Hydric Soils

Definition of Hydric Soils

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 (USDA, Soil Conservation Service, 1987, as revised). This definition identifies soils that are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

Hydric Soil Criteria

The above definition identifies in generalities those properties that are associated with wetness. However, in order to determine whether a specific soil is or is hydric, specific information such as inundation depth and duration is needed. For that reason, criteria which identify those soil properties unique to hydric soils have been established. These criteria are utilized to identify phases of soil series that normally are associated with wetlands. The criteria used in Florida are those criteria established by the NTCHS (USDA, Soil Conservation Service, 1991, as revised).

By comparing the hydric soil criteria with data in published soil surveys, county lists of hydric soils are developed. These individual lists are available at local field offices of the Soil Conservation Service. A state list of hydric soils is available by combining the county lists. Hydric soil lists when used in conjunction with the published soil survey series are excellent land use planning tools. However, an on-site examination is always required when making a hydric soil determination for a specific site. A specific area is not necessarily considered to have hydric soils just because it is dominated by soils on any hydric soils list. Hydric soils must be field identified by verifying the presence of one or more of the hydric soil indicators.

Field Identification of Hydric Soils

Hydric Soil Indicator Concept:

The Hydric Soil Indicator concept is based on the premise that hydric soils develop and exhibit characteristic morphologies that result from repeated periods of saturation and/or inundation for more than a few days. Saturation or inundation when combined with anaerobic microbiological activity in the soil causes a depletion of oxygen. This anaerobiosis promotes biogeochernical processes such as the accumulation of organic matter and the reduction, translocation, and/or accumulation of iron and other reducible elements. These processes result in characteristic morphologies which persist in the soil during both wet and dry periods, making them particularly useful for identifying hydric soils.

Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds. The presence of hydrogen sulfide gas (rotten egg odor) is a strong indicator of a hydric soil, but this indicator is found in only the wettest sites containing sulfur.

Hydric Soil Indicator Identification Procedure

To document a hydric soil first remove all loose leaf matter, needles, bark, and other easily identified plant parts (often called "duff" layer) to expose the surface. Dig a hole and describe the soil profile to a depth of at least 50 cm (20 inches {in.}). Using the completed soil description specify which of the Hydric Soil Indicators have been matched. Deeper examination of soil may be required where Hydric

Soil Indicators are not easily seen within 50 cm (20 in.) of the surface. It is always recommended that soils be excavated and described as deep as necessary to make reliable interpretations. Examination to less than 50 cm (20 in.) may suffice in soils with surface horizons of organic material or mucky mineral material because these shallow organic accumulations only occur in hydric soils. Depths used in are measured from the muck or mineral soil surface unless otherwise indicated. All colors refer to moist Munsell colors.

Hydric Soil Indicator Schema:

Each of the Hydric Soil Indicators is structured as follows:

1. Alpha-numeric Listing
2. Short Name
3. Applicable Land Resource Regions (LRRs)
4. Description of the Field Indicator
5. User Notes

For example, A1 indicates the first indicator for all soils; *Histosol* is the short name; the indicator is for use in *all LRRs; classifies as a Histosol, except Folists* is the indicator description; helpful User Notes are added. Unless otherwise indicated, all mineral layers above any of the Indicators have dominant chroma 2 or less, or the layer(s) with dominant chroma of more than 2 is less than 15 cm (6 in.) thick. Also, unless otherwise indicated, nodules and concretions are not considered to be redox concentrations.

The indicators are designed to be regionally specific. Each indicator states the Land Resource Regions (LRRs) in which it can be used. The geographic extent of LRRs is defined in USDA Ag. Handbook 296 **(USDA, SCS,** 1981) and displayed for Florida to the right.

Land Resource Region P is typified by gently sloping to steep uplands. Dominate soils are sandy excessively well drained soils like those of Eglin Air Force Base and in Suwannee County and well drained red and yellow soils that extend from Pensacola to Tallahassee. Land Resource Regions T and U have similar soils. The regions are separated climatically by a line from Cedar Key through Alachua County to St. Augustine.

Indicators

Hydric soil indicators are divided into two groups. The first group has those indicators normally used to delineate hydric soils. These normally occur at the hydric soil boundary. The second group are often used to identify hydric soils but, because they are maximum expressions of anaerobiosis, they are rarely used for delineation purposes.

Hydric Soil Delineation Indicators for All Soils

These indicators are to be used for all soils regardless of texture.

A5. Stratified Layers. *For use in all LRRs.* **Several stratified layers starting within the upper 15 cm (6 in.) of the soil surface. One or more of the layers has value 3 or less with chroma 1 or less and/or it is muck, mucky peat, peat, or mucky modified mineral texture. The remaining layers have value 4 or more and chroma 2 or less.**

Stratified Layers User Notes: Use of this indicator may require assistance from a trained soil scientist with local experience. The minimum organic carbon content of at least one layer of this indicator is slightly less than required for indicator A7 (Mucky Modified Mineral Texture); at least 70 percent of soil material is covered, coated, or similarly masked with organic matter. An undisturbed sample must

be observed. Individual strata are dominantly less than 2.5 cm (I in.) thick. A hand lens is an excellent tool to aid in the identification of this indicator. Many alluvial soils have stratified layers at greater depths; these are not hydric soils. Many alluvial soils have stratified layers at the required depths but lack chroma 2 or less; these do not fit this indicator. Stratified Layers occur in any type soil material

A6. Organic Bodies. *For use in all LRRs.* **Presence of 2% or more organic bodies of muck or a mucky modified mineral texture, approximately 1 to 3 cm (0.5 to 1 in.) in diameter, starting within 15 cm (6 in.) of the soil surface. In some soils the organic bodies are smaller than 1 cm.**

Organic Bodies User Notes: The percent organic carbon in organic bodies is the same as in the Muck or Mucky Texture Indicators. This indicator includes the indicator previously named "accretions". Many organic bodies lack the required amount of organic carbon and are not indicative of hydric soils. The content of organic carbon should be known before this indicator is used. Organic bodies of hemic (mucky peat) and/or fibric (peat) soil materials qualify as this indicator. Material consisting of partially decomposed root tissue does not qualify as the indicator.

A7. 5 cm Mucky Mineral. *For use in all LRRs.* **A mucky modified mineral surface layer 5 cm (2 in.) or more thick starting within 15 cm (6 in.) of the soil surface.**

5 cm Mucky Mineral User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon content is at least 5 and ranges to as high as 18 percent. The percentage requirement is dependent upon the clay content of the soil; the higher the clay content, the higher the organic carbon requirement. An example is mucky fine sand, which has at least 5 percent organic carbon but not more than about 12 percent organic carbon. Another example is mucky sandy loam which has at least 7 percent organic carbon but not more than about 14 percent organic carbon.

A8. Muck Presence. *For use in LRR U.* **A layer of muck with value 3 or less and chroma I or less within 15 cm (6 in.) of the soil surface.**

Muck Presence User Notes: The presence of muck of any thickness within 15 cm (6 in.) is the only requirement. Normally this expression of anaerobiosis is at the soil surface; however, it may occur at any depth within 15 cm (6 in.). Muck is sapric soil material with at least 12 to 18 percent organic carbon. Organic soil material is called muck (sapric soil material) if virtually all of the material has undergone sufficient decomposition such that plant parts can not be identified. Hemic (mucky peat) and fibric (peat) soil materials do not qualify. To determine if muck is present, first remove loose leaves, needles, bark, and other easily identified plant remains. This is sometimes called a leaf/root mat. Then examine for decomposed organic soil material. Generally muck is black and has a "greasy" feel; sand grains should not be evident.

A9. I cm Muck. *For use in LRRs P and T.* **A layer of muck I cm (0.5 in.) or more thick with value 3 or less and chroma I or less starting within 15 cm (6 in.) of the soil surface.**

1 cm Muck User Notes: Unlike Indicator A8 (Muck Presence) there is a minimum thickness requirement of 1 cm. Normally this expression of anaerobiosis is at the soil surface; however, it may occur at any depth within 15 cm (6 in.). Muck is sapric soil material with at least 12 to 18 percent organic carbon. Organic soil material is called muck (sapric soil material) if virtually all of the material has undergone sufficient decomposition to limit recognition of the plant parts. Hemic (mucky peat) and fibric (peat) soil materials do not qualify. To determine if muck is present, first remove loose leaves, needles, bark, and other easily identified plant remains. This Is sometimes called a leaf/root mat. Then examine for decomposed organic soil material. Generally muck is black and has a "greasy" feel; sand grains should not be evident.

Hydric Soil Delineation Indicators for Sandy Soils

These indicators are to be used for soil materials with a USDA texture of loamy fine sand and coarser.

S4. Sandy Gleyed Matrix. *For use in all LRRs.* **A gleyed matrix which occupies 60% or more of a layer starting within 15 cm (6 in.) of the soil surface.**

Sandy Gleyed Matrix User Notes: Gley colors are not synonymous with gray colors. Gley colors are those colors that are found on the gley page (Kollmorgen Instruments Corporation, 1994). They have hue N, 1OY, 5GY, 1OGY, 5G, 1OG, 5BG, 1OBG, 5B, 1OB, or 5PB with value 4 or more. The gleyed matrix only has to be present within 15 cm (6 in.) of the surface. Soils with gleyed matrices are saturated for a significant duration; this is why no thickness of the layer is required.

S5. Sandy Redox. *For use in all LRRs.* **A layer starting within 15 cm (6 in.) of the soil surface that is at least 10 cm (4 in.) thick, and has a matrix with 60 % or more of its volume chroma 2 or less with 2% or more distinct or prominent redox concentrations as soft masses and/or pore linings.**

Sandy Redox User Notes: Distinct and prominent redox concentrations which include iron and manganese masses (reddish mottles) and pore linings are required. Included within this concept of redox concentrations are iron/manganese bodies as soft masses with diffuse boundaries. The iron/manganese masses are 2 to 5 mm in size and have a value 3 or less and a chroma 3 or less; most commonly they are black. Iron/manganese masses should not be confused with concretions and nodules associated with plinthitic soils or relict concretions. Common to many (more than 2%) redox concentrations within the layer of interest are required.

S6. Stripped Matrix. For *use in all LRRs.* **A layer starting within 15 cm (6 in.) of the soil surface in which iron/manganese oxides and/or organic matter have been stripped from the matrix exposing the primary base color of soil materials. The stripped areas and translocated oxides and/or organic matter form a diffuse splotchy pattern of two or more colors. The stripped zones are 10% or more of the volume; they are rounded and approximately I to 3 cm (0.5 to 1 in.) in diameter.**

Stripped Matrix User Notes: This indicator includes the indicator previously named "polychromatic matrix" (Florida Soil Survey Staff, 1992) as well as the term "streaking" (Environmental Laboratory, 1987). The combined area of stripped (uncoated) soil materials I to 3 cm (0.5 to I in.) Must be at least 10 percent of the layer of interest. Commonly the splotches of color have value 5 or more and chroma 1 and/or 2 (stripped) and chroma 3 and/or 4 (unstripped). The matrix may lack the 3 and/or 4 chroma material. The mobilization and translocation of the oxides and/or organic matter is the important process and should result in splotchy coated and uncoated soil areas. This indicator is restricted to depressional landforms, concave positions of interstream divides, and areas frequently flooded for long to very long duration. Slough landforms are included in this concept.

S7. Dark Surface. *For use in all LRRs.* **A layer 10 cm (4 in.) or more thick starting within the upper 15 cm (6 in.) of the soil surface with a matrix value 3 or less and chroma 1 or less. At least 70% of the visible soil particles must be covered, coated, or similarly masked with organic material. The matrix color of the layer immediately below the dark layer must have chroma 2 or less.**

Dark Surface User Notes: The organic carbon content of this indicator is slightly less than required for mucky mineral indicator. An undisturbed sample must be observed. A 10X or 15X hand lens is an excellent too to help determine percentages. Many wet soils have a ratio of about 50 percent soil particles that are covered or coated with organic matter and about 50 percent uncoated or uncovered soil particles, giving the soil a salt and pepper appearance. Where the percent of coverage is less than 70 percent throughout the 10 cm (4 in.) thickness, a Dark Surface indicator is not present.

Hydric Soil Delineation Indicators for Loamy and Clayey Soils

These indicators are to be used for soil materials with a USDA texture of loamy very fine sand and finer.

F2. Loamy Gleyed Matrix. *For use in all LRRs.* **A gleyed matrix that occupies 60% or more of a layer starting within 30 cm (12 in.) of the soil surface.**

Loamy Gleyed Matrix User Notes: Gley colors are not synonymous with gray colors. Gley colors are those colors that are found on the gley pages (Kollmorgen Corporation, 1975). They have hue N, 10Y, 5GY, 10GY, 5G, 10G, 5BG, 10BG, 5B, 10B, or 5PB, with value 4 or more. The gleyed matrix only has to be present within 30 cm (12 in.) of the surface. Soils with gleyed matrices are saturated for a significant duration, this is why no thickness of the layer is required.

F3. Depleted Matrix. *For use in all LRRs.* **A layer at least 15 cm (6 in.) thick with a depleted matrix that has 60% or more chroma 2 or less starting within 25 cm (10 in.) of the surface.**

Depleted Matrix User Notes: The depleted matrix must begin within 25 cm (10 in.) and continue for at least 15 cm (6 in.). The minimum thickness requirement is 5 cm (2 in.) if the depleted matrix is the mineral surface layer. Redox concentrations including iron and manganese masses (reddish mottles) and/or pore linings are required in soils with matrix colors of 4/1, 4/2, and 5/2. See below for the definition of a depleted matrix. The low chroma matrix must be due to wetness and not a relict or parent material feature.

Depleted Matrix -- A depleted matrix refers to the volume of a soil horizon or subhorizon from which iron has been removed or transformed by processes of reduction and translocation to create colors of low chroma and high value. A and E horizons may have low chromas and high values and may therefore be mistaken for a depleted matrix; however, they are excluded from the concept of depleted matrix unless common to many, distinct or prominent redox concentrations as soft masses or pore linings are present. The following combinations of value and chroma identify a depleted matrix:

1. Matrix value 5 or more and chroma 1 or less with or without redox concentrations- as soft masses and/or pore linings; or
2. Matrix value 6 or more and-chroma 2 or less with or without redox concentrations as soft masses and/or pore linings; or
3. Matrix value 4 or 5 and chroma 2 and 2 percent or more distinct or prominent redox concentrations as soft masses and/or pore linings; or
4. Matrix value 4 and chroma I and 2 percent or more distinct or prominent redox concentrations as soft masses and/or pore linings.

F10. Marl. *For use in LRR U.* **A layer of marl with a value 5 or more starting within 10 cm (4 in.) of the soil surface.**

Marl User Notes: Marl is a limnic material deposited in water by precipitation of $CaC0_3$ by algae as defined in Soil Taxonomy (Soil Survey Staff,. 1975). Marl has a Munsell value 5 or more and reacts with dilute HCl to evolve $C0_2$. Marl is not the carbonatic substrate material associated with limestone bedrock. Some soils have materials with all the properties of marl except they lack the required Munsell value. These soils are hydric if the required value is present within 10 cm (4 in) of the soil surface. Normally this indicator occurs at the soil surface.

F12. Iron/Manganese Masses. *For use in LRRs P, and T.* **On flood plains, a layer 10 cm (4 in.) or**

more thick with 40 % or more of the volume with value 5 or more and chroma 2 or less, and 2% or more distinct or prominent redox concentrations as soft iron/manganese masses with diffuse boundaries. The layer occurs entirely within 30 cm (12 in.) of the soil surface. Iron/manganese masses have value 3 or less and chroma 3 or less; most commonly they are black. The thickness requirement is waived if the layer is the mineral surface layer.

Iron/Manganese Masses User Notes: These iron/manganese masses are usually small (2 to 5 mm in size) and have a value and chroma 3 or less; most commonly they are black. The low matrix chroma must be due to wetness and not be a relict or parent material feature. Iron/manganese masses should not be confused with the larger and redder iron nodules associated with plinthitic soils or with concretions that have abrupt boundaries. This indicator occurs on flood plains of rivers such as the Apalachicola.

F13. Umbric Surface. *For use in all LRRs.* **On concave positions of interstream divides and in depressions, a layer 15 cm (6 in.) or more thick starting within the upper 15 cm (6 in.) of the soil surface with value 3 or less and chroma 1 or less immediately underlain by a layer 10 cm (4 in.) or more thick with chroma 2 or less.**

Umbric Surface User Notes: Thickness requirements are slightly less that those required for an umbric epipedon. Umbric surfaces on higher landscape positions, such as Umbrepts, are excluded.

Hydric Soil Identification Indicators for All Soils

Al. Histosol. *For use in all LRRs.* **Classifies as a Histosol, except Folists.**

Histosol User Notes: A Histosol has 40 cm (16 in.) or more of the upper 80 cm (32 in.) as organic soil material. Organic soil material has an organic carbon content (by weight) of 12 to 18 percent, or more, depending on the clay content of the soil. These materials include muck (sapric soil material), mucky peat (hemic soil material), or peat (fibric soil material). Aquic conditions or artificial drainage are required.

A2. Histic Epipedon. *For use in all LRRs.* **A histic epipedon.**

Histic Epipedon User Notes: Most histic epipedons are surface horizons 20 to 40 cm (8 to 16 in.) or more thick of organic soil material. Aquic conditions or artificial drainage are required. See Soil Taxonomy (Soil Survey Staff, 1975). Slightly lower organic carbon contents are allowed in plowed soils (Keys to Soil Taxonomy, 1992).

A3. Black Histic. *For use in all LRRs.* **A layer of peat, mucky peat, or muck 20 to 40 cm (8 to 16 in.) or more thick starting within the upper 15 cm (6 in.) of the soil surface having hue 10YR or yellower, value 3 or less, and chroma I or less.**

Black Histic User Notes: Unlike indicator A2 this indicator does not require proof of aquic conditions or artificial drainage.

A4. Hydrogen Sulfide. *For use in all LRRs.* **A hydrogen sulfide odor within 30 cm (12 in.) of the soil surface.**

Hydrogen Sulfide User Notes: This "rotten egg smell" indicates that sulfate-sulfur has been reduced and therefore the soil is anaerobic. In most hydric soils, the sulfidic odor is only present when the soil is saturated and anaerobic.

Hydric Soil Identification Indicators for Sandy Soils

S1. Sandy Mucky Mineral. *For use in all LRRs.* **A mucky modified mineral layer 5 cm (2 in.) or more thick starting within 15 cm (6 in.) of the soil surface.**

Sandy Mucky Mineral User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon content is at least 5 and ranges to as high as 14 percent for sandy soils. The percentage requirement is dependent upon the clay content of the soil; the higher the clay content, the higher the organic carbon requirement. An example is mucky fine sand, which has at least 5 percent organic carbon but not more than about 12 percent organic carbon.

S8. Polyvalue Below Surface. *For use in LRR T.* **A layer with value 3 or less and chroma 1 or less starting within 15 cm (6 in.) of the soil surface underlain by a layer(s) where translocated organic matter unevenly covers the soil material forming a diffuse splotchy pattern. At least 70% of the visible soil particles in the upper layer must be covered, coated, or masked with organic material. Immediately below this layer, the organic coating occupies 5 % or more of the soil volume and has value 3 or less and chroma 1 or less. The remainder of the soil volume has value 4 or more and chroma 1 or less.**

Polyvalue Below Surface User Notes: This indicator describes soils with a very dark gray or black surface or near surface layer less than 10 cm (4 in.) thick underlain by a layer where organic matter has been differentially distributed within the soil by water movement. The mobilization and translocation of organic matter results in splotchy coated and uncoated soil areas as described in the Sandy Redox and Stripped Matrix Indicators except that for S8 the whole soil is in shades of black and gray. The chroma 1 or less is critical because it limits application of this indicator to only those soils which are depleted of iron. This indicator includes the indicator previously termed "streaking" by the Army COE. This indicator is restricted to depressional landforms, concave positions of interstream divides, and areas frequently flooded for long to very long duration. Slough landforms are included in this concept.

S9. Thin Dark Surface. For use in *LRR T.* **A layer 5 cm (2 in.) or more thick within the upper 15 cm. (6 in.) of the surface, with value 3 or less and chroma I or less. At least 70% of the visible soil particles in this layer must be covered, coated, or masked with organic material. This layer is underlain by a layer(s) with value 4 or less and chroma 1 or less to a depth of 30 cm (12 in.) or to the spodic horizon, whichever is less.**

Thin Dark Surface User Notes: This indicator describes soils with a very dark gray or black near-surface layer at least 5 cm (2 in.) thick underlain by a layer where organic matter has been carried downward by flowing water. The mobilization and translocation of organic matter results in an even distribution of organic matter in the eluvial (E) horizon. The chroma 1 or less is critical because it limits application of this indicator to only those soils which are depleted of iron. This indicator commonly occurs in hydric Spodosols; however, the identification of a spodic horizon is not required. This indicator is restricted to depressional landforms, concave positions of interstream divides, and areas frequently flooded for long to very long duration. Slough landforms are included in this concept.

Hydric Soil Identification Indicators for Loamy and Clayey Soils

F1. Loamy Mucky Mineral. *For use in all LRRs.* **A mucky modified mineral layer 10 cm (4 in.) or more thick starting within 15 cm (6 in.) of the soil surface.**

Loamy Mucky Mineral User Notes: "Mucky" is a USDA texture modifier for mineral soils. The organic carbon is at least 8 percent but can range to as high as 18 percent. The percentage requirement is dependent upon the clay content of the soil; the higher the clay content, the higher the organic carbon

redox concentrations that occur as Fe pore linings or masses within the depletion(s) or surrounding the depletion(s).

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/OBS79/31.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and USDA Soil Conservation Service, Washington, DC. Cooperative technical publication. (Revisions Being Proposed).

Florida Soil Conservation Staff. 1984. 26 Ecological Communities of Florida. USDA/SCS, Florida, Gainesville, FL.

Hurt, G.W., W.G. Henderson, Jr., and W.E. Puckett. 1990. Field Identification of Hydric Soils, in Hydric Soils of Florida Handbook, V.W. Carlisle, (ed.). Florida Association of Professional Soil Classifiers. Gainesville, FL.

Hurt, G.W., and W.E. Puckett, 1992. Proposed Hydric Soil Criteria and their Field Identification, in Proceedings of the Eight International Soil Correlation Meeting (VII ISCOM): Characterization, Classification, and Utilization of Wet Soils. J.M. Kimble, (ed.). USDA, Soil Conservation Service, National Soil Survey Center, Lincoln, NE.

Kollmorgen Corporation. 1975. Munsell. Soil Color Charts. Macbeth Division of Kollmorgen Corp., Baltimore, MD.

Soil Survey Staff. 1975. Soil Taxonomy. A basic system of soil classification for making and interpreting soil surveys. USDA-SCS Agricultural Handbook 436 U.S. Gov. Print. Office. Washington, DC.

Soil Survey Staff. 1981. Soil Survey Manual. Chapter 4. USDA-SCS U.S. Gov. Print. Office, Washington, DC.

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service, National Wetlands Inventory, Newton Corner, MA and Delaware Department of Natural Resources and Environmental Control, Wetlands Section, Dover, DE. Cooperative Publication.

USDA - Soil Conservation Service. 1987. Hydric Soils of the United States. In cooperation with the National Technical Committee for Hydric Soils. USDA-SCS, Washington, DC.

USDA - Soil Conservation Service. 1991. Hydric Soils of the United States. In cooperation with the National Technical Committee for Hydric Soils. USDA-SCS, Washington, DC.

Watts, F.C. and Hurt, G.W. 1991. Determining Depths to the Seasonal High Water Table and Hydric Soils in Florida. Soil Survey Horizons, Vol. 32, No. 4. Madison, WI.

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