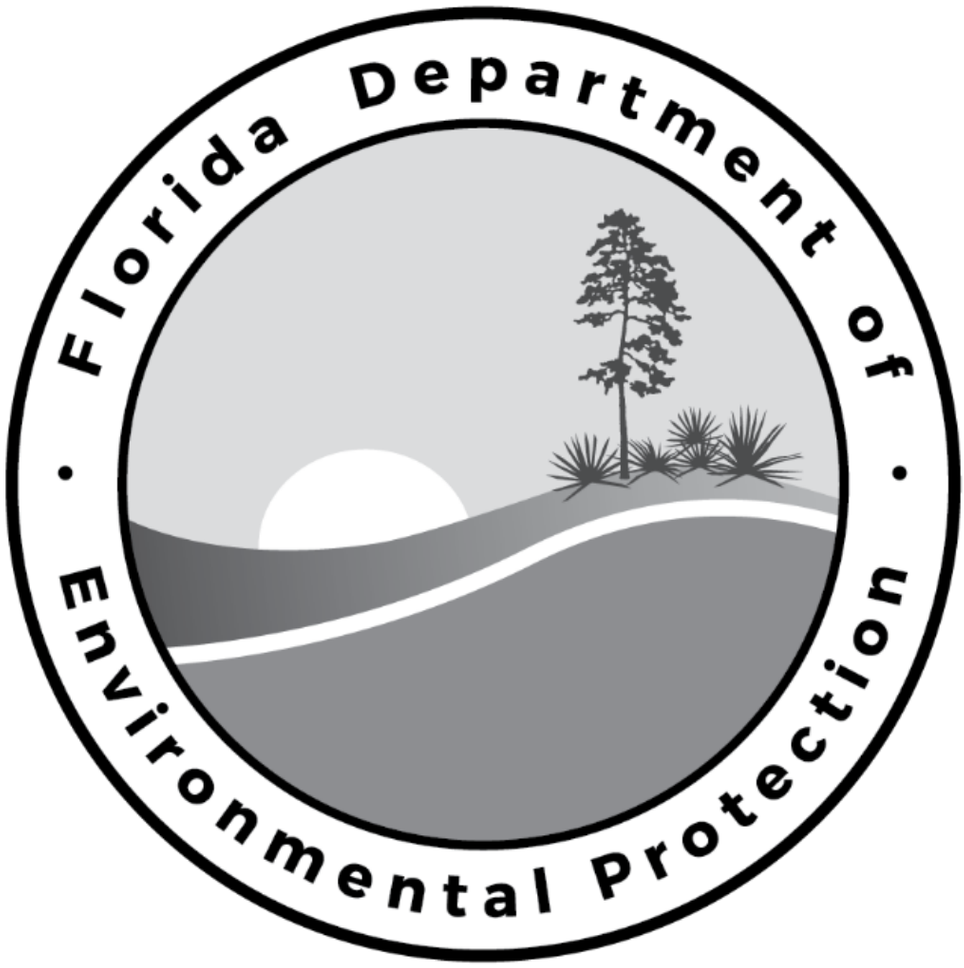
Chapter 62-340, F.A.C.
Data Form Guide

Wetland and Other Surface Water Delineation
Version: August 2016 ©



From the Staff of
Wetland Evaluation and Delineation
Submerged Lands and Environmental Resources Coordination
Florida Department of Environmental Protection

The content of this guide was compiled by members of the Florida Department of Environmental Protection Submerged Lands and Environmental Resources Coordination Wetland Evaluation and Delineation Staff. The express purpose of this document is to provide guidance to regulatory staff in order to maintain consistency in the applied field methodologies for wetland delineation pursuant to Chapter 62-340, F.A.C. The information contained in this guide was garnered from various sources pertinent to the field application of wetland delineation methodology outlined in Chapter 62-340, F.A.C. FDEP does not warrant data provided by other sources for accuracy or for any particular use that may require accurate information. This guide is for information purposes only.

Table of Contents **Page**

Appendix A: subsection 62-340.450(1), (2), (3), F.A.C.
Vegetative Index Plant List
Botanical Name/ Common Name/ Wetland Status

Abildgaardia ovata flat-spike rush FACW
Acacia auriculiformis ear-leaved acacia FAC
Acer negundo box-elder FACW
Acer rubrum red maple FACW
Acer saccharinum silver maple OBL
Acoelorraphe wrightii paurotis palm OBL
Acrostichum spp. leather fern OBL
Aeschynomene indica India joint-vetch FACW
Aeschynomene pratensis meadow joint-vetch OBL
Agalinis aphylla scale-leaf false-foxglove FACW
Agalinis linifolia flax-leaf false-foxglove OBL
Agalinis maritima saltmarsh false-foxglove OBL
Agalinis pinetorum (*A. pulchella*) false-foxglove FACW
Agalinis purpurea large purple false-foxglove FACW
Agarista populifolia hobble-bush FACW
Agrostis stolonifera redtop FACW
Aletris spp. colic-root FAC
Alisma subcordatum subcordate water-plantain OBL
Alnus serrulata hazel alder OBL
Alopecurus carolinianus tufted foxtail FAC
Alternanthera maritima beach alternanthera FACW - Keys only
Alternanthera paronychioides smooth chaff-flower FAC - Keys only
Alternanthera philoxeroides alligator-weed OBL
Alternanthera sessilis sessile alligator-weed OBL
Amaranthus australis southern amaranth OBL
Amaranthus cannabinus tidemarsh amaranth OBL
Amaranthus floridanus Florida amaranth OBL
Ammannia spp. toothcup OBL
Amorpha fruticosa indigo-bush FACW
Amphicarpum muhlenbergianum blue maidencane FACW
Amsonia rigida stiff slimpod FACW
Amsonia tabernaemontana eastern slimpod FACW
Anagallis pumila Florida pimpernel FAC
Andropogon arctatus (Campbell) savannah bluestem FAC
Andropogon brachystachys (Campbell) short-spike bluestem FAC
Andropogon gerardii (Campbell) big bluestem FAC
Andropogon glomeratus (Campbell) bushy bluestem FACW
Andropogon liebmanii var. ***pungensis*** (Campbell) (***A. mohrii***) Mohr's bluestem FACW
Andropogon perangustatus (Campbell) slim bluestem FAC
Andropogon virginicus (Campbell) broom-sedge FAC
Annona glabra pond apple OBL
Anthaenantia rufa purple silky-scale FACW
Apteria aphylla nodding nixie FACW

Ardisia spp. marlberry FAC
Arenaria godfreyi Godfrey's stitchwort FACW
Arisaema spp. jack-in-the-pulpit; green-dragon FACW
Aristida affinis long-leaf three-awn grass OBL
Aristida purpurascens (s.l.) wand-like three-awn grass FACW
Aristida rhizomophora rhizomatous three-awn grass FAC
Aristida spiciformis three-awn bottlebrush FAC
Aristida stricta pineland three-awn grass FAC
Armoracia aquatica lakecress OBL
Arnoglossum diversifolium variable-leaf indian-plantain FACW
Arnoglossum ovatum egg-leaf indian-plantain FACW
Arnoglossum sulcatum indian-plantain, Georgia OBL
Aronia arbutifolia red chokeberry FACW
Arundinaria gigantea giant cane FACW
Arundo donax giant reed FAC
Asclepias connivens large-flower milkweed FACW
Asclepias incarnata swamp milkweed OBL
Asclepias lanceolata fen-flower milkweed OBL
Asclepias longifolia long-leaf milkweed FACW
Asclepias pedicellata savannah milkweed FACW
Asclepias perennis aquatic milkweed OBL
Asclepias rubra red milkweed OBL
Asclepias viridula southern milkweed FACW
Aster carolinianus climbing aster OBL
Aster chapmanii savannah aster FACW
Aster dumosus bushy aster FAC
Aster elliottii Elliott's aster OBL
Aster eryngiifolius coyote-thistle aster FACW
Aster lateriflorus calico aster FACW
Aster spinulosus bog aster FACW
Aster subulatus saltmarsh aster OBL
Aster tenuifolius saltmarsh aster OBL
Aster umbellatus flat-top white aster FAC
Aster vimineus small white aster FACW
Athyrium filix-femina subarctic lady fern FACW
Atriplex patula halberd-leaf saltbush FACW
Avicennia germinans black mangrove OBL
Axonopus spp. carpet grass FAC
Baccharis angustifolia false-willow OBL
Baccharis dioica broom-bush false-willow FAC
Baccharis glomeruliflora groundsel tree FAC
Baccharis halimifolia eastern false-willow FAC
Bacopa spp. water-hyssop OBL
Balduina atropurpurea purple honeycomb-head FACW
Balduina uniflora one-flower honeycomb-head FACW
Bartonia spp. screwstem FACW
Batis maritima saltwort OBL

Betula nigra river birch OBL
Bidens bipinnata Spanish needles U
Bidens pilosa white beggar-ticks FAC
Bidens spp. beggar-ticks OBL
Bigelowia nudata rayless golden-rod FACW
Blechnum serrulatum swamp fern FACW
Boehmeria cylindrica small-spike false-nettle OBL
Boltonia spp. boltonia FACW
Borrichia spp. sea oxeye OBL
Brachiaria purpurascens paragrass FACW
Bucida buceras gregory wood FAC
Bumelia celastrina coastal bumelia FAC
Bumelia lycioides buckthorn bumelia FAC
Bumelia reclinata bumelia FAC
Burmannia spp. burmannia OBL
Byrsonima lucida locust-berry FAC - Keys only
Cacalia suaveolens sweet-scent indian-plantain FACW
Calamovilfa curtissii Curtiss' reed grass FACW
Callitriche spp. water-starwort OBL
Calopogon spp. grass-pinks FACW
Calycocarpum lyonii cupseed FACW
Campanula americana American bellflower FAC
Campanula floridana bellflower OBL
Canna spp. canna OBL
Canna x generalis common canna FAC
Caperonia spp. caperonia FACW
Capparis flexuosa caper-tree FACW
Cardamine bulbosa bitter-cress OBL
Cardamine pensylvanica spring-cress OBL
Carex atlantica prickly bog sedge OBL
Carex comosa bearded sedge OBL
Carex crinita fringed sedge OBL
Carex crus-corvi raven-foot sedge OBL
Carex decomposita cypress-knee sedge OBL
Carex elliottii Elliott's sedge OBL
Carex folliculata long sedge OBL
Carex gigantea large sedge OBL
Carex howei Howe's sedge OBL
Carex hyalinolepis sedge, shoreline sedge OBL
Carex leptalea bristly-stalk sedge OBL
Carex louisianica Louisiana sedge OBL
Carex lupulina hop sedge OBL
Carex lurida shallow sedge OBL
Carex spp. sedges FACW
Carex stipata stalk-grain sedge OBL
Carex walteriana Walter's sedge OBL
Carphephorus carnosus pineland chaffhead FACW

Carphephorus odoratissimus vanilla plant FAC
Carphephorus paniculatus deer-tongue FAC
Carphephorus pseudoliatris bristle-leaf chaffhead FACW
Carpinus caroliniana American hornbeam FACW
Carya aquatica water hickory OBL
Casuarina spp. casuarina FAC
Cayaponia quinqueloba five-lobe cayaponia FAC
Celtis laevigata sugar-berry; hackberry FACW
Centella asiatica coinwort FACW
Cephalanthus occidentalis buttonbush OBL
Cestrum diurnum day jessamine FAC
Chamaecyparis thyoides Atlantic white cedar OBL
Chaptalia tomentosa sunbonnet; pineland daisy FACW
Chasmanthium latifolium spanglegrass FAC
Chasmanthium sessiliflorum long-leaf Chasmanthium FAC
Chasmanthium spp. spanglegrass FACW
Chiococca spp. snowberry FAC
Chrysobalanus icaco cocoplum FACW
Cicuta spp. water-hemlock OBL
Cirsium lecontei Leconte's thistle FACW
Cirsium muticum swamp thistle OBL
Cirsium nuttallii Nuttall's thistle FACW
Cladium spp. sawgrass OBL
Cleistes divaricata rosebud OBL
Clethra alnifolia sweet pepper bush FACW
Cliftonia monophylla buckwheat-tree FACW
Colocasia esculenta elephant's ear OBL
Colubrina asiatica Asian snakewood FAC
Commelina erecta sandhill dayflower U
Commelina spp. dayflower FACW
Conocarpus erectus buttonwood FACW
Conoclinium coelestinum mistflower FAC
Coreopsis falcata sickle tickseed FACW
Coreopsis floridana Florida tickseed FACW
Coreopsis gladiata southeastern tickseed FACW
Coreopsis integrifolia ciliate-leaf tickseed FACW
Coreopsis leavenworthii Leavenworth's tickseed FACW
Coreopsis linifolia Texas tickseed FACW
Coreopsis nudata Georgia tickseed OBL
Coreopsis tripteris tall tickseed FAC
Cornus amomum silky dogwood OBL
Cornus foemina swamp dogwood FACW
Crataegus aestivalis mayhaw OBL
Crataegus marshallii parsley haw FACW
Crataegus viridis green haw FACW
Crinum americanum southern swamp-lily OBL
Croton elliottii Elliott's croton FACW

Ctenitis submarginalis brown-hair comb fern FACW
Ctenium spp. toothache grass FACW
Cupaniopsis anacardioides carrotwood FAC
Cuphea aspera common waxweed FACW
Cuphea carthagenensis Columbia waxweed FAC
Cyperus alternifolius alternate-leaf flatsedge OBL
Cyperus articulatus jointed flatsedge OBL
Cyperus cuspidatus coastal-plain flatsedge FAC
Cyperus difformis variable flatsedge OBL
Cyperus distinctus marshland flatsedge OBL
Cyperus drummondii flatsedge OBL
Cyperus entrerianus flatsedge OBL
Cyperus erythrorhizos red-root flatsedge OBL
Cyperus esculentus flatsedge FAC
Cyperus filiculmis sandhill flatsedge U
Cyperus giganteus flatsedge FAC
Cyperus globulosus Baldwin's flatsedge FAC
Cyperus haspan sheathed flatsedge OBL
Cyperus huarmensis black knotty-root flatsedge FAC
Cyperus lanceolatus epiphytic flatsedge OBL
Cyperus metzii flatsedge FAC
Cyperus ovularis flatsedge U
Cyperus papyrus papyrus flatsedge OBL
Cyperus reflexus flatsedge U
Cyperus refractus flatsedge U
Cyperus retrofractus flatsedge U
Cyperus retrorsus flatsedge FAC
Cyperus rotundus purple flatsedge FAC
***Cyperus* spp.** flatsedge FACW
Cyperus tetragonus flatsedge U
Cypselea humifusa panal FAC
Cyrilla racemiflora swamp cyrilla FAC
Decodon verticillatus swamp-loosestrife OBL
Dichondra caroliniensis pony-foot FAC
Dichromena colorata starbrush white-top sedge FACW
Dichromena floridensis Everglades white-top sedge FACW
Dichromena latifolia giant white-top sedge OBL
Dicliptera brachiata wild mudwort FACW
Digitaria pauciflora everglades grass FACW
Digitaria serotina dwarf crabgrass FAC
Diodia virginiana button-weed FACW
Dionaea muscipula Venus' flytrap FACW
Diospyros virginiana common persimmon FAC
Distichlis spicata seashore saltgrass OBL
Drosera brevifolia dwarf sundew FACW
Drosera capillaris pink sundew FACW
Drosera filiformis thread-leaf sundew OBL

Drosera intermedia spoon-leaf sundew OBL
Drosera tracyi Gulf coast sundew OBL
Drymaria cordata West Indian chickweed FAC
Dryopteris ludoviciana southern shield-fern FACW
Dulichium arundinaceum three-way sedge OBL
Dyschoriste humistrata swamp dyschoriste FACW
Echinochloa spp. jungle-rice; cockspur grass FACW
Echinodorus spp. burhead OBL
Eclipta alba yerba de Tajo FACW
Eleocharis spp. spikerush OBL
Elyonurus tripsacoides Pan-American balsam-scale FACW
Elytraria caroliniensis Carolina scaly-stem FAC
Equisetum hyemale horsetail FACW
Eragrostis spp. lovegrass FAC
Erechtites hieraciifolia fireweed FAC
Erianthus brevibarbis short-beard plumegrass FACW
Erianthus giganteus sugarcane plumegrass OBL
Erianthus strictus narrow plumegrass OBL
Erigeron quercifolius fleabane FAC
Erigeron vernus early whitetop fleabane FACW
Eriocaulon spp. pipewort OBL
Eriochloa spp. cupgrass FACW
Erithalis fruticosa black torchwood FAC
Ernodea littoralis golden-creeper FAC - Keys only
Eryngium aquaticum corn snakeroot OBL
Eryngium baldwinii Baldwin's coyote-thistle FAC
Eryngium integrifolium blue-flower coyote-thistle FACW
Eryngium prostratum creeping coyote-thistle FACW
Eryngium yuccifolium rattlesnake master FACW
Erythrodes querceticola low erythrodes FACW
Eulophia alta wild coco FACW
Eupatoriadelphus fistulosus joe-pye-weed FACW
Eupatorium leptophyllum marsh thoroughwort OBL
Eupatorium leucolepis white-bract thoroughwort FACW
Eupatorium mikanioides semaphore thoroughwort FACW
Eupatorium perfoliatum boneset FACW
Eupatorium spp. thoroughworts FAC
Euphorbia humistrata (*Chamaesyce humistrata*) spreading broomspurge FACW
Euphorbia inundata Florida spurge FACW
Euphorbia polyphylla many-leaved spurge FACW
Eustachys glauca (*Chloris glauca*) saltmarsh fingergrass FACW
Eustachys petraea fingergrass FAC
Eustoma exaltatum prairie-gentian FACW
Euthamia spp. bushy goldenrod FAC
Evolvulus convolvuloides evolvulus FACW
Evolvulus sericeus silky bindweed FACW
Ficus aurea Florida strangler fig FAC

Fimbristylis annua annual fringe-rush FACW
Fimbristylis puberula Vahl's hairy fringe-rush FACW
Fimbristylis spathacea hurricane-grass FAC
Fimbristylis spp. fringe-rush OBL
Flaveria bidentis yellowtop FAC
Flaveria floridana yellowtop FACW
Flaveria linearis yellowtop FACW
Flaveria trinervia yellowtop FAC
Forestiera acuminata swamp privet FACW
Forestiera segregata Florida privet FAC
Fothergilla gardenii dwarf witch-alder FACW
Fraxinus americana white ash U
Fraxinus spp. ash OBL
Fuirena spp. umbrella-sedge OBL
Galium tinctorium stiff marsh bedstraw FACW
Gaylussacia dumosa dwarf huckleberry FAC
Gaylussacia frondosa dangleberry FAC
Gaylussacia mosieri woolly-berry FACW
Gentiana spp. gentian FACW
Gleditsia aquatica water-locust OBL
Gleditsia triacanthos honey-locust FACW
Glyceria striata fowl mannagrass OBL
Gordonia lasianthus loblolly bay FACW
Gratiola hispida hispid hyssop FAC
Gratiola spp. hedgehyssop FACW
Guapira discolor blolly FAC - Keys only
Habenaria spp. rein orchid FACW
Halesia diptera silver-bell FACW
Harperocallis flava Harper's beauty FACW
Hartwrightia floridana Florida hartwrightia FACW
Hedychium coronarium ginger FACW
Helenium amarum pasture sneezeweed FAC
Helenium spp. sneezeweed FACW
Helianthus agrestis southeastern sunflower FACW
Helianthus angustifolius swamp sunflower FACW
Helianthus carnosus lakeside sunflower FACW
Helianthus floridanus Florida sunflower FAC
Helianthus heterophyllus wetland sunflower FACW
Helianthus simulans muck sunflower FACW
Heliotropium curassavicum seaside heliotrope FAC
Heliotropium polyphyllum heliotrope FAC
Heliotropium procumbens four-spike heliotrope FACW
Hemicarpha spp. dwarf-bulrush FACW
Heteranthera reniformis kidney-leaf mud-plantain OBL
Hibiscus aculeatus rosemallow FACW
Hibiscus coccineus scarlet rosemallow OBL
Hibiscus grandiflorus swamp rosemallow OBL

Hibiscus laevis halberd-leaf rosemallow OBL
Hibiscus moscheutos swamp rosemallow OBL
Hibiscus tiliaceus sea rosemallow FAC
Hydrochloa caroliniensis watergrass OBL
Hydrocleis nymphoides water-poppy OBL
Hydrocotyle ranunculoides floating pennywort OBL
Hydrocotyle spp. pennywort FACW
Hydrolea spp. false-fiddle-leaf OBL
Hygrophila spp. hygrophila OBL
Hymenachne amplexicaulis trompetilla OBL
Hymenocallis spp. spider-lily OBL
Hypericum chapmanii Chapman's St. John's-wort OBL
Hypericum cumulicola scrub St. John's-wort U
Hypericum drummondii Drummond's St. John's-wort U
Hypericum edisonianum Edison's St. John's-wort OBL
Hypericum fasciculatum marsh St. John's-wort OBL
Hypericum gentianoides pineweed U
Hypericum hypericoides St. Andrew's cross FAC
Hypericum lissophloeus smooth-bark St. John's-wort OBL
Hypericum microsepalum small-sepal St. John's-wort U
Hypericum nitidum Carolina St. John's-wort OBL
Hypericum prolificum shrubby St. John's-wort U
Hypericum punctatum dotted St. John's-wort U
Hypericum reductum Atlantic St. John's-wort U
Hypericum spp. St. John's-wort FACW
Hypericum tetrapetalum four-petal St. John's-wort FAC
Hypolepis repens bead fern FACW
Hypoxis spp. yellow stargrasses FACW
Hyptis alata musky mint FACW
Ilex amelanchier sarvis holly OBL
Ilex cassine dahoon holly OBL
Ilex coriacea bay-gall holly FACW
Ilex decidua deciduous holly FACW
Ilex myrtifolia myrtle holly OBL
Ilex opaca var.***opaca*** American holly FAC
Ilex verticillata winterberry OBL
Ilex vomitoria yaupon holly FAC
Illicium floridanum Florida anise OBL
Illicium parviflorum star anise FACW
Impatiens capensis spotted touch-me-not OBL
Iris spp. iris OBL
Iris verna dwarf iris U
Isoetes spp. quillwort OBL
Itea virginica virginia willow OBL
Iva frutescens marsh elder OBL
Iva microcephala little marsh elder FACW
Jacquinia keyensis joewood FAC

Juncus marginatus rush FACW
Juncus spp. rush OBL
Juncus tenuis rush FAC
Justicia brandegeana shrimp plant U
Justicia spp. water-willow OBL
Kalmia latifolia mountain laurel FACW
Kosteletzkya pentasperma coastal mallow FAC
Kosteletzkya virginica seashore mallow OBL
Lachnanthes caroliniana redroot FAC
Lachnocaulon anceps white-head bogbutton FACW
Lachnocaulon beyrichianum southern bogbutton FACW
Lachnocaulon digynum pineland bogbutton OBL
Lachnocaulon engleri Engler's bogbutton OBL
Lachnocaulon minus Small's bogbutton OBL
Laguncularia racemosa white mangrove OBL
Laportea canadensis Canada wood-nettle FACW
Leersia spp. cutgrass OBL
Leitneria floridana corkwood OBL
Leptochloa spp. sprangle-top FACW
Leptochloa virgata tropic sprangle-top FAC
Leucothoe spp. dog-hobble FACW
Liatris garberi Garber's gayfeather FACW
Liatris gracilis blazing star FAC
Liatris spicata spiked gayfeather FAC
Lilaeopsis spp. lilaeopsis OBL
Lilium catesbaei southern red lily FAC
Lilium iridollae panhandle lily OBL
Limnobium spongia frogbit OBL
Limnophila spp. marshweed OBL
Limonium carolinianum sea-lavender OBL
Lindera benzoin northern spicebush FACW
Lindera melissifolia southern spicebush OBL
Lindernia crustacea Malayan false-pimpernel FAC
Lindernia spp. false-pimpernel FACW
Linum carteri Carter's flax FACW
Linum floridanum Florida yellow flax FAC
Linum medium stiff yellow flax FAC
Linum striatum ridged yellow flax FACW
Linum westii West's flax OBL
Liparis elata (*L. nervosa*) tall liparis OBL
Lipocarpha spp. lipocarpha FACW
Liquidambar styraciflua sweetgum FACW
Liriodendron tulipifera tulip tree FACW
Listera spp. twayblade FACW
Litsea aestivalis pondspice OBL
Lobelia cardinalis cardinal flower OBL
Lobelia floridana Florida lobelia OBL

Lobelia spp. lobelia FACW
Lophiola americana golden-crest FACW
Ludwigia hirtella hairy seedbox FACW
Ludwigia maritima seaside seedbox FACW
Ludwigia spp. ludwigia; water-primrose OBL
Ludwigia suffruticosa headed seedbox FACW
Ludwigia virgata savanna seedbox FACW
Lycium carolinianum Christmas berry OBL
Lycopodium spp. clubmoss FACW
Lycopus spp. bugleweed OBL
Lyonia ligustrina maleberry FAC
Lyonia lucida fetter-bush FACW
Lyonia mariana fetter-bush FACW
Lysimachia spp. loosestrife OBL
Lythrum spp. marsh loosestrife OBL
Macbridea spp. birds-in-a-nest FACW
Macranthera flammea flameflower OBL
Magnolia virginiana var. ***australis*** sweetbay magnolia OBL
Malaxis spicata Florida adder's-mouth OBL
Manilkara bahamensis wild dilly FAC - Keys only
Manisuris cylindrica pitted jointgrass FAC
Manisuris spp. jointgrass FACW
Marshallia graminifolia grass-leaf barbara's-buttons FACW
Marshallia tenuifolia slim-leaf barbara's-buttons FACW
Maxillaria crassifolia hidden orchid OBL
Maytenus phyllanthoides Florida mayten FAC
Mecardonia spp. mecardonia FACW
Melaleuca quinquenervia punk tree FAC
Melanthera nivea squarestem FACW
Melanthium virginicum Virginia bunchflower OBL
Melochia corchorifolia chocolate-weed FAC
Metopium toxiferum poison wood FAC
Micranthemum spp. baby tears OBL
Micromeria brownei (*Satureja brownei*) Brown's savory OBL
Mimosa pigra black mimosa FAC
Mimulus alatus monkey-flower OBL
Mitreola spp. hornpod FACW
Monanthochloe littoralis keygrass OBL
Morinda royoc Keys rhubarb FACW - Keys only
Morus rubra red mulberry FAC
Muhlenbergia capillaris muhly grass OBL
Muhlenbergia expansa cutover muhly FAC
Muhlenbergia schreberi nimblewill FACW
Murdannia spp. dewflower FAC
Myosurus minimus tiny mouse-tail FAC
Myrica cerifera southern bayberry FAC
Myrica heterophylla evergreen bayberry FACW

Myrica inodora odorless bayberry FACW
Myrsine guianensis guiana myrsine FAC
Nasturtium spp. water-cress OBL
Nelumbo spp. water-lotus OBL
Nemastylis floridana fall-flowering pleatleaf FACW
Nemophila aphylla small-flower baby-blue-eyes FACW
Nephrolepis spp. sword ferns FAC
Neyraudia reynaudiana silk reed FAC
Nuphar luteum yellow cow-lily OBL
Nymphaea spp. water-lily OBL
Nymphoides spp. floating-hearts OBL
Nyssa aquatica water tupelo OBL
Nyssa ogeche ogeechee tupelo OBL
Nyssa sylvatica var. ***biflora*** swamp tupelo OBL
Oldenlandia spp. water bluets FACW
Onoclea sensibilis sensitive fern FACW
Oplismenus setarius woods grass FAC
Orontium aquaticum golden club OBL
Oryza sativa cultivated rice FAC
Osmunda cinnamomea cinnamon fern FACW
Osmunda regalis royal fern OBL
Oxypolis spp. water drop-wort OBL
Panicum abscissum (Hall) cut-throat grass FACW
Panicum anceps beaked panicum FAC
Panicum commutatum panicum FAC
Panicum dichotomiflorum fall panicum FACW
Panicum dichotomum panicum FACW
Panicum ensifolium panic grass OBL
Panicum erectifolium erect-leaf witchgrass OBL
Panicum gymnocarpon savannah panicum OBL
Panicum hemitomon maiden-cane OBL
Panicum hians gaping panicum FAC
Panicum longifolium tall thin panicum OBL
Panicum pinetorum panicum FACW
Panicum repens torpedo grass FACW
Panicum rigidulum red-top panicum FACW
Panicum scabriusculum woolly panicum OBL
Panicum scoparium panicum FACW
Panicum spretum panicum FACW
Panicum strigosum panicum FAC
Panicum tenerum bluejoint panicum OBL
Panicum tenue panicum FAC
Panicum verrucosum warty panicum FACW
Panicum virgatum switchgrass FACW
Parietaria spp. pellitory FAC
Parnassia spp. grass-of-Parnassus OBL
Paspalidium geminatum water panicum OBL

Paspalum acuminatum brook paspalum FACW
Paspalum boscianum bull paspalum FACW
Paspalum conjugatum sour paspalum FAC
Paspalum dilatatum dallisgrass FAC
Paspalum dissectum mudbank paspalum OBL
Paspalum distichum joint paspalum OBL
Paspalum fimbriatum Panama paspalum FAC
Paspalum floridanum Florida paspalum FACW
Paspalum laeve field paspalum FACW
Paspalum monostachyum gulf paspalum OBL
Paspalum plicatulum brown-seed paspalum FAC
Paspalum praecox early paspalum OBL
Paspalum pubiflorum hairy-seed paspalum FACW
Paspalum repens water paspalum OBL
Paspalum setaceum thin paspalum FAC
Paspalum urvillei vasey grass FAC
Pavonia spicata mangrove mallow FACW
Peltandra spp. arum; spoon flower OBL
Pennisetum purpureum elephant ear grass FAC
Penthorum sedoides ditch stonecrop OBL
Pentodon pentandrus Hall's pentodon OBL
Persea palustris swamp bay OBL
Phalaris spp. canary grass FAC
Philoxerus vermicularis silverhead FACW
Phragmites australis common reed OBL
Phyla spp. frog-fruit FAC
Phyllanthus caroliniensis Carolina leaf-flower FACW
Phyllanthus liebmannianus Florida leaf-flower FACW
Phyllanthus urinaria water leaf-flower FAC
Physostegia godfreyi Godfrey's dragon-head OBL
Physostegia leptophylla slender-leaf dragon-head OBL
Physostegia purpurea purple dragon-head FACW
Physostegia virginiana false dragon-head FACW
Pieris phillyreifolia climbing fetter-bush FACW
Pilea spp. clearweed FACW
Pinckneya bracteata (*P. pubens*) fever-tree OBL
Pinguicula spp. butterwort OBL
Pinus glabra spruce pine FACW
Pinus serotina pond pine FACW
Piriqueta caroliniana piriqueta FAC
Pisonia rotundata pisonia FAC - Keys only
Pithecellobium keyense blackbead FAC - Keys only
Pithecellobium unguis-cati catclaw FAC - Keys only
Planera aquatica planer tree OBL
Platanthera spp. fringed orchid OBL
Platanus occidentalis sycamore FACW
Pleea tenuifolia rush-featherling OBL

Pluchea spp. camphor-weed FACW
Pogonia ophioglossoides rose pogonia OBL
Polygala cymosa tall milkwort OBL
Polygala leptostachys sandhill milkwort U
Polygala lewtonii scrub milkwort U
Polygala polygama racemed milkwort U
Polygala spp. milkwort FACW
Polygala verticillata whorled milkwort U
Polygonum argyrocoleon silversheath smartweed U
Polygonum spp. smartweed OBL
Polygonum virginianum jumpseed FACW
Polypogon spp. rabbit-foot grass FAC
Polypremum procumbens rustweed FAC
Pontederia cordata pickerelweed OBL
Ponthieva racemosa shadow-witch FACW
Populus deltoides eastern cottonwood FACW
Populus heterophylla swamp cottonwood OBL
Proserpinaca spp. mermaid-weed OBL
Psidium cattleianum strawberry guava FAC
Psilocarya spp. baldrush OBL
Psychotria spp. wild coffee FAC
Pteris tripartita giant brake FACW
Ptilimnium capillaceum mock bishop-weed FACW
Pycnanthemum nudum coastal-plain mountain-mint FACW
Quercus laurifolia laurel oak FACW
Quercus lyrata overcup oak OBL
Quercus michauxii swamp chestnut oak FACW
Quercus nigra water oak FACW
Quercus pagoda cherry-bark oak FACW
Quercus phellos willow oak FACW
Randia aculeata box briar FAC - Keys only
Ranunculus spp. butter-cup FACW
Reimarochloa oligostachya Florida reimar grass FACW
Reynosia septentrionalis darling plum FAC - Keys only
Rhapidophyllum hystrix needle palm FACW
Rhexia parviflora white meadow-beauty OBL
Rhexia salicifolia panhandle meadow-beauty OBL
Rhexia spp. meadow-beauty FACW
Rhizophora mangle red mangrove OBL
Rhododendron viscosum swamp azalea FACW
Rhodomyrtus tomentosus downy rose-myrtle FAC
Rhynchospora cephalantha clustered beakrush OBL
Rhynchospora chapmanii Chapman’s beakrush OBL
Rhynchospora corniculata short-bristle beakrush OBL
Rhynchospora decurrens swamp-forest beakrush OBL
Rhynchospora divergens spreading beakrush OBL
Rhynchospora grayi Gray’s beakrush U

Rhynchospora harperi Harper's beakrush OBL
Rhynchospora intermedia pinebarren beakrush U
Rhynchospora inundata horned beakrush OBL
Rhynchospora macra large beakrush OBL
Rhynchospora megalocarpa giant-fruited beakrush U
Rhynchospora microcarpa southern beakrush OBL
Rhynchospora miliacea millet beakrush OBL
Rhynchospora mixta mingled beakrush OBL
Rhynchospora oligantha few-flower beakrush OBL
Rhynchospora spp. beakrush FACW
Rhynchospora stenophylla Chapman's beakrush OBL
Rhynchospora tracyi Tracy's beakrush OBL
Rorippa spp. yellow-cress OBL
Rosa palustris swamp rose OBL
Rotala ramosior toothcup OBL
Roystonea spp. royal palm FACW
Rubus spp. blackberries FAC
Rudbeckia fulgida orange coneflower FACW
Rudbeckia graminifolia grass-leaf coneflower FACW
Rudbeckia laciniata cut-leaf coneflower FACW
Rudbeckia mohrii Mohr's coneflower OBL
Rudbeckia nitida shiny coneflower FACW
Ruellia brittoniana Britton's wild-petunia FAC
Ruellia caroliniensis wild-petunia FAC
Ruellia noctiflora night-flowering wild-petunia FACW
Rumex spp. dock FACW
Sabal minor dwarf palmetto FACW
Sabal palmetto cabbage palm FAC
Sabatia bartramii Bartram's rose-gentian OBL
Sabatia calycina coast rose-gentian OBL
Sabatia dodecandra large rose-gentian OBL
Sabatia spp. rose-gentian FACW
Sacciolepis indica glenwood grass FAC
Sacciolepis striata American cupscale OBL
Sachsia polycephala sachsia FACW
***Sagittaria* spp.** arrowhead OBL
Salicornia spp. glasswort OBL
Salix spp. willow OBL
Sambucus canadensis elderberry FAC
Samolus spp. water pimpernel OBL
Sapium sebiferum Chinese tallow-tree FAC
Sarracenia minor hooded pitcher-plant FACW
Sarracenia spp. pitcher-plant OBL
Saururus cernuus lizard's tail OBL
Schinus terebinthifolius Brazilian pepper-tree FAC
Schizachyrium spp. bluestem FAC
Schoenolirion croceum sunny bells FACW

Schoenolirion elliottii sunny bells FACW
Schoenus nigricans black-sedge FACW
Scirpus spp. bulrush OBL
Scleria spp. nutrush FACW
Sclerolepis uniflora one-flower hardscale FACW
Scoparia dulcis sweet broom FAC
Scutellaria floridana skullcap FAC
Scutellaria integrifolia rough skullcap FAC
Scutellaria lateriflora blue skullcap OBL
Scutellaria racemosa skullcap OBL
Sebastiania fruticosa gulf sebastian-bush FAC
Selaginella apoda meadow spike-moss FACW
Senecio aureus golden ragwort OBL
Senecio glabellus butterweed OBL
Sesbania spp. rattle-bush FAC
Sesuvium spp. sea-purslane FACW
Setaria geniculata bristle grass FAC
Setaria magna foxtail OBL
Seymeria cassioides black senna FAC
Sisyrinchium atlanticum eastern blue-eye-grass FACW
Sisyrinchium capillare blue-eye-grass FACW
Sisyrinchium mucronatum Michaux's blue-eye-grass FACW
Sium suave water-parsnip OBL
Solanum bahamense canker-berry FACW
Solanum erianthum shrub nightshade FACW
Solidago elliottii Elliott's goldenrod OBL
Solidago fistulosa marsh goldenrod FACW
Solidago leavenworthii Leavenworth's goldenrod FACW
Solidago patula rough-leaf goldenrod OBL
Solidago rugosa wrinkled goldenrod FAC
Solidago sempervirens seaside goldenrod FACW
Solidago stricta willow-leaf goldenrod FACW
Sophora tomentosa coast sophora FACW
Sparganium americanum burreed OBL
Spartina alterniflora saltmarsh cordgrass OBL
Spartina bakeri sand cordgrass FACW
Spartina cynosuroides big cordgrass OBL
Spartina patens saltmeadow cordgrass FACW
Spartina spartinae gulf cordgrass OBL
Spergularia marina saltmarsh sandspurry OBL
Spermacoce glabra smooth button-plant FACW
Sphagnum spp. sphagnum moss OBL
Sphenoclea zeylanica chicken-spike FACW
Sphenopholis pensylvanica swamp wedgescale OBL
Sphenostigma coelestinum Bartram's ixia FACW
Spigelia loganioides pink-root FACW
Spilanthes americana creeping spotflower FACW

Spiranthes spp. ladies'-tresses FACW
Sporobolus floridanus Florida dropseed FACW
Sporobolus virginicus seashore dropseed OBL
Stachys lythroides hedgenettle OBL
Staphylea trifolia American bladdernut FACW
Stenandrium floridanum stenandrium FACW
Stenanthium gramineum eastern feather-bells FACW
Stillingia aquatica corkwood OBL
Stillingia sylvatica var. ***tenuis*** marsh queen's-delight FAC
Stipa avenacioides Florida needle grass FACW
Stokesia laevis stokesia FACW
Strumpfia maritima strumpfia FACW - Keys only
Styrax americana snowbell; storax OBL
Suaeda spp. sea-blite OBL
Suriana maritima bay-cedar FAC
Syngonanthus flavidulus bantam-buttons FACW
Syzygium spp. Java plum FAC
Taxodium ascendens pond cypress OBL
Taxodium distichum bald cypress OBL
Teucrium canadense American germander FACW
Thalia geniculata thalia; fire flag OBL
Thalictrum spp. meadow-rue FACW
Thelypteris spp. shield fern FACW
Thespesia populnea seaside mahoe FAC
Thrinax radiata Florida thatch palm FAC - Keys only
Tilia americana American basswood FACW
Tofieldia racemosa coastal false-asphodel OBL
Toxicodendron vernix poison sumac FACW
Trachelospermum difforme climbing-dogbane FACW
Tradescantia fluminensis trailing spiderwort FAC
Trema spp. trema FAC
Trepocarpus aethusae aethusa-like trepocarpus FACW
Triadenum spp. marsh St. John's-wort OBL
Trianthema portulacastrum horse-purslane FACW
Tridens ambiguus savannah tridens FACW
Tridens strictus long-spike tridens FACW
Triglochin striata arrow-grass OBL
Triphora spp. nodding pogonias FACW
Tripsacum dactyloides eastern gama grass FAC
Typha spp. cattail OBL
Ulmus rubra slippery elm U
Ulmus spp. elm FACW
Urechites lutea wild allamanda FACW
Utricularia spp. bladderwort OBL
Uvularia floridana Florida bellwort FACW
Vaccinium corymbosum highbush blueberry FACW
Vaccinium elliottii Elliott's blueberry FAC

Verbena scabra sandpaper vervain FACW
Verbesina chapmanii Chapman's crownbeard FACW
Verbesina heterophylla diverse-leaf crownbeard FACW
Verbesina virginica white crownbeard FAC
Vernonia angustifolia narrow-leaf ironweed U
Vernonia spp. ironweed FACW
Veronica anagallis-aquatica water speedwell OBL
Veronicastrum virginicum culver's-root FACW
Viburnum dentatum arrow-wood FACW
Viburnum nudum possum-haw viburnum FACW
Viburnum obovatum walter viburnum FACW
Vicia acutifolia four-leaf vetch FACW
Vicia floridana Florida vetch FACW
Vicia ocalensis Ocala vetch OBL
Viola affinis Leconte's violet FACW
Viola esculenta edible violet FACW
Viola lanceolata lance-leaf violet OBL
Viola primulifolia primrose-leaf violet FACW
Websteria confervoides water-meal OBL
Wedelia trilobata creeping ox-eye FAC
Woodwardia areolata chainfern OBL
Woodwardia virginica chainfern FACW
Xanthorhiza simplicissima shrubby yellow-root FACW
Xanthosoma sagittifolium elephant ear FACW
Xyris caroliniana Carolina yellow-eyed grass FACW
Xyris jupicai tropical yellow-eyed grass FACW
Xyris spp. yellow-eyed grass OBL
Yeatesia viridiflora green-flower yeatesia FACW
Zephyranthes atamasco atamasco lily FACW
Zigadenus densus crow poison FACW
Zigadenus glaberrimus atlantic deathcamas FACW
Zizania aquatica wildrice OBL
Zizaniopsis miliacea southern wildrice OBL

Any plant not specifically listed is considered an upland plant except vines, aquatic plants, and any plant species not introduced into the State of Florida as of the effective date of Chapter 62-340, F.A.C. (Effective Date July 1, 1994)

Chapter 62-340, F.A.C.
Delineation of the Landward Extent of Wetlands and Surface Waters

62-340.100 Intent.

(1) This rule's intent is to provide a unified statewide methodology for the delineation of the extent of wetlands and surface waters to satisfy the mandate of Section 373.421, F.S. This delineation methodology is intended to approximate the combined landward extent of wetlands as determined by a water management district and the Department immediately before the effective date of this rule. Before implementing the specific provisions of this methodology, the regulating agency shall attempt to identify wetlands according to the definition for wetlands in subsection 373.019(27), F.S., and subsection 62-340.200(19), F.A.C., below. The landward extent of wetlands shall be determined by the dominance of plant species, soils and other hydrologic evidence indicative of regular and periodic inundation or saturation. In all cases, attempts shall be made to locate the landward extent of wetlands visually by on site inspection, or aerial photointerpretation in combination with ground truthing, without quantitative sampling. If this cannot be accomplished, the quantitative methods in paragraph 62-301.400(1)(c), F.A.C., shall be used unless the applicant or petitioner and regulating agency agree, in writing, on an alternative method for quantitatively analyzing the vegetation on site. The methodology shall not be used to delineate areas which are not wetlands as defined in subsection 62-340.200(19), F.A.C., nor to delineate as wetlands or surface waters areas exempted from delineation by statute or agency rule.

(2) The Department shall be responsible for ensuring statewide coordination and consistency in the delineation of surface waters and wetlands pursuant to this rule, by providing training and guidance to the Department, Districts,

and local governments in implementing the methodology.
Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.100.

62-340.200 Definitions.
When used in this chapter, the following terms shall mean:
(1) "**Aquatic plant**" means a plant, including the roots, which typically floats on water or requires water for its entire structural support, or which will desiccate outside of water.
(2) "**Canopy**" means the plant stratum composed of all woody plants and palms with a trunk four inches or greater in diameter at breast height, except vines.
(3) "**Diameter at Breast Height (DBH)**" means the diameter of a plant's trunk or main stem at a height of 4.5 feet above the ground.
(4) "**Facultative plants**" means those plant species listed in subsection 62-340.450(3), F.A.C., of this chapter. For the purposes of this rule, facultative plants are not indicators of either wetland or upland conditions.
(5) "**Facultative Wet plants**" means those plant species listed in subsection 62-340.450(2), F.A.C., of this chapter.
(6) "**Ground Cover**" means the plant stratum composed of all plants not found in the canopy or subcanopy, except vines and aquatic plants.
(7) "**Ground truthing**" means verification on the ground of conditions on a site.
(8) "**Hydric Soils**" means soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile.
(9) "**Hydric Soil Indicators**" means those indicators of hydric soil conditions as identified in *Soil and Water Relationships of Florida's Ecological Communities* (Florida Soil Conservation ed. Staff 1992).
(10) "**Inundation**" means a condition in which water from any source regularly and periodically covers a land surface.
(11) "**Obligate plants**" means those plant species listed in subsection 62-340.450(1), F.A.C., of this chapter.
(12) "**Regulating agency**" means the Department of Environmental Protection, the water management districts, state or regional agencies, local governments, and any other governmental entities.
(13) "**Riverwash**" means areas of unstabilized sandy, silty, clayey, or gravelly sediments. These areas are flooded, washed, and reworked by rivers or streams so frequently that they may support little or no vegetation.
(14) "**Saturation**" means a water table six inches or less from the soil surface for soils with a permeability equal to or greater than six inches per

hour in all layers within the upper 12 inches, or a water table 12 inches or less from the soil surface for soils with a permeability less than six inches per hour in any layer within the upper 12 inches.

(15) "**Seasonal High Water**" means the elevation to which the ground and surface water can be expected to rise due to a normal wet season.

(16) "**Subcanopy**" means the plant stratum composed of all woody plants and palms, exclusive of the canopy, with a trunk or main stem with a DBH between one and four inches, except vines.

(17) "**Upland plants**" means those plant species, not listed as Obligate, Facultative Wet, or Facultative by this rule, excluding vines, aquatic plants, and any plant species not introduced into the State of Florida as of the effective date of this rule.

(18) "**U.S.D.A.-S.C.S."** means the United States Department of Agriculture, Soil Conservation Service.

(19) "**Wetlands**," as defined in subsection 373.019(27), F.S., means those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.

Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.200.

62-340.300 Delineation of Wetlands.

The landward extent (i.e., the boundary) of wetlands as defined in subsection 62-340.200(19), F.A.C., shall be determined by applying reasonable scientific judgment to evaluate the dominance of plant species, soils, and other hydrologic evidence of regular and periodic inundation and saturation as set forth below. In applying reasonable scientific judgment, all reliable information shall be evaluated in determining whether the area is a wetland as defined in subsection 62-340.200(19), F.A.C.

(1) Before using the wetland delineation methodology described below, the regulating agency shall attempt to identify and delineate the landward extent of wetlands by direct application of the definition of wetlands in subsection 62-340.200(19), F.A.C., with particular attention to the vegetative communities which the definition lists as wetlands and non-wetlands. If the boundary cannot be located easily by use of the definition in subsection 62-340.200(19), F.A.C., the provisions of this rule shall be used to locate the landward extent of a wetland. In applying the provisions of this rule, the regulating agency shall attempt to locate the landward extent of wetlands visually by on site inspection, or aerial photointerpretation in combination with ground truthing.

(2) The landward extent of a wetland as defined in subsection 62-340.200(19), F.A.C., shall include any of the following areas:

(a) Those areas where the aereal extent of obligate plants in the appropriate vegetative stratum is greater than the areal extent of all upland plants in that stratum, as identified using the method in Rule 62-340.400, F.A.C., and either:

1. The substrate is composed of hydric soils or riverwash, as identified using standard U.S.D.A.-S.C.S. practices for Florida, including the approved hydric soil indicators, except where the hydric soil is disturbed by a nonhydrological mechanical mixing of the upper soil profile and the regulating agency establishes through data or evidence that hydric soil indicators would be present but for the disturbance;

2. The substrate is nonsoil, rock outcrop-soil complex, or the substrate is located within an artificially created wetland area; or

3. One or more of the hydrologic indicators listed in Rule 62-340.500, F.A.C., are present and reasonable scientific judgment indicates that inundation or saturation is present sufficient to meet the wetland definition of subsection 62-340.200(19), F.A.C.

(b) Those areas where the areal extent of obligate or facultative wet plants, or combinations thereof, in the appropriate stratum is equal to or greater than 80% of all the plants in that stratum, excluding facultative plants, and either:

1. The substrate is composed of hydric soils or riverwash, as identified using standard U.S.D.A.-S.C.S. practices for Florida, including the approved hydric soil indicators, except where the hydric soil is disturbed by a nonhydrologic mechanical mixing of the upper soil profile and the regulating agency establishes through data or evidence that hydric soil indicators would be present but for the disturbance;

2. The substrate is nonsoil, rock outcrop-soil complex, or the substrate is located within an artificially created wetland area; or

3. One or more of the hydrologic indicators listed in Rule 62-340.500,

F.A.C., are present and reasonable scientific judgment indicates that inundation or saturation is present sufficient to meet the wetland definition of subsection 62-340.200(19), F.A.C.

(c) Those areas, other than pine flatwoods and improved pastures, with undrained hydric soils which meet, in situ, at least one of the criteria listed below. A hydric soil is considered undrained unless reasonable scientific judgment indicates permanent artificial alterations to the on site hydrology have resulted in conditions which would not support the formation of hydric soils.

1. Soils classified according to United States Department of Agriculture's *Keys to Soil Taxonomy* (4th ed. 1990) as Umbraqualfs, Sulfaquents, Hydraquents, Humaquepts, Histosols (except Folists), Argiaquolls, or Umbraquults.

2. Saline sands (salt flats-tidal flats).

3. Soil within a hydric mapping unit designated by the U.S.D.A.-S.C.S. as frequently flooded or depressional, when the hydric nature of the soil has been field verified using the U.S.D.A.-S.C.S. approved hydric soil indicators for Florida. If a permit applicant, or a person petitioning for a formal determination pursuant to subsection 373.421(2), F.S., disputes the boundary of a frequently flooded or depressional mapping unit, the applicant or petitioner may request that the regulating agency, in cooperation with the U.S.D.A.-S.C.S., confirm the boundary. For the purposes of subsection 120.60(2), F.S., a request for a boundary confirmation pursuant to this subparagraph shall have the same effect as a timely request for additional information by the regulating agency. The regulating agency's receipt of the final response provided by the U.S.D.A.-S.C.S. to the request for boundary confirmation shall have the same effect as a receipt of timely requested additional information.

4. For the purposes of this paragraph only, "pine flatwoods" means a plant community type in Florida occurring on flat terrain with soils which may experience a seasonal high water table near the surface. The canopy species consist of a monotypic or mixed forest of long leaf pine or slash pine. The subcanopy is typically sparse or absent. The ground cover is dominated by saw palmetto with areas of wire grass, gallberry, and other shrubs, grasses, and forbs, which are not obligate or facultative wet species. Pine flatwoods do not include those wetland communities as listed in the wetland definition contained in subsection 62-340.200(19), F.A.C., which may occur in the broader landscape setting of pine flatwoods and which may contain slash pine. Also for the purposes of this paragraph only, "improved pasture" means areas where the dominant native plant community has been replaced with planted or natural recruitment of herbaceous species which are not obligate or facultative wet species and which have been actively

maintained for livestock through mechanical means or grazing.

(d) Those areas where one or more of the hydrologic indicators listed in Rule 62-340.500, F.A.C., are present, and which have hydric soils, as identified using the U.S.D.A.-S.C.S. approved hydric soil indicators for Florida, and reasonable scientific judgment indicates that inundation or saturation is present sufficient to meet the wetland definition of subsection 62-340.200(19), F.A.C. These areas shall not extend beyond the seasonal high water elevation.

(3)(a) If the vegetation or soils of an upland or wetland area have been altered by natural or man-induced factors such that the boundary between wetlands and uplands cannot be delineated reliably by use of the methodology in subsection 62-340.300(2), F.A.C., as determined by the regulating agency, and the area has hydric soils or riverwash, as identified using standard U.S.D.A.-S.C.S. practices for Florida, including the approved hydric soil indicators, except where the hydric soil is disturbed by a non hydrologic mechanical mixing of the upper soil profile and the regulating agency establishes through data or evidence that hydric soil indicators would be present but for the disturbance, then the most reliable available information shall be used with reasonable scientific judgment to determine where the methodology in subsection 62-340.300(2), F.A.C., would have delineated the boundary between wetlands and uplands. Reliable available information may include, but is not limited to, aerial photographs, remaining vegetation, authoritative site-specific documents, or topographical consistencies.

(b) This subsection shall not apply to any area where regional or site-specific permitted activity, or activities which did not require a permit, under Sections 253.123 and 253.124, F.S. (1957), as subsequently amended, the provisions of Chapter 403, F.S. (1983), relating to dredging and filling activities, Chapter 84-79, Laws of Florida, and Part IV of Chapter 373, F.S., have altered the hydrology of the area to the extent that reasonable scientific judgment, or application of the provisions of Section 62-340.550, F.A.C., indicate that under normal circumstances the area no longer inundates or saturates at a frequency and duration sufficient to meet the wetland definition in subsection 62-340.200(19), F.A.C.

(c) This subsection shall not be construed to limit the type of evidence which may be used to delineate the landward extent of a wetland under this chapter when an activity violating the regulatory requirements of Sections 253.123 and 253.124, F.S. (1957), as subsequently amended, the provisions of Chapter 403, F.S. (1983), relating to dredging and filling activities, Chapter 84-79, Laws of Florida, and Part IV of Chapter 373, F.S., has disturbed the vegetation or soils of an area.

(4) The regulating agency shall maintain sufficient soil scientists on staff to

provide evaluation or consultation regarding soil determinations in applying the methodologies set forth in subsection 62-340.300(2) or (3), F.A.C. Services provided by the U.S.D.A.-S.C.S., or other competent soil scientists, under contract or agreement with the regulating agency, may be used in lieu of, or to augment, agency staff.
Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.300.

62-340.400 Selection of Appropriate Vegetative Stratum.
Dominance of plant species, as described in paragraphs 62-340.300(2)(a) and 62-340.300(2)(b), F.A.C., shall be determined in a plant stratum (canopy, subcanopy, or ground cover). The top stratum shall be used to determine dominance unless the top stratum, exclusive of facultative plants, constitutes less than 10 percent areal extent, or unless reasonable scientific judgment establishes that the indicator status of the top stratum is not indicative of the hydrologic conditions on site. In such cases, the stratum most indicative of on site hydrologic conditions, considering the seasonal variability in the amount and distribution of rainfall, shall be used. The evidence concerning the presence or absence of regular and periodic inundation or saturation shall be based on in situ data. All facts and factors relating to the presence or absence of regular and periodic inundation or saturation shall be weighed in deciding whether the evidence supports shifting to a lower stratum. The presence of obligate, facultative wet, or upland plants in a lower stratum does not by itself constitute sufficient evidence to shift strata, but can be considered along with other physical data in establishing the weight of evidence necessary to shift to a lower stratum. The burden of proof shall be with the party asserting that a stratum other than the top stratum should be used to determine dominance. Facultative plants shall not be considered for purposes of determining appropriate strata or dominance.
Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.400.

62-340.450 Vegetative Index.
(1) Obligate Species (See Appendix A)
(2) Facultative Wet Species (See Appendix A)
(3) Facultative Species (See Appendix A)
(4) Nomenclature. Use of plants in this rule is based solely on the scientific names. Common names are included in the above lists for information purposes only. The following references shall be used by the regulating agency to resolve any uncertainty about the nomenclature or taxonomy of any plant listed by a given scientific name in this section: R.

Godfrey, Trees, Shrubs and Woody Vines of Northern Florida and Adjacent Georgia & Alabama (Univ. Ga. Press, Athens 1988) and D. Lellinger, Ferns & Fern-Allies of the United States & Canada (Smithsonian Institution Press, Washington D.C. 1985) for all species covered by these references. For all other listed scientific names the following references will be followed unless the species list in this section designates a different authority next to an individual species name: R. Godfrey & J. Wooten, Aquatic and Wetland Plants of Southeastern United States: Monocotyledons (Univ. Ga. Press, Athens 1979); R. Godfrey & J. Wooten, Aquatic and Wetland Plants of Southeastern United States: Dicotyledons (Univ. Ga. Press, Athens 1979); D. & H. Correll, Flora of the Bahama Archipelago (A.R. Gantner, Germany 1982). When the species list in this section designates a different authority next to an individual species name, the regulating agency shall resolve any ambiguity in nomenclature by using the name identified in D. Hall, The Grasses of Florida (Doctoral Dissertation, Univ. of Fla., Gainesville 1978); or C. Campbell, Systematics of the Andropogon Virginicus Complex (GRAMINEAE), 64 Journal of the Arnold Arboretum 171-254 (1983).
Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.450.

62-340.500 Hydrologic Indicators.
The indicators below may be used as evidence of inundation or saturation when used as provided in Rule 62-340.300, F.A.C. Several of the indicators reflect a specific water elevation. These specific water elevation indicators are intended to be evaluated with meteorological information, surrounding topography and reliable hydrologic data or analyses when provided, to ensure that such indicators reflect inundation or saturation of a frequency and duration sufficient to meet the wetland definition in subsection 62-340.200(19), F.A.C., and not rare or aberrant events. These specific water elevation indicators are not intended to be extended from the site of the indicator into surrounding areas when reasonable scientific judgment indicates that the surrounding areas are not wetlands as defined in subsection 62-340.200(19), F.A.C.

(1) **Algal mats**. The presence or remains of nonvascular plant material which develops during periods of inundation and persists after the surface water has receded.

(2) **Aquatic mosses or liverworts on trees or substrates**. The presence of those species of mosses or liverworts tolerant of or dependent on surface water inundation.

(3) **Aquatic plants**. Defined in subsection 62-340.200(1), F.A.C.

(4) **Aufwuchs**. The presence or remains of the assemblage of sessile, attached or free-living, nonvascular plants and invertebrate animals

(including protozoans) which develop a community on inundated surfaces.

(5) **Drift lines and rafted debris**. Vegetation, litter, and other natural or manmade material deposited in discrete lines or locations on the ground or against fixed objects, or entangled above the ground within or on fixed objects in a form and manner which indicates that the material was waterborne. This indicator should be used with caution to ensure that the drift lines or rafted debris represent usual and recurring events typical of inundation or saturation at a frequency and duration sufficient to meet the wetland definition of subsection 62-340.200(19), F.A.C.

(6) **Elevated lichen lines**. A distinct line, typically on trees, formed by the water-induced limitation on the growth of lichens.

(7) **Evidence of aquatic fauna**. The presence or indications of the presence of animals which spend all or portions of their life cycle in water. Only those life stages which depend on being in or on water for daily survival are included in this indicator.

(8) **Hydrologic data**. Reports, measurements, or direct observation of inundation or saturation which support the presence of water to an extent consistent with the provisions of the definition of wetlands and the criteria within this rule, including evidence of a seasonal high water table at or above the surface according to methodologies set forth in *Soil and Water Relationships of Florida's Ecological Communities* (Florida Soil Conservation Staff 1992).

(9) **Morphological plant adaptations**. Specialized structures or tissues produced by certain plants in response to inundation or saturation which normally are not observed when the plant has not been subject to conditions of inundation or saturation.

(10) **Secondary flow channels**. Discrete and obvious natural pathways of water flow landward of the primary bank of a stream watercourse and typically parallel to the main channel.

(11) **Sediment deposition**. Mineral or organic matter deposited in or shifted to positions indicating water transport.

(12) **Vegetated tussocks or hummocks**. Areas where vegetation is elevated above the natural grade on a mound built up of plant debris, roots, and soils so that the growing vegetation is not subject to the prolonged effects of soil anoxia.

(13) **Water marks**. A distinct line created on fixed objects, including vegetation, by a sustained water elevation.

Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.500.

62-340.550 Wetland Hydrology.

A wetland delineation using the methodology described above, can be refuted by either reliable hydrologic records or site specific hydrologic data which indicate that neither inundation for at least seven consecutive days, nor saturation for at least twenty consecutive days, occurs during conditions which represent long-term hydrologic conditions. Hydrologic records or site specific hydrologic data must be of such a duration, frequency, and accuracy to demonstrate that the records or data are representative of the long-term hydrologic conditions, including the variability in quantity and seasonality of rainfall. When sufficient amounts of either reliable hydrologic records or site specific hydrologic data are not available to prove that the wetland area of concern does not inundate or saturate as described above, a site-specific field-verified analytic or numerical model may be used to demonstrate that the wetland area no longer inundates or saturates regularly or periodically under typical long-term hydrologic conditions. Before initiating the use of a model to evaluate if a wetland delineation should be refuted based on hydrologic conditions, the applicant or petitioner shall first meet with the appropriate regulating agency and reach an agreement on the terms of study, including data collection, the specific model, model development and calibration, and model verification. If the data, analyses, or models are deemed inadequate based on the hydrologic conditions being addressed, the regulating agency shall provide a case-by-case review of the applicability of any data, analyses, or models and shall provide specific reasons, based on generally accepted scientific and engineering practices, why they are inadequate.

Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211 FS. History–New 7-1-94, Formerly 17-340.550.

62-340.600 Surface Waters.

(1) For the purposes of Section 373.421, F.S., surface waters are waters on the surface of the earth, contained in bounds created naturally or artificially, including, the Atlantic Ocean, the Gulf of Mexico, bays, bayous, sounds, estuaries, lagoons, lakes, ponds, impoundments, rivers, streams, springs, creeks, branches, sloughs, tributaries, and other watercourses. However, state water quality standards apply only to those waters defined in subsection 403.031(13), F.S.

(2) The landward extent of a surface water in the State for the purposes of implementing Section 373.414, F.S., shall be the more landward of the following:

(a) Wetlands as located by Rule 62-340.300, F.A.C., of this chapter;

(b) The mean high water line elevation for tidal water bodies;

(c) The ordinary high water line for non-tidal natural water bodies;

(d) The top of the bank for artificial lakes, borrow pits, canals, ditches and other artificial water bodies with side slopes of 1 foot vertical to 4 feet horizontal or steeper, excluding spoil banks when the canals and ditches have resulted from excavation into the ground; or

(e) The seasonal high water line for artificial lakes, borrow pits, canals, ditches, and other artificial water bodies with side slopes flatter than 1 foot vertical to 4 feet horizontal along with any artificial water body created by diking or impoundment above the ground.

(3) Determinations made pursuant to paragraphs (2)(b) and (2)(c) shall be for regulatory purposes and are not intended to be a delineation of the boundaries of lands for the purposes of title.

Specific Authority 373.421 FS. Law Implemented 373.421, 373.4211, 403.031(13) FS. History–New 7-1-94, Formerly 17-340.600.

62-340.700 Exemptions for Treatment or Disposal Systems.

(1) Alteration and maintenance of the following shall be exempt from the rules adopted by the department and the water management districts to implement subsections 373.414(1) through 373.414(6), 373.414(8) and 373.414(10), F.S.; and subsection 373.414(7), F.S., regarding any authority to apply state water quality standards within any works, impoundments, reservoirs, and other watercourses described in this subsection and any authority granted pursuant to Section 373.414, F.S. (1991):

(a) Works, impoundments, reservoirs, and other watercourses constructed and operated solely for wastewater treatment or disposal in accordance with a valid permit reviewed or issued under Rules 62-28.700, 62-302.520, F.A.C., Chapters 62-17, 62-600, 62-610, 62-640, 62-650, 62-660, 62-670, 62-671, 62-673, or 62-701, F.A.C., or Section 403.0885, F.S., or rules implementing Section 403.0885, F.S., except for treatment wetlands or receiving wetlands permitted to receive wastewater pursuant to Chapter 62-611, F.A.C., or Section 403.0885, F.S., or its implementing rules;

(b) Works, impoundments, reservoirs, and other watercourses constructed solely for wastewater treatment or disposal before a construction permit was required under Chapter 403, F.S., and operated solely for wastewater treatment or disposal in accordance with a valid permit reviewed or issued under Rules 62-28.700, 62-302.520, F.A.C., Chapters 62-17, 62-600, 62-610, 62-640, 62-650, 62-660, 62-670, 62-671, 62-673, or 62-701, F.A.C., or Section 403.0885, F.S., or rules implementing Section 403.0885, F.S., except for treatment wetlands or receiving wetlands permitted to receive wastewater pursuant to Chapter 62-611, F.A.C., or Section 403.0885, F.S., or its implementing rules;

(c) Works, impoundments, reservoirs, and other watercourses of less than 0.5 acres in combined area on a project-wide basis, constructed and operated

solely for stormwater treatment in accordance with a noticed exemption under Chapter 62-25, F.A.C., or a valid permit issued under Chapters 62-25 (excluding Rule 62-25.042), 62-330, 40B-4, 40C-4, 40C-42 (excluding Rule 40C-42.0265), 40C-44, 40D-4, 40D-40, 40D-45, or 40E-4, F.A.C., except those permitted as wetland stormwater treatment systems; or

(d) Works, impoundments, reservoirs, and other watercourses of less than 0.5 acres in combined area on a project-wide basis, constructed and operated solely for stormwater treatment before a permit was required under Chapters 62-25, 40B-4, 40C-4, 40C-42, 40C-44, 40D-4, 40D-40, 40D-45, or 40E-4, F.A.C.

(2) Alteration and maintenance of the following shall be exempt from the rules adopted by the department and the water management districts to implement subsections 373.414(1), 373.414(2)(a), 373.414(8), and 373.414(10), F.S.; and subsections 373.414(3) through 373.414(6), F.S.; and subsection 373.414(7), F.S., regarding any authority to apply state water quality standards within any works, impoundments, reservoirs, and other watercourses described in this subsection and any authority granted pursuant to Section 373.414, F.S. (1991), except for authority to protect threatened and endangered species in isolated wetlands:

(a) Works, impoundments, reservoirs, and other watercourses of 0.5 acre or greater in combined area on a project-wide basis, constructed and operated solely for stormwater treatment in accordance with a noticed exemption under Chapter 62-25, F.A.C., or a valid permit issued under Chapters 62-25 (excluding Rule 62-25.042), 62-330, 40B-4, 40C-4, 40C-42 (excluding Rule 40C-42.0265), 40C-44, 40D-4, 40D-40, 40D-45, 40E-4, except those permitted as wetland stormwater treatment systems; or

(b) Works, impoundments, reservoirs, and other watercourses of 0.5 acres or greater in combined area on a project-wide basis, constructed and operated solely for stormwater treatment before a permit was required under Chapters 62-25, 40B-4, 40C-4, 40C-42, 40C-44, 40D-4, 40D-40, 40D-45, or 40E-4, F.A.C.

(3) The exemptions in subsections 62-340.700(1) and (2) shall not apply to works, impoundments, reservoirs or other watercourses that

(a) Are currently wetlands which existed before construction of the stormwater treatment system and were incorporated in it;

(b) Are proposed to be altered through expansion into wetlands or other surface waters; or

(c) Are wetlands created, enhanced, or restored as mitigation for wetland or surface water impacts under a permit issued by the Department or a water management district.

(4) Alterations and maintenance of works, impoundments, reservoirs, and other watercourses exempt under this subsection shall not be considered in

determining whether any wetland permitting threshold is met or exceeded under part IV of Chapter 373, F.S.
(5) Works, impoundments, reservoirs, and other watercourses exempt under this subsection, other than isolated wetlands in systems described in subsection 62-340.700(2), F.A.C., above, shall not be delineated under Section 373.421, F.S.
(6) This exemption shall not affect the application of state water quality standards, including those applicable to Outstanding Florida Waters, at the point of discharge to waters as defined in subsection 403.031(13), F.S.
(7) As used in this subsection, "solely for" means the reason for which a work, impoundment, reservoir, or other watercourse is constructed and operated; and such construction and operation would not have occurred but for the purposes identified in subsection 62-340.700(1) or 62-340.700(2), F.A.C. Furthermore, the phrase does not refer to a work, impoundment, reservoir, or other watercourse constructed or operated for multiple purposes. Incidental uses, such as occasional recreational uses, will not render the exemption inapplicable, so long as the incidental uses are not part of the original planned purpose of the work, impoundment, reservoir, or other watercourse. However, for those works, impoundments, reservoirs, or other watercourses described in paragraphs 62-340.700(1)(c) and 62-340.700(2)(a), F.A.C., use of the system for flood attenuation, whether originally planned or unplanned, shall be considered an incidental use, so long as the works, impoundments, reservoirs, and other watercourses are no more than 2 acres larger than the minimum area required to comply with the stormwater treatment requirements of the district or department. For the purposes of this subsection, reuse from a work, impoundment, reservoir, or other watercourse is part of treatment or disposal.
Specific Authority 373.414(9) FS. Law Implemented 373.414(9) FS. History–New 7-1-94, Formerly 17-340.700.

62-340.750 Exemption for Surface Waters or Wetlands Created by Mosquito Control Activities.
Construction, alteration, operation, maintenance, removal, and abandonment of stormwater management systems, dams, impoundments, reservoirs, appurtenant works, or works, in, on or over lands that have become surface waters or wetlands solely because of mosquito control activities undertaken as part of a governmental mosquito control program, and which lands were neither surface waters nor wetlands before such activities, shall be exempt from the rules adopted by the department and water management districts to implement subsections 373.414(1) through 373.414(6), 373.414(8), and 373.414(10), F.S.; and subsection 373.414(7), F.S., regarding any authority granted pursuant to Section 373.414, F.S. (1991). Activities exempted under

this section shall not be considered in determining whether any wetland permitting threshold is met or exceeded under part IV of Chapter 373, F.S. This exemption shall not affect the regulation of impacts on other surface waters or wetlands, or the application of state water quality standards to waters as defined in subsection 403.031(13), F.S., including standards applicable to Outstanding Florida Waters.
Specific Authority 373.414(9) FS. Law Implemented 373.414(9) FS. History– New 7-1-94, Formerly 17-340.750.

See The Florida Wetlands Delineation Manual for further clarification.

Data Form Guide Notes:

Surface Water Definitions

Definition from §373.019(19) Florida Statutes
"**Surface water**" means water upon the surface of the earth, whether contained in bounds created naturally or artificially or diffused. Water from natural springs shall be classified as surface water when it exits from the spring onto the earth's surface.

Definition from §373.019(14) Florida Statutes
"**Other watercourse**" means any canal, ditch, or other artificial watercourse in which water usually flows in a defined bed or channel. It is not essential that the flowing be uniform or uninterrupted.

Definition from §62.340.200(15) Florida Administrative Code
"**Seasonal High Water**" means the elevation to which the ground and surface water can be expected to rise due to a normal wet season.

From The Florida Wetlands Delineation Manual pg. 37
Ordinary high water is that point on the slope or bank where the surface water from the water body ceases to exert a dominant influence on the character of the surrounding vegetation and soils. The OHWL frequently encompasses areas dominated by non-listed vegetation and non-hydric soils. When the OHWL is not at a wetland edge, the general view of the area may present an "upland" appearance.

Definition from §403.803(14) Florida Statutes
"**Swale**" means a manmade trench which:
(a) Has a top width-to-depth ratio of the cross-section equal to or greater than 6:1, or side slopes equal to or greater than 3 feet horizontal to 1 foot vertical;
(b) Contains contiguous areas of standing or flowing water only following a rainfall event;
(c) Is planted with or has stabilized vegetation suitable for soil stabilization, stormwater treatment, and nutrient uptake; and
(d) Is designed to take into account the soil erodibility, soil percolation, slope, slope length, and drainage area so as to prevent erosion and reduce pollutant concentration of any discharge.

Data Form Guide Notes:

Tips from Field Indicators of Hydric Soils in the United States V7.0, 2010

- As long as the soil meets the definition of a hydric soil, the lack of an indicator does not preclude the soil from being hydric.
- Concentrate sampling efforts near the wetland edge and, if these soils are hydric, assume that soils in the wetter, interior portions also are hydric. The indicators were developed mostly to identify the boundary of hydric soil areas and generally work best on the margins. Not all of the obviously wetter hydric soils will be identified by the indicators.

SOIL AND WATER RELATIONSHIPS OF FLORIDA'S ECOLOGICAL COMMUNITIES July, 1992 Adapted

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 biogeochemical 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, dig a hole and describe the soil profile to a depth of approximately 50 cm (20 inches). 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.

Estimating Seasonal High Saturation

Introduction

Seasonal High Water Table (SHWT) is the shallowest depth to free water that stands in an unlined borehole or where the soil moisture tension is zero for a significant period (more than a few weeks). The depth to the estimated SHWT is the used soil interpretation in Florida. This method of estimating SHWT applies only to areas lacking hydrologic modifications. Hydrologic modifications such as ditches and dikes can make the soil either wetter or drier.

By observing soil features, SHWT predictions can be made for hydric soils as well as other soils.

Field Identification of SHWT

The procedure for field Identification of SHWT is based on the assumption that, when soils are wet enough, for a long enough duration to develop SHWT, they should exhibit certain visible properties that are to be used to determine on-site SHWT. All SHWT determinations should be based on field observations of moist soils.

Procedure

SHWT is determined by examining soils with a hydric soil indicator in a freshly dug pit for the SHWT indicators listed below. Presence of the shallowest of the SHWT indicators listed below indicates the depth to SHWT.

1. Soils with the following hydric soil indicators have SHWT at or above the surface:

A1 (Histosol or Histel), A2 (Histic Epipedon), A3 (Black Histic), A4 (Hydrogen Sulfide), A7 (5 cm Mucky Mineral), A8 (Muck Presence) or A9 (1 cm Muck), S4 (Sandy Gleyed Matrix), and F2 (Loamy Gleyed Matrix).

2. Soils with the following hydric soil indicators have SHWT within 6 inches of the surface:

A5 (Stratified Layers), A6 (Organic Bodies), A11 (Depleted Below Dark Surface), A12 (Thick Dark Surface), S5 (Sandy Redox), S6 (Stripped Matrix), S7 (Dark Surface), S8 (Polyvalue Below Surface), S9 (Thin Dark Surface), F10 (Marl), and F13 (Umbric Surface). Depth to SHWT is the depth at which all requirements of a particular indicator are met.

For example, if S6 (Stripped Matrix) starts at 4 inches, depth to SHWT is 4 inches or if S7 (Dark Surface) starts at the soil surface, depth to SHWT is the soil surface.

3. Soils with the following hydric soil indicators have SHWT within 12 inches of the surface:

F3 (Depleted Matrix), F6 (Redox Dark Surface), and F7 (Depleted Dark Surface). Depth to SHWT is the depth at which all requirements of a particular indicator are met.

For example, if F3 (Depleted Matrix) starts at 8 inches, depth to SHWT is 8 inches.

4. Soils with the following hydric soil indicators lack significant saturation but are inundated for long or very long duration:

F8 (Redox Depressions) and F12 (Iron/Manganese Masses).

Data Form Guide Note:
A stand-alone D Test soil field indicator is both a hydric soil field indicator and a hydrologic indicator.

The hydric soil field indicators below indicate SHWT at or above the surface, and therefore may also be used as evidence of hydrologic data under subsection 62-340.500(8), F.A.C. per Soil and Water Relationships of Florida's Ecological Communities (Florida Soil Conservation Staff 1992 Adapted)**:**

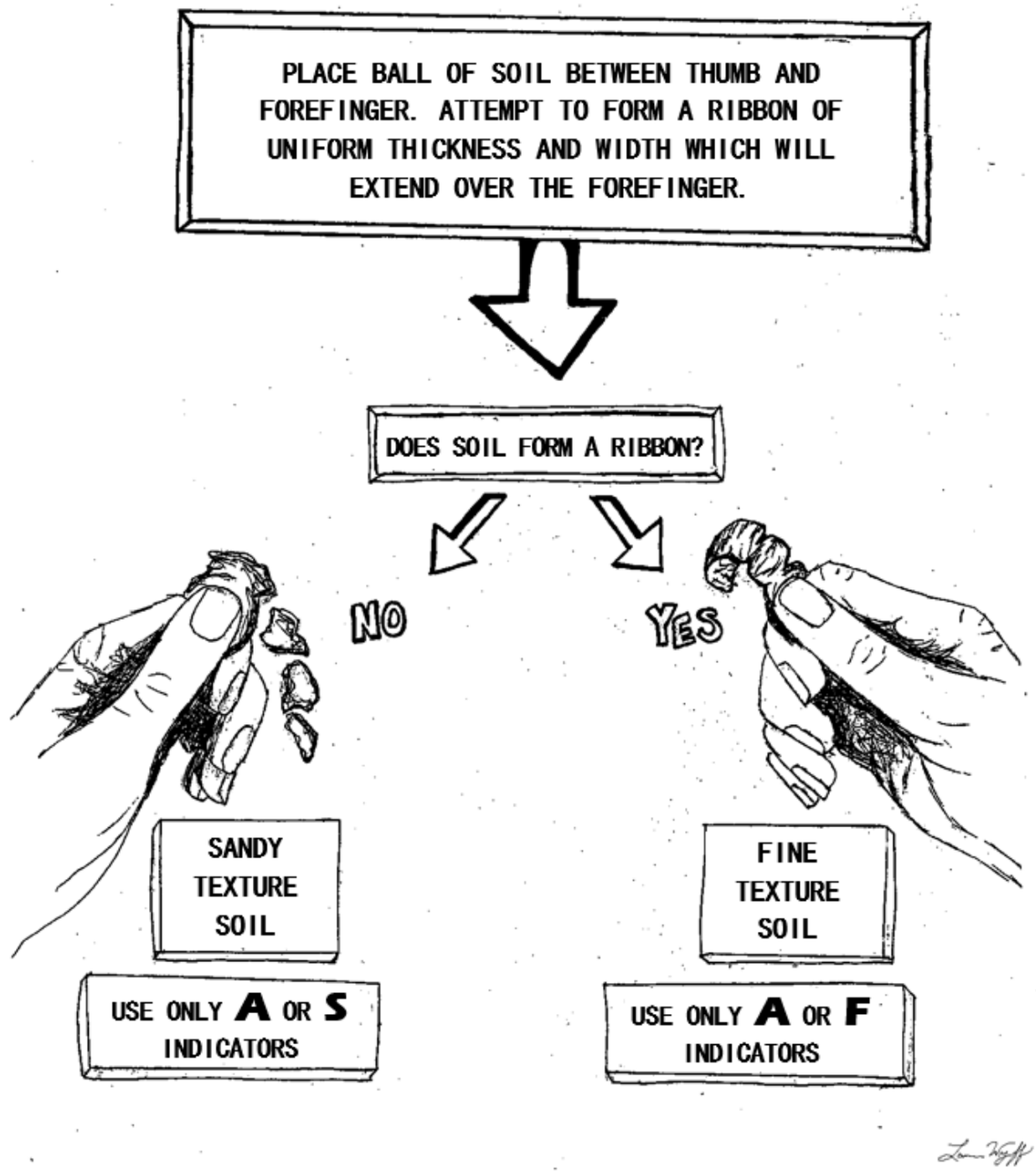
A1 – Histosol or Histel
A2 – Histic Epipedon
A3 – Black Histic
A4 – Hydrogen Sulfide
A7 – 5 cm Mucky Mineral
A8 – Muck Presence
A9 – 1 cm Muck
S4 – Sandy Gleyed Matrix
F2 – Loamy Gleyed Matrix

Or **any NRCS hydric soil field indicator** in which all requirements of that indicator are met starting at the soil surface (see Data Form Guide page 36)

The hydric soil field indicator below is also a hydrologic indicator under subsection 62-340.500(11), F.A.C. evidence of sediment deposition:

A5 - Stratified Layers

Field Determination of Soil Indicator Texture



Soil Textures and Their Hydric Soil Indicator Prefix Designations:

A - All texture soils "All soils" refers to soils with any USDA soil texture, including muck, mucky peat, and peat.

S - Sandy texture soils (soils that will not ribbon) "Sandy soils" refers to those soils with a USDA soil texture of loamy sand and coarser, and does not include muck, mucky peat, or peat.

F - Fine texture soils (soils that will ribbon) "Loamy and clayey soils" refers to those soils with USDA soil texture of sandy loam and finer, and does not include muck, mucky peat, or peat.

Tips for Determining Texture of Soil Materials High in Organic Carbon

"Texture Rub Test"

If soil appears dark, gently (minimal pressure) rub wet soil material between forefinger and thumb and note how it feels.

# of Rubs	Feeling	Texture
≤ 2	Gritty	Sandy Mineral[1]
2	Greasy	*Continue to next row*
3 to ≤ 5	Gritty	Sandy Mucky Mineral[1]
3 to ≤ 5	Plastic[2]	Check % Organic Carbon[3] to determine if Fine Mineral[1] or Fine Mucky Mineral[1]
≥ 5	Greasy	Muck[1]

[1] Results of this test only indicate texture; check NRCS hydric soil field indicators to determine if all requirements of an indicator are met

[2] Plastic: able to be molded or deformed into various shapes by moderate pressure

[3] Sufficiency of organic carbon* can be approximated using the "Color Test"[4]

**not to be confused with organic coating*

"Fiber Rub Test"

If soil material is all or nearly all organic, firmly rub a moist sample 10 times in the palm of one hand with the thumb of the other and estimate proportion of fibers visible with a hand lens.

[5] Live roots are not considered

Proportion of visible fibers[5]	Organic soil texture
Less than 1/6 (<17%)	Sapric (Muck)
1/6 to 2/5 (17% - 40%)	Hemic (Mucky Peat)
More than 2/5 (>40%)	Fibric (Peat)

Tips for Approximating Composition of Soil

"Decant Tests"

Place a pea sized amount of soil in cupped palm of hand. Holding spray bottle close (~3 in.), thoroughly wet soil, filling but not overflowing palm.

↓

Break apart soil material to make a souplike suspension of particles.

↓

[4]"Color Test"

Keeping solution in palm, note its color. (Helps to determine if suspended particles are organic or fine mineral.)

- Black/Brown → Organic Material
- Gray/Cloudy → Clay and/or Silt

↓

"Sand Content Test"

Gently decant liquid solution while keeping solid material in palm.

↓

Spray, smear, examine, drain, and repeat until solution runs nearly clear.

↓

Spread remaining soil material across palm. Compare amount of sand in relation to original pea sized clump, considering the relative loss of fine soil material (clay & silt) indicated by the "Color Test", to approximate organic vs. mineral (sand, silt, & clay) content. See Figure 5 pg. 70 for the dry weight soil texture ratio requirements.

Tips for Determining Boundary Types of Features in Soil

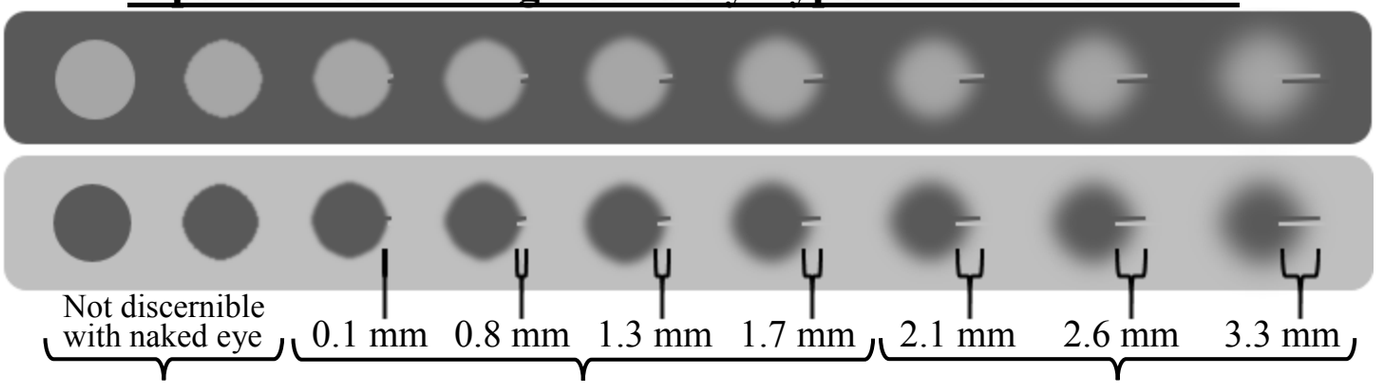


Figure 1: Diagram for determining boundary types of features in the matrix.

Tips for Determining Contrast Between Soil Colors

Table 1: Chart of delta hue (Figure 2), delta value, and delta chroma required for each level of color contrast. The last column in each row states what level of contrast exists between two colors when the Δhue, Δvalue, and Δchroma criteria within that row are met.

*Note: If both colors have value ≤3 and chroma ≤2, the contrast is faint, regardless of the change in hue.

ΔHue	ΔValue	ΔChroma	Contrast
0	≤2	≤1	Faint
	≤2	>1 to <4	Distinct
	>2 to <4	<4	Distinct
	any	≥4	Prominent
	≥4	any	Prominent
1	≤1	≤1	Faint
	≤1	>1 to <3	Distinct
	>1 to <3	<3	Distinct
	any	≥3	Prominent
	≥3	any	Prominent
2	0	0	Faint
	0	>0 to <2	Distinct
	>0 to <2	<2	Distinct
	any	≥2	Prominent
	≥2	any	Prominent
3+	any	any	Prominent

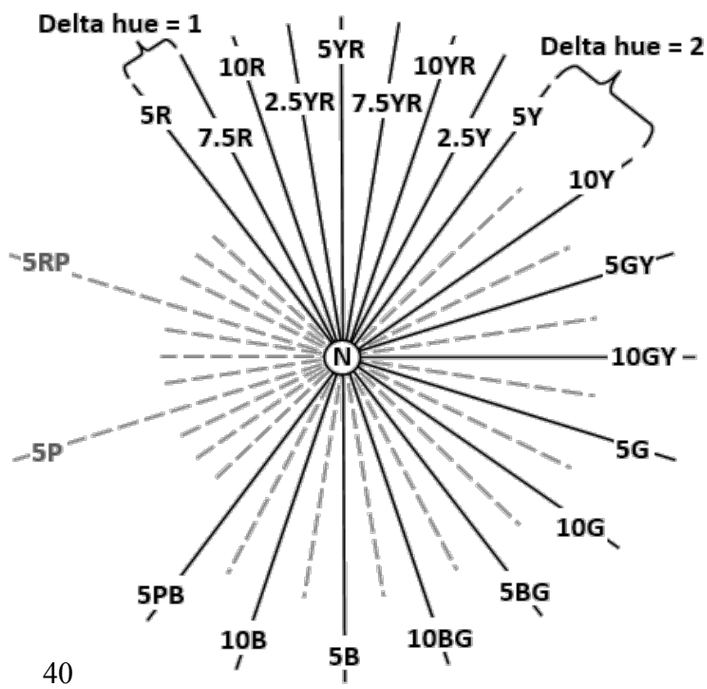


Figure 2: Relationships among the hues of the Munsell Color System. Solid lines represent hues contained in the *Munsell Soil Color Charts* (2009). Dotted lines represent all other possible 2.5 unit steps. Moving from one hue line to the adjacent hue line represents a delta hue of 1 (2.5 units).

Adapted from the *Soil Survey Manual* (Soil Survey Staff, 1993)

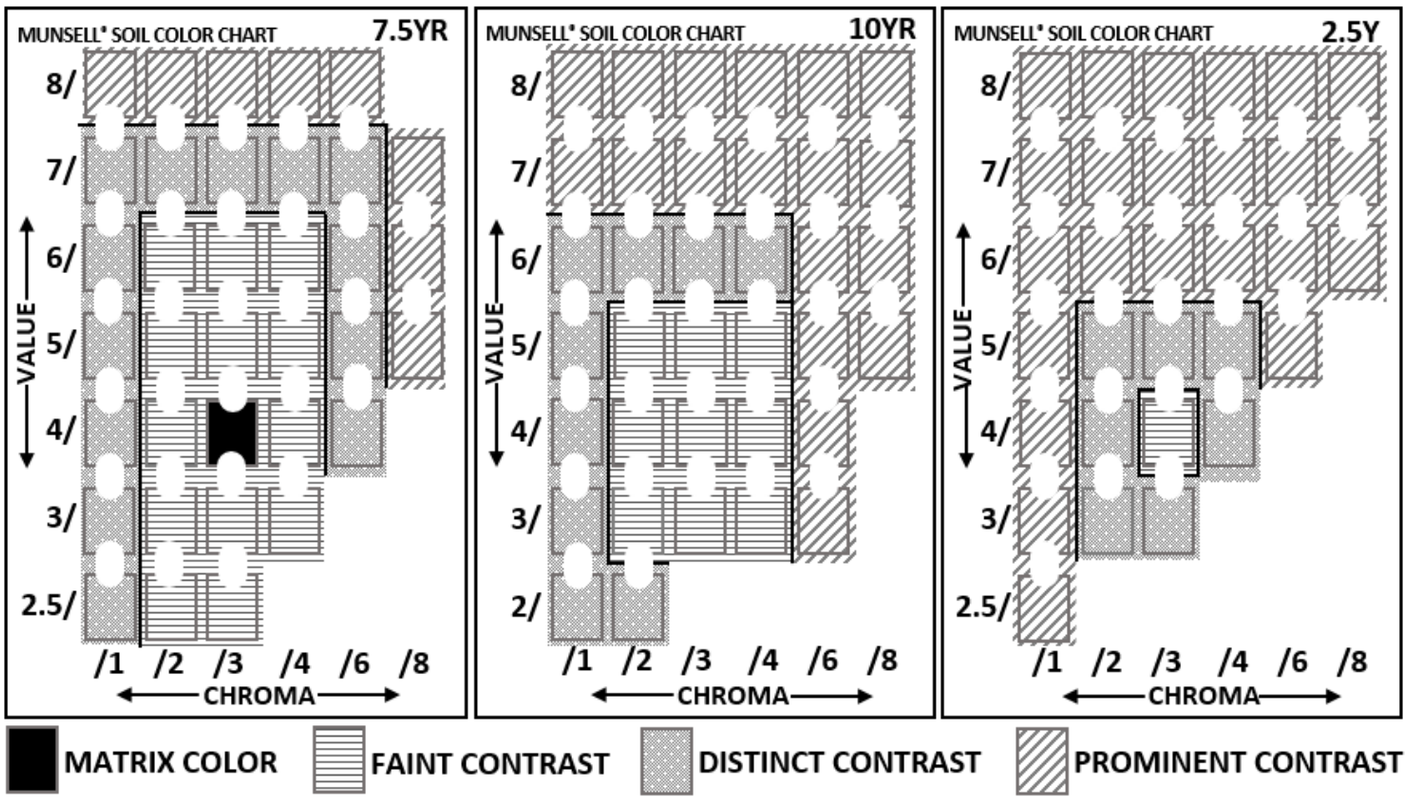


Figure 3: Using the 7.5 YR 4/3 color chip as an example matrix color, an illustration of faint, distinct, and prominent contrast between colors in relation to the matrix color in the *Munsell Soil Color Charts* (2009).

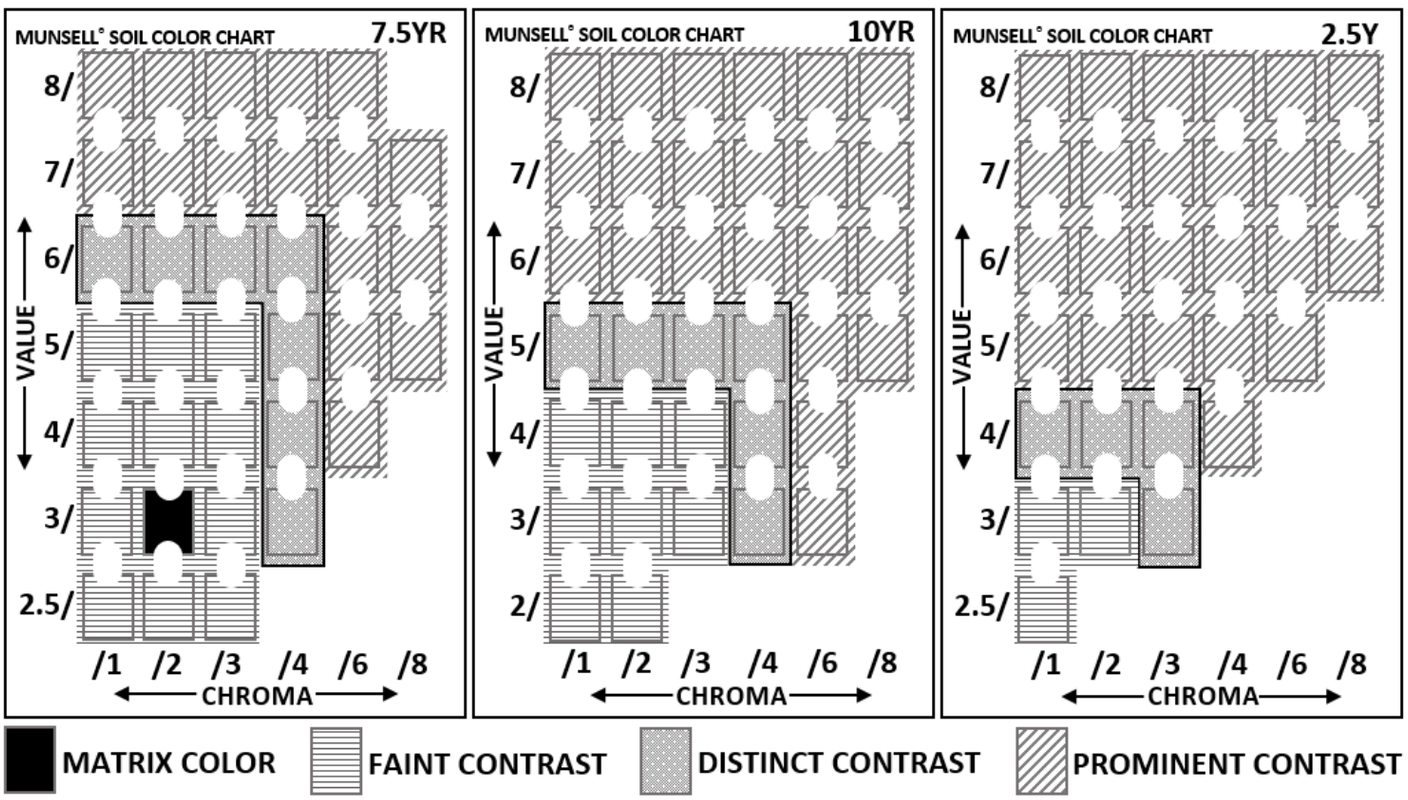
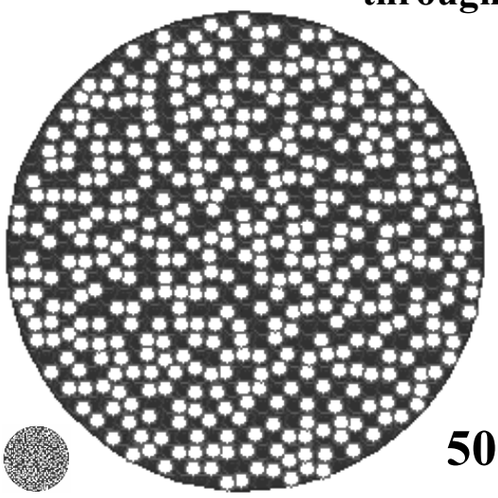


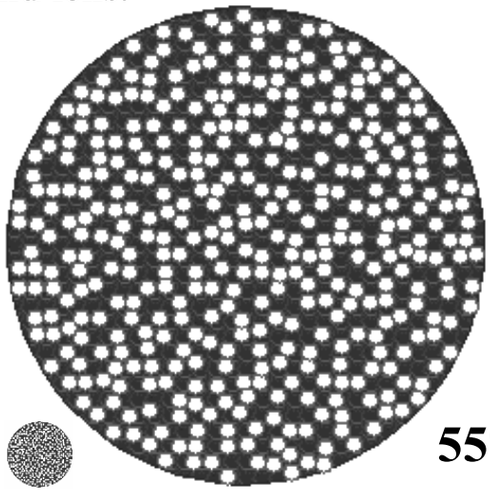
Figure 4: Using the 7.5 YR 3/2 color chip as an example matrix color, an illustration of faint, distinct, and prominent contrast between colors in relation to the matrix color in the *Munsell Soil Color Charts* (2009). Note that because the matrix has value ≤3 and chroma ≤2, all other colors with value ≤3 and chroma ≤2 are faintly contrasting despite the change in hue.

Estimating Percent Organic Coating

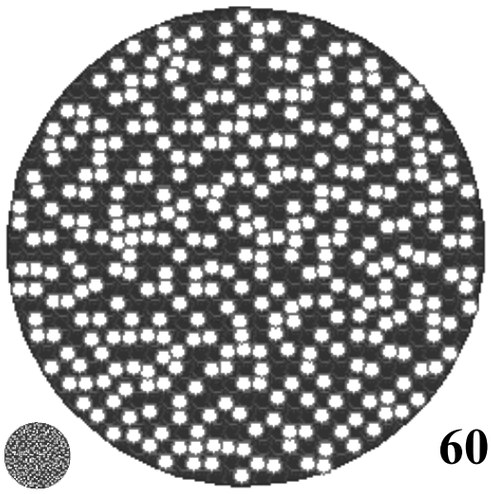
The round diagrams represent the appearance of uncoated (clear or white) sand grains versus coated (gray to black) sand grains within a ped face as viewed through a 10X hand lens.



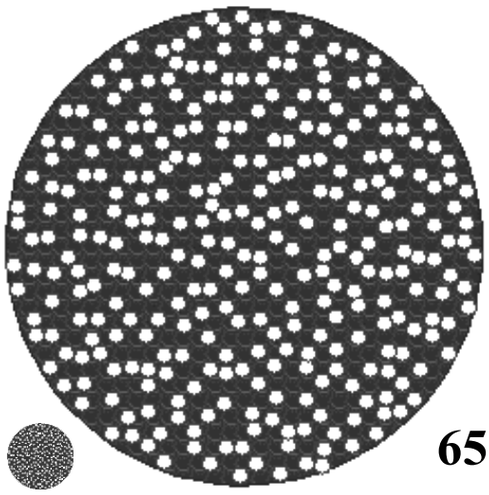
50%



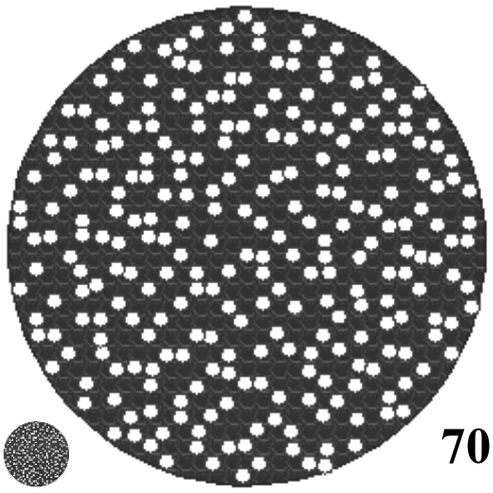
55%



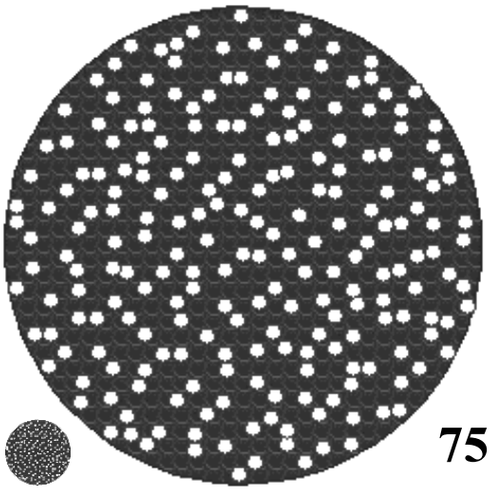
60%



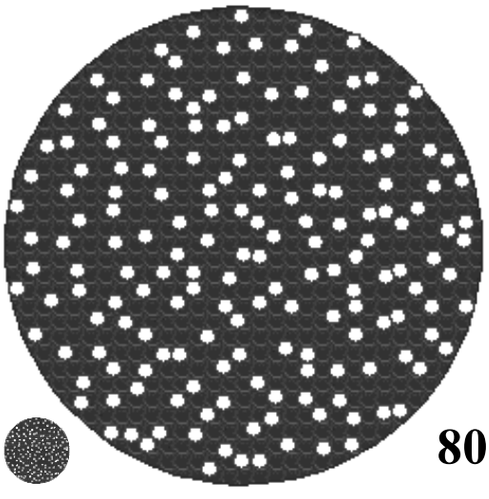
65%



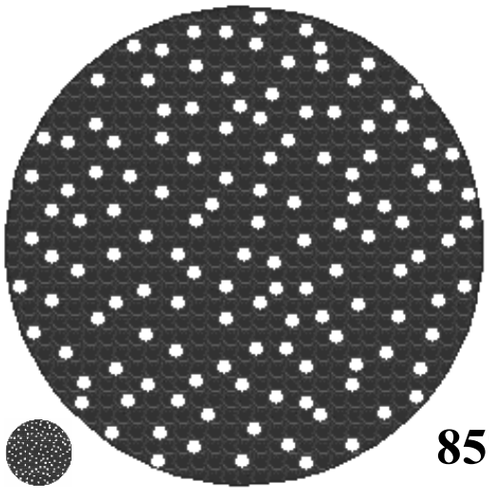
70%



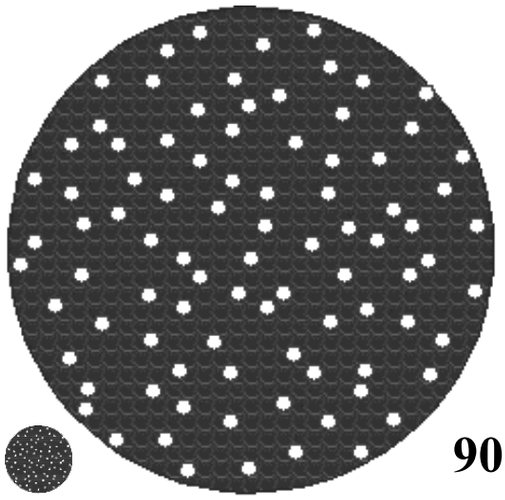
75%



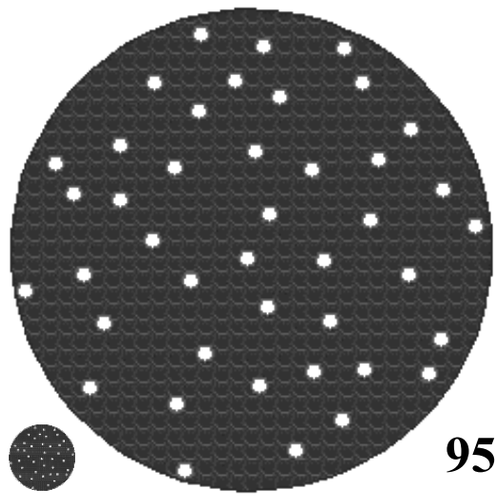
80%



85%



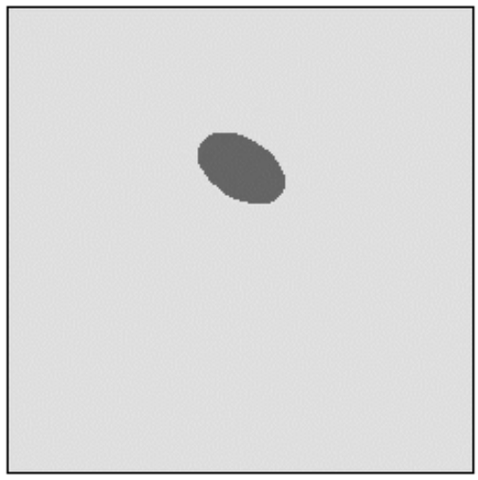
90%



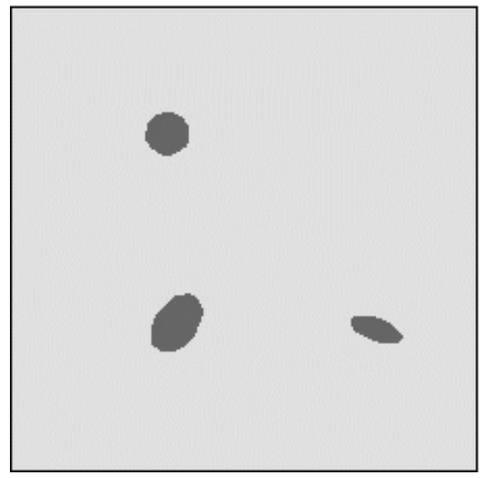
95%

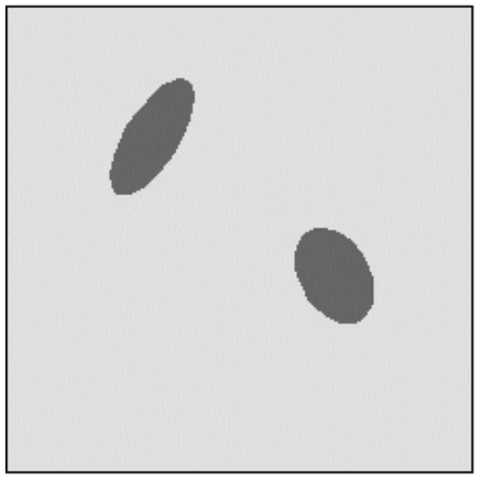
Estimating Percent Volume

The squares represent part of a grid drawn on the soil profile to estimate volume of light areas, dark areas, or redox concentrations of larger and smaller sizes.

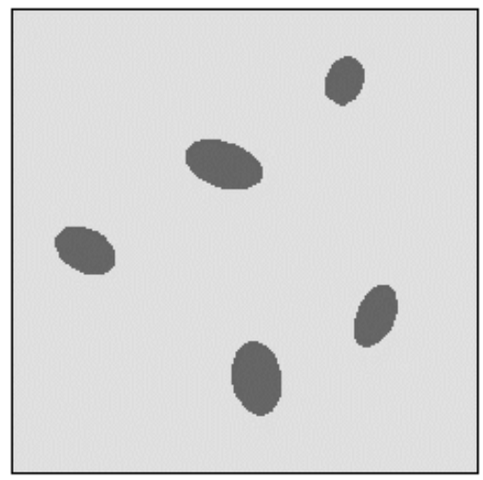


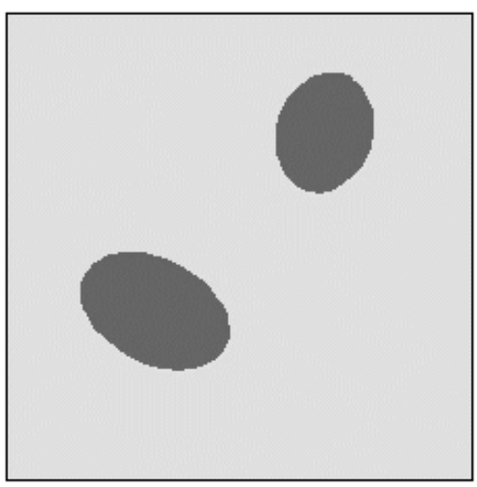
2%



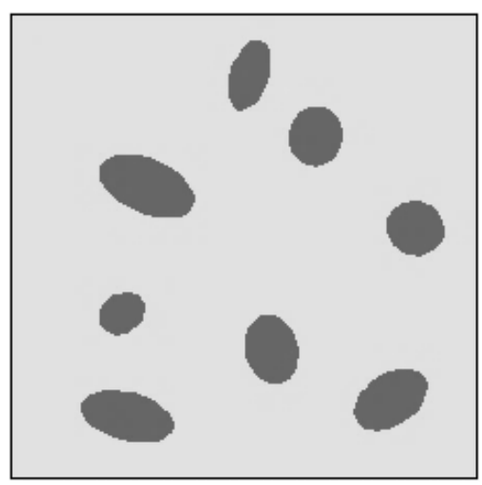


5%

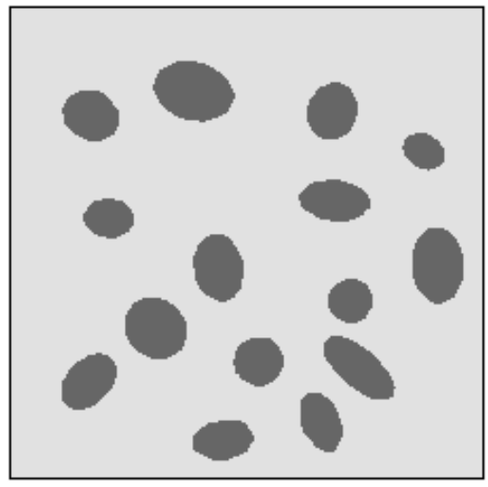




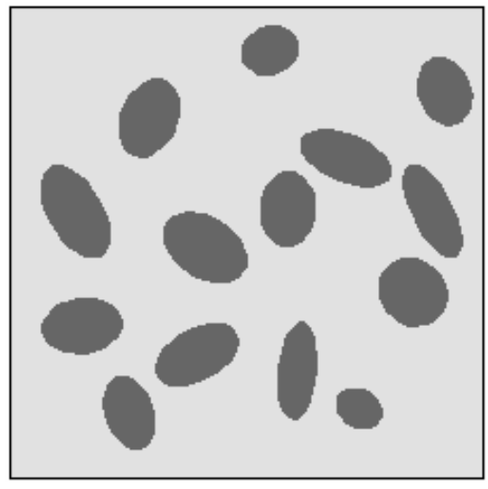
10%

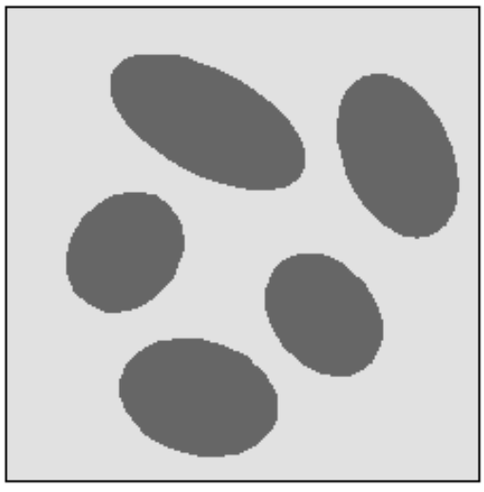


15%

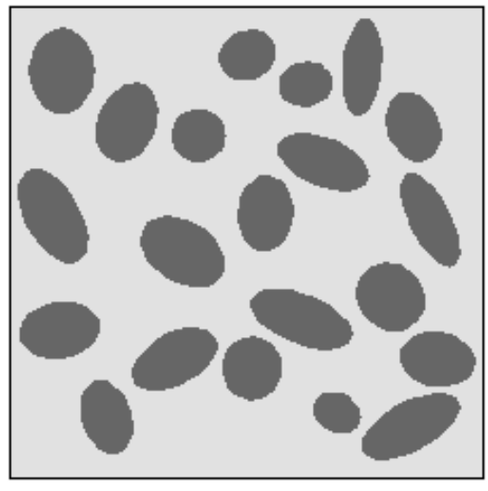


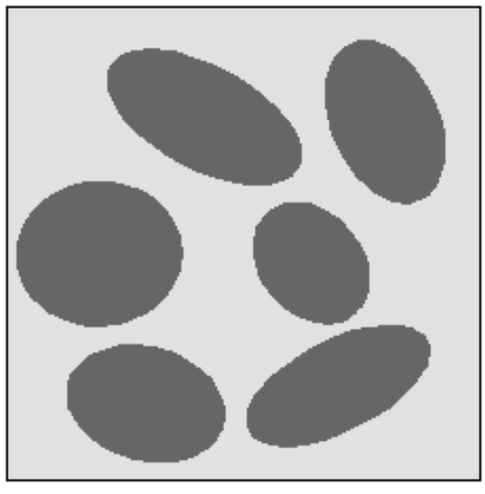
20%



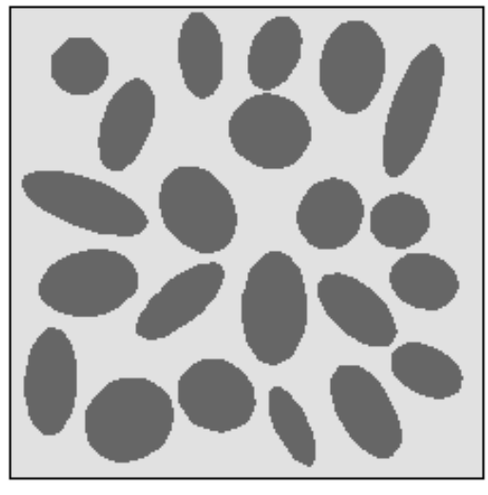


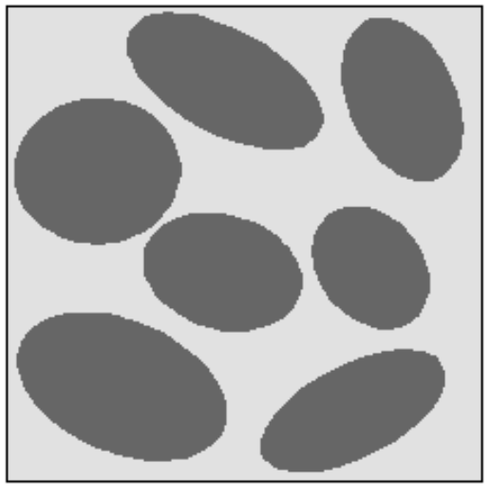
30%



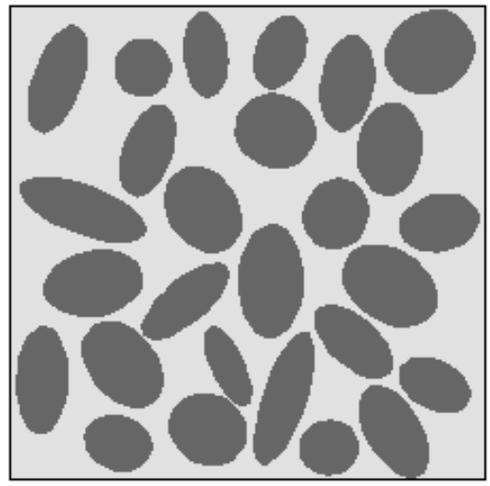


40%

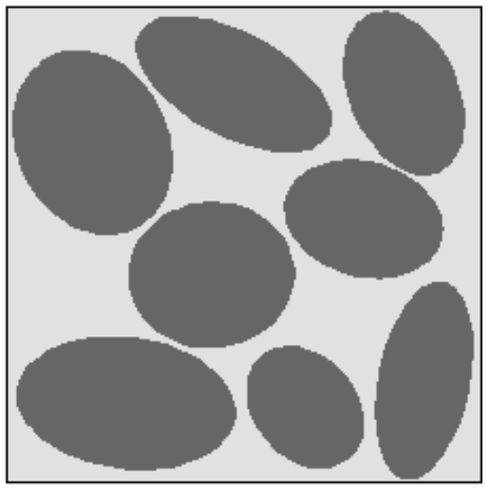




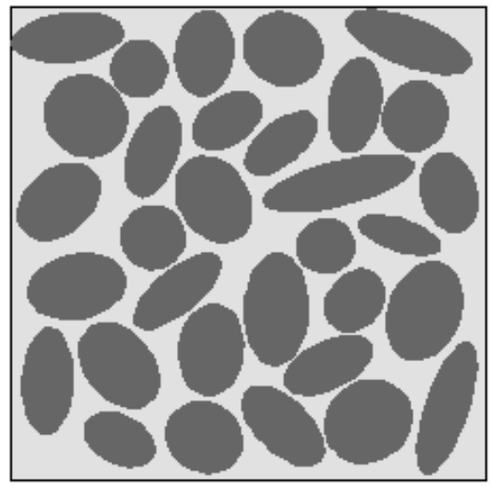
50%

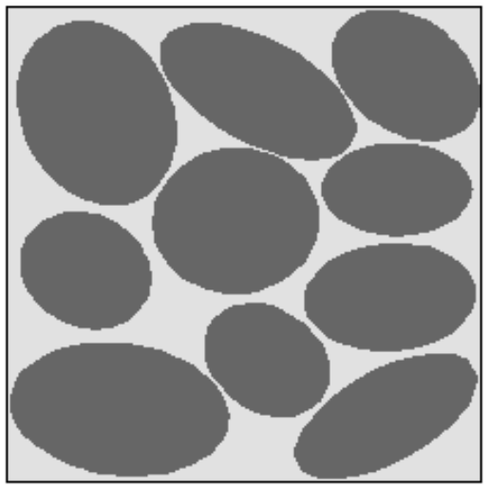


(Note: when a feature (e.g. stripped areas) composes more than 50% of the volume, its color is considered to be the matrix color of the soil profile. When more than two colors are present, the color composing the majority of the volume is the matrix color.)

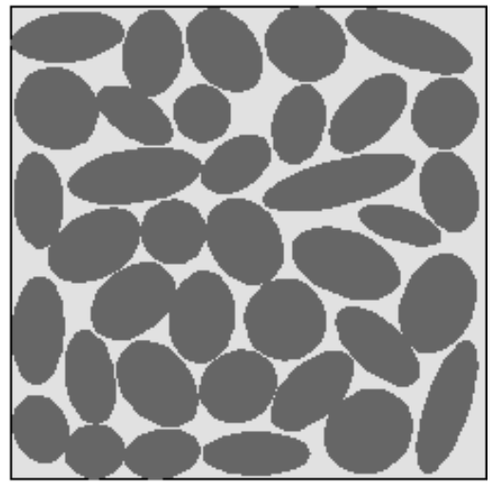


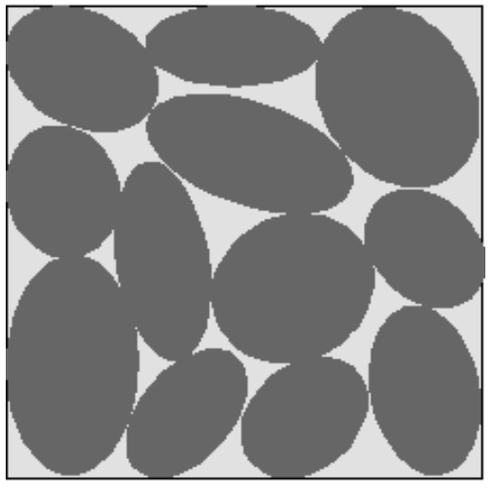
60%



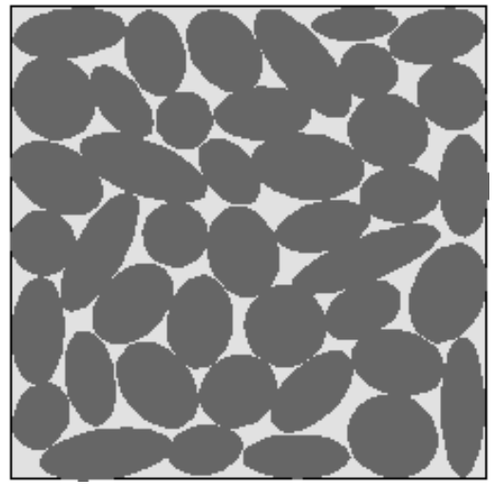


70%



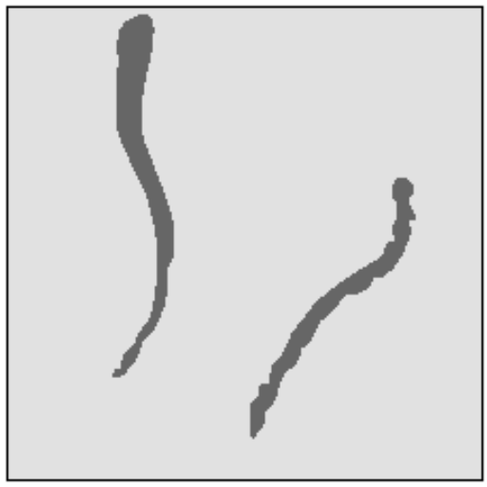


80%



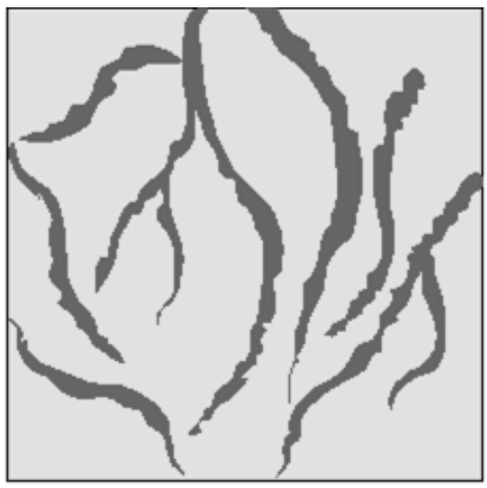
The squares represent part of a grid drawn on the soil profile to estimate volume of oxidized rhizospheres or other linear features within the profile.

2%



5%

10%



15%

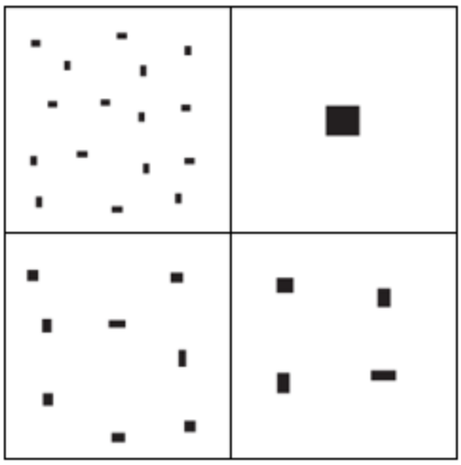
20%

30%

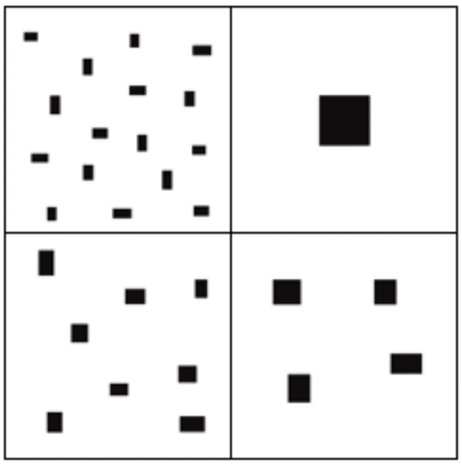
40%

50%

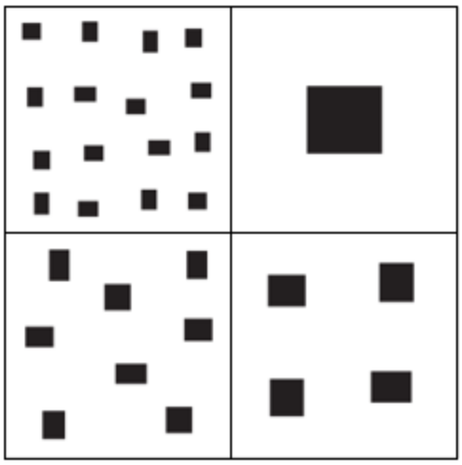
Each square is divided into quarters which depict the same percent volume using features of different sizes. These can also represent areal extents for plants.



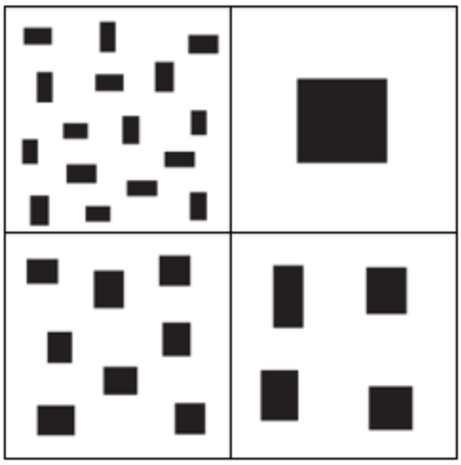
2%



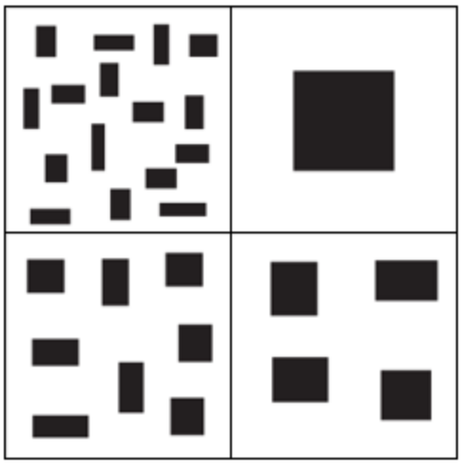
5%



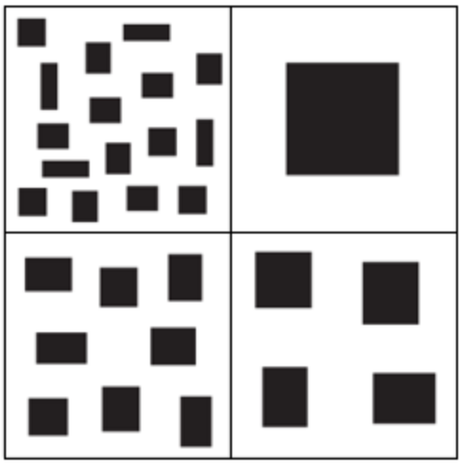
10%



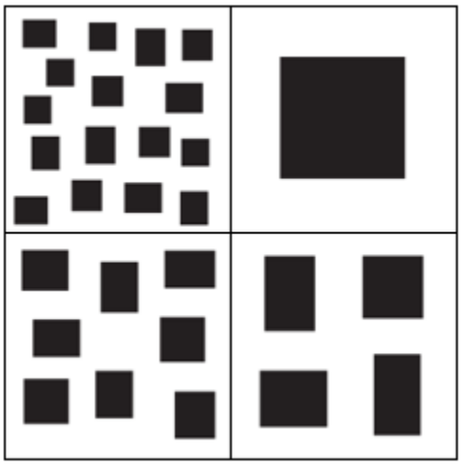
15%



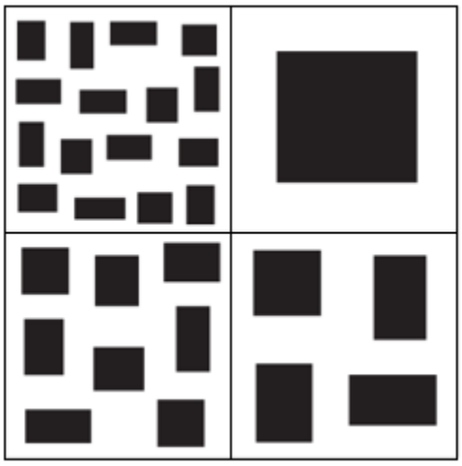
20%



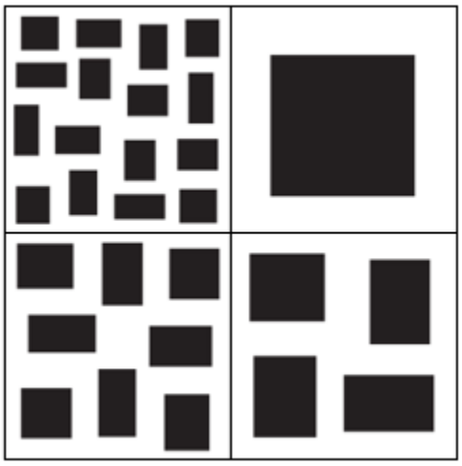
25%



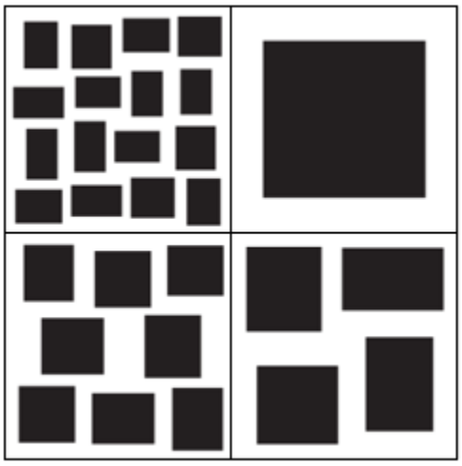
30%



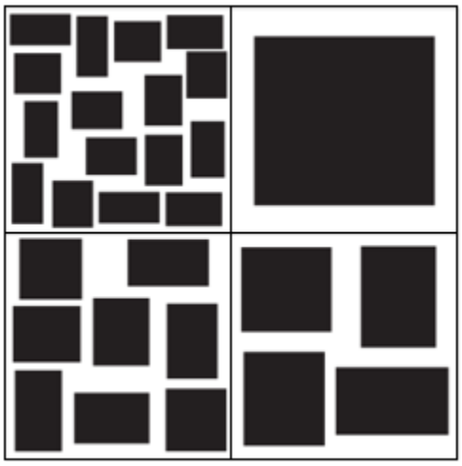
35%



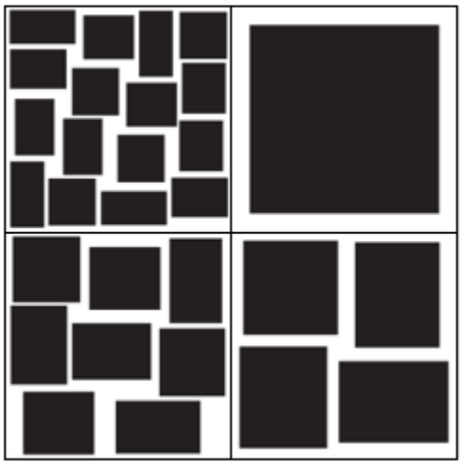
40%



50%

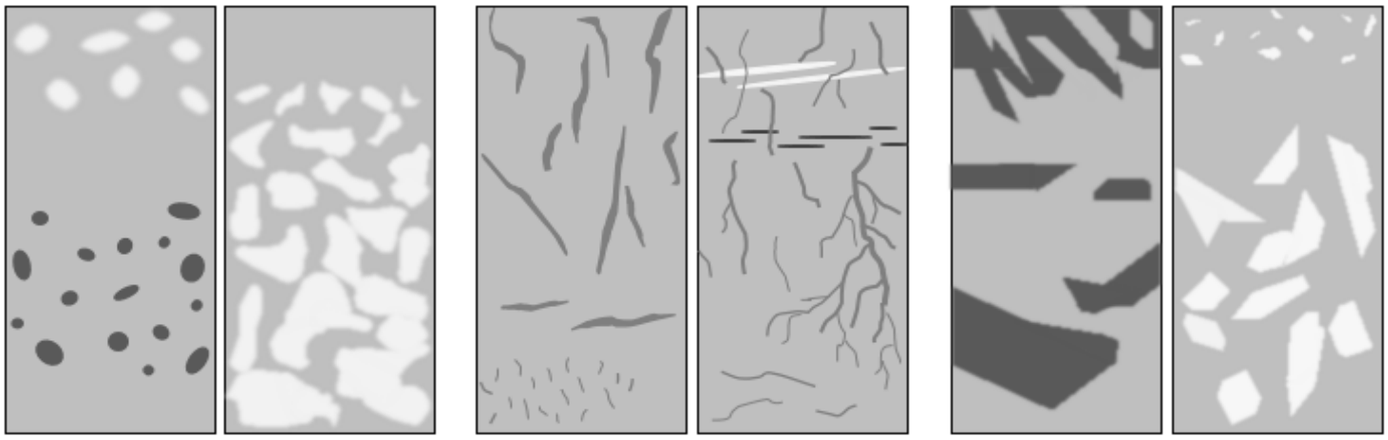


60%



70%

Tips for Determining Shapes of Features in Soil



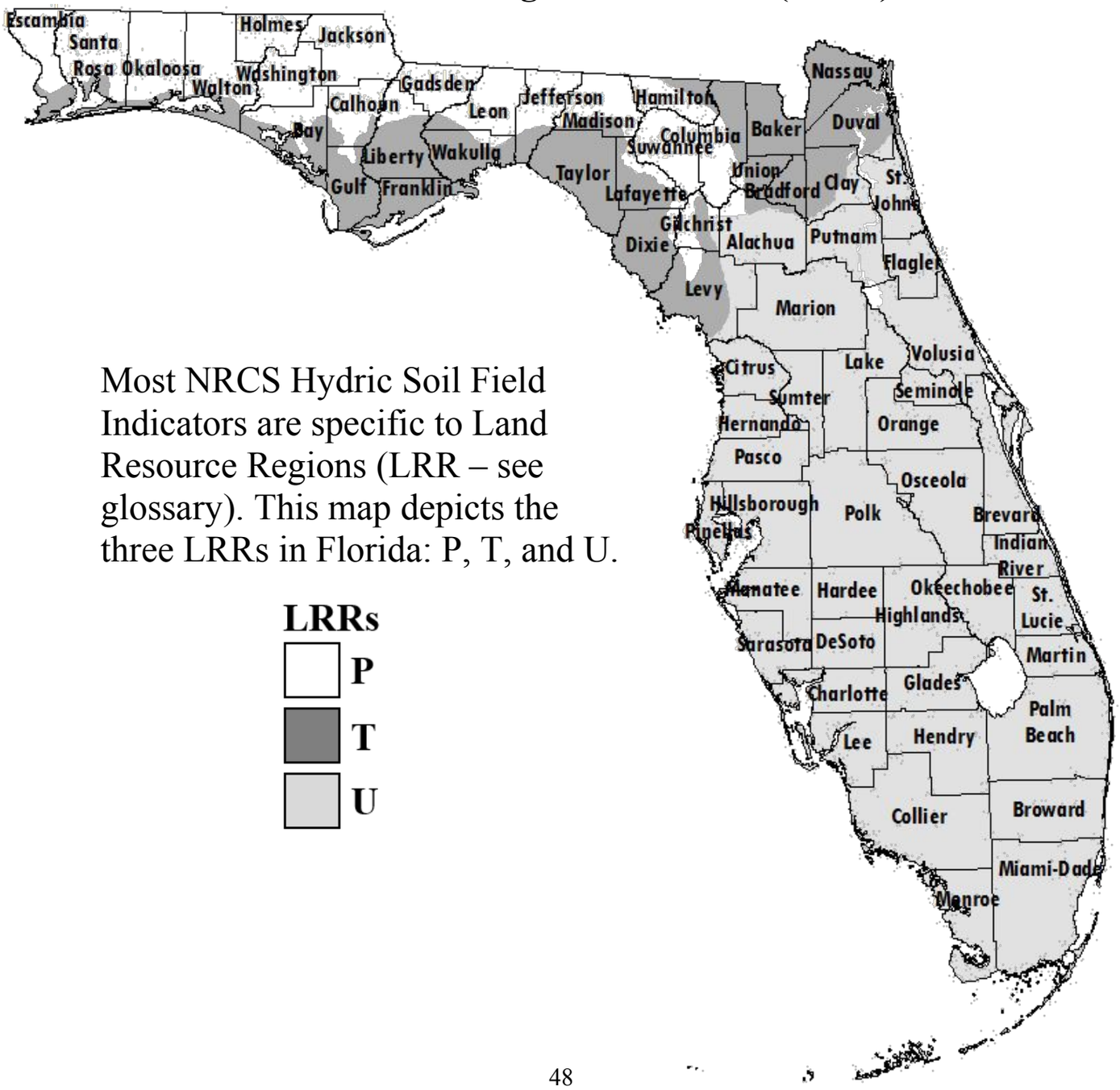
Rounded
Features with generally curved outlines (do not have to be circular; often amorphous)

Linear
Features that are generally long & narrow (typically associated with roots or burrows, sometimes mixing or deposition)

Angular
Features with generally straight outlines & defined angles (often resulting from physical mixing of soils)

Figure 5: Diagram for determining shape categories of features in the matrix.

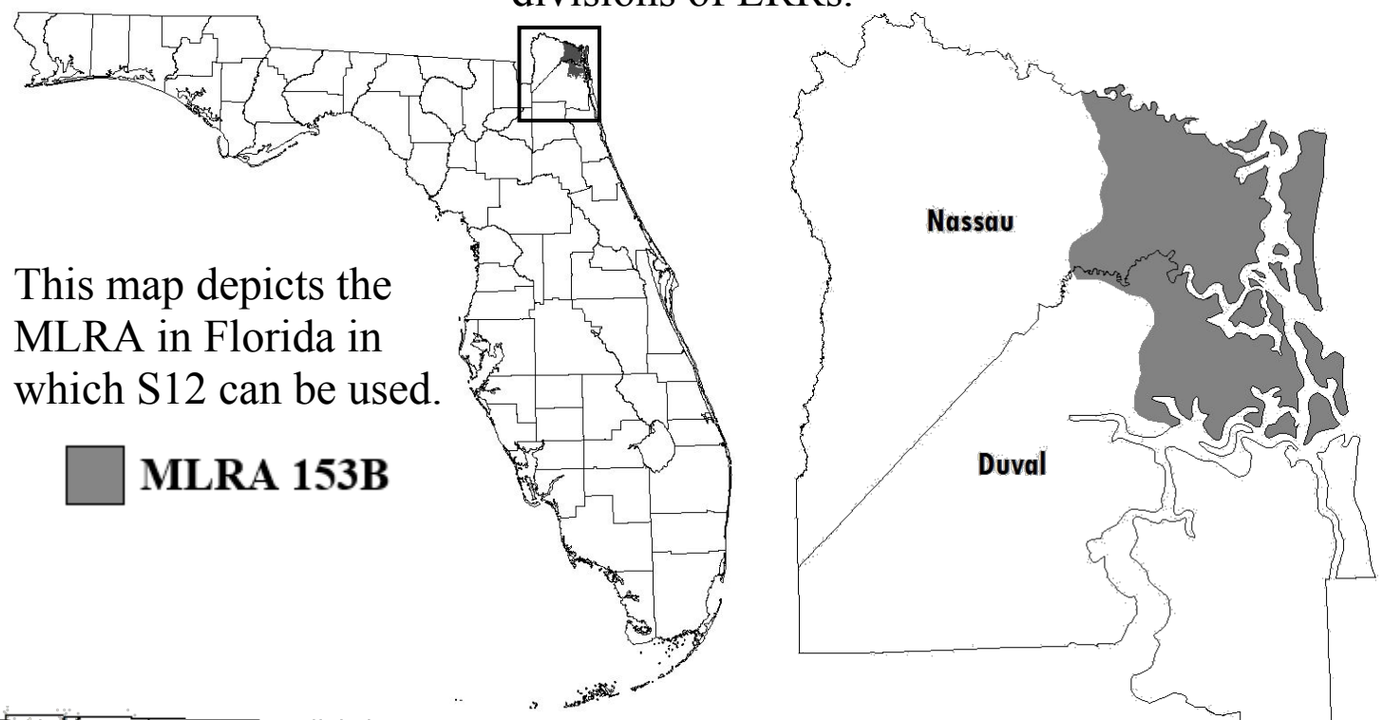
NRCS Hydric Soil Field Indicators
Land Resource Regions of Florida (LRRs)



Most NRCS Hydric Soil Field Indicators are specific to Land Resource Regions (LRR – see glossary). This map depicts the three LRRs in Florida: P, T, and U.

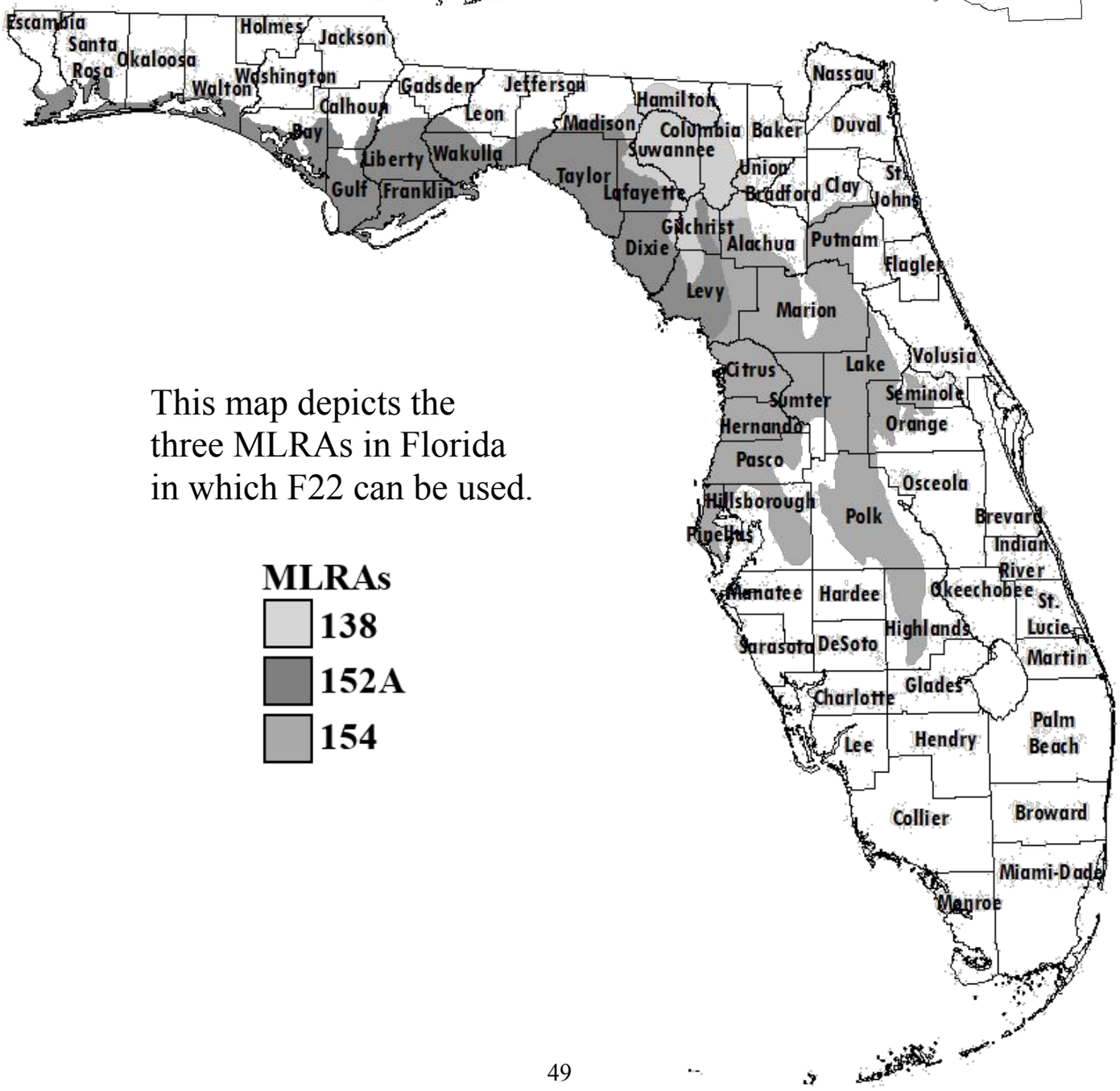
Major Land Resource Areas (MLRAs)

Two Hydric Soil Field Indicators in Florida (S12 and F22) are specific to Major Land Resource Areas (MLRA – see glossary), which are smaller divisions of LRRs.



This map depicts the MLRA in Florida in which S12 can be used.

MLRA 153B



This map depicts the three MLRAs in Florida in which F22 can be used.

MLRAs

- 138
- 152A
- 154

Hydric Soil Field Indicators:
Florida Soil Conservation ed. Staff 1992 – Soil and Water Relationships of Florida's Ecological Communities: Adapted

(as per Hydric Soil Indicators definition subsection 62-340.200(9)).

These indicators are subdivided by prefix:
A – for All texture soils
S – for Sandy texture soils
F – for Fine texture soils
LRR or MLRA – refer to the "Land Resource Region" or the "Major Land Resource Area" in which the indicator may be used

Data Form Guide Notes

Soil profile documentation: The top of the uppermost muck (sapric) or mineral surface is the soil surface/0 inch depth for purposes of Chapter 62-340, F.A.C. Other materials, such as peat (fibric) or mucky peat (hemic) are documented by a "+" before the thickness in inches of each additional layer above the soil surface. (For example: +4 – 0 inches mucky peat, 0 – 3 inches muck)

Overlying layer(s) requirement: All mineral layers above any of the layers meeting the requirements of any indicators, except S6, F8, and F12, must have a dominant chroma of 2 or less, or the thickness of the layer(s) with a dominant chroma of more than 2 is less than 6 inches.

----------*For use in All texture soils*----------

A1. Histosol - LRR: **P, T, U**
Note: This is a stand-alone D Test indicator
Classifies as a Histosol (except Folist).
User Notes: In a Histosol, typically 40 cm (16 inches) or more of the upper 80 cm (32 inches) is organic soil material. Organic soil materials have organic-carbon contents (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), and peat (fibric soil material). See *Keys to Soil Taxonomy* (Soil Survey Staff, 2010) for a complete definition.

A2. Histic Epipedon - LRR: **P, T, U**
Note: This is a stand-alone D Test indicator
A histic epipedon underlain by mineral soil material with chroma of 2 or less.
User Notes: Most histic epipedons are surface horizons 20 cm (8 inches) or more thick of organic soil material. Aquic conditions or artificial drainage is required. See *Keys to Soil Taxonomy* (Soil Survey Staff, 2010) for a complete definition.

A3. Black Histic - LRR: **P, T, U**
Note: This is a stand-alone D Test indicator
A layer of peat, mucky peat, or muck 20 cm (8 inches) or more thick that starts within the upper 15 cm (6 inches) of the soil surface; has hue of 10YR or yellower, value of 3 or less, and chroma of 1 or less; and is underlain by mineral soil material with chroma of 2 or less.
User Notes: Unlike indicator A2, this indicator does not require proof of aquic conditions or artificial drainage.

A4. Hydrogen Sulfide - LRR: **P, T, U**
Note: This is a stand-alone D Test indicator
A hydrogen sulfide odor within 30 cm (12 inches) of the soil surface.

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 occurs only when the soils are saturated and anaerobic.

A5. <u>Stratified Layers</u> - LRR: **P, T, U**

Note: This is a stand-alone D Test indicator (qualifies as sediment deposition)

Several stratified layers starting within the upper 15 cm (6 inches) of the soil surface. At least one of the layers has value of 3 or less and chroma of 1 or less, or it is muck, mucky peat, peat, or a mucky modified mineral texture. The remaining layers have chroma of 2 or less. For any sandy material that constitutes the layer with value of 3 or less and chroma of 1 or less, at least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked.

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 is required for indicator A7 (5 cm Mucky Mineral). An undisturbed sample must be observed. Individual strata are dominantly less than 2.5 cm (1 inch) 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 soils do not meet the requirements of this indicator. Many alluvial soils have stratified layers at the required depths but do not have chroma of 2 or less; these do not meet the requirements of this indicator. The stratified layers occur in any soil texture.

A6. <u>Organic Bodies</u> - LRR: **P, T, U**

Presence of 2 percent or more organic bodies of muck or a mucky modified mineral texture starting within 15 cm (6 inches) of the soil surface.

User Notes: Organic bodies typically occur at the tips of fine roots. The content of organic carbon in organic bodies is the same as that in the Muck or Mucky indicators. The Organic Bodies indicator includes the indicator previously named “accretions” (Florida Soil Survey Staff, 1992). The size of the organic body is not critical, but the content of organic carbon is critical. The bodies are commonly 1 to 3 cm (0.5 to 1 inch) in diameter, and the organic-carbon requirement in the organic bodies must meet those of muck or mucky modified textures. Many organic bodies do not have the required content of organic carbon and are not examples of this indicator. Organic bodies of hemic material (mucky peat) and/or fibric material (peat) do not meet the requirements of this indicator, nor does material consisting of partially decomposed root tissue.

A7. <u>5 cm Mucky Mineral</u> - LRR: **P, T, U**

Note: This is a stand-alone D Test indicator

A layer of mucky modified mineral soil material 5 cm (2 inches) or more thick, starting within 15 cm (6 inches) of the soil surface.

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

A8. <u>Muck Presence</u> - LRR: **U**

Note: This is a stand-alone D Test indicator

A layer of muck with value of 3 or less and chroma of 1 or less, starting within 15 cm (6 inches) of the soil surface.

User Notes: The presence of muck of any thickness within a depth of 15 cm (6 inches) 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 inches). Muck is sapric soil material with a minimum content of organic carbon that ranges from 12 to18 percent, depending on the content of clay. Organic soil material is called muck if virtually all of the material has undergone sufficient decomposition to

prevent the identification of plant parts. Hemic soil material (mucky peat) and fibric soil material (peat) do not qualify. Generally, muck is black and has a "greasy" feel; sand grains should not be evident.

A9. 1 cm Muck - LRR: **P, T**

Note: This is a stand-alone D Test indicator

A layer of muck 1 cm (0.5 inch) or more thick with value of 3 or less and chroma of 1 or less and starting within 15 cm (6 inches) of the soil surface.

User Notes: Unlike indicator A8 (Muck Presence), this indicator has 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 inches). Muck is sapric soil material with a minimum content of organic carbon that ranges from12 to18 percent, depending on the content of clay. Organic soil material is called muck if virtually all of the material has undergone sufficient decomposition to limit the recognition of plant parts. Hemic soil material (mucky peat) and fibric soil material (peat) do not qualify. Generally, muck is black and has a "greasy" feel; sand grains should not be evident.

A11. Depleted Below Dark Surface - LRR: **P, T, U**

A layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting within 30 cm (12 inches) of the soil surface, and having a minimum thickness of either:

a. 15 cm (6 inches), or

b. 5 cm (2 inches) if the 5 cm consists of fragmental soil material.

[1]Sandy layer(s) with value 3 or less and chroma 1 or less and, viewed through a 10x or 15x hand lens, at least 70 percent of the visible particles must be masked with organic material or dark loamy or clayey layer(s) with value 3 or less and chroma 2 or less must occur immediately above the depleted matrix and within 15 cm (6 inches) of the soil surface. In dark sandy layers observed without a hand lens particles appear to be close to 100 percent masked.

[1] From NRCS Errata (March 2015)

User Notes: This indicator often occurs in Mollisols but also applies to soils with umbric epipedons and dark colored ochric epipedons. For soils with dark colored epipedons more than 30 cm (12 inches) thick, use indicator A12. A depleted matrix requires value of 4 or more and chroma of 2 or less. Redox concentrations, including soft iron-manganese masses and/or pore linings, are required in soils with matrix colors of 4/1, 4/2, or 5/2. A, E, and calcic 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 the soil has common or many distinct or prominent redox concentrations occurring as soft masses or pore linings.

A12. Thick Dark Surface - LRR: **P, T, U**

A layer at least 15 cm (6 inches) thick with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less starting below 30 cm (12 inches) of the surface. [2]Layer(s) starting within 15 cm (6 inches) and above the depleted or gleyed matrix must have value of 2.5 or less and chroma 1 or less and be at least 30 cm (12 inches) thick and any remaining layer(s) above the depleted or gleyed matrix must have value of 3 or less and chroma of 1 or less. In dark sandy layers observed without a hand lens particles appear to be close to 100 percent masked.

[2]From NRCS Errata (March 2015)

User Notes: This indicator applies to soils that have a black layer 30 cm (12 inches) or more thick and have value of 3 or less and chroma of 1 or less in any remaining layers directly above a depleted or gleyed matrix. This indicator is most often associated with overthickened soils in concave landscape positions. A depleted matrix requires value of 4 or more and chroma of 2 or less. Redox concentrations, including soft iron-manganese masses and/or pore linings, are required in soils with matrix colors of 4/1, 4/2, or 5/2. A, E, and calcic 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 the soil has common or many distinct or prominent redox concentrations occurring as soft masses or pore linings.

S4. Sandy Gleyed Matrix - LRR: **P, T, U**

Note: This is a stand-alone D Test indicator

A gleyed matrix that occupies 60 percent or more of a layer starting within 15 cm (6 inches) of the soil surface.

User Notes: Gley colors are not synonymous with gray colors. They are the colors on the gley color pages in the Munsell color book (Gretag-Macbeth, 2000). They have hue of N, 10Y, 5GY, 10GY, 5G, 10G, 5BG, 10BG, 5B, 10B, or 5PB and value of 4 or more. For this indicator, the gleyed matrix only has to be present within 15 cm (6 inches) of the surface. Soils with gleyed matrices are saturated for periods of a significant duration; as a result, there is no thickness requirement for the layer.

S5. Sandy Redox - LRR: **P, T, U**

A layer starting within 15 cm (6 inches) of the soil surface that is at least 10 cm (4 inches) thick and has a matrix with 60 percent or more chroma of 2 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings.

User Notes: "Distinct" and "prominent" are defined in the Glossary. Redox concentrations include iron and manganese masses (reddish mottles) and pore linings (Vepraskas, 1994). Included within the concept of redox concentrations are iron-manganese bodies occurring as soft masses with diffuse boundaries. Common (2 to less than 20 percent) or many (20 percent or more) redox concentrations are required (USDA, NRCS, 2002). If the soil is saturated at the time of sampling, it may be necessary to let it dry to a moist condition for redox features to become visible.

This is a very common indicator of hydric soils and is often used to identify the hydric/nonhydric soil boundary in sandy soils.

S6. Stripped Matrix - LRR: **P, T, U**

A layer starting within 15 cm (6 inches) of the soil surface in which iron-manganese oxides and/or organic matter have been stripped from the matrix and the primary base color of the soil material has been exposed. The stripped areas and translocated oxides and/or organic matter form a faintly contrasting pattern of two or more colors with diffuse boundaries. The stripped zones are 10 percent or more of the volume and are rounded.

User Notes: This indicator includes the indicator previously named "polychromatic matrix" as well as the term "streaking." Common or many areas of stripped (unmasked) soil materials are required. The stripped areas are typically 1 to 3 cm (0.5 to 1 inch) in size but may be larger or smaller. Commonly, the stripped areas have value of 5 or more and chroma of 1 and/or 2, and the unstripped areas have chroma of 3 and/or 4. The matrix (predominant color) may not have the material with chroma of 3 and/or 4. The mobilization and translocation of oxides and/or organic matter is the important process and should result in splotchy masked and unmasked soil areas. This may be a difficult pattern to recognize and is more evident when a horizontal slice is observed.

S7. Dark Surface - LRR: **P, T, U**

A layer 10 cm (4 inches) thick, starting within the upper 15 cm (6 inches) of the soil surface, with a matrix value of 3 or less and chroma of 1 or less. At least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked. The matrix color of the layer directly below the dark layer must have the same colors as those described above or any color that has chroma of 2 or less.

User Notes: For this indicator, the content of organic carbon is slightly less than is required for "mucky." An undisturbed sample must be observed. Many wet soils have a ratio of about 50 percent soil particles that are masked with organic matter and about 50 percent unmasked soil particles, giving the soils a salt-and-pepper appearance. Where the coverage is less than 70 percent, a Dark Surface indicator does not occur.

S8. Polyvalue Below Surface - LRR: **T, U**

A layer with value of 3 or less and chroma of 1 or less starting within 15 cm (6 inches) of the soil surface. At least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked. Directly below this layer, 5 percent or more of the soil volume has value of 3 or less and chroma of 1 or less, and the remainder of the soil volume has value of 4 or more and chroma of 1 or less to a depth of 30 cm (12 inches) or to the spodic horizon, whichever is less.

User Notes: This indicator applies to soils with a very dark gray or black surface or near-surface layer that is less than 10 cm (4 inches) thick and is underlain by a layer in which organic matter has been differentially distributed within the soils by water movement. The mobilization and translocation of organic matter result in splotchy coated and uncoated soil.

S9. Thin Dark Surface - LRR: **T, U**

A layer 5 cm (2 inches) or more thick, within the upper 15 cm (6 inches) of the soil, with value of 3 or less and chroma of 1 or less. At least 70 percent of the visible soil particles must be masked with organic material, viewed through a 10x or 15x hand lens. Observed without a hand lens, the particles appear to be close to 100 percent masked. This layer is underlain by a layer or layers with value of 4 or less and chroma of 1 or less to a depth of 30 cm (12 inches) or to the spodic horizon, whichever is less.

User Notes: This indicator applies to soils with a very dark gray or black near-surface layer that is at least 5 cm (2 inches) thick and is underlain by a layer in which organic matter has been carried downward by flowing water. The mobilization and translocation of organic matter result in an even distribution of organic matter in the eluvial (E) horizon. The chroma of 1 or less is critical because it limits application of this indicator to only those soils that are depleted of iron. This indicator commonly occurs in hydric Spodosols, but a spodic horizon is not required.

S12. Barrier Islands 1 cm Muck[3] **-** MLRA: **153B**

In the swale portion of dune-and-swale complexes of barrier islands, a layer of muck 1 cm (0.5 inch) or more thick with value of 3 or less and chroma of 2 or less and starting within 15 cm (6 inches) of the soil surface.

User notes: This indicator is similar to A9 but allows chroma of greater than 1, but not greater than 2. The indicator is limited to the dune-and-swale complex on barrier islands.

[3] From NRCS Errata (March 2015)

F2. Loamy Gleyed Matrix - LRR: **P, T, U**

Note: This is a stand-alone D Test indicator

A gleyed matrix that occupies 60 percent or more of a layer starting within 30 cm (12 inches) of the soil surface.

User Notes: Gley colors are not synonymous with gray colors. They are the colors on the gley color pages of the Munsell color book (Gretag-Macbeth, 2000). They have hue of N, 10Y, 5GY, 10GY, 5G, 10G, 5BG, 10BG, 5B, 10B, or 5PB and value of 4 or more. The gleyed matrix only has to be present within 30 cm (12 inches) of the surface. Soils with gleyed matrices are saturated for periods of a significant duration; as a result, there is no thickness requirement for the layer.

F3. Depleted Matrix - LRR: **P, T, U**

A layer that has a depleted matrix with 60 percent or more chroma of 2 or less and that has a minimum thickness of either:

a. **5 cm (2 inches) if the 5 cm is entirely within the upper 15 cm (6 inches) of the soil, or**
b. **15 cm (6 inches), starting within 25 cm (10 inches) of the soil surface.**

User Notes: A depleted matrix requires a value of 4 or more and chroma of 2 or less. Redox concentrations, including soft iron-manganese masses and/or pore linings, are required in soils with matrix colors of 4/1, 4/2, or 5/2. A, E, and calcic 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 the soil has common or many distinct or prominent redox concentrations occurring as soft masses or pore linings. The low-chroma matrix must be the result of wetness and not a weathering or parent material feature.

F6. Redox Dark Surface - LRR: **P, T, U**

A layer that is at least 10 cm (4 inches) thick, is entirely within the upper 30 cm (12 inches) of the mineral soil, and has:

a. **Matrix value of 3 or less and chroma of 1 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings, or**
b. **Matrix value of 3 or less and chroma of 2 or less and 5 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings.**

User Notes: This is a very common indicator used to delineate wetland soils that have a dark surface layer. Redox concentrations in mineral soils with a high content of organic matter and a dark surface layer commonly are small and difficult to see. The organic matter masks some or all of the concentrations that may be present. Careful examination is required to see what are commonly brownish redox concentrations in the darkened materials. If the soil is saturated at the time of sampling, it may be necessary to let it dry at least to a moist condition for redox features to become visible. Soils that are wet because of ponding or have a shallow, perched layer of saturation may have any color below the dark surface. It is recommended that delineators evaluate the hydrologic source and examine and describe the layer below the dark colored epipedon when applying this indicator.

F7. Depleted Dark Surface - LRR: **P, T, U**

Redox depletions with value of 5 or more and chroma of 2 or less in a layer that is at least 10 cm (4 inches) thick, is entirely within the upper 30 cm (12 inches) of the mineral soil, and has:

a. **Matrix value of 3 or less and chroma of 1 or less and 10 percent or more redox depletions, or**
b. **Matrix value of 3 or less and chroma of 2 or less and 20 percent or more redox depletions.**

User Notes: Care should be taken not to mistake mixing of an E or calcic horizon into the surface layer for depletions. The “pieces” of E and calcic horizons are not redox depletions. Knowledge of local conditions is required in areas where E and/or calcic horizons may be present. In soils that are wet because of subsurface saturation, the layer directly below the dark surface layer should have a depleted or gleyed matrix. Redox depletions should have associated microsite redox concentrations that occur as Fe pore linings or masses within the depletion(s) or surrounding the depletion(s).

F8. Redox Depressions - LRR: **P, T, U**

In closed depressions subject to ponding, 5 percent or more distinct or prominent redox concentrations occurring as soft masses or pore linings in a layer that is 5 cm (2 inches) or more thick and is entirely within the upper 15 cm (6 inches) of the soil.

User Notes: This indicator occurs on depressional landforms, such as vernal pools, playa lakes, rainwater basins, "Grady" ponds, and potholes. It does not occur in microdepressions (approximately 1 m) on convex or plane landscapes.

F10. Marl - LRR: **U**

A layer of marl with value of 5 or more and [4]chroma less than 2 starting within 10 cm (4 inches) of the soil surface.

User Notes: Marl is a limnic material deposited in water by precipitation of CaCO3 by algae as defined in *Soil Taxonomy* (Soil Survey Staff, 1999). It has a Munsell value of 5 or more and reacts with dilute HCl to evolve CO2. Marl is not the carbonatic substrate material associated with limestone bedrock. Some soils have materials with all of the properties of marl, except for the required Munsell value. These soils are hydric if the required value is present within 10 cm (4 inches) of the soil surface. Normally, this indicator occurs at the soil surface.

[4]From NRCS Errata (March 2015)

F12. Iron/Manganese Masses - LRR: **P, T**

On flood plains, a layer 10 cm (4 inches) or more thick with 40 percent or more chroma of 2 or less and 2 percent or more distinct or prominent redox concentrations occurring as soft iron-manganese masses with diffuse boundaries. The layer occurs entirely within 30 cm (12 inches) of the soil surface. Iron-manganese masses have value and chroma of 3 or less. Most commonly, they are black. The thickness requirement is waived if the layer is the mineral surface layer.

User Notes: These iron-manganese masses generally are small (2 to 5 mm in size) and have value and chroma of 3 or less. They can be dominated by manganese and therefore have a color approaching black. The low matrix chroma must be the result of wetness and not be a weathering or parent material feature. Iron-manganese masses should not be confused with the larger and redder iron nodules associated with plinthite or with concretions that have sharp boundaries. This indicator occurs on flood plains along rivers, such as the Apalachicola, Congaree, Mobile, Savannah, and Tennessee Rivers.

F13. Umbric Surface - LRR: **P, T, U**

In depressions and other concave landforms, a layer 25 cm (10 inches) or more thick, starting within 15 cm (6 inches) of the soil surface, in which the upper 15 cm (6 inches) has value of 3 or less and chroma of 1 or less and in which the lower 10 cm (4 inches) has the same colors as those described above or any other color that has chroma of 2 or less.

User Notes: The thickness requirements may be slightly less than those for an umbric epipedon. Microlows (approximately 1 m) are not considered to be concave landforms. Umbric surfaces in the higher landscape positions, such as side slopes dominated by Humic Dystrudepts, are excluded.

F22. Very Shallow Dark Surface[5] - MLRA: **138, 152A, 154**

In depressions and flood plains subject to frequent ponding and/or flooding, one of the following:

a. **If bedrock occurs between 15 cm (6 inches) and 25 cm (10 inches), a layer at least 15 cm (6 inches) thick starting within 10 cm (4 inches) of the soil surface with value 2.5 or less and chroma 1 or less, and the remaining soil to bedrock must have the same colors as above or any other color that has chroma 2 or less. Or,**
b. **If bedrock occurs within 15 cm (6 inches), more than half of the soil thickness must have value 2.5 or less and chroma 1 or less, and the remaining soil to bedrock must have the same colors as above or any other color that has a chroma 2 or less.**

[5]From NRCS Errata (March 2015)

Hydric Soil Field Indicators Simplified Checklist:

Hydric Soil Field Indicators Simplified Checklist is adapted from the Florida Soil Conservation ed. Staff 1992 – Soil and Water Relationships of Florida's Ecological Communities: Adapted (as per Hydric Soil Indicators definition subsection 62-340.200(9), F.A.C.). The checklist is composed of Yes/No questions for each indicator. If any question in an indicator is answered No then the indicator is not met. If all of the questions for an indicator are answered Yes then the indicator is met.

Note: Mineral soil texture refers to either sandy, fine, or mucky mineral textures.

----------*For use in All texture soils*----------

A1. Histosol

Note: This is a stand-alone D Test indicator

- ✓ Is there a layer(s) of organic soil material (peat, mucky peat, and/or muck soil texture)
- ✓ Does the layer(s) satisfy either **Option A or B**

A. Layer(s) is 16 inches or more thick
AND
Starts within 16 inches of the ground surface (ground surface begins at the peat, mucky peat, muck, or mineral surface)

B. Organic soil material layer(s) constitutes 2/3 or more of the total thickness of the soil from the ground surface to a layer dense or cemented enough to inhibit root growth (e.g. bedrock, sandstone)
AND
Total combined thickness of any mineral soil texture layer(s) between the ground surface and the dense/cemented layer is 4 inches or less

- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)
- ❖ See Appendix B for complete requirements to classify as a Histosol

A2. Histic Epipedon

Note: This is a stand-alone D Test indicator

- ✓ Is there a layer(s) of organic soil material (peat, mucky peat, and/or muck soil texture)
- ✓ Did the layer(s) form near the ground surface (ground surface begins at the peat, mucky peat, muck, or mineral surface)
- ✓ Is the layer(s) 8 to 16 inches thick
- ✓ Is the layer(s) underlain by mineral soil texture with chroma of 2 or less
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)
- ❖ See Appendix B for complete requirements to classify as a histic epipedon

A3. Black Histic

Note: This is a stand-alone D Test indicator

- ✓ Is there a layer(s) of organic soil material (peat, mucky peat, and/or muck soil texture)
- ✓ Does the layer(s) have matrix hue of 10YR or yellower, value of 3 or less, and chroma of 1 or less

- ✓ Is the layer(s) 8 inches or more thick
- ✓ Does the layer(s) start within 6 inches of the ground surface (ground surface begins at the peat, mucky peat, muck, or mineral surface)
- ✓ Is the layer(s) underlain by mineral soil texture with chroma of 2 or less
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A4. <u>Hydrogen Sulfide</u>

Note: This is a stand-alone D Test indicator

- ✓ Is there a hydrogen sulfide odor (rotten egg smell)
- ✓ Does the hydrogen sulfide odor start within 12 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A5. <u>Stratified Layers</u>

Note: This is a stand-alone D Test indicator (as sediment deposition)

- ✓ Are there several stratified layers due to the alternating deposition of mineral soil material and organic matter
- ✓ Do one or more of the stratified layers satisfy either **Option A, B, and/or C**
  - **A.** Layer is composed of organic soil material (peat, mucky peat, and/or muck soil texture)
  - **B.** Layer is composed of mucky mineral soil texture
  - **C.** Layer is composed of sandy or fine soil texture
    AND
    Has value of 3 or less and chroma of 1 or less
    AND
    If layer texture is sandy at least 70% of the visible soil particles are masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Other than the layer(s) meeting Option A, B, and/or C, do all of the remaining stratified layers have chroma of 2 or less
- ✓ Do the stratified layers start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A6. <u>Organic Bodies</u>

- ✓ Is there a layer with organic bodies composed of muck or mucky mineral soil texture
- ✓ Are there 2% or more organic bodies within the layer
- ✓ Does the layer start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A7. 5 cm Mucky Mineral

Note: This is a stand-alone D Test indicator

- ✓ Is there a layer(s) of mucky mineral soil texture
- ✓ Is the layer(s) 2 inches or more thick
- ✓ Does the layer(s) start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A8. Muck Presence

Note: This is a stand-alone D Test indicator

- ✓ Is the soil profile located within Land Resource Region U
- ✓ Is there a layer of muck soil texture
- ✓ Does the layer have value of 3 or less and chroma of 1 or less
- ✓ Does the layer start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A9. 1 cm Muck

Note: This is a stand-alone D Test indicator

- ✓ Is the soil profile located within Land Resource Region P or T
- ✓ Is there a layer(s) of muck soil texture
- ✓ Does the layer(s) have value of 3 or less and chroma of 1 or less
- ✓ Is the layer(s) 0.5 inch or more thick
- ✓ Does the layer(s) start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A11. Depleted Below Dark Surface

- ✓ Is there a dark layer(s) that satisfies either **Option A, B, C, and/or D**

  A. Layer is composed of muck soil texture

  B. Layer is composed of mucky mineral soil texture

  C. Layer is composed of sandy soil texture
  AND
  Has value of 3 or less and chroma of 1 or less
  AND
  Has at least 70% of the visible soil particles masked with organic material when viewed through a 10x or 15x hand lens

  D. Layer is composed of fine soil texture
  AND
  Has value of 3 or less and chroma of 2 or less

- ✓ Does the dark layer(s) start within 6 inches of the soil surface
- ✓ Does the layer(s) immediately below the dark layer(s) satisfy either **Option A or B**

  A. The layer(s) has a gleyed matrix (value of 4 or more on the Gley 1 or Gley 2 page in the Munsell Soil Color Book, 2009)

B. The layer(s) has a depleted matrix (value of 4 or more and chroma of 2 or less, along with 2% or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings, or a reduced matrix)

- ✓ Does the underlying layer(s) with the gleyed or depleted matrix have 60% or more chroma of 2 or less
- ✓ Does the underlying layer(s) satisfy either **Option A or B**

A. Layer(s) is 6 inches or more thick

B. Layer(s) is 2 inches or more thick
AND
Is composed of fragmental soil material

- ✓ Does the underlying layer(s) with the gleyed or depleted matrix start within 12 inches from the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

A12. <u>Thick Dark Surface</u>

- ✓ Is there a dark layer(s) that has value of 2.5 or less and chroma of 1 or less
- ✓ Does the dark layer(s) satisfy either **Option A, B, C, and/or D**

A. Layer is composed of muck soil texture

B. Layer is composed of mucky mineral soil texture

C. Layer is composed of sandy soil texture
AND
Has at least 70% of the visible soil particles masked with organic material when viewed through a 10x or 15x hand lens

D. Layer is composed of fine soil texture

- ✓ Does the dark layer(s) start within 6 inches of the soil surface
- ✓ Is the dark layer(s) 12 inches or more thick
- ✓ Is there a layer(s) below the dark layer that satisfies either **Option A or B**

A. The layer(s) has a gleyed matrix (value of 4 or more on the Gley 1 or Gley 2 page in the Munsell Soil Color Book, 2009)

B. The layer(s) has a depleted matrix (value of 4 or more and chroma of 2 or less, along with 2% or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings, or a reduced matrix)

- ✓ Does the lower layer(s) with the gleyed or depleted matrix have 60% or more chroma of 2 or less
- ✓ Is the lower layer(s) 6 inches or more thick
- ✓ Does the lower layer(s) start below 12 inches from the soil surface
- ✓ Do all remaining layers between the 12-inch dark layer (above) and the layer with the gleyed or depleted matrix have value of 3 or less and chroma of 1 or less
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

----------***For use in <u>Sandy texture</u> soils***----------

S4. <u>Sandy Gleyed Matrix</u>

Note: This is a stand-alone D Test indicator

- ✓ Is there a layer of sandy soil texture in which 60% or more of the layer is a gleyed matrix (value of 4 or more on the Gley 1 or Gley 2 page in the Munsell Soil Color Book, 2009)
- ✓ Does the layer start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

S5. <u>Sandy Redox</u>

- ✓ Is there a layer(s) of sandy or sandy mucky mineral soil texture with 2% or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings
- ✓ Does the matrix of the layer(s) have 60% or more chroma of 2 or less
- ✓ Is the layer(s) 4 inches or more thick
- ✓ Does the layer(s) start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

S6. <u>Stripped Matrix</u>

- ✓ Is there a layer of sandy or sandy mucky mineral soil texture with two or more **faintly[1] contrasting** colors (Contrast is due to organic matter and/or iron-manganese oxides having been stripped away from the matrix and the primary base color of the soil material has been exposed)
- ✓ Are there rounded, diffuse[2] boundaries between the faintly contrasting colors
- ✓ Do the stripped (lighter colored) areas of the faintly contrasting colors compose 10% or more of the layer's volume
- ✓ Does the layer start within 6 inches of the soil surface

[1] See Table 1 (p 40) to determine if contrast is faint

[2] See Figure 1 (p 40) to determine if boundaries are diffuse

S7. <u>Dark Surface</u>

- ✓ Is there a dark layer(s) of sandy or sandy mucky mineral soil texture that has a matrix value of 3 or less and chroma of 1 or less
- ✓ Does the dark layer(s)'s matrix have at least 70% of the visible soil particles masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Does the dark layer(s) satisfy either **Option A or B**

A. The dark layer(s) is more than 4 inches thick

B. The dark layer(s) is exactly 4 inches thick

AND

The layer directly below has chroma of 2 or less

- ✓ Does the dark layer(s) start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

S8. <u>Polyvalue Below Surface</u>

- ✓ Is the soil profile located within Land Resource Region T or U
- ✓ Is there a dark layer(s) of sandy or sandy mucky mineral soil texture that has value of 3 or less and chroma of 1 or less
- ✓ Does the dark layer(s) have at least 70% of the visible soil particles masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Does the dark layer(s) start within 6 inches of the soil surface
- ✓ Does the soil volume directly below this dark layer(s) to a depth of 12 inches from the soil surface or to the spodic horizon, whichever is less, meet both **Criteria 1 <u>and</u> 2**
  - **1.** 5% or more of the soil volume has value of 3 or less and chroma of 1 or less AND
  - **2.** The remainder of the soil volume has value of 4 or more and chroma of 1 or less
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

S9. <u>Thin Dark Surface</u>

- ✓ Is the soil profile located within Land Resource Region T or U
- ✓ Is there a dark layer(s) of sandy or sandy mucky mineral soil texture that has value of 3 or less and chroma of 1 or less
- ✓ Does the dark layer(s) have at least 70% of the visible soil particles masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Is the dark layer(s) 2 inches or more thick
- ✓ Does the dark layer (s)start within 4 inches of the soil surface
- ✓ Directly below this dark layer(s) is there a layer(s) with value of 4 or less and chroma of 1 or less
- ✓ Does the underlying layer(s) extend to a depth of 12 inches from the soil surface or to the spodic horizon, whichever is less

S12. <u>Barrier Islands 1 cm Muck</u>

- ✓ Is the soil profile located within the swale portion of dune-and-swale complexes of barrier islands in Major Land Resource Area 153B (See p 49)
- ✓ Is there a layer(s) of muck soil texture
- ✓ Does the layer(s) have value of 3 or less and chroma of 2 or less
- ✓ Is the layer(s) 0.5 inch or more thick
- ✓ Does the layer(s) start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

----------***For use in <u>Fine texture</u> soils***----------

F2. <u>Loamy Gleyed Matrix</u>

Note: This is a stand-alone D Test indicator

- ✓ Is there a layer of fine soil texture in which 60% or more of the layer is a gleyed matrix (value of 4 or more on the Gley 1 or Gley 2 page in the Munsell Soil Color Book, 2009)
- ✓ Does the layer start within 12 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

F3. <u>Depleted Matrix</u>

- ✓ Is there a layer(s) of fine soil texture with a depleted matrix (value of 4 or more and chroma of 2 or less, along with 2% or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings, or a reduced matrix)
- ✓ Does the layer(s)'s matrix have 60% or more chroma of 2 or less
- ✓ Does the layer(s) satisfy either **Option A or B**

A. Layer(s) is 2 inches or more thick
AND
Starts within 4 inches of the soil surface

B. Layer(s) is 6 inches or more thick
AND
Starts within 10 inches of the soil surface

- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

F6. <u>Redox Dark Surface</u>

- ✓ Is there a layer(s) of fine or fine mucky mineral soil texture with distinct or prominent redox concentrations occurring as soft masses and/or pore linings
- ✓ Does the layer(s) with redox concentrations satisfy either **Option A or B**

A. Layer(s)'s matrix has value of 3 or less and chroma of 1 or less
AND
Has 2% or more redox concentrations

B. Layer(s)'s matrix has value of 3 or less and chroma of 2 or less
AND
Has 5% or more redox concentrations

- ✓ Is the layer(s) 4 inches or more thick
- ✓ Does the layer(s) start within 8 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

F7. <u>Depleted Dark Surface</u>

- ✓ Is there a layer(s) of fine or fine mucky mineral soil texture with redox depletions (lighter areas)
- ✓ Do the redox depletions have value of 5 or more and chroma of 2 or less
- ✓ Does the layer(s) with redox depletions satisfy either **Option A or B**

A. Layer(s)'s matrix has value of 3 or less and chroma of 1 or less
AND
Has 10% or more redox depletions

B. Layer(s)'s matrix has value of 3 or less and chroma of 2 or less
AND
Has 20% or more redox depletions

- ✓ Is the layer(s) 4 inches or more thick
- ✓ Does the layer(s) start within 8 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

F8. <u>Redox Depressions</u>

- ✓ Is the soil profile located within a closed depression subject to ponding
- ✓ Is there a layer(s) of fine or fine mucky mineral soil texture with 5% or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings
- ✓ Is the layer(s) 2 inches or more thick
- ✓ Does the layer(s) start within 4 inches of the soil surface

F10. <u>Marl</u>

- ✓ Is the soil profile located within Land Resource Region U
- ✓ Is there a layer of marl material
- ✓ Does the layer have value of 5 or more and chroma of less than 2
- ✓ Does the layer start within 4 inches of the soil surface

F12. <u>Iron/Manganese Masses</u>

- ✓ Is the soil profile located within Land Resource Region P or T
- ✓ Is the soil profile located within a flood plain
- ✓ Is there a layer(s) of fine soil texture with 2% or more distinct or prominent redox concentrations occurring as soft masses and/or pore linings
- ✓ Do the redox concentrations occur as soft iron-manganese masses
- ✓ Do the iron-manganese masses have value and chroma of 3 or less
- ✓ Do the iron-manganese masses have diffuse boundaries[3]
- ✓ Does 40% or more of the layer(s) have chroma of 2 or less
- ✓ Does the layer(s) with iron-manganese masses satisfy either **Option A or B**

A. Layer(s) starts at the soil surface

B. Layer(s) is 4 inches or more thick
AND
Starts within 8 inches of the soil surface

[3] See Figure 1 (p 40) to determine if boundaries are diffuse

F13. <u>Umbric Surface</u>

- ✓ Is the soil profile located within a depression or other concave landform
- ✓ Is there a layer(s) of fine or fine mucky mineral soil texture 10 inches or more thick
- ✓ Does the layer(s) satisfy both **Criteria 1 <u>and</u> 2**
  - **1.** The upper 6 inches of the layer(s) has value of 3 or less and chroma of 1 or less
    AND
  - **2.** The lower 4 inches of the layer(s) has chroma of 2 or less
- ✓ Does the layer(s) start within 6 inches of the soil surface
- ✓ Are there less than 6 inches of mineral soil texture with a dominant chroma of more than 2 above this indicator (if there are no mineral layers with chroma of more than 2 or no mineral layers at all above this indicator, answer yes)

F22. <u>Very Shallow Dark Surface</u>

- ✓ Is the soil profile located within Major Land Resource Area 138, 152A, or 154 (See p 49)
- ✓ Is the soil profile located within a depression or flood plain subject to frequent ponding and/or flooding
- ✓ Is there a dark layer(s) of fine or fine mucky mineral soil texture with value of 2.5 or less and chroma of 1 or less
- ✓ Does bedrock occur within 10 inches of the soil surface
- ✓ Does the soil profile satisfy either **Option A or B**
  - **A.** The bedrock occurs between 6 and 10 inches from the soil surface
    AND
    The dark layer(s) is 6 inches or more thick
    AND
    Starts within 4 inches of the soil surface
  - **B.** The bedrock occurs within 6 inches of the soil surface
    AND
    The dark layer(s) constitutes more than half of the soil thickness
- ✓ Does all remaining soil between the dark layer(s) and the bedrock have chroma of 2 or less

Glossary from NRCS Field Indicators of Hydric Soils in the United States Version 7.0, 2010

As defined in this Glossary, terms marked with an asterisk (*) have definitions that are slightly different from the definitions in the referenced materials. The definitions in the Glossary are intended to assist users of this document and are not intended to add to or replace definitions in the referenced materials.

Data Form Guide Note: Definitions expressed in Chapter 62-340, F.A.C. supersede all other definitions contained within this guide when applying the rule.

A horizon. A mineral soil horizon that formed at the surface or below an O horizon where organic material is accumulating. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Accreting areas. Landscape positions in which soil material accumulates through deposition from higher elevations or upstream positions more rapidly than the rate at which soil material is being lost through erosion.

Anaerobic. A condition in which molecular oxygen is virtually absent from the soil.

Anaerobiosis. Microbiological activity under anaerobic conditions.

Aquic conditions. Conditions in the soil represented by depth of saturation, occurrence of reduction, and redoximorphic features. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

***Artificial drainage.** The use of human efforts and devices to remove free water from the soil surface or from the soil profile. The hydrology may also be modified by levees and dams, which keep water from entering a site.

CaCO3 equivalent. The acid neutralizing capacity of a soil expressed as a weight percentage of CaCO3 (molecular weight of CaCO3 equals 100).

Calcic horizon. An illuvial horizon in which carbonates have accumulated to a significant extent. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Calcium carbonate. Calcium carbonate has the chemical formula CaCO3. It effervesces when treated with cold hydrochloric acid.

Closed depressions. Low-lying areas that are surrounded by higher ground and have no natural outlet for surface drainage**.**

COE. U.S. Army Corps of Engineers.

Common. When referring to redox concentrations and/or depletions, “common” represents 2 to 20 percent of the observed surface.

Concave landscapes. Landscapes in which the surface curves downward.

***Depleted matrix.** For loamy and clayey material (and sandy material in areas of indicators A11 and A12), a depleted matrix refers to the volume of a soil horizon or subhorizon in which the processes of reduction and translocation have removed or transformed iron, creating colors of low chroma and high value. A, E, and calcic 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 the soil has common or many distinct or prominent

redox concentrations occurring as soft masses or pore linings. In some areas the depleted matrix may change color upon exposure to air (see Reduced matrix); this phenomenon is included in the concept of depleted matrix. The following combinations of value and chroma identify a depleted matrix:

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

Diffuse boundary. (Figure 1 *p.40*) Used to describe redoximorphic features that grade gradually from one color to another. The color grade is commonly more than 2 mm wide. "**Clear**" is used to describe boundary color gradations intermediate between sharp and diffuse.

Distinct.[1] (Table 1 *p.40*) Readily seen but contrasting only moderately with the color to which compared. The contrast is distinct if:

1. Delta hue[2] = 0, then a) Delta value ≤2 and delta chroma >1 to <4, or
   b) Delta value >2 to <4 and delta chroma <4.
2. Delta hue = 1, then a) Delta value ≤1 and delta chroma >1 to <3, or
   b) Delta value >1 to <3 and delta chroma <3.
3. Delta hue = 2, then a) Delta value = 0 and delta chroma >0 to <2, or
   b) Delta value >0 to <2 and delta chroma <2.

[1]Regardless of the magnitude of hue difference, where both colors have value ≤3 and chroma ≤2, the contrast is faint.

[2]Data Form Guide Note: A delta hue of 1 is equal to 2.5 units (Figure 2 *p.40*), as defined in the *Soil Survey Manual* (Soil Survey Staff, 1993)

E horizon. A mineral horizon in which the dominant process is loss of silicate clay, iron, and/or aluminum, leaving a concentration of sand and silt particles. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

EPA. U.S. Environmental Protection Agency.

Epipedon. A horizon that has developed at the soil surface. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Faint. (Table 1 *p.40*) Evident only on close examination. The contrast is faint if:

1. Delta hue = 0, then delta value ≤2 and delta chroma ≤1, or
2. Delta hue = 1, then delta value ≤1 and delta chroma ≤1, or
3. Delta hue = 2, then delta value = 0 and delta chroma = 0, or

Any delta hue if both colors have value ≤3 and chroma ≤2.

Fe-Mn concretions. Firm to extremely firm, irregularly shaped bodies with sharp to diffuse boundaries. When broken in half, concretions have concentric layers. See Vepraskas (1994) for a complete discussion.

Fe-Mn nodules. Firm to extremely firm, irregularly shaped bodies with sharp to diffuse boundaries. When broken in half, nodules do not have visibly organized internal structure. See Vepraskas (1994) for a complete discussion.

Few. When referring to redox concentrations and/or depletions, "few" represents less than 2 percent of the observed surface.

Fibric. See Peat.

Flood plain.[3] The nearly level plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the streams.

[3]From NRCS Errata (March 2015)

Fragmental soil material. Soil material that consists of 90 percent or more rock fragments. Less than 10 percent of the soil consists of particles 2 mm or smaller.

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

FWS. U.S. Department of the Interior, Fish and Wildlife Service.

***g.** A horizon suffix indicating that the horizon is gray because of wetness but not necessarily that it is gleyed. All gleyed matrices (defined below) should have the suffix "g"; however, not all horizons with the "g" suffix are gleyed. For example, a horizon with the color 10YR 6/2 that is at least seasonally wet, with or without other redoximorphic features, should have the "g" suffix.

Glauconitic. Refers to a mineral aggregate that contains a micaceous mineral resulting in a characteristic green color, e.g., glauconitic shale or clay.

***Gleyed matrix.** Soils with a gleyed matrix have the following combinations of hue, value, and chroma (the soils are not glauconitic):

1. 10Y, 5GY, 10GY, 10G, 5BG, 10BG, 5B, 10B, or 5PB with value of 4 or more and chroma of 1; or
2. 5G with value of 4 or more and chroma of 1 or 2; or
3. N with value of 4 or more

In some places the gleyed matrix may change color upon exposure to air. (See Reduced matrix). This phenomenon is included in the concept of gleyed matrix.

***Hemic.** See Mucky peat.

Histels. Organic soils that overlie permafrost and show evidence of cryoturbation. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Histic epipedon. A thick (20- to 60-cm, or 8- to 24- inch) organic soil horizon that is saturated with water at some period of the year (unless the soil is artificially drained) and that is at or near the surface of a mineral soil.

Histosols. Organic soils that have organic soil materials in more than half of the upper 80 cm (32 inches) or that have organic materials of any thickness if they overlie rock or fragmental materials that have interstices filled with organic soil materials. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Horizon. A layer, approximately parallel to the surface of the soil, distinguishable from adjacent layers by a distinctive set of properties produced by soil-forming processes. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Hydric soil definition (1994). *(See also Ch 62-340, F.A.C. definition)* 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.

Hydrogen sulfide odor. The odor of H_2S. It is similar to the smell of rotten eggs.

Hydromorphic features. Features in the soil caused or formed by water.

Layer(s). A horizon, subhorizon, or combination of contiguous horizons or subhorizons sharing at least one property referred to in the indicators.

Lithologic discontinuity. Occurs in a soil that has developed in more than one type of parent material. Commonly determined by a significant change in particle-size distribution, mineralogy, etc. that indicates a difference in material from which the horizons formed.

LRR. Land resource region. LRRs are geographic areas characterized by a particular pattern of soils, climate, water resources, and land use. Each LRR is assigned a different letter of the alphabet (A-Z). LRRs are defined in U.S. Department of Agriculture Handbook 296 (USDA, NRCS, 2006b).

Many. When referring to redox concentrations and/or depletions, "many" represents more than 20 percent of the observed surface.

Marl. An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

***Masked.** Through redoximorphic processes, the color of soil particles is hidden by organic material, silicate clay, iron, aluminum, or some combination of these.

Matrix. The dominant soil volume that is continuous in appearance and envelops microsites. When three colors occur, such as when a matrix, depletions, and concentrations are present, the matrix may represent less than 50 percent of the total soil volume.

MLRA. Major land resource areas. MLRAs are geographically associated divisions of land resource regions. MLRAs are defined in U.S. Department of Agriculture Handbook 296 (USDA, NRCS, 2006b).

Mollic epipedon. A mineral surface horizon that is relatively thick, dark colored, and humus rich and has high base saturation. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Mollisols. Mineral soils that have a mollic epipedon. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

***Muck.** Sapric organic soil material in which virtually all of the organic material is so decomposed that identification of plant forms is not possible. Bulk density is normally 0.2 or more. Muck has less than one-sixth fibers after rubbing, and

its sodium pyrophosphate solution extract color has lower value and chroma than 5/1, 6/2, and 7/3.

***Mucky modified mineral soil material.** (Figure 5) A USDA soil texture modifier, e.g., mucky sand. Mucky modified mineral soil material that has 0 percent clay has between 5 and 12 percent organic carbon. Mucky modified mineral soil material that has 60 percent clay has between 12 and 18 percent organic carbon. Soils with an intermediate amount of clay have intermediate amounts of organic carbon. Where the organic component is peat (fibric material) or mucky peat (hemic material), mucky mineral soil material does not occur.

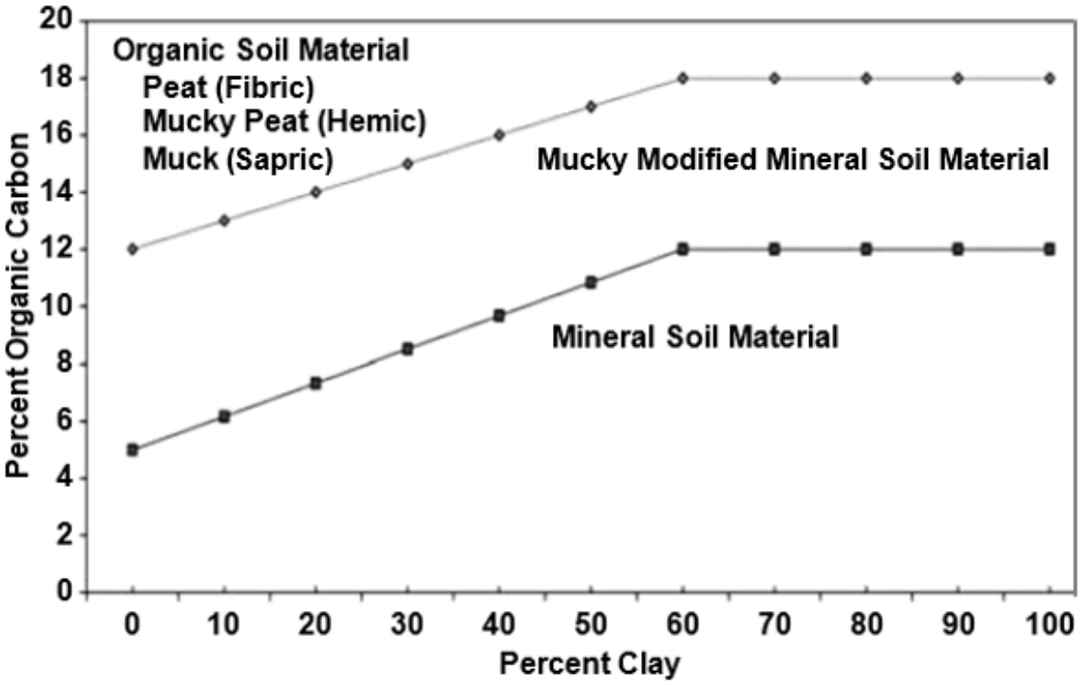


Figure 5: Percent organic carbon required for organic soil material, mucky modified mineral soil material, and mineral soil material as it is related to content of clay.

***Mucky peat.** Hemic organic material, which is characterized by decomposition that is intermediate between that of fibric material and that of sapric material. Bulk density is normally between 0.1 and 0.2 g/cm3. Mucky peat does not meet the fiber content (after rubbing) or sodium pyrophosphate solution extract color requirements for either fibric or sapric soil material.

Nodules. See Fe-Mn nodules.

NRCS. USDA, Natural Resources Conservation Service (formerly Soil Conservation Service).

NTCHS. National Technical Committee for Hydric Soils.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Organic soil material. (Figure 5) Soil material that is saturated with water for long periods or artificially drained and, **excluding live roots**, has 18 percent or more organic carbon with 60 percent or more clay or 12 percent or more organic carbon with 0 percent clay. Soils with an intermediate amount of clay have an intermediate amount of organic carbon. If the soil is never saturated for more than a few days, it contains 20 percent or more organic carbon. Organic soil material includes muck, mucky peat, and peat.

Data Form Guide Note: Generally, organic soil material is 2 cm or smaller.

***Peat.** Fibric organic soil material. The plant forms can be identified in virtually all of the organic material. Bulk density is normally <0.1. Peat has three-fourths or more fibers after rubbing, or it has two-fifths or more fibers after rubbing and has sodium pyrophosphate solution extract color of 7/1, 7/2, 8/2, or 8/3.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete discussion.

Ponding. Standing water in a closed depression that is removed only by percolation, evaporation, or transpiration. The ponding lasts for more than 7 days.

Pore linings. Zones of accumulation that may be either coatings on a ped or pore surface or impregnations of the matrix adjacent to the pore or ped. See Vepraskas (1994) for a complete discussion.

Prominent. (Table 1 *p.40*) Contrasts strongly in color. Color contrasts more contrasting than faint and distinct are prominent.

Red parent material. The parent material with a natural inherent reddish color attributable to the presence of iron oxides, typically hematite (Elless and Rabenhorst, 1994; Elless et al., 1996), occurring as coatings on and occluded within mineral grains. Soils that formed in red parent material have conditions that greatly retard the development and extent of the redoximorphic features that normally occur under prolonged aquic conditions. They typically have a Color Change Propensity Index (CCPI) of <30 (Rabenhorst and Parikh, 2000). Most commonly, the material consists of dark red, consolidated Mesozoic or Paleozoic sedimentary rocks, such as shale, siltstone, and sandstone, or alluvial materials derived from such rocks. Assistance from a local soil scientist may be needed to determine where red parent material occurs.

Redox concentrations. Bodies of apparent accumulation of Fe-Mn oxides. Redox concentrations include soft masses, pore linings, nodules, and concretions. For the purposes of the indicators, nodules and concretions are excluded from the concept of redox concentrations unless otherwise specified by specific indicators. See Vepraskas (1994) for a complete discussion.

Redox depletions. Bodies of low chroma (2 or less) having value of 4 or more where Fe- Mn oxides have been stripped or where both Fe-Mn oxides and clay have been stripped. Redox depletions contrast distinctly or prominently with the matrix. See Vepraskas (1994) for a complete discussion.

Redoximorphic features. Features formed by the processes of reduction, translocation, and/or oxidation of Fe and Mn oxides; formerly called mottles and low-chroma colors. See Vepraskas (1994) for a complete discussion.

Reduced matrix. A soil matrix that has low chroma and high value, but in which the color changes in hue or chroma when the soil is exposed to air. See Vepraskas (1994) for a complete discussion.

***Reduction.** For the purpose of the indicators, reduction occurs when the redox potential (Eh) is below the ferric-ferrous iron threshold as adjusted for pH. In

hydric soils, this is the point when the transformation of ferric iron (Fe3+) to ferrous iron (Fe2+) occurs.

Relict features. Soil morphological features that reflect past hydrologic conditions of saturation and anaerobiosis. See Vepraskas (1994) for a complete discussion.

***Sapric.** See Muck.

Saturation. *(See also Ch 62-340, F.A.C. definition)* Wetness characterized by zero or positive pressure of the soil water. Almost all of the soil pores are filled with water.

Sharp boundary. Used to describe redoximorphic features that grade sharply from one color to another. The color grade is commonly less than 0.1 mm wide.

Soft masses. Noncemented redox concentrations, frequently within the soil matrix, that are of various shapes and cannot be removed as discrete units.

Soil texture. The relative proportions, by weight, of sand, silt, and clay particles in the soil material less than 2 mm in size.

Spodic horizon. A mineral soil horizon that is characterized by the illuvial accumulation of amorphous materials consisting of aluminum and organic carbon with or without iron. The spodic horizon has a minimum thickness, a minimum quantity of oxalate extractable carbon plus aluminum, and/or specific color requirements.

Stream Terrace.[4] One, or a series of flat-topped landforms in a stream valley that flank and are parallel to the stream channel, originally formed by a previous stream level, and representing remnants of an abandoned flood plain, stream bed, or valley floor produced during a past state of fluvial erosion or deposition (i.e., currently very rarely or never flooded; inactive cut and fill and/or scour and fill processes). Erosional surfaces cut into bedrock and thinly mantled with stream deposits (alluvium) are called "strath terraces." Remnants of constructional valley floors thickly mantled with alluvium are called alluvial terraces.

[4]From NRCS Errata (March 2015)

Umbric epipedon. A thick, dark mineral surface horizon with base saturation of less than 50 percent. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

Vertisol. A mineral soil with 30 percent or more clay in all layers. These soils expand and shrink, depending on moisture content, and have slickensides or wedge-shaped peds. See *Soil Taxonomy* (Soil Survey Staff, 1999) for a complete definition.

***Wetland.** *(See also Ch 62-340, F.A.C. definition)* An area that has hydrophytic vegetation, hydric soils, and wetland hydrology, as per the “National Food Security Act Manual” and the 1987 *Corps of Engineers Wetlands Delineation Manual* (United States Army Corps of Engineers, 1987).

Within. When referring to specific indicator depth requirements, “within” means not beyond in depth. “Within a depth of 15 cm,” for example, indicates that the depth is less than or equal to 15 cm.

Appendix B: Histosol and Histic Epipedon Definition

From *Keys to Soil Taxonomy* (Soil Survey Staff, 2010)

Histosols

1. Do not have andic soil properties in 60 percent or more of the thickness between the soil surface and either a depth of 60 cm or a densic, lithic, or paralithic contact or duripan if shallower; *and*
2. Have organic soil materials that meet *one or more* of the following:
   a. Overlie cindery, fragmental, or pumiceous materials and/or fill their interstices1 *and* directly below these materials, have a densic, lithic, or paralithic contact; *or*
   b. When added with the underlying cindery, fragmental, or pumiceous materials, total 40 cm or more between the soil surface and a depth of 50 cm; *or*
   c. Constitute two-thirds or more of the total thickness of the soil to a densic, lithic, or paralithic contact *and* have no mineral horizons or have mineral horizons with a total thickness of 10 cm or less; *or*
   d. Are saturated with water for 30 days or more per year in normal years (or are artificially drained), have an upper boundary within 40 cm of the soil surface, and have a total thickness of *either*:
      1) 60 cm or more if three-fourths or more of their volume consists of moss fibers or if their bulk density, moist, is less than 0.1 g/cm3; *or*
      2) 40 cm or more if they consist either of Sapric or hemic materials, or of fibric materials with lessthan three-fourths (by volume) moss fibers and a bulk density, moist, of 0.1 g/cm3 or more.

Folists (excluded from meeting indicator A1)

Histosols that are saturated with water for less than 30 cumulative days during normal years (and are not artificially drained).

Histic Epipedon

The histic epipedon is a layer (one or more horizons) that is characterized by saturation (for 30 days or more, cumulative) and reduction for some time during normal years (or is artificially drained) and e*ither*:

1. Consists of organic soil material that:
   a. Is 20 to 60 cm thick and either contains 75 percent or more (by volume) *Sphagnum* fibers or has a bulk density, moist, of less than 0.1; *or*
   b. Is 20 to 40 cm thick; *or*
2. Is an Ap horizon that, when mixed to a depth of 25 cm, has an organic-carbon content (by weight) of:
   a. 16 percent or more if the mineral fraction contains 60 percent or more clay; *or*
   b. 8 percent or more if the mineral fraction contains no clay; *or*
   c. 8 + (clay percentage divided by 7.5) percent or more if the mineral fraction contains less than 60 percent clay.

Most histic epipedons consist of organic soil material (defined in chapter 2). Item 2 provides for a histic epipedon that is an Ap horizon consisting of mineral soil material. A Histic epipedon consisting of mineral soil material can also be part of a mollic or umbric epipedon.

Data Form Guide Note:
SUPPLEMENTAL SOIL DATA

HORIZON CRITERIA – MASTER HORIZON DESIGNATIONS

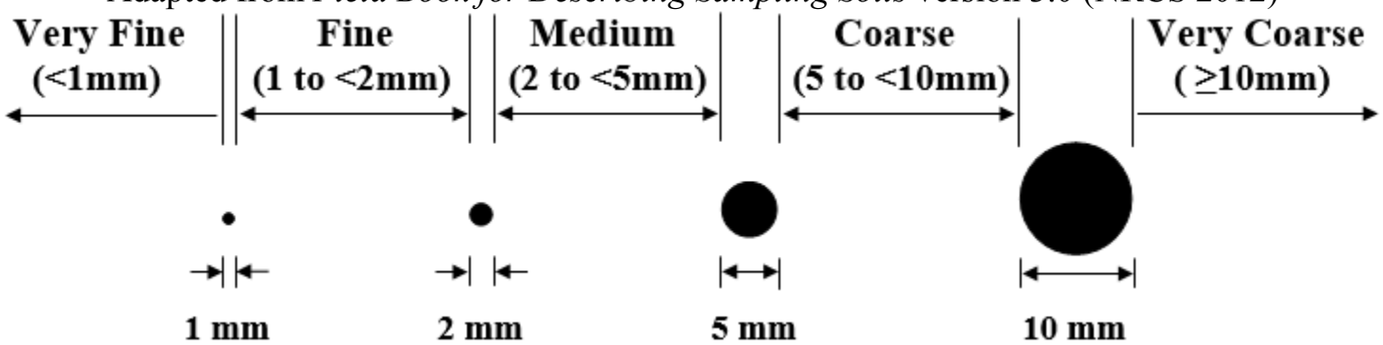
O Organic soil materials (not limnic)
A Mineral; organic matter (humus) accumulation, loss of Fe, Al, clay
E Mineral; loss of Fe, Al, clay, or organic matter
B Subsurface accumulation of clay, Fe, Al, Si, humus, $CaCO_3$, $CaSO_4$; or loss of $CaCO_3$; or accumulation of sesquioxides; or subsurface soil structure
C Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock
L Limnic soil materials
R Bedrock, Strongly Cemented to Indurated

HORIZON CRITERIA – SUFFIX DESIGNATIONS

a Highly decomposed organic matter
b Buried genetic horizon (not used with C horizons)
c Concretions or nodules
e Moderately decomposed organic matter
g Strong gley
h Illuvial organic matter accumulation
i Slightly decomposed organic matter
k Pedogenic carbonate accumulation
m Strong cementation (pedogenic, massive)
ma Marl (Used only with L)
n Pedogenic, exchangeable sodium accumulation
o Residual sesquioxide accumulation (pedogenic)
p Plow layer or other artificial disturbance
r Weathered or soft bedrock
s Illuvial sesquioxide accumulation
t Illuvial accumulation of silicate clay
v Plinthite
w Weak color or structure within B (used only with B)
z Pedogenic accumulation of salt more soluble than gypsum

Root Size Estimation and Quantity Classes

Adapted from *Field Book for Describing Sampling Soils* version 3.0 (NRCS 2012)



Quantity Class	Few	Common	Many
Roots: Average Count per Area*	<1 per area*	1 to <5 per area*	≥5 per area*

*Root assessment area = 1x1cm for roots <2mm, 10x10cm for 2 to <10mm, 100x100cm for ≥10mm

NRCS National Technical Committee for Hydric Soils

Hydric Soils Technical Notes contain National Technical Committee for Hydric Soils (NTCHS) updates, insights, and clarifications of the publication "Field Indicators of Hydric Soils in the United States" (USDA, NRCS, 1996 and 1998).

Hydric Soils Technical Note 4: Indicator Insights for Hydric Soil Identification

Question: I have a soil with layers that meet the color and redoximorphic requirements of several indicators; however, they do not meet any of the thickness requirements. What guidance is there regarding combining layers to meet a hydric soil indicator?

Answer: If layers/indicators are combined, the combination needs to meet the most stringent depth/thickness requirements of the combined indicators.

Example (The following table and guidance were adapted by FDEP staff to summarize Technical Note 4 and do not contain the exact text from this Note):

Layer	Depth	Matrix Color	Matrix Texture	Notes (RC = redox concentrations)
1	0-6	10YR 2/1	fine	None
2	6-8	10YR 3/1	fine	RC: 10YR 6/8, 5%, diffuse boundaries
3	8-12	10YR 5/2	fine	RC: 10YR 6/8, 10%, diffuse boundaries
4	12-20+	10YR 6/3	fine	RC: 10YR 6/8, 15%, diffuse boundaries

In this example, Layer 2 meets the requirements (except thickness) of indicator F6 – Redox Dark Surface. Layer 3 meets the requirements (except thickness) of indicator F3 – Depleted Matrix. Examining the indicator language, F6 requires a layer 4 inches thick starting within 8 inches; F3 requires a layer 6 inches thick starting within 10 inches. In this case, the soil has F6 starting within 8 inches (at 6) and has F3 starting within 10 inches (at 8); the combined thickness is 6 inches. Therefore, this soil meets the combined color, depth, and thickness requirements and should be documented as meeting hydric soil indicator(s) F6 and F3 (combined).

Hydric Soils Technical Note 13: Altered Hydric Soils
(The following tables were created by FDEP staff to summarize Technical Note 13 and do not contain the exact text from this Note):

Altered Hydric Soil Type	What was modified?	Modified by what?	Modified how?	Soil status*	Example
Artificial	Hydrology or Soil	Human activities	Wetter or lower surface elevation	Hydric	Excavation/irrigation/ water impoundment
Drained/ protected	Hydrology	Human activities	Drier or barriers against flooding	Hydric	Ditches/roads/dams/ pumps/levees
Historic/ buried	Soil	Human activites	Soil placed on ground surface	Not hydric	Fill/erosional depositions
Relict	Hydrology	Geologic activities	Hydrology gone by natural means	Not hydric	Stream downcutting/ seismic activity

*See Appendix B for NRCS Hydric Soil Criteria

Soils that are no longer hydric may still exhibit redoximorphic features (called relict features), but these can be differentiated from those in contemporary (currently) hydric soils by the following characteristics:

Feature	Boundary	Nodule and Concretion Surfaces	Macropore Associated Depletions	Pore Linings	Value and Chroma
Contemporary	Diffuse	Irregular, or smooth with red to yellow corona	Not overlain by iron rich coating	Continuous around live roots	Value ≥4 Chroma ≥4
Relict	Sharp	Smooth	Overlain by iron rich coating	Broken and unrelated to live roots	Value <4 Chroma<4

Appendix C: Hydric Soils Criteria and Technical Standard

Note: Hydric soil criteria, standards, and definitions used by the NRCS may differ from and do not supersede the criteria, standards, and definitions outlined in Chapter 62-340, F.A.C. to identify and delineate wetlands in Florida.

Soils are considered hydric by the NRCS if they:
1. Have a hydric soil indicator, or
2. Meet hydric soils list criteria 3 or 4, or
3. By data meet the Hydric Soil Technical Standard (HSTS).

Hydric Soils List Criteria
(Updated by NTCHS February 2012)

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;

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.

Glossary of Terms Used in Hydric Soils List Criteria

Note: The following definitions are specific to the NRCS Hydric Soils List Criteria and do not supersede any conflicting definitions contained within Chapter 62-340, F.A.C.

Flooded means 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).

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

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

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

Very long duration means a duration class in which innundation for a single event is greater than 1 month.

Hydric Soil Technical Standard (HSTS)
(Updated by NTCHS December 2015)

For a soil to be considered hydric by the Natural Resources Conservation Service (NRCS), Anaerobic Conditions and Saturated Conditions must exist for at least 14 consecutive days.

1. Anaerobic Conditions(as documented by a, b, or c below)
    a. Indicator of Reduction in Soils (IRIS) tubes
    b. Oxidation-reduction potential (Eh) measurements using platinum electrodes
    c. Alpha-alpha-dipyridyl dye
2. Saturated Conditions
    - Confirmed by piezometer data.
    - NTCHS recommends that the piezometer data be verified by open well data.

(Onsite precipitation data are needed to confirm normal rainfall conditions)

WETLAND FLUCCS CODES

610 **Wetland Hardwood Forests**
Level IV classification further subdivides Level III classifications on the basis of tree crown closure classes.
6101 Class 1: 10 to 30% crown closure
6102 Class 2: 31 to 50% crown closure
6103 Class 3: 51 to 70% crown closure
6104 Class 4: greater than 70% crown closure
611 **Bay Swamps**
612 **Mangrove Swamps**
613 **Gum Swamps**
614 **Titi Swamps**
615 **Streams and Lake Swamps (Bottomland)**
616 **Inland Ponds and Sloughs**
617 **Mixed Wetland Hardwoods**
618 **Willow and Elderberry**
619 **Exotic Wetland Hardwoods**
620 **Wetland Coniferous Forests**
Level IV classification further subdivides Level III classifications on the basis of tree crown closure classes
6201 Class 1: 10 to 30% crown closure
6202 Class 2: 31 to 50% crown closure
6203 Class 3: 51 to 70% crown closure
6204 Class 4: greater than 70% crown closure
621 **Cypress**
622 **Pond Pine**
623 **Atlantic White Cedar**
624 **Cypress - Pine - Cabbage Palm**
625 **Hydric Pine Flatwoods**
626 **Hydric Pine Savanna**
627 **Slash Pine Swamp Forest**
630 **Wetland Forested Mixed**
631 **Wetland Shrub**
640 **Vegetated Non-Forested Wetlands**
641 **Freshwater Marshes**
646 **Treeless Hydric Savanna**
650 **Non-Vegetated**
651 **Tidal Flats**
652 **Shorelines**
653 **Intermittent Ponds**
654 **Oyster Bars**

FNAI NATURAL COMMUNITIES OF FLORIDA

HARDWOOD FORESTED UPLANDS
Slope Forest
Upland Hardwood Forest
Mesic Hammock
Rockland Hammock
Xeric Hammock

HIGH PINE AND SCRUB
Upland Mixed Woodland
Upland Pine
Sandhill
Scrub

PINE FLATWOODS AND DRY PRAIRIE
Wet Flatwoods
Mesic Flatwoods
Scrubby Flatwoods
Pine Rockland
Dry Prairie

COASTAL UPLANDS
Beach Dune
Coastal Berm
Coastal Grassland
Coastal Strand
Maritime Hammock
Shell Mound

SINKHOLES AND OUTCROP COMMUNITIES
Upland Glade
Sinkhole
Limestone Outcrop
Keys Cactus Barren

FRESHWATER NON-FORESTED WETLANDS
PRAIRIES AND BOGS
Seepage Slope
Wet Prairie
Marl Prairie
Shrub Bog
MARSHES
Depression Marsh
Basin Marsh
Coastal Interdunal Swale
Floodplain Marsh
Slough Marsh
Glades Marsh
Slough

FRESHWATER FORESTED WETLANDS
CYPRESS/TUPELO
Dome Swamp
Basin Swamp
Strand Swamp
Floodplain Swamp
HARDWOOD
Baygall
Hydric Hammock
Bottomland Forest
Alluvial Forest

MARINE AND ESTUARINE VEGETATED WETLANDS
Salt Marsh
Mangrove Swamp
Keys Tidal Rock Barren

LACUSTRINE
Clastic Upland Lake
Coastal Dune Lake
Coastal Rockland Lake
Flatwoods/Prairie Lake and Marsh Lake
River Floodplain Lake and Swamp Lake
Sandhill Upland Lake
Sinkhole Lake

RIVERINE
Alluvial Stream
Blackwater Stream
Seepage Stream
Spring-run Stream

Recommended 5-Step Field Wetland Delineation Procedure

1. Identify the indisputable wetland area and the indisputable upland area.
2. In the area between the indisputable wetlands and uplands, identify the most landward boundary of where the vegetation meets A or B test criteria.
3. In the area between the indisputable wetlands and uplands, identify the most landward boundary of where hydrologic indicators are present.
4. Between the vegetation test boundary and the hydrologic indicator boundary, identify the most landward hydric soil boundary.
5. Applying the wetland definition and reasonable scientific judgment, evaluate and modify if necessary the most landward boundary of the wetland based on the A, B, C, or D tests delineated by the previous steps.

Required Equipment for the Implementation of Chapter 62-340, F.A.C.

Sharpshooter Shovel (minimum soil examination of 20 inch+)
Munsell Soils Color Chart
Hand Lens (10x-15x)
Soil survey map for inspection area
Soil knife
Spray bottle
Tape measure

Suggested Equipment for the Implementation of Chapter 62-340, F.A.C.

FDEP Data Form Guide
FDEP Chapter 62-340, F.A.C. Data Form
Appropriate plant identification manuals
Appropriate soil information documents
A copy of Chapter 62-340, F.A.C.
Florida Wetlands Delineation Manual
Compass
Camera with extra batteries
Towel
Pens and pencils
Permanent Markers – two colors preferably
GPS Units
Flagging tape
Pin flags
4-foot level
First Aid
Sunscreen
Insect Repellent
Plant presses
Auger
Waterproof equipment cases