

HYDRIC SOILS OF NEBRASKA

INTRODUCTION

The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Soils that are sufficiently wet because of artificial measures are included in the concept of hydric soils. Also, soils in which the hydrology has been artificially modified are hydric if the soil, in an unaltered state, was hydric. Some series, designated as hydric, have phases that are not hydric depending on water table, flooding, and ponding characteristics. Hydric soils are identified in the field using [Field Indicators of Hydric Soils in the United States](#).

The lists of hydric soils were formerly created by using criteria that were developed by the [National Technical Committee on Hydric Soils](#) (NTCHS), in 2000. The criteria were selected soil properties that are documented in Soil Taxonomy (Soil Survey Staff, 1999) and were designed primarily to generate a list of hydric soils from the National Soil Information System (NASIS) database.

The NTCHS updated the criteria in 2012 to select map unit components for the hydric soils list. The former database selection criteria created to select soils that may meet the definition of hydric soils did not cover the full extent of what is included in the hydric soils definition. The list has evolved from a national list of hydric soil series that may be hydric to a comprehensive list of all map units that have at least one map unit component that is hydric. The list also provides information on what component is at least in part hydric and where it is located on the landscape. Since map unit components may consist of soil series that cross the hydric/nonhydric boundary, a map unit component listed as hydric may also include portions that are non-hydric.

County hydric soils list may be accessed through [Web Soil Survey](#) or Soil Data Viewer.

Hydric soil lists have a number of agricultural and nonagricultural applications. These include assistance in land-use planning, conservation planning, and assessment of potential wildlife habitat. A combination of the hydric soil, hydrophytic vegetation, and hydrology criteria defines wetlands as described in the National Food Security Act Manual as amended (NFSAM) and the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987) and COE Regional Supplements. Therefore, an area that meets the hydric soil criteria must also meet the hydrophytic vegetation and wetland hydrology criteria in order for it to be classified as a wetland for NFSAM purposes.

DEFINITION OF HYDRIC SOIL

The definition of a hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

CRITERIA FOR HYDRIC SOILS

The updated (2012) criteria are as follows:

1. All Histels except Folistels and Histosols except Folists; or
2. Map unit components in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, or Andic, Cumulic, Pachic, or Vitrandic subgroups that:
 - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - b. Show evidence that the soil meets the definition of a hydric soil;

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Statewide

3. Map unit components that are frequently ponded for long duration or very long duration during the growing season that:
 - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - b. Show evidence that the soil meets the definition of a hydric soil; or
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
 - a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - b. Show evidence that the soils meet the definition of a hydric soil.

NFSAM APPLICATIONS FOR WETLAND DETERMINATIONS

HYDROLOGY CRITERIA FOR WETLANDS (NFSAM 514.22 & 23)

Farmed Wetland (FW) Hydrology Criteria: Secondary Indicators

NOTE: In order to protect remaining unique wetland functions and values, more restrictive criteria have been adopted for potholes, playas, and pocosins to give credit for saturated conditions.

Playa, Pothole, or Pocosin Landforms

NFSAM Hydrology Definition for FW:

If the area is a playa, pothole, or a pocosin, is inundated for at least 7 consecutive days or saturated for at least 14 consecutive days during the growing season.

NASIS Correlation for FW:

Playa, pothole, or a pocosin Landform meets the wetland hydrology criteria when listed under the hydric criteria of 2 and are saturated for at least 14 consecutive days. OR hydric criteria of 3, which means they are inundated for at least 7 consecutive days.

All Other Landforms (other than playa, pothole, or pocosin)

NFSAM Hydrology Definition for FW:

If the area is NOT a pothole, playa, or pocosin, has 50% chance of being seasonally ponded or flooded for at least 15 consecutive days during the growing season, or 10% of the growing season, whichever is less, under normal conditions.

NASIS Correlation for FW:

All other soil Landforms that are not playa, pothole, or a pocosin MAY meet the wetland hydrology criteria when listed under the hydric criteria of 3 or 4. These soils are frequently ponded or flooded for long or very long duration (7 to 30 days).

NOTE: Local soils survey data can NOT be used as a secondary indicator for hydrology UNLESS additional undeniable information exists to support that hydrology (required ponding or flooding) exists.

Farmed Wetland Pasture (FWP) Hydrology Criteria: Secondary Indicators

NFSAM Hydrology Definition for FWP:

If the area is a playa, pothole, or a pocosin, is inundated for at least 7 consecutive days or saturated for at least 14 consecutive days during the growing season.

NASIS Correlation for FWP:

Playa, pothole, or a pocosin Landform meets the wetland hydrology criteria when listed under the hydric criteria of 2 and are saturated for at least 14 consecutive days; OR hydric criteria of 3, which means they are inundated for at least 7 consecutive days.

Woody Vegetation for determining if hydrology would result in PC label

The use of the woody vegetation indicators to generate a PC label applies to areas with ALL of the following:

- NOT a playa, pothole, or pocosin landform.
- Woody vegetation under natural conditions as determined by one of the geographic areas listed below.
- A confirmed manipulation such as cropping that was used to produce an agricultural commodity prior to December 23, 1985.
- Only the 14 consecutive days saturation criteria is met and listed under the hydric criteria code of 2

NOTE: Even if woody vegetation is removed there may be areas such as oxbows and/or natural channels that may meet the FW hydrology definition due to ponding or flooding. In such cases, a PC label would NOT apply to the oxbow or channel.

Natural conditions in Nebraska are defined as those existing in the 1800's before settlers from the east established towns, farming, and ranching. Soils of Nebraska considered to support woody vegetation when under natural conditions are found in the following geographic areas:

- Pine Ridge
- Wildcat Hills
- Niobrara River Valley
- bottom lands in the Missouri River Valley,
- bottom lands in the tributary stream valleys in all counties east of, and including State Highway 15.

Maps showing the extent of each of the natural woody vegetation areas are filed in Section I of the Technical Guide, under Maps.

GLOSSARY

anaerobic: a situation in which molecular oxygen is virtually absent from the environment.

artificial hydric soil: a soil that meets the definition of a hydric soil as a result of an artificially induced hydrologic regime and did not meet the definition before the artificial measures were applied.

biologic zero: the soil temperature, at a depth of 50 cm (19.7"), below which the growth and function of locally adapted plants are negligible.

drained: a condition in which ground or surface water has been removed by artificial means.

Field Indicators of Hydric Soils in the United States: A publication that lists soil characteristics which are documented to be strictly associated only with hydric soils. Field indicators are an efficient on-site means to confirm the presence of hydric soil. The field indicators are designed to identify soils which meet the hydric soil definition without further data collection. Some hydric soils exist for which no Field Indicators have yet been recorded and documented, and to identify these soils as hydric, evidence must be gathered to demonstrate that the definition is met. Additional Field Indicators are being developed and tested.

flooded: a condition in which the soil surface is temporarily covered with flowing water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, inflow from the high tides, or any combination of sources.

frequently flooded, ponded, saturated: a frequency class in which flooding, ponding, or saturation is likely to occur often under usual weather conditions (more than 50 percent chance in any year, or more than 50 times in 100 years).

growing season: the part of the year when soils temperatures at 19.7 inches below the soil surface are higher than biological zero (5 degrees C). Growing season may be estimated by approximation the number of frost free days unless quantitative data is available from in-ground instrumentation. The growing season can be approximated as the period of time between the average date of the last killing frost to the average date of the first killing frost. This represents a temperature threshold of 28 degrees F or lower at a frequency of 5 years in 10. For Nebraska wetland determination applications see Field Office Technical Guide, Section I, Maps, Nebraska Maps, "Growing Seasons for Wetland Hydrology"

hydrophytic vegetation: plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

hydric soil: a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. This definition includes soils that developed under anaerobic conditions in the upper part but no longer experience these conditions due to hydrologic alteration such as those hydric soils that have been artificially drained or protected (e.g., ditches or levees).

long duration: a duration class in which inundation for a single event ranges from 7 days to 1 month.

map unit: a collection of areas defined and named the same in terms of their soil components or miscellaneous areas or both.

map unit components: the collection of soils and miscellaneous areas found within a map unit.

phase, map unit: a subdivision of a map unit based on features that affect its use and management (e.g., slope, surface texture, stoniness, and thickness).

ponded: a condition in which water stands in a closed depression. The water is removed only by percolation, evaporation, or transpiration.

saturated: a condition in which all voids (pores) between soil particles are filled with water.

soil series: a group of soils having horizons similar in differentiating characteristics and arrangements in the soil profile, except for texture of the surface layer.

very long duration: a duration class in which inundation for a single event is greater than 1 month.