

Hydric Soil Overview

- All information is based upon current deliberations and recommendations of the National Technical Committee for Hydric Soils (NTCHS)
- The NTCHS consists of members from NRCS, COE, EPA, FWS, BLM, FS, & 6 Universities

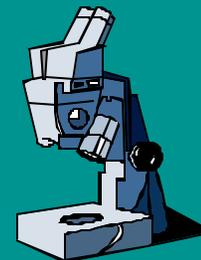
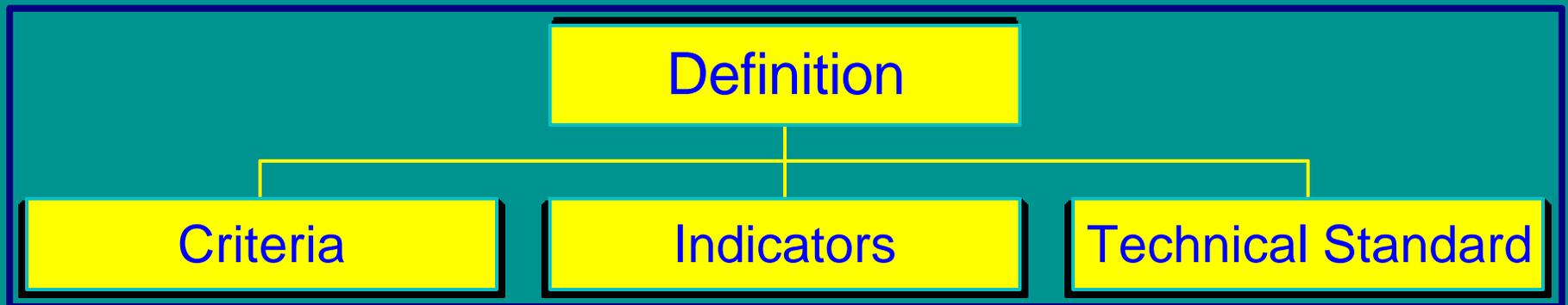
Objectives

- Define terms used and describe procedures specified by the official hydric soil definition and criteria.
- Explain difference between definition, criteria, field indicators, and technical standard.
- Explain controversial or ambiguous aspects.

Introduction

- Hydric soils are usually identified because wetlands are being delineated for government regulation.
 - They may also be identified for wetland restoration programs, CRP, etc
- Hydric Soil identification is a process that involves both policy and science
 - “hydric soils are discrete boundaries on a natural continuum”
 - “jurisdictional wetlands are a psychological construct”
- This short section introduces the concept of a hydric soil and associated terminology

Hydric Soils



Definition

- “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” (59 Fed. Reg. 35680, 7/13/94)

Anaerobic

- Waterlogging process
 - Microbes use up O₂
 - H₂O retards oxygen diffusion to soil
- Technical Definition
 - Free of all O₂
 - Depleted enough to stress plants
- Measurement
 - O₂ meters, Pt electrodes, or a, a' dipyrityl
- Problems
 - Difficult to measure O₂, climate patterns, Reduction is “lower” than anaerobiosis

“long enough” “the upper part”

- Don't know exactly how long
 - as little as 2 days in a lab
 - possibly in as little as 1 week in the field
- The upper part is
 - the major portion of the rooting zone
 - usually 6 (sandy soils) to 12 inches (loamy soils)

“formed under conditions of”

- Artificial drainage does not alter hydric soil soil status
 - however, it can alter soil properties
 - less OM
 - compaction
 - shift microbial populations
 - change pH and salinity

Growing Season

- Above biological zero in upper part
 - 5 C, 41 F
- Rough estimate
 - soil temp. regimes
- More accurate
 - first frost free dates in soil survey report
- WETS Table

Criteria

The criteria for Hydric Soils (Fed. Reg., 2/24/95)

- 1 All Histels except Folistels and Histosols except Folists
- 2 The “saturation” criteria
- 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

“Saturation” criteria

2 Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:

a. swp drained with water table = 0.0 ft. during growing season

b. pd or vpd and have either

(1) water table = 0.0 ft. during growing season if all textures within 20 inches are fine sand or coarser

(2) water table ≤ 0.5 ft. during growing season if perm. ≥ 6.0 in./hr. in all layers w/in 20”

(3) water table ≤ 1.0 ft. during growing season if perm. < 6.0 in./hr. in any layer w/in 20”

Criteria

- Main purpose is to create hydric soil lists.
 - Not all soils on list are hydric,
 - If any portion of the range of estimated properties for a soil is within the criteria that soil appears on the hydric list. For example, if a soil w/ perm. < 6 in./hr. has an estimated water table of 1 to 2 ft. during any portion of the growing season, that soil would be on the hydric list, even though most of the range in estimated water table is outside the criteria.
 - Hydric list is an interpretative rating which must be confirmed by on-site investigations

Criteria, cont.

- Criteria are not intended for on-site application
- Criteria 1 is an indicator
- Data that proves criteria 3 or 4 exists can be used to document the presence of a hydric soil

Hydric Soil Indicators

- Indicators are not intended to replace or relieve the requirements contained in the Hydric Soil Definition
- Indicators are used to identify the hydric soil component of wetlands; however, there are some hydric soils that lack one of the currently listed indicators
- The indicators are “test positive” the lack of an indicator is not “test negative”

Draft Data Standard for Hydric Soils Requirements

- Water table measurements
- Redox potential measurements
- Reduced Iron (Fe II) measurements
- In-situ pH measurements
- On-site precipitation data
- Replicates

Summary

- All hydric soils must meet the definition
 - Criteria are used to generate lists
 - Lists are used off-site to determine if an area is likely or not to contain hydric soils
 - Indicators are used to identify hydric soils on site
 - Technical standard is used with data
 - To prove a hydric soil exists in the absence of an indicator, and to develop new indicators

Want to know more?

- **Publications**

- **NTCHS Interagency Field Indicators**
- **Vepraskas - “Redoximorphic Features”**
- **SSSA, Vepraskas and Sprecher - “Aquic Conditions and Hydric Soils: The Problem Soils”**
- **Tiner - “Wetland Indicators”, CRC Press, May 99**
- **Vepraskas and Richardson - “Wetland Soils”, Fall 2000**

- **Training**

- **Interagency Hydric Soils for Wetland Delineation**
- **NRCS Advanced Hydric Soils**
- **NRCS CD-ROM, “Hydric Soils Interactive”** M. Whited - 4/2000

WWW Sites

- <http://www.pwrc.usgs.gov/wli/>
 - NRCS Wetland Science Inst.
- <http://www.statlab.iastate.edu/soils/hydric>
 - NRCS/NTCHS hydric soils homepage
- <http://www.nscss.org/soil.html>
 - Consulting soil scientists, lots of links
- <http://sws.org/wetlandweblinks.html>
 - SWS, lots of wetland links
- <http://www.epa.gov/region03/hydricsoils/index.htm>
 - Mid-Atlantic hydric soils committee
- http://www.soils.umn.edu/hsi_web/
 - UMinn, Hydric Soils Interactive CD on-line