

**Field Indicators of Hydric Soils
OREGON**

Oregon Land Resource Regions (LRR): A,B,D,E

Western Mountains, Valleys, and Coast: A - Northwest Forest and Coast
 E - Rocky Mountain Forests and Rangeland

Arid West: B - Columbia/Snake River Plateau
 D - Interior Deserts

Unless otherwise indicated, all mineral layers above any of the indicators must have a dominant chroma of ≤ 2 or the layer(s) with dominant chroma of more than 2 must be < 6 in. thick

Absence of any listed indicator does NOT preclude the soil from being hydric
 See guidance in Chapters 3 and 5 for identifying hydric soils that lack indicators

Notes:

- > Dig to depth required to confirm presence/absence of indicators. For most soils recommended depth is 20 inches from the soil surface
- > Nodules and concretions are not considered to be redox concentrations unless otherwise noted
- > Read the indicator's full USER NOTES and not just abbreviated notes below

INDICATOR	APPLICABLE LRR	STARTING	A LAYER	ENTIRELY WITHIN	MINIMUM THICKNESS	TECHNICAL DESCRIPTION	ABBREVIATED USER NOTES
ALL SOILS							
A1: Histosol	A,B,D,E	see description				classifies as a Histosol (except Folists) In a Histosol, 16" or more of upper 32" is organic soil material	Organic soil material has: Organic carbon content (by weight) of 12-18% or more, dependent on clay content Includes: muck, mucky peat, peat
A2: Histic Epipedon	A,B,D,E	see description				Histic epipedon underlain by mineral soil with chroma ≤ 2	See Indicator A1 for organic carbon (OC) requirements Most Histic epipedons are surface horizons ≥ 8 " thick of organic soil material Proof of aquic conditions or artificial drainage required - can be assumed if indicators of hyrophytic vegetation and hydrophytic hydrology
A3: Black Histic	A,B,D,E	within 6" of surface	≥ 8 " thick			a layer of peat, mucky peat, or muck Hue 10YR or yellower, value ≤ 3 , chroma ≤ 1 underlain by mineral soil material with chroma ≤ 2	See Indicator A1 for organic carbon (OC) requirements Does NOT require proof of aquic conditions or artificial drainage
A4: Hydrogen Sulfide	A,B,D,E	within 12" of surface				hydrogen sulfide (rotten egg) odor	Most commonly found in permanently saturated and inundated soils May be pronounced or very fleeting as gas dissipates rapidly
A9: 1cm Muck	D	within 6" of surface	≥ 0.5 " thick (1cm)			a layer with value ≤ 3 , chroma ≤ 1	Muck (sapric) = well-decomposed organic soil material with at least 12-18% organic carbon. Less than 17% fibers after rubbing, greasy feel, sand grains should not be evident
A11: Depleted Below Dark Surface	A,B,D,E	within 12" of surface	see min. thickness		6" OR 2" if the 2" consist of fragmental soil material	a layer with a depleted or gleyed matrix that has $\geq 60\%$ chroma ≤ 2 loamy/clayey layer(s) above depleted/gleyed layer must have value ≤ 3 and chroma ≤ 2 sandy material above depleted/gleyed layer must have value ≤ 3 and chroma ≤ 1 and $\geq 70\%$ of visible soil particles must be covered, coated or masked with organic material	Occurs in Mollisols, soils with umbric epipedons & dark colored ochric epipedons For dark surface layers > 12 " thick, use indicator A12 Matrix value/chroma of 4/1, 4/2, 5/2 - require $\geq 2\%$ distinct/prominent redox conc. including Fe/Mn soft masses and/or pore linings
A12: Thick Dark Surface	A,B,D,E	below 12" of surface	≥ 6 " thick			a layer with a depleted or gleyed matrix that has $\geq 60\%$ chroma ≤ 2 layer(s) above this layer must have value ≤ 2.5 and chroma ≤ 1 to a depth of at least 12" and in any remaining layer(s) above depleted/gleyed layer, must have value ≤ 3 and chroma ≤ 1 sandy material above depleted/gleyed layer must have $\geq 70\%$ of visible soil particles covered, coated, or masked with organic material	The soil has depleted/gleyed matrix below dark surface layer ≥ 12 " thick matrix value/chroma of 4/1, 4/2, 5/2 - requires $\geq 2\%$ distinct/prominent redox conc. including Fe/Mn soft masses and/or pore linings See glossary definition for depleted/gleyed matrix Gleyed matrix includes reduced soils that change color upon exposure to air
SANDY SOILS							
S1: Sandy Mucky Mineral	A,B,D,E	within 6" of surface	≥ 2 " thick			a layer of mucky modified sandy soil material	Mucky is a texture modifier for mineral soils Organic carbon at least 5% - 14% dependent on clay content
S4: Sandy Gleyed Matrix	A,B,D,E	within 6" of surface			no requirement	a gleyed matrix that occupies $\geq 60\%$ of the layer	see glossary for Gleyed Matrix definition and colors
S5: Sandy Redox	A,B,D,E	within 6" of surface	≥ 4 " thick			has matrix with $\geq 60\%$ chroma ≤ 2 with $\geq 2\%$ distinct/prominent redox concentrations as soft masses and/or pore linings	
S6: Stripped Matrix	A,B,D,E	within 6" of surface			no requirement	layer in which Fe/Mn oxides and/or organic matter have been stripped from matrix causes a faint, diffuse splotchy pattern of two or more colors stripped zones are $\geq 10\%$ of the volume, are rounded, and approx 0.5 - 1" diameter	Requires common to many areas of stripped soil materials Commonly splotches have value ≥ 5 and chroma 1 or 2 (stripped) and chroma 3 or 4 (unstripped)

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LOAMY & CLAYEY							
F1: Loamy Mucky Mineral	A,B,D,E except MLRA1	within 6" of surface	≥4" thick			a layer of mucky modified loamy or clayey soil material	Mucky is a texture modifier for mineral soils Organic carbon is at least 8% - 18% dependent on clay content
F2: Loamy Gleyed Matrix	A,B,D,E	within 12" of surface			no requirement	a gleyed matrix that occupies ≥ 60% of the layer	See glossary for Gleyed Matrix definition and colors
F3: Depleted Matrix	A,B,D,E				2" if the 2" entirely within the upper 6" OR 6" starting within 10" of the soil surface	a layer that has depleted matrix with ≥60% chroma ≤2	Matrix value/chroma of 4/1, 4/2, 5/2 - requires ≥2% distinct/prominent redox conc. including Fe/Mn soft masses and/or pore linings Low chroma matrix must be result of wetness-not relict or parent material feature See glossary for definition of depleted matrix
F6: Redox Dark Surface	A,B,D,E		≥4" thick	upper 12" of mineral soil		matrix value ≤3 and chroma ≤1 and ≥2% distinct/prominent redox soft masses or pore linings OR matrix value ≤3 and chroma ≤2 and ≥5% distinct/prominent redox soft masses or pore linings	In dark surfaces, often redox are small and may be masked by organic matter If dry colors used, need matrix chroma of 1 or 2 and distinct/prom redox See User Notes
F7: Depleted Dark Surface	A,B,D,E		≥4" thick	upper 12" of mineral soil		redox depletions with value ≥5 and chroma ≤2 in a layer that has: a. matrix value ≤3 and chroma ≤1 and ≥10% redox depletions or b. matrix value ≤3 and chroma ≤2 and ≥ 20% redox depletions	Take care not to mistake mixing of eluvial/illuvial materials as depletions See User Notes
F8: Redox Depressions	A,B,D,E		≥2" thick	upper 6"		in closed depressions subject to ponding ≥5% distinct/prominent redox conc as soft masses or pore linings no color requirement for the soil matrix	On depressional landforms (vernal pools, playa lakes, rainwater basins, potholes) Does not occur in micro depressions on convex landscapes Redox layer may extend below 6" as long as at least 2" is within 6" of the surface
F9: Vernal Pools	B,D		≥2" thick	upper 6"		In closed depressions subject to ponding presence of a depleted matrix with ≥60% chroma ≤2	Matrix value/chroma of 4/1, 4/2, 5/2 - require ≥2% distinct/prominent redox conc. See glossary for depleted matrix definition
PROBLEM SOILS	To use these indicators, follow the procedure described in the section on Problematic Hydric Soils in Chapter 5						
A10: 2cm Muck	A,B,E	within 6" of surface	≥0.75" thick			a layer of muck with a value ≤3, chroma ≤1	See Notes Under A9
F18: Reduced Vertic	B,D		≥4" thick OR ≥2" thick	upper 12" OR upper 6"		In Vertisols & Vertic intergrades, a positive reaction to alpha, alpha-dipyridyl that: - is the dominant (>60%) condition of a layer of the mineral or muck soil surface, - occurs at least 7 continuous days and 28 cumulative days, and - occurs during a normal (within 16-84% of probable precipitation) or drier season/month	Follow procedures in the Hydric Soil Technical Note #8
TF2: Red Parent Material	A,B,D,E		≥4"	upper 12"	2" if the layer is the mineral surface layer	in parent material with hue of 7.5YR or redder, matrix value ≤4 and chroma ≤4 and ≥2% redox depletions and/or concentrations occurring as soft masses and/or pore linings (no contrast requirements)	Redox features most noticeable in red material include depletions and soft manganese masses that are black or dark reddish black

DEPLETED MATRIX

- Iron has been removed or transformed by reduction and translocation to create low chroma and high value.
- Does not include A, E, and calcic horizons unless common or many, distinct or prominent redox concentrations as soft masses or pore linings are present.
- **Reduced Matrix** is included in this concept and in the following color combinations

- Matrix value of 5 or more and chroma of 1, with or without redox concentrations occurring as soft masses and/or pore linings, or
- Matrix value of 6 or more and chroma of 2 or 1, with or without redox concentrations occurring as soft masses and/or pore linings, or
- Matrix value of 4 or 5 and chroma of 2, with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings, or
- Matrix value of 4 and chroma of 1, with 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings .
(USDA Natural Resources Conservation Service 2006b)

GLEYED MATRIX

- Has one of the following combinations of hue, value, and chroma
 - 10Y, 5GY, 10GY, 10G, 5BG, 10BG, 5B, 10B, or 5PB with value of 4 or more and chroma of 1; or
 - 5G with value of 4 or more and chroma of 1 or 2; or
 - N with value of 4 or more (USDA Natural Resources Conservation Service 2006b)

TEST FOR REDUCED SOILS [For soils that contain sufficient reduced (ferrous) iron. May not occur in soils with high pH]

1) COLOR CHANGE:

Mineral soil layer 4 in. or more thick starting within 12 inc. of the soil surface has a matrix value of 4 or more and chroma 2 or less becomes redder by one or more pages in hue and/or increases one or more in chroma when exposed to air within 30 minutes (Vepraskas 1992)

2) ALPHA, ALPHA-DIPYRIDYL DYE

Apply small amount by dropper to a freshly broken ped face
Mineral soil layer 4 in. or more thick within a depth of 12 in. of the soil surface with a reaction in at least 60% of the layer within 30 seconds evidence of a pink or red coloration to the dye during the growing season