cordova	9	Depressions	Yes	2B3
	Glencoe	6	Depressions, Drainageways	Yes	2B3
CU:					
Coland clay loam, frequently flooded	Coland, frequently flooded	90	Flats, Flood plains	Yes	2B3, 4
	Minneiska	5	---	No	---
	Oshawa	5	Flood plains	Yes	2B3, 4
CW:					
Cordova-Webster complex	Cordova	65	Drainageways, Moraines	Yes	2B3
	Webster	30	Drainageways, Moraines	Yes	2B3
	Glencoe	5	Depressions, Drainageways	Yes	2B3, 3
DA:					
Dakota and Rasset sandy loams, 0 to 2 percent slopes	Dakota	50	Stream terraces	No	---
	Rasset	50	Stream terraces	No	---
DB:					
Dakota and Rasset sandy loams, 2 to 6 percent slopes	Dakota	50	Stream terraces	No	---
	Rasset	50	Stream terraces	No	---
EA:					
Estherville sandy loam, 0 to 2 percent slopes	Estherville	90	Stream terraces	No	---
	Biscay	5	Drainageways	Yes	2B3
	Wadena	5	---	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
EB:					
Estherville sandy loam, 2 to 6 percent slopes	Estherville	90	Stream terraces	No	---
	Biscay	5	Drainageways	Yes	2B3
	Wadena	5	---	No	---
EB2:					
Estherville sandy loam, 2 to 6 percent slopes, eroded	Estherville, eroded	90	Stream terraces	No	---
	Biscay	5	Drainageways	Yes	2B3
	Wadena	5	---	No	---
EX:					
Essexville sandy loam	Essexville	85	Beaches	Yes	2B3
	Belleville	10	Beaches	Yes	2B3
	Soils with a sandy substratum	5	Beaches	Yes	2B3
FA:					
Fairhaven silt loam, 0 to 2 percent slopes	Fairhaven	100	Stream terraces	No	---
FB:					
Fairhaven silt loam, 2 to 6 percent slopes	Fairhaven	100	Stream terraces	No	---
FC2:					
Fairhaven silt loam, 6 to 12 percent slopes, eroded	Fairhaven, eroded	100	Stream terraces	No	---
GL:					
Glencoe clay loam	Glencoe	85	Depressions, Moraines	Yes	2B3, 3
	Canisteo	10	Swales	Yes	2B3
	Okoboji	5	Swales	Yes	2B3, 3
GP:					
Pits-Udipsamments complex	Pits	55	Outwash plains, Stream terraces		---
	Udipsamments	45	Outwash plains, Stream terraces		---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
HC:					
Estherville-Hawick sandy loams, 6 to 12 percent slopes	Estherville	60	Stream terraces	No	---
	Hawick	30	Stream terraces	No	---
	Dickman	10	---	No	---
HC2:					
Estherville-Hawick sandy loams, 6 to 12 percent slopes, eroded	Estherville, eroded	60	Stream terraces	No	---
	Hawick, eroded	30	Stream terraces	No	---
	Dickman	10	---	No	---
HD:					
Estherville-Hawick sandy loams, 12 to 18 percent slopes	Estherville	60	Stream terraces	No	---
	Hawick	30	Stream terraces	No	---
	Dickman	10	---	No	---
HM:					
Hamel loam	Hamel	90	Drainageways, Moraines	Yes	2B3
	Glencoe	5	Depressions, Drainageways	Yes	2B3, 3
	Terril	5	---	No	---
HN:					
Hanlon loam	Hanlon, occasionally flooded	90	Flood plains	No	---
	Suckercreek	10	Flood plains	Yes	2B3, 3
IA:					
Dickman sandy loam, 0 to 2 percent slopes	Dickman	90	Stream terraces	No	---
	Dickinson	5	---	No	---
	Estherville	5	---	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
IB2:					
Dickman sandy loam, 2 to 6 percent slopes, eroded	Dickman, eroded	90	Stream terraces	No	---
	Dickinson	5	---	No	---
	Estherville	5	---	No	---
IC2:					
Dickman sandy loam, 6 to 12 percent slopes, eroded	Dickman, eroded	90	Stream terraces	No	---
	Dickinson	5	---	No	---
	Estherville	5	---	No	---
KB:					
Kilkenny-Lester loams, 2 to 6 percent slopes	Kilkenny	60	Moraines	No	---
	Lester	40	Moraines	No	---
KB2:					
Lester-Kilkenny loams, 2 to 6 percent slopes, eroded	Lester, eroded	60	Moraines	No	---
	Kilkenny, eroded	40	Moraines	No	---
KC:					
Lester-Kilkenny loams, 6 to 12 percent slopes	Lester	60	Moraines	No	---
	Kilkenny	40	Moraines	No	---
KC2:					
Lester-Kilkenny loams, 6 to 12 percent slopes, eroded	Lester, eroded	60	Moraines	No	---
	Kilkenny, eroded	40	Moraines	No	---
KD:					
Lester-Kilkenny loams, 12 to 18 percent slopes	Lester	60	Moraines	No	---
	Kilkenny	40	Moraines	No	---
KD2:					
Lester-Kilkenny loams, 12 to 18 percent slopes, eroded	Lester, eroded	60	Moraines	No	---
	Kilkenny, eroded	40	Moraines	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
KE2:					
Lester-Kilkenny loams, 18 to 25 percent slopes, eroded	Lester, eroded	60	Moraines	No	---
	Kilkenny, eroded	40	Moraines	No	---
KF:					
Lester-Kilkenny loams, 25 to 40 percent slopes	Lester	60	Moraines	No	---
	Kilkenny	40	Moraines	No	---
KL:					
Hanlon-Kalmarville complex, frequently flooded	Hanlon, frequently flooded	55	Flood plains, Rises	No	---
	Kalmarville, frequently flooded	40	Flats, Flood plains	Yes	2B3, 4
	Coland	5	Flood plains	Yes	2B3, 4
KM:					
Minneiska-Kalmarville complex, frequently flooded	Minneiska, frequently flooded	55	Flood plains	No	---
	Kalmarville, frequently flooded	35	Flats, Flood plains	Yes	2B3, 4
	Chaska	5	---	No	---
	Oshawa	5	Drainageways	Yes	2B3
LA:					
Le Sueur-Lester loams, 1 to 4 percent slopes	Le Sueur	70	Moraines	No	---
	Lester	30	Moraines	No	---
LB2:					
Lester loam, 2 to 6 percent slopes	Lester	90	Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Le Sueur	5	---	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
LC:					
Lester loam, 6 to 12 percent slopes	Lester	85	Moraines	No	---
	Cordova	5	Drainageways	No	2B3
	Le Sueur	5	---	No	---
	Terril	5	---	No	---
LC2:					
Lester loam, 6 to 12 percent slopes, eroded	Lester, eroded	85	Moraines	No	---
	Cordova	5	Drainageways	Yes	2B3
	Le Sueur	5	---	No	---
	Terril	5	---	No	---
LD:					
Lester loam, 12 to 18 percent slopes	Lester	85	Moraines	No	---
	Terril	8	---	No	---
	Stroden	5	---	No	---
	Hamel	2	Drainageways	Yes	2B3
LD2:					
Lester loam, 12 to 18 percent slopes, eroded	Lester, eroded	85	Moraines	No	---
	Terril	8	---	No	---
	Stroden	5	---	No	---
	Hamel	2	Drainageways	Yes	2B3
LE2:					
Lester loam, 18 to 25 percent slopes, eroded	Lester, eroded	100	Moraines	No	---
LF:					
Lester loam, 25 to 40 percent slopes	Lester	100	Moraines	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
LS:					
Le Sueur loam	Le Sueur	90	Moraines	No	---
	Cokato	5	---	No	---
	Cordova	5	Drainageways	Yes	2B3
M-W:					
Water, miscellaneous	Water, miscellaneous	100	---		---
MK:					
Houghton and Muskego soils	Houghton	50	Depressions, Moraines	Yes	1, 3
	Muskego	50	Depressions, Moraines	Yes	1, 3
MN:					
Minneiska loam	Minneiska, occasionally flooded	85	Flood plains	No	---
	Chaska	5	---	No	---
	Coland	5	Drainageways	Yes	2B3
	Terril	5	---	No	---
MP:					
Klossner and Muskego soils, ponded	Klossner, ponded	50	Marshes, Moraines	Yes	1, 3
	Muskego, ponded	50	Marshes, Moraines	Yes	1, 3
MY:					
Mayer loam	Mayer	85	Stream terraces, Swales	Yes	2B3
	Biscay	5	Swales	Yes	2B3
	Canisteo	5	Swales	Yes	2B3
	Linder	5	---	No	---
NC3:					
Lester-Kilkenny clay loams, 6 to 12 percent slopes, severely eroded	Lester, severely eroded	60	Moraines	No	---
	Kilkenny, severely eroded	40	Moraines	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
ND3:					
Lester-Kilkenny clay loams, 12 to 18 percent slopes, severely eroded	Lester, severely eroded	60	Moraines	No	---
	Kilkenny, severely eroded	40	Moraines	No	---
NE3:					
Lester-Kilkenny clay loams, 18 to 25 percent slopes, severely eroded	Lester, severely eroded	60	Moraines	No	---
	Kilkenny, severely eroded	40	Moraines	No	---
OS:					
Oshawa silty clay loam	Oshawa, frequently flooded	85	Flood plains, Oxbows	Yes	2B3, 3, 4
	Chaska	8	---	No	---
	Minneiska	7	Drainageways	No	2B3
PA:					
Sparta loamy sand, 0 to 2 percent slopes	Sparta	90	Stream terraces	No	---
	Crowfork	5	---	No	---
	Dickman	5	---	No	---
PB:					
Sparta loamy sand, 2 to 6 percent slopes	Sparta	90	Stream terraces	No	---
	Crowfork	5	---	No	---
	Dickman	5	---	No	---
PC:					
Sparta loamy sand, 6 to 12 percent slopes	Sparta	90	Stream terraces	No	---
	Crowfork	5	---	No	---
	Dickman	5	---	No	---
PD:					
Sparta loamy sand, 12 to 18 percent slopes	Sparta	90	Stream terraces	No	---
	Crowfork	5	---	No	---
	Dickman	5	---	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
PM:					
Klossner muck	Klossner	85	Depressions, Moraines	Yes	1, 3
	Canisteo	10	Swales	Yes	2B3
	Glencoe	5	Depressions, Drainageways	Yes	2B3
PS:					
Klossner muck, sandy substratum	Klossner, sandy substratum	85	Depressions, Stream terraces	Yes	1, 3
	Dassel	10	Depressions	Yes	2B3, 3
	Mayer	5	Depressions, Drainageways	Yes	2B3
RB:					
Rasset sandy loam, 0 to 6 percent slopes	Rasset	90	Stream terraces	No	---
	Dickman	5	---	No	---
	Malardi	5	---	No	---
RC:					
Rasset sandy loam, 6 to 12 percent slopes	Rasset	90	Stream terraces	No	---
	Dickman	5	---	No	---
	Malardi	5	---	No	---
RD:					
Rasset sandy loam, 12 to 18 percent slopes	Rasset	90	Stream terraces	No	---
	Dickman	5	---	No	---
	Malardi	5	---	No	---
RW:					
Richwood silt loam	Richwood	100	Stream terraces	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
SC2:					
Lester-Storden complex, 6 to 12 percent slopes, eroded	Lester, eroded	55	Moraines	No	---
	Storden, eroded	40	Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
SD2:					
Lester-Storden complex, 12 to 18 percent slopes, eroded	Lester, eroded	60	Moraines	No	---
	Storden, eroded	35	Moraines	No	---
	Delft	5	Drainageways	Yes	2B3
SV:					
Spillville loam, occasionally flooded	Spillville, occasionally flooded	85	Flood plains	No	---
	Coland	5	Drainageways	Yes	2B3
	Millington	5	Drainageways	Yes	2B3
	Terril	5	---	No	---
TB:					
Terril loam, 0 to 6 percent slopes	Terril	90	Moraines	No	---
	Delft	10	Drainageways	Yes	2B3
TC:					
Terril loam, 6 to 12 percent slopes	Terril	90	Moraines	No	---
	Delft	10	Drainageways	Yes	2B3
TT:					
Talcot silty clay loam	Talcot	100	Depressions, Stream terraces	Yes	2B3
US:					
Udipsamments, sloping	Udipsamments, sloping	100	Stream terraces	No	---
W:					
Water	Water	100	---		---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
WA:					
Wadena loam, 0 to 2 percent slopes	Wadena	90	Stream terraces	No	---
	Biscay	5	Drainageways	Yes	2B3
	Mayer	5	Swales	Yes	2B3
WB:					
Wadena loam, 2 to 6 percent slopes	Wadena	90	Stream terraces	No	---
	Biscay	4	Drainageways	Yes	2B3
	Estherville	3	---	No	---
	Mayer	3	Swales	Yes	2B3
WC2:					
Wadena loam, 6 to 12 percent slopes, eroded	Wadena, eroded	90	Stream terraces	No	---
	Biscay	4	Drainageways	Yes	2B3
	Estherville	3	---	No	---
	Mayer	3	Swales	Yes	2B3
XB:					
Rasset-Lester complex, 2 to 6 percent slopes	Rasset	55	Moraines	No	---
	Lester	45	Moraines	No	---
XC:					
Rasset-Lester complex, 6 to 12 percent slopes	Rasset	60	Moraines	No	---
	Lester	40	Moraines	No	---
XC2:					
Rasset-Lester complex, 6 to 12 percent slopes, eroded	Rasset, eroded	60	Moraines	No	---
	Lester, eroded	40	Moraines	No	---
XD:					
Rasset-Lester complex, 12 to 18 percent slopes	Rasset	65	Moraines	No	---
	Lester	35	Moraines	No	---

Hydric Soils

Carver County, Minnesota

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
XE:					
Rasset-Lester complex, 18 to 25 percent slopes	Rasset	65	Moraines	No	---
	Lester	35	Moraines	No	---
YB:					
Rasset-Lester-Kilkenny complex, 2 to 6 percent slopes	Rasset	55	Moraines	No	---
	Lester	25	Moraines	No	---
	Kilkenny	20	Moraines	No	---
YC:					
Rasset-Lester-Kilkenny complex, 6 to 12 percent slopes	Rasset	55	Moraines	No	---
	Lester	25	Moraines	No	---
	Kilkenny	20	Moraines	No	---
YC2:					
Rasset-Lester-Kilkenny complex, 6 to 12 percent slopes, eroded	Rasset, eroded	55	Moraines	No	---
	Lester, eroded	25	Moraines	No	---
	Kilkenny, eroded	20	Moraines	No	---
YD:					
Rasset-Lester-Kilkenny complex, 12 to 18 percent slopes	Rasset	55	Moraines	No	---
	Lester	25	Moraines	No	---
	Kilkenny	20	Moraines	No	---
YE:					
Rasset-Lester-Kilkenny complex, 18 to 25 percent slopes	Rasset	55	Moraines	No	---
	Lester	25	Moraines	No	---
	Kilkenny	20	Moraines	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.