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

Wetland and Other Surface Water Delineation
Version: May 2021 ©

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

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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 Training Team. 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.

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:
Tips from NRCS Field Indicators of Hydric Soils in the United States Version 8.2, 2018:

- 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:

In soils that lack a hydric soil indicator, but that meet all the requirements of a hydric soil indicator except depth, SHWT is the depth where all requirements of the hydric soil indicator are met. (Per Hydric Soils of Florida Handbook 4th ed., FAESS, 2007)

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 SHWT Procedure above)

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

Place a ball of soil between the thumb and forefinger. Attempt to form a ribbon of uniform thickness (~2mm) and width which will extend over the forefinger.

Does the soil form a ribbon?

No ↙ ↘ **Yes**

Sandy Texture Soil
Use only **A** or **S** indicators

Fine Texture Soil
Use only **A** or **F** indicators

Tips for Determining Texture of Soil Materials High in Organic Carbon

"Five Rub Texture 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 rows*
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*

"Ten Rub Fiber 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.

Proportion of visible fibers[5]	Organic soil texture
Less than 1/6 (<17%)	Sapric (Muck)
1/6 to 3/4 (17% - 75%)	Hemic (Mucky Peat)
More than 3/4 (>75%)	Fibric (Peat)

[5] Live roots are not considered

Tips for Approximating Composition of Soil

"Volume Tests"

Create two equal pea-sized clumps of soil. Place one aside as reference, and place other 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.

If solution is dark brown to black, suspended particles are primarily organic. Proceed to "sand content test."	If solution is slightly cloudy or milky but still dark, suspended particles are organic and silt/clay. Proceed to "sand content test," but adjust sand volume thresholds using reasonable scientific judgment.	If solution is mid to light gray, suspended particles are mostly silt and/or clay, and soil is most likely fine mineral texture.

↓

"Sand Content Test"

Gently decant liquid solution while keeping solid material in palm.

↓

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

↓

Separate any undecomposed organic material or nonsoil from sand in palm of hand. Compare volume of sand in relation to original (reference) pea sized clump, considering relative loss of fine soil material (silt/clay) indicated by "color test", to approximate the organic vs. mineral (sand/silt/clay) content. Percent volume of sand left in palm after organic content has been "washed" away approximates lab-determined organic carbon dry weight percentages as below. Adjust thresholds if "color test" indicated fine soil material presence.

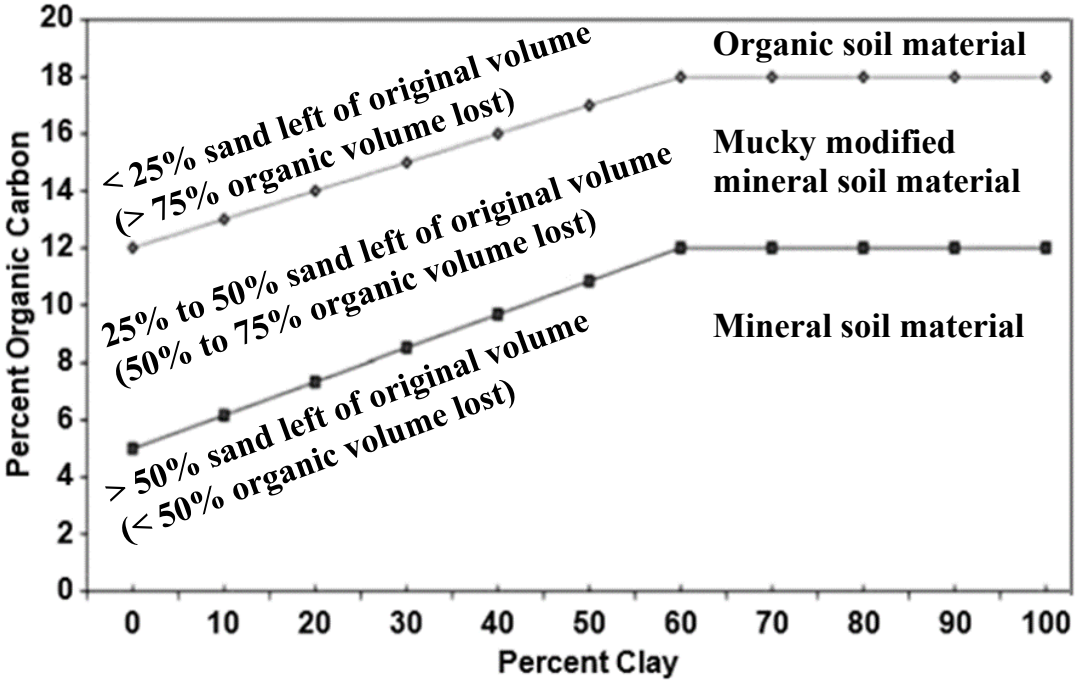
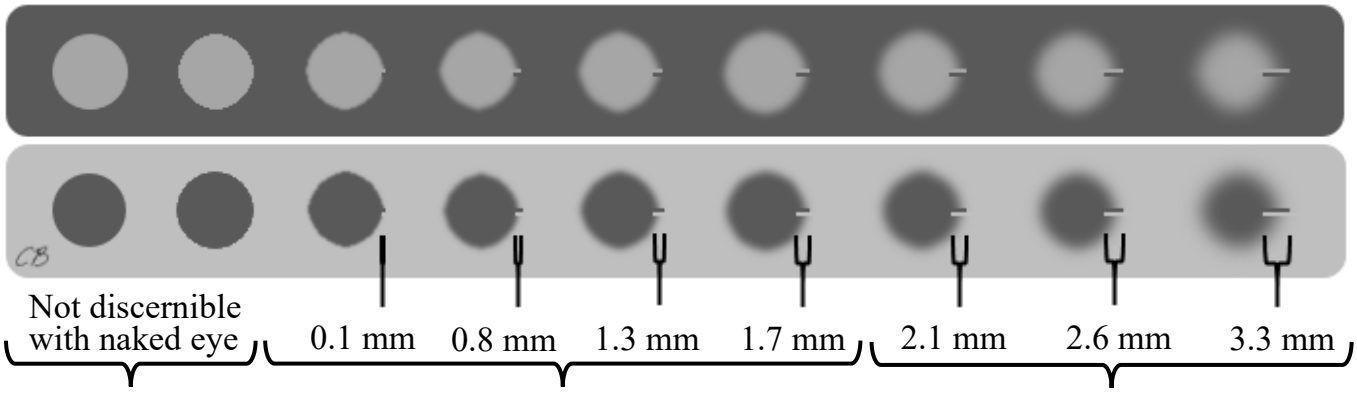


Figure 1: Interpretation of "Sand Content Test" results if "Color Test" solution is black/brown. If solution is cloudy, percent organic carbon thresholds are higher. Adjust sand volume thresholds accordingly.

Tips for Determining Boundary Types of Features in Soil



Sharp
Color gradation is less than 0.1mm wide

Clear
Color gradation is 0.1mm to 2mm wide

Diffuse
Color gradation is greater than 2mm wide

Figure 2: Diagram for determining boundary types of features in the matrix.

Tips for Determining Contrast Between Soil Colors

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

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.**

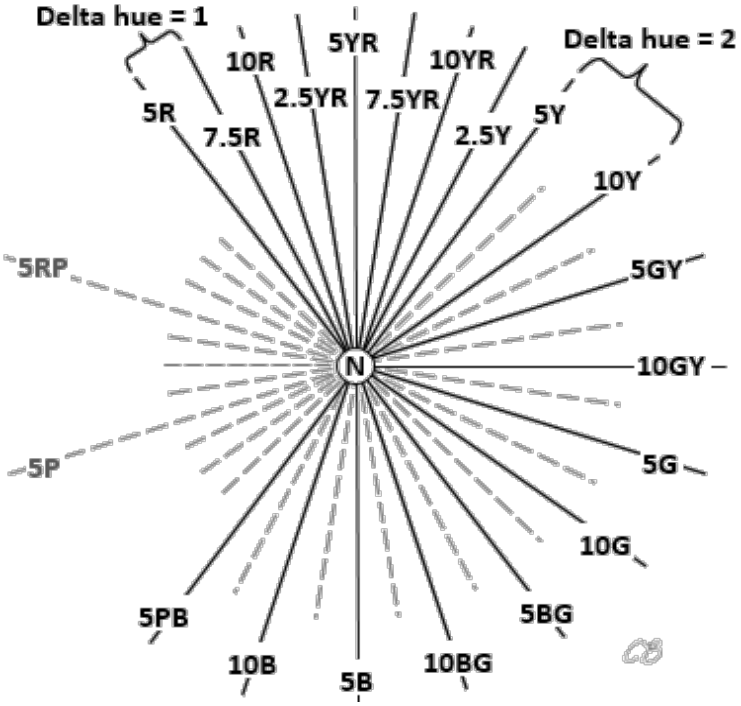


Figure 3: Relationships among the hues of the Munsell Color System. Solid lines represent hues contained in the *Munsell Soil Color Charts* (2009). Dotted lines represent all other possible 2.5 unit steps. Moving from one hue line to the adjacent hue line represents a delta hue of 1 (2.5 units). Moving from hue N to any other hue the delta hue is 1.

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

Tips for Determining Contrast Between Soil Colors (continued)

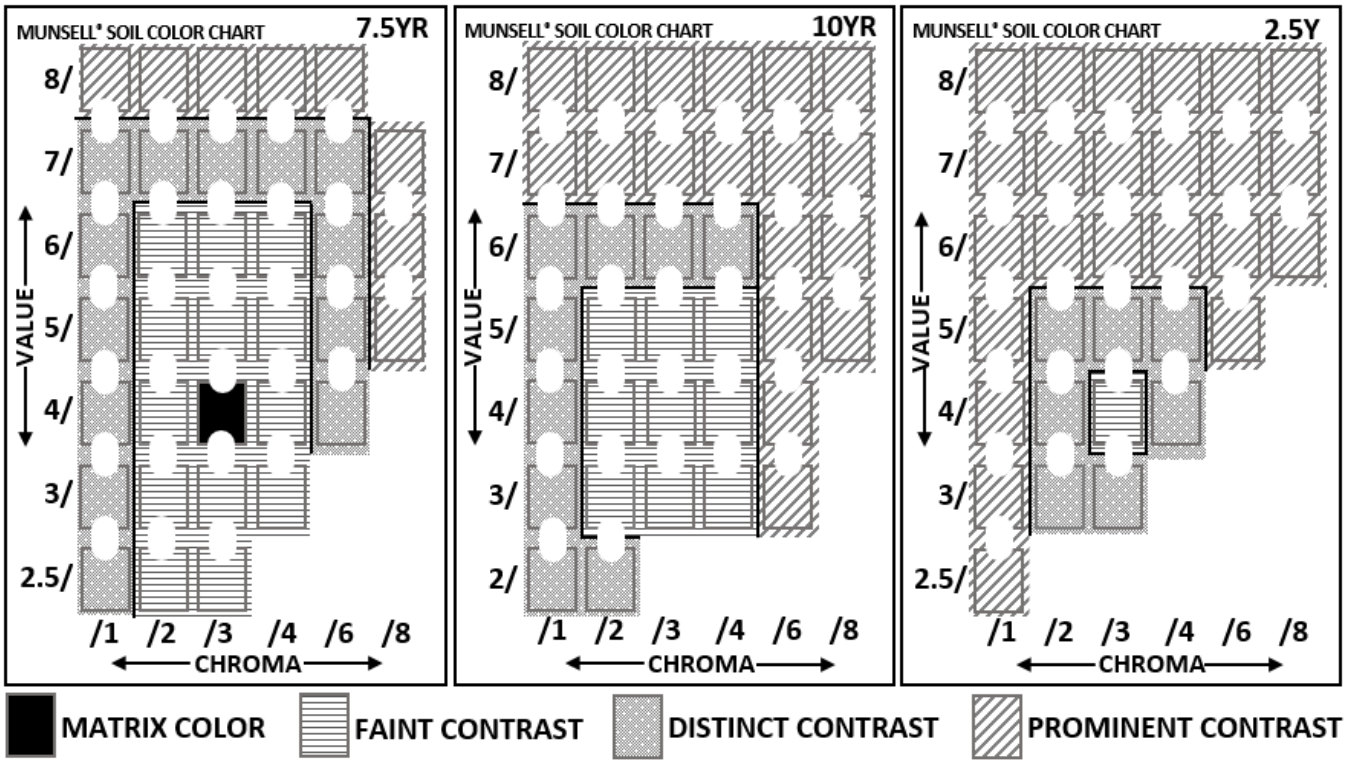


Figure 4: Using the 7.5 YR 4/3 color chip as an example matrix color, an illustration of faint, distinct, and prominent contrast between colors in relation to the matrix color in the *Munsell Soil Color Charts* (2009).

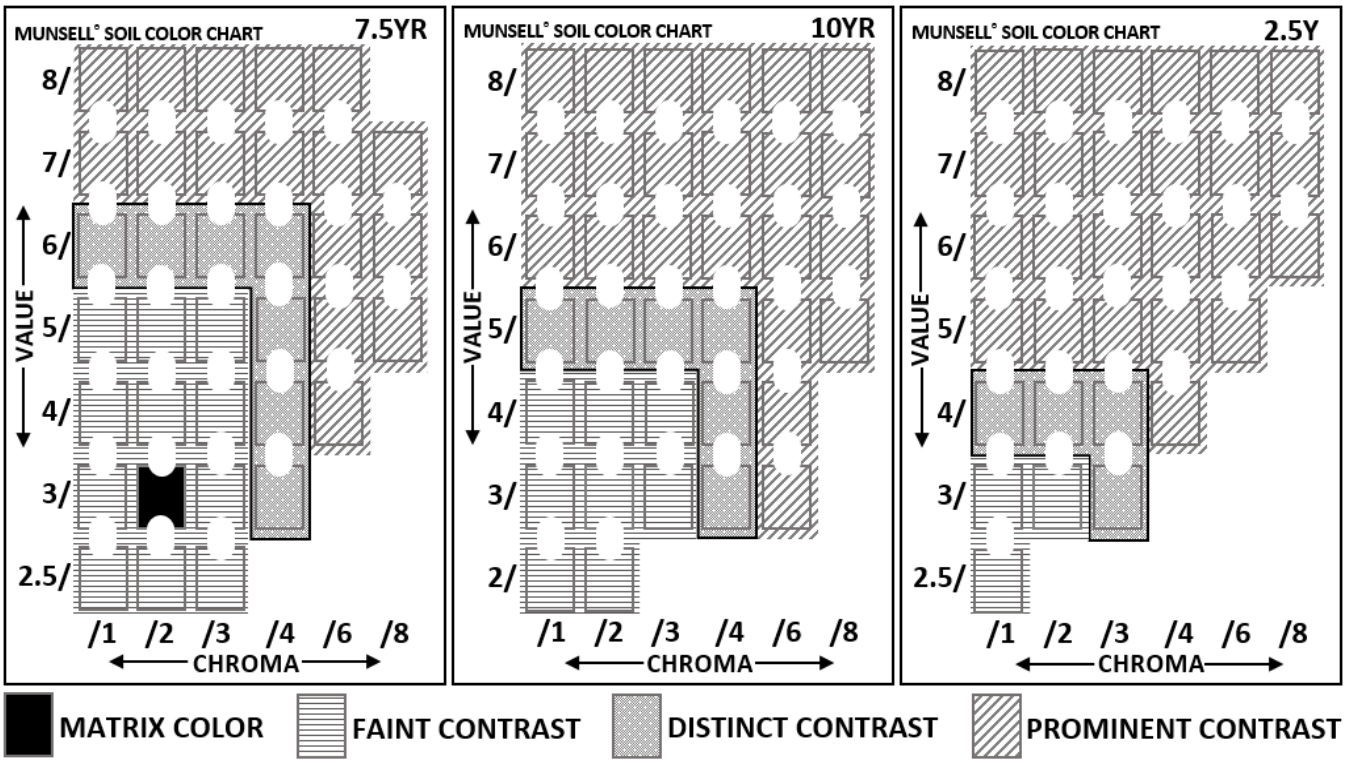
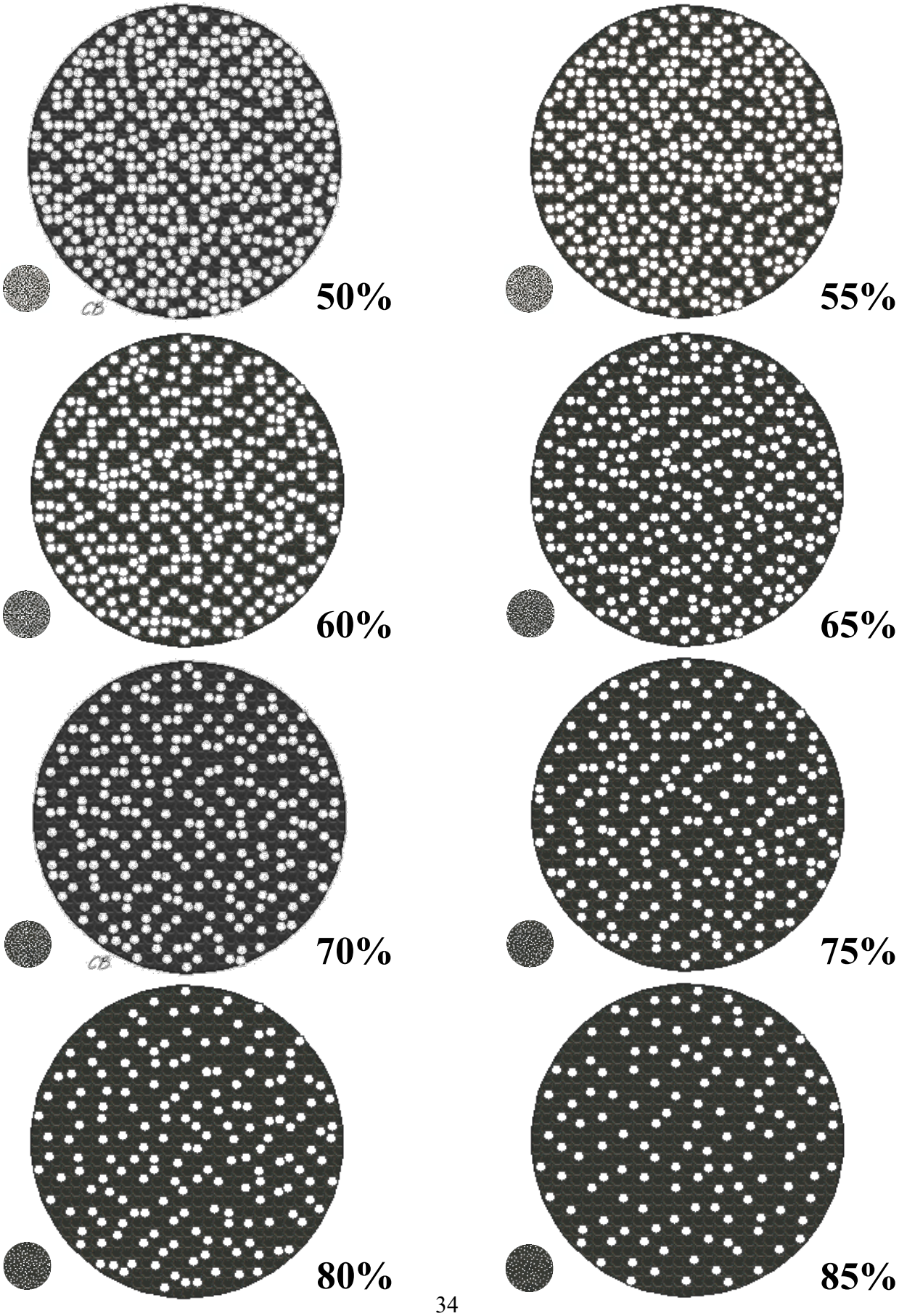
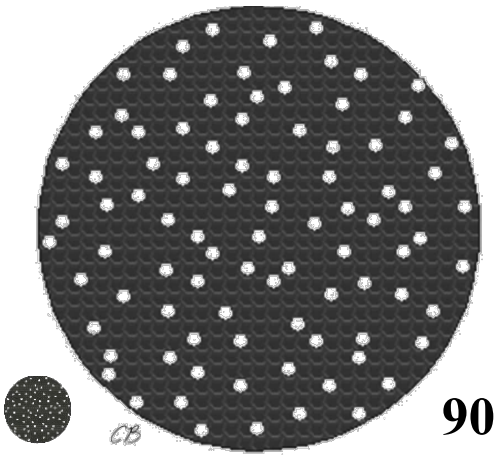


Figure 5: Using the 7.5 YR 3/2 color chip as an example matrix color, an illustration of faint, distinct, and prominent contrast between colors in relation to the matrix color in the *Munsell Soil Color Charts* (2009). Note that because the matrix has value ≤3 and chroma ≤2, all other colors with value ≤3 and chroma ≤2 are faintly contrasting despite the change in hue.

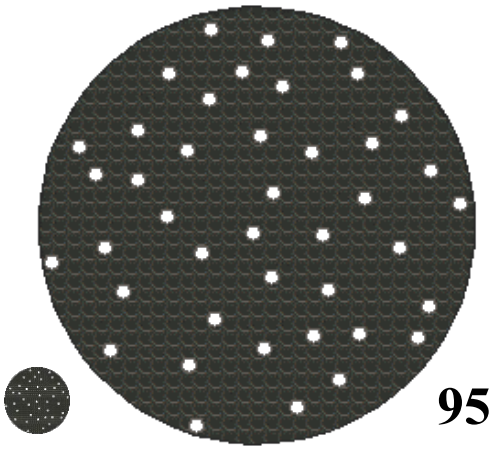
Estimating Percent Organic Coating

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.





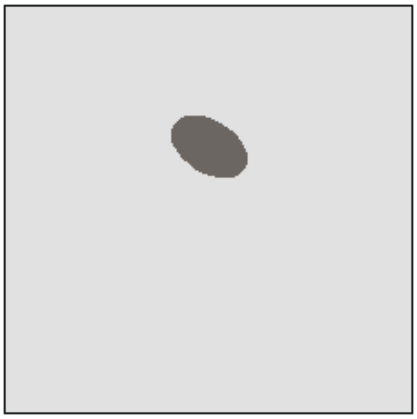
90%



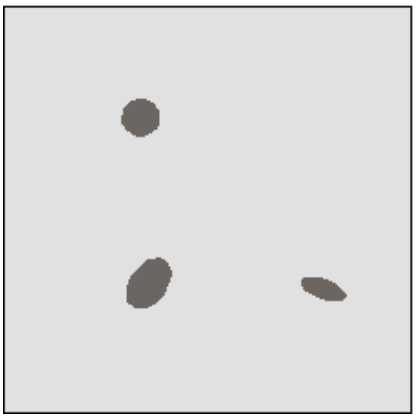
95%

Estimating Percent Volume

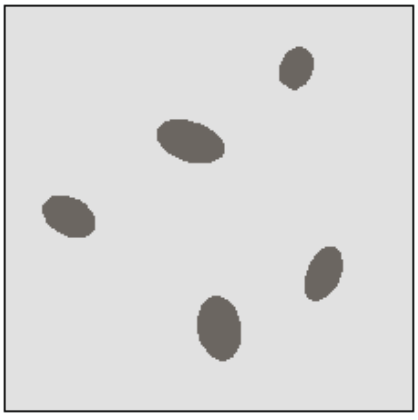
The squares represent part of a grid drawn on the soil profile to estimate volume of light areas, dark areas, or redox concentrations of larger and smaller sizes.

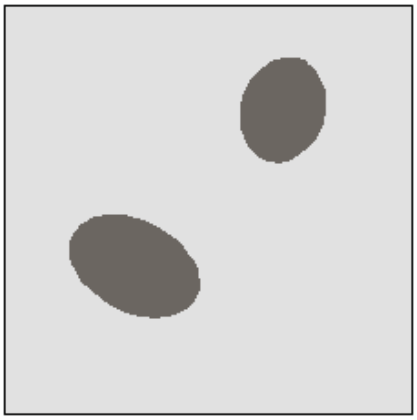


2%



5%





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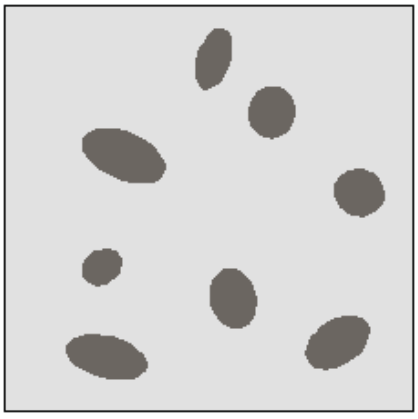

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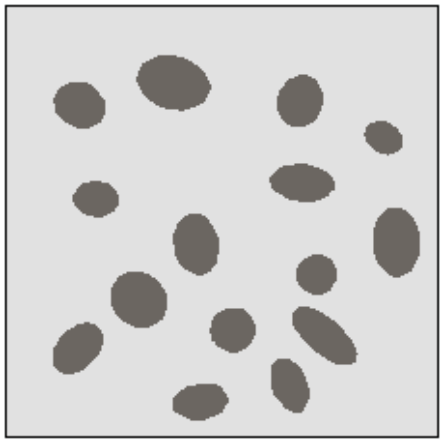

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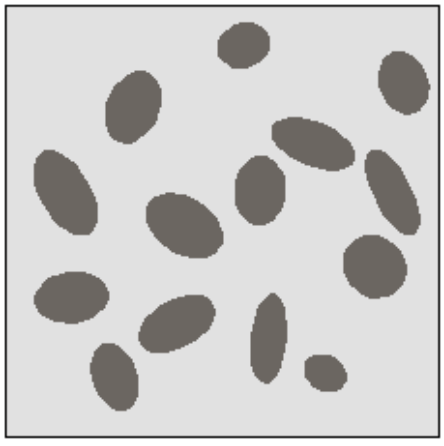
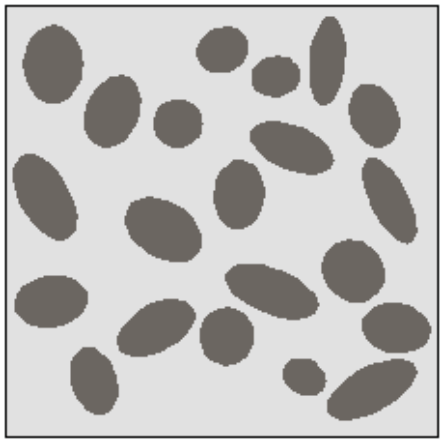
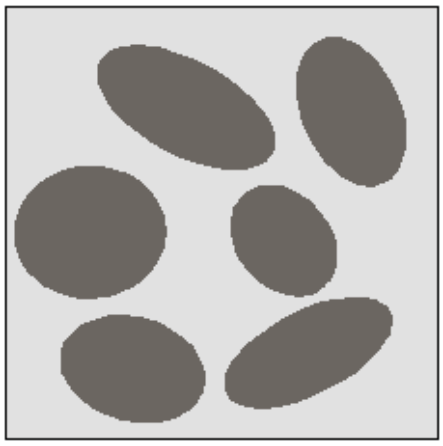


30%





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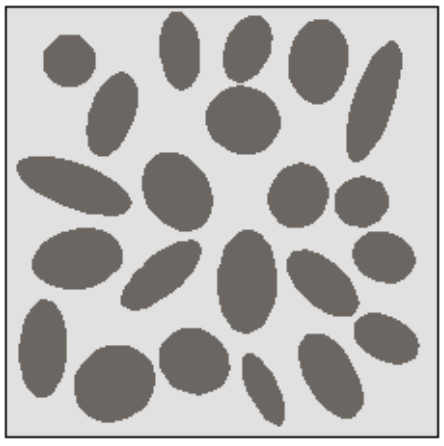
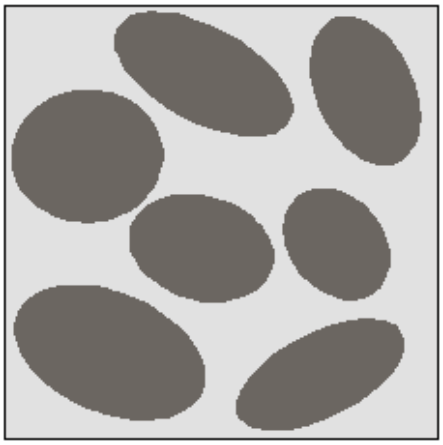
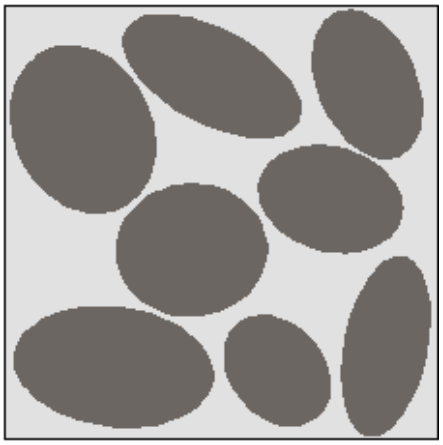




50%

(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.)



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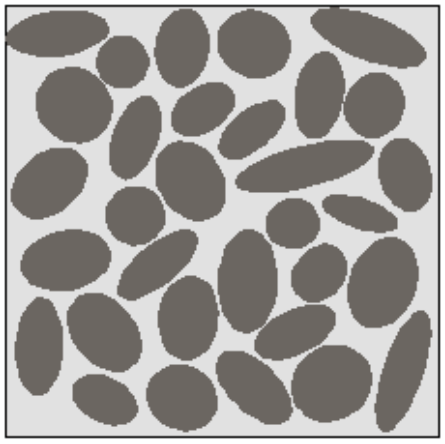

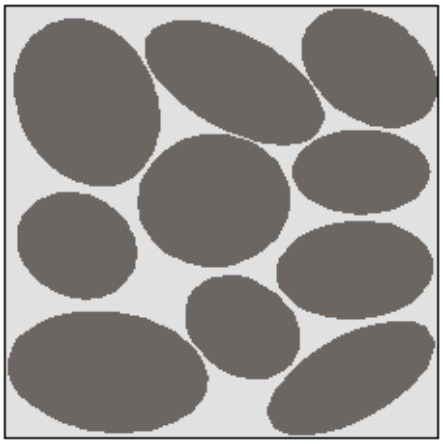

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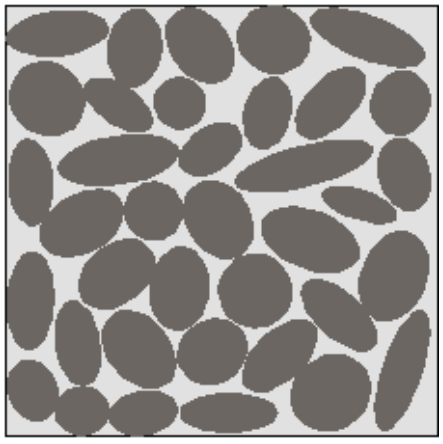

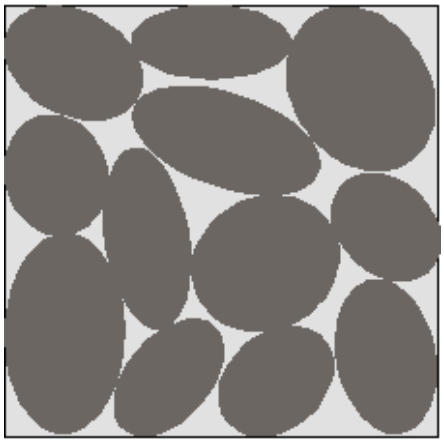

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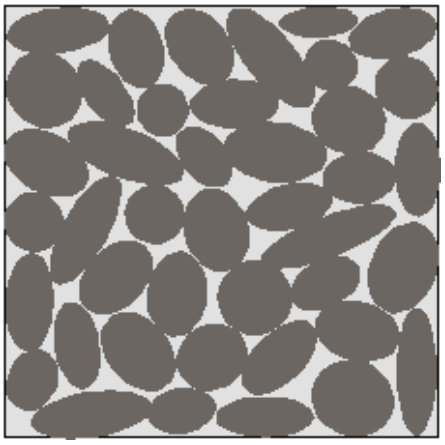


The squares represent part of a grid drawn on the soil profile to estimate volume of plant fibers, oxidized rhizospheres, or other linear features.

2%

5%

10%

17%

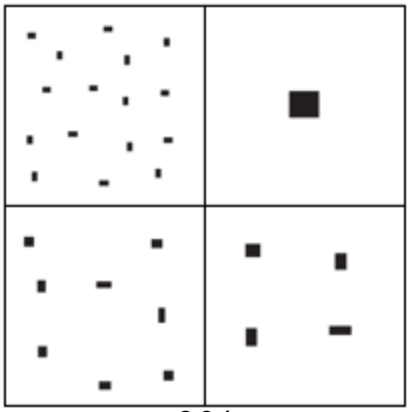
20%

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.



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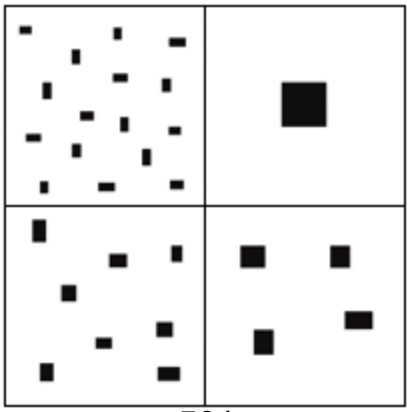

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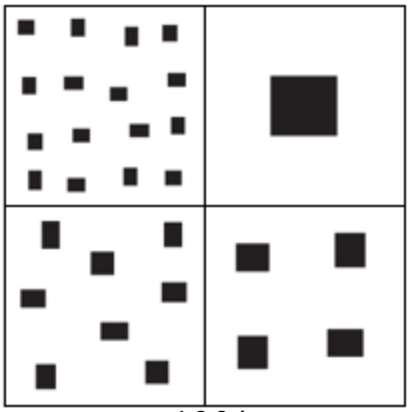

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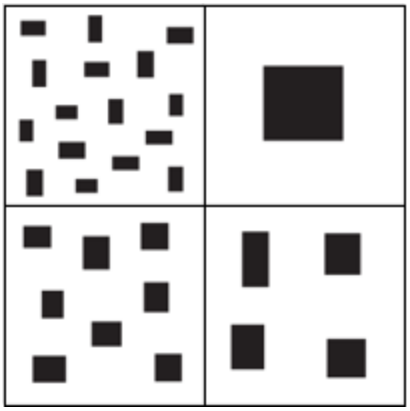

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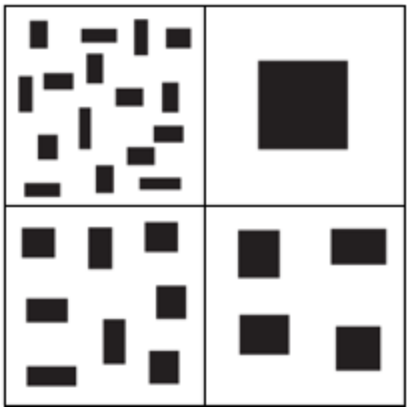

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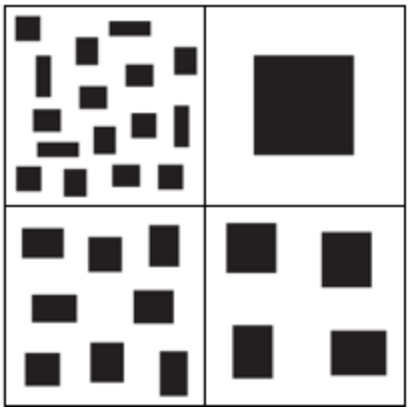

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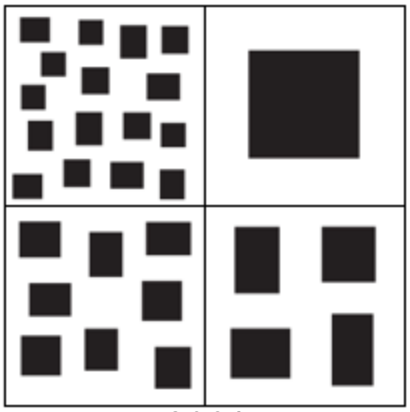

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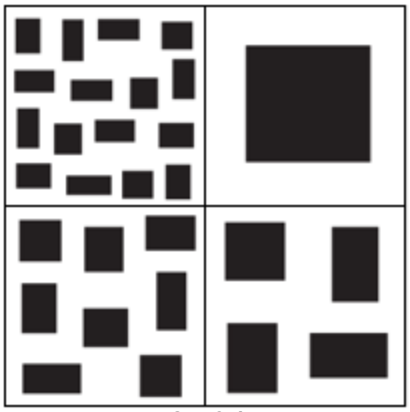

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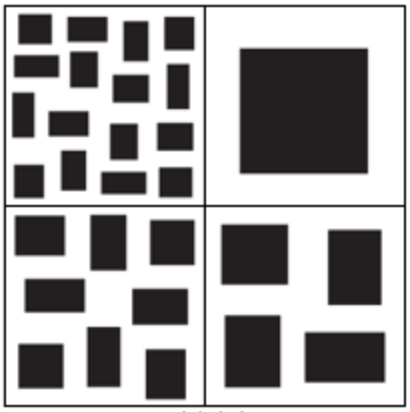

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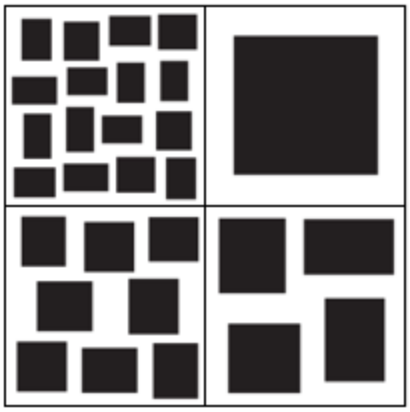

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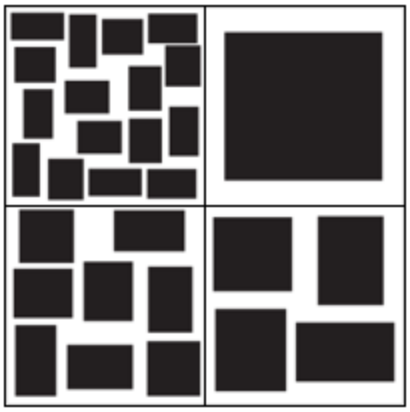

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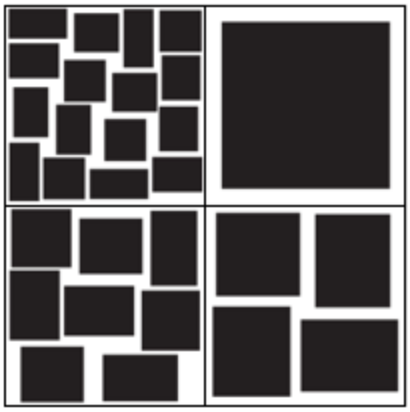
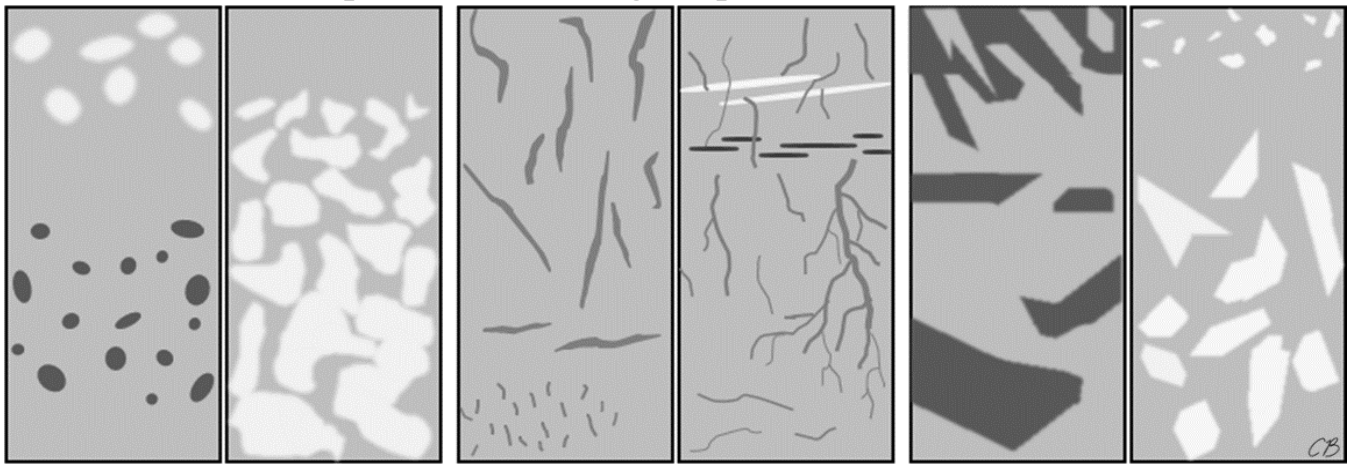


70%

Tips for Determining Shapes of Features in Soil



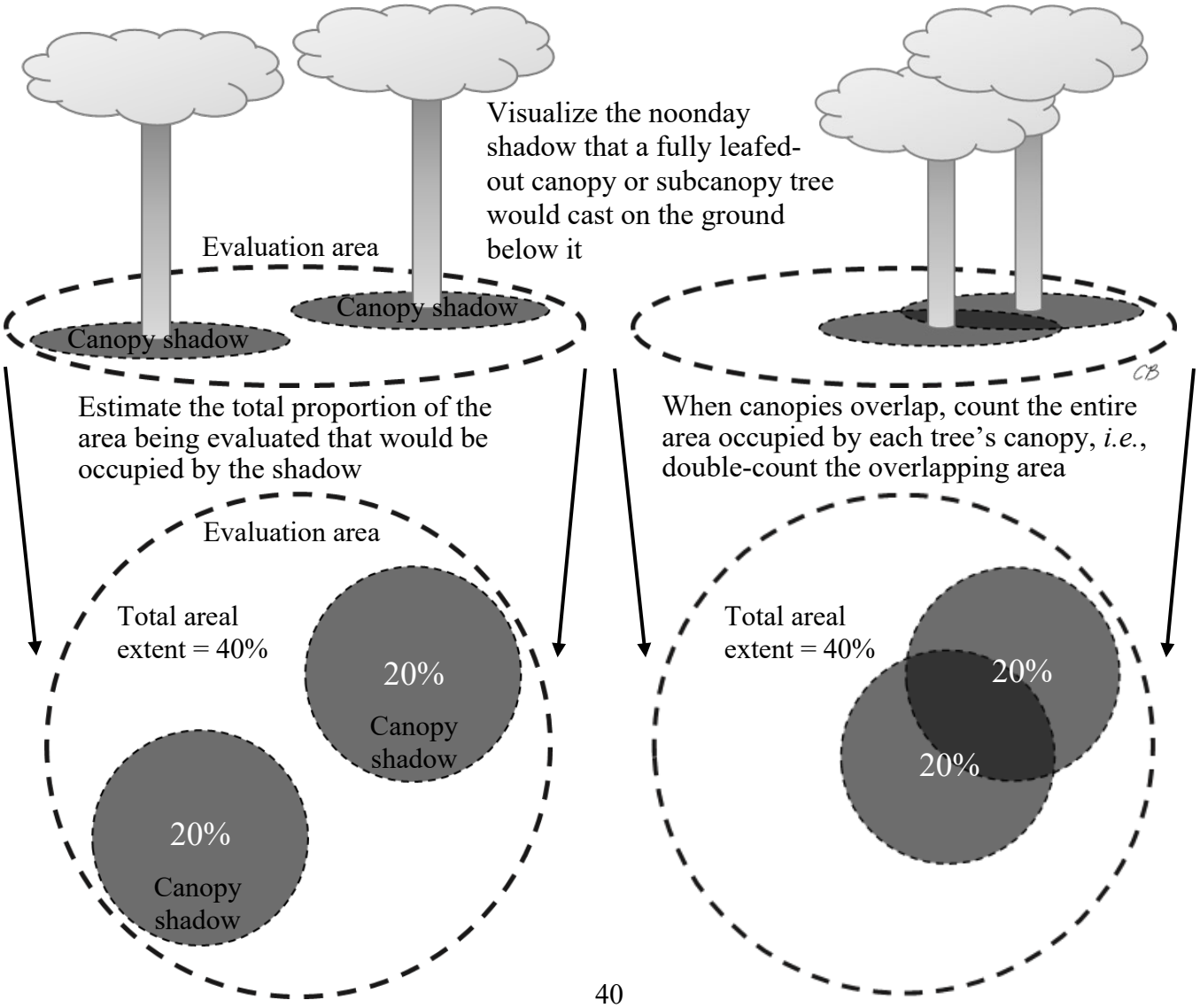
Rounded
Features with generally curved outlines (do not have to be circular; often amorphous)

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

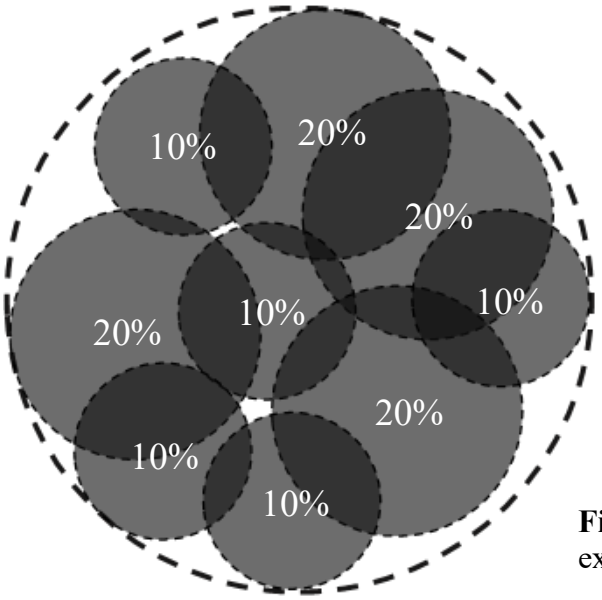
Angular
Features with generally straight outlines & defined angles (often resulting from physical mixing of soils)

Figure 6: Diagram for determining shape categories of features in the matrix.

Tips for Estimating Areal Extent of Plant Species



Tips for Estimating Areal Extent of Plant Species (continued)

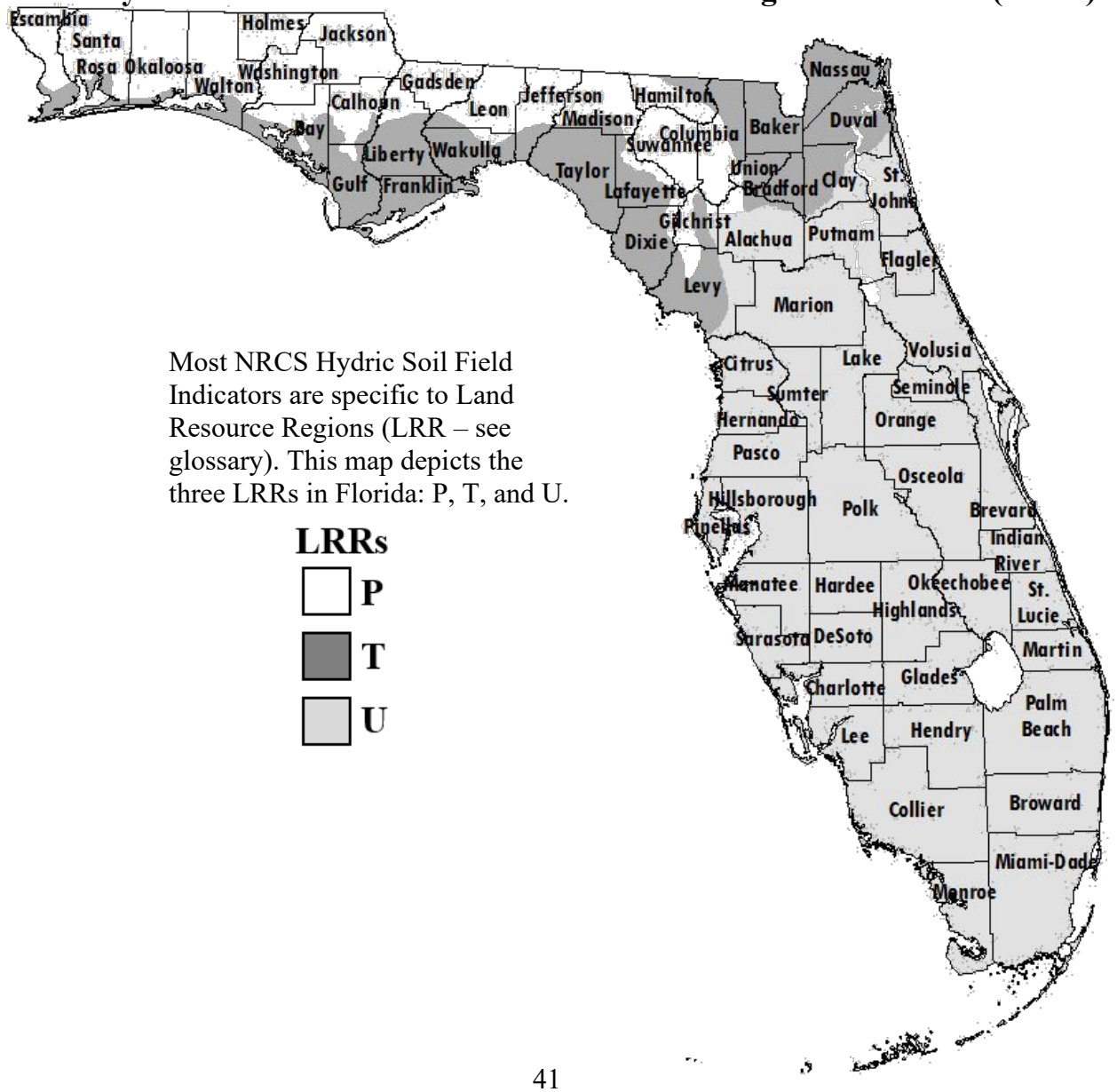


In a dense canopy where many trees overlap one another, the total areal extent of species in the evaluation area may exceed 100%, even if open sky is visible between some canopies

Total areal extent = 130%

Figure 7: Diagrams for estimating the areal extents of plants within an evaluation area.

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



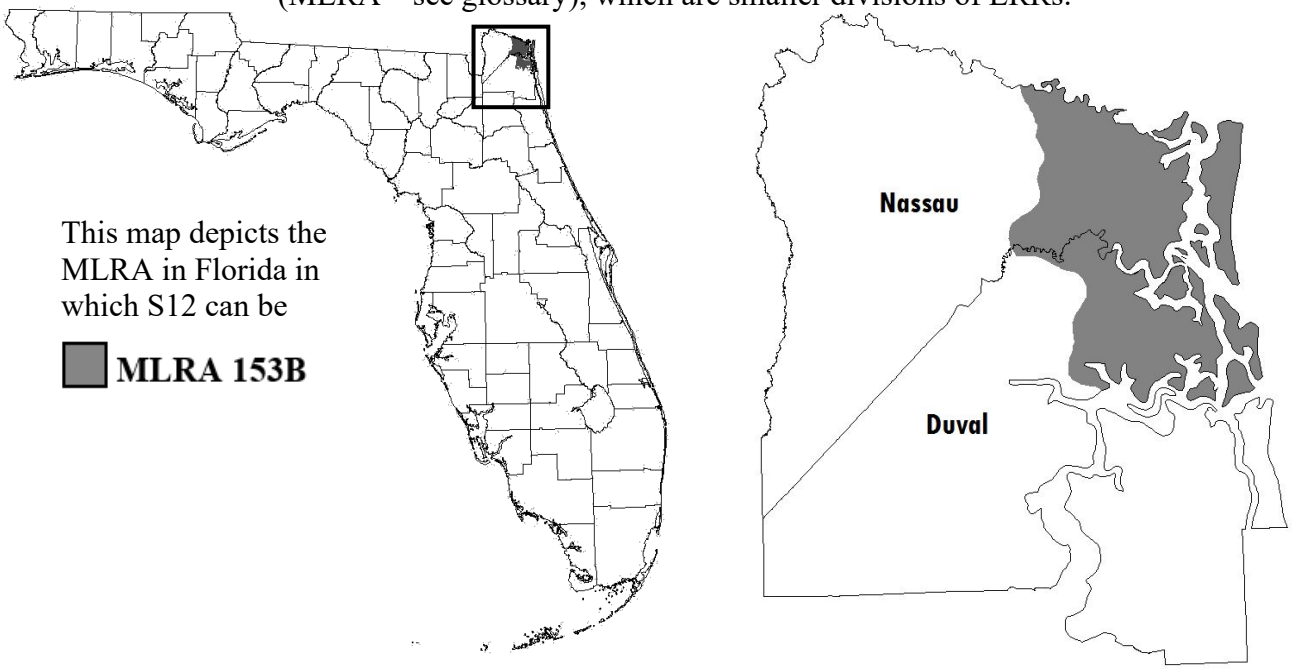
Most NRCS Hydric Soil Field Indicators are specific to Land Resource Regions (LRR – see glossary). This map depicts the three LRRs in Florida: P, T, and U.

LRRs

- P
- T
- U

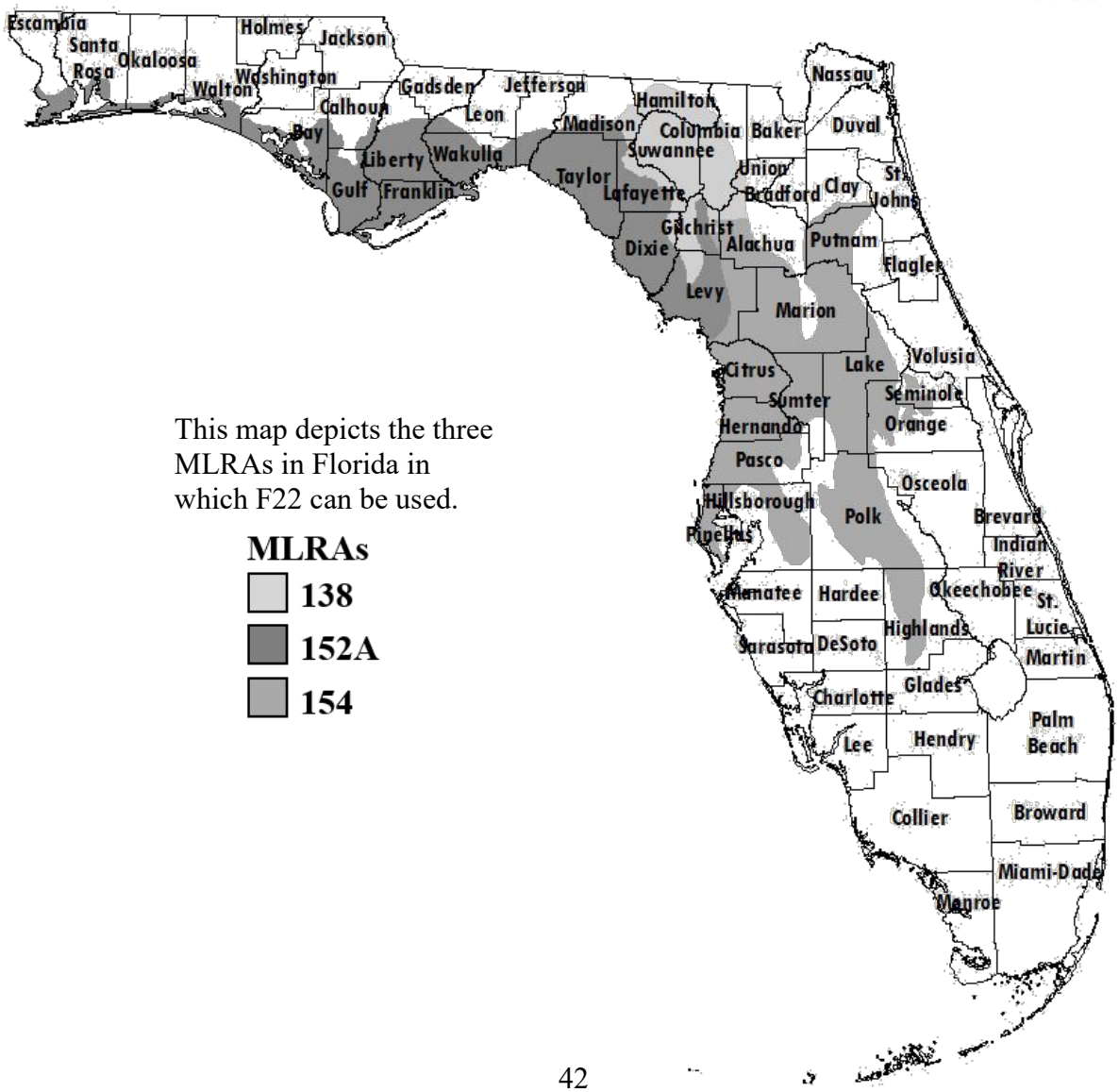
Major Land Resource Areas (MLRAs)

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

MLRA 153B



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

MLRAs

138

152A

154

Hydric Soil Field Indicators Simplified Checklist:

Hydric Soil Field Indicators Simplified Checklist is adapted from Field Indicators of Hydric Soils in the United States, Version 8.2 (USDA NRCS, 2018) using Florida-specific indicators per Rule 62-340.300(2)(a)1., (b)1., (c)3., and (d), 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.

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)

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

Adjacent layers within a soil profile description may be combined to meet a hydric soil field indicator's layer thickness requirements provided the adjacent layers share the required properties referred to in the indicator (*E.g.*, 2 inches of sandy mucky mineral soil and 3 inches of sand with ≥70% organic coating may be combined to meet S7 provided both layers have matrix values of 3 or less and chromas of 1 or less.)

----------*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 ≤16 inches from 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
- ✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:
  - **A.** There are no mineral soil layers above this indicator
  - **B.** All mineral soil above this indicator has a dominant chroma of 2 or less
  - **C.** There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator
- ❖ 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
- ✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:
  - **A.** There are no mineral soil layers above this indicator

B. All mineral soil above this indicator has a dominant chroma of 2 or less

C. There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator

❖ 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 ≤ 6 inches from 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

A4. Hydrogen Sulfide

Note: This is a stand alone D-Test indicator

✓ Is there a hydrogen sulfide odor (rotten egg smell)
✓ Does the hydrogen sulfide odor start ≤ 12 inches from the soil surface
✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:

A. There are no mineral soil layers above this indicator

B. All mineral soil above this indicator has a dominant chroma of 2 or less

C. There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator

A5. Stratified Layers

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

✓ Are there several stratified layers due to the alternating deposition of organic matter and mineral soil material deposited by flowing water
✓ Do one or more of the stratified layers satisfy either **Option A, B, and/or C**

A. Layer(s) is composed of organic soil material (peat, mucky peat, and/or muck soil texture)

B. Layer(s) is composed of mucky mineral soil texture

C. Layer(s) is composed of sandy or fine soil texture
AND
Has value of 3 or less and chroma of 1 or less
AND
If layer(s) texture is sandy at least 70% of the visible sand 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 ≤ 6 inches from the soil surface

A6. Organic Bodies

✓ Is there a layer(s) with organic bodies composed of muck or mucky mineral soil texture
✓ Are there 2% or more organic bodies within the layer(s)
✓ Does the layer(s) start ≤ 6 inches from the soil surface

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 ≤ 6 inches from the soil surface

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(s) of muck soil texture
- ✓ Does the layer(s) have value of 3 or less and chroma of 1 or less
- ✓ Does the layer(s) start ≤ 6 inches from the soil surface

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 ≤ 6 inches from the soil surface

A11. Depleted Below Dark Surface

- ✓ Is there a dark layer(s) that satisfies either **Option A and/or B**
  - **A.** Layer(s) is composed of muck, fine mucky mineral, and/or fine soil texture
    AND
    Has value of 3 or less and chroma of 2 or less
  - **B.** Layer(s) is composed of sandy and/or sandy mucky mineral soil texture
    AND
    Has value of 3 or less and chroma of 1 or less
    AND
    Has at least 70% of the visible sand particles masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Does the dark layer(s) start ≤ 6 inches from the soil surface
- ✓ Does the layer(s) immediately below the dark layer(s) satisfy either **Option A and/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 ≤ 12 inches from the soil surface

A12. Thick Dark Surface

- ✓ 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 and/or B**
  - **A.** Layer(s) is composed of muck, fine mucky mineral, and/or fine soil texture
  - **B.** Layer(s) is composed of sandy and/or sandy mucky mineral soil texture
    AND
    Has at least 70% of the visible sand particles masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Does the dark layer(s) start ≤ 6 inches from the soil surface and extend to a depth of at least 12 inches

- ✓ Is there a layer(s) below the dark layer(s) that satisfies either **Option A and/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) with the gleyed or depleted matrix 6 inches or more thick
- ✓ Do all remaining layers between the aforementioned dark layer(s) and the layer(s) with the gleyed or depleted matrix have value of 3 or less and chroma of 1 or less

----------*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(s) 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(s) start ≤ 6 inches from the soil surface

S5. <u>Sandy Redox</u>

- ✓ Is there a layer(s) of sandy and/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 ≤ 6 inches from the soil surface

S6. <u>Stripped Matrix</u>

- ✓ Is there a layer(s) of sandy and/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)'s volume
- ✓ Does the layer(s) start ≤ 6 inches from the soil surface

[1] See Table 1 (p 32) to determine if contrast is faint

[2] See Figure 2 (p 32) to determine if boundaries are diffuse

S7. <u>Dark Surface</u>

- ✓ Is there a dark layer(s) of sandy, sandy mucky mineral, and/or muck soil texture with 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 sand 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 ≤ 6 inches from the soil surface

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, sandy mucky mineral, and/or muck soil texture with value of 3 or less and chroma of 1 or less
- ✓ Does the dark layer(s) have at least 70% of the visible sand particles masked with organic material when viewed through a 10x or 15x hand lens
- ✓ Does the dark layer(s) start ≤ 6 inches from 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 and 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

S9. Thin Dark Surface

- ✓ Is the soil profile located within Land Resource Region T or U
- ✓ Is there a dark layer(s) of sandy, sandy mucky mineral, and/or muck soil texture with value of 3 or less and chroma of 1 or less
- ✓ Does the dark layer(s) have at least 70% of the visible sand 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 ≤ 6 inches from 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. Barrier Islands 1 cm Muck

- ✓ 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 42)
- ✓ 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 ≤ 6 inches from the soil surface

----------*For use in Fine texture soils*----------

F2. Loamy Gleyed Matrix

Note: This is a stand alone D-Test indicator

- ✓ Is there a layer(s) 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(s) start ≤ 12 inches from the soil surface
- ✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:
    - **A.** There are no mineral soil layers above this indicator
    - **B.** All mineral soil above this indicator has a dominant chroma of 2 or less
    - **C.** There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator

F3. Depleted Matrix

- ✓ 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 ≤ 4 inches from the soil surface

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

- ✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:
  - **A.** There are no mineral soil layers above this indicator
  - **B.** All mineral soil above this indicator has a dominant chroma of 2 or less
  - **C.** There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator

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

- ✓ Is there a layer(s) of fine and/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 ≤ 8 inches from the soil surface
- ✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:
  - **A.** There are no mineral soil layers above this indicator
  - **B.** All mineral soil above this indicator has a dominant chroma of 2 or less
  - **C.** There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator

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

- ✓ Is there a layer(s) of fine and/or fine mucky mineral soil texture with redox depletions (lighter areas with associated redox concentrations)
- ✓ 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 and/or B**
  - **A.** Layer(s)'s matrix has value of 3 or less and chroma of 1 or less
    AND
    Has 10% or more distinct or prominent redox depletions
  - **B.** Layer(s)'s matrix has value of 3 or less and chroma of 2 or less
    AND
    Has 20% or more distinct or prominent redox depletions
- ✓ Is the layer(s) 4 inches or more thick
- ✓ Does the layer(s) start ≤ 8 inches from the soil surface
- ✓ Above the starting depth of this indicator, is either **Option A, B, or C** satisfied:
  - **A.** There are no mineral soil layers above this indicator
  - **B.** All mineral soil above this indicator has a dominant chroma of 2 or less
  - **C.** There are less than 6 inches of mineral soil material with a dominant chroma of more than 2 above this indicator

F8. <u>Redox Depressions</u>

- ✓ Is the soil profile located within a closed depression subject to ponding

- ✓ Is there a layer(s) of fine and/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 ≤ 4 inches from the soil surface

F10. Marl

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

F12. Iron/Manganese Masses

- ✓ 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 and/or fine mucky mineral 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[3] boundaries
- ✓ 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 ≤ 8 inches from the soil surface

[3] See Figure 2 (p 32) to determine if boundaries are diffuse

F13. Umbric Surface

- ✓ Is there a layer(s) of fine, fine mucky mineral, and/or muck soil texture
- ✓ Is the layer(s) 10 inches or more thick
- ✓ Does the layer(s) satisfy both **Criteria 1 and 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 ≤ 6 inches from the soil surface

F22. Very Shallow Dark Surface

- ✓ Is the soil profile located within Major Land Resource Area 138, 152A, or 154 (See p 42)
- ✓ 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, fine mucky mineral, and/or muck soil texture with value of 2.5 or less and chroma of 1 or less
- ✓ Does bedrock occur ≤ 10 inches from 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 ≤ 4 inches from the soil surface
  - **B.** The bedrock occurs ≤ 6 inches from 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 8.2, 2018

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, redox depletions, or both, “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 2 *p.32*) 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.32*) 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.32*), 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.32*) 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, depletions, or both, "few" represents less than 2 percent of the observed surface.

Fibric. See Peat.

Flood plain. 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 stream.

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 H2S. 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 the properties required by the indicator.

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, depletions, or both, “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. 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 8) 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.

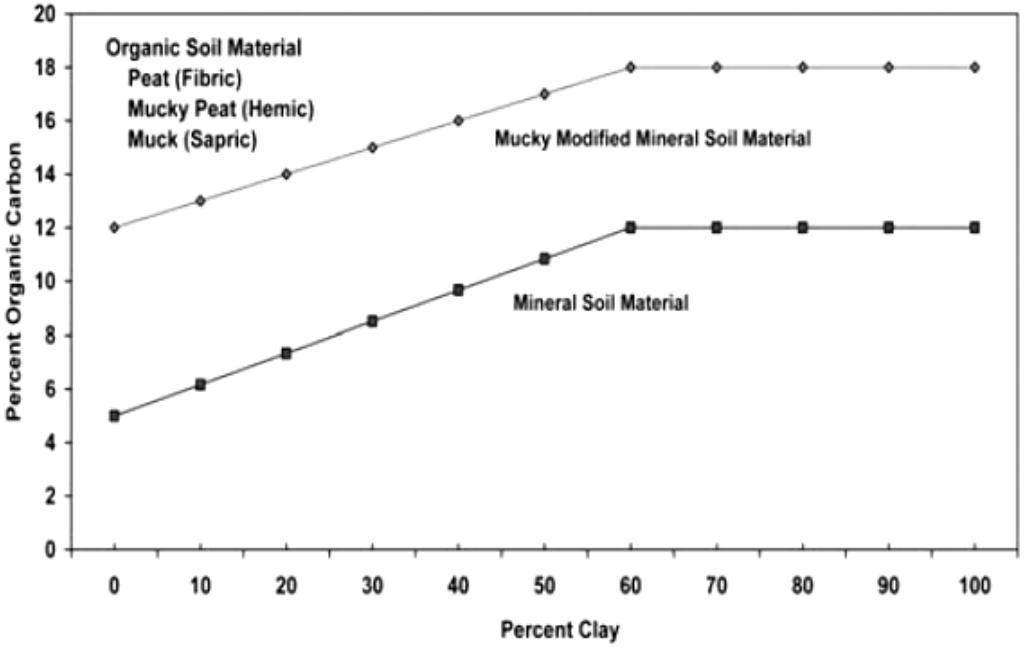


Figure 7: Percent organic carbon required for organic soil material, mucky modified mineral soil material, and mineral soil material as it is related to content of clay.

***Mucky peat.** Hemic organic material, which is characterized by decomposition that is intermediate between that of peat (fibric material) and that of muck (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 peat (fibric) or muck (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 8) 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 and decomposing.

***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.

Ped. A unit of soil structure such as a block, column, granule, plate, or prism, formed by natural processes (in contrast with a clod, which is formed artificially).

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.32*) 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 (Fe^{3+}) to ferrous iron (Fe^{2+}) 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. 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 the 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). Stream terraces may occur singularly or as a series. 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.

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).

Data Form Guide Notes:

<u>Surface Water Definitions</u>

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 <u>The Florida Wetlands Delineation Manual</u> 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.

Hydric Soil Field Indicators:

Adapted from **Field Indicators of Hydric Soils in the United States, Version 8.2 (USDA NRCS, 2018)** to include Florida-specific indicators per Rule 62-340.300(2)(a)1., (b)1., (c)3., and (d), F.A.C.

These indicators are subdivided by prefix:

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

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

F - Fine texture soils "Loamy and clayey soils" refers to those soils with USDA soil texture of loamy very fine sand and finer (does not include mucky peat or peat).

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

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, 2014) 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, 2014) 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 at a depth of ≤ 15 cm (6 inches) from 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 starting at a depth ≤ 30 cm (12 inches) from the soil surface.

User Notes: This "rotten egg smell" indicates that sulfate-sulfur has been reduced to hydrogen sulfide gas and therefore the soil is anaerobic.

A5. Stratified Layers - LRR: **P, T, U**

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

Several stratified layers starting at a depth ≤ 15 cm (6 inches) from 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. A stratified layer is depositional and not pedogenic. 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. Organic Bodies - LRR: **P, T, U**

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

User Notes: Organic bodies typically occur at the tips of fine roots. In order to meet the Organic Bodies indicator, the organic carbon content in organic bodies must meet the requirements of muck or mucky modified textures. The size of the organic body is not specifically defined, but the bodies are commonly 1 to 3 cm (0.5 to 1 inch) in diameter. Many organic bodies do not have the required content of organic carbon and as a result do not meet this indicator. For example, organic bodies of mucky peat (hemic material) and/or peat (fibric material) do not meet the requirements of this indicator, nor does material consisting of partially decomposed root tissue. The Organic Bodies indicator includes the indicator previously named "accretions" (Florida Soil Survey Staff, 1992).

A7. 5 cm Mucky Mineral - 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 at a depth ≤ 15 cm (6 inches) from 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. For example, a mucky fine sand soil contains between 5 and 12 percent organic carbon. When the amount of clay is increased as in a mucky sandy loam, the organic carbon content increases to between 7 and 14 percent.

A8. Muck Presence - 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 at a depth ≤ 15 cm (6 inches) from the soil surface.

User Notes: The presence of muck of any thickness at 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 ≤ 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. Mucky peat (hemic material) and/or peat (fibric material) do not qualify. Generally, muck is black and has a "greasy" feel; sand grains should not be evident.

A9. <u>1 cm Muck</u> - 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 at a depth ≤ 15 cm (6 inches) from 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 ≤ 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. Mucky peat (hemic material) and/or peat (fibric material) do not qualify. Generally, muck is black and has a "greasy" feel; sand grains should not be evident.

A11. <u>Depleted Below Dark Surface</u> - LRR: **P, T, U**

A layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting at a depth ≤ 30 cm (12 inches) from 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.

Organic, loamy, or clayey layer(s) above the depleted or gleyed matrix must have value of 3 or less and chroma of 2 or less starting at a depth <15 cm (6 inches) from the soil surface and extend to the depleted or gleyed matrix. Any sandy material above the depleted or gleyed matrix must have value of 3 or less and chroma of 1 or less starting at a depth ≤15 cm (6 inches) from the soil surface and extend to the depleted or gleyed matrix. Viewed through a 10x or 15x hand lens, at least 70 percent of the visible sand particles must be masked with organic material. Observed without a hand lens, the sand particles appear to be close to 100 percent masked.

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. <u>Thick Dark Surface</u> - 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. The layer(s) above the depleted or gleyed matrix and starting at a depth <15 cm (6 inches) from the soil surface must have value of 2.5 or less and chroma of 1 or less to a depth of at least 30 cm (12 inches) and value of 3 or less and chroma of 1 or less in any remaining layers above the depleted or gleyed matrix. In any sandy material above the depleted or gleyed matrix, 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: 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.

----------*For use in Sandy texture soils*----------

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 at a depth ≤ 15 cm (6 inches) from 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 (X-Rite, 2009) that 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 at a depth ≤ 15 cm (6 inches) from 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 at a depth ≤ 15 cm (6 inches) from 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 at a depth ≤ 15 cm (6 inches) from 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 2 or less, 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 a splotchy pattern of 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 at a depth less than or equal to the upper 15 cm (6 inches) from 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: 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, the 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 at a depth ≤ 15 cm (6 inches) from 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, starting at a depth ≤ 15 cm (6 inches) from the soil surface, 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 - 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 at a depth ≤ 15 cm (6 inches) from 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 dune-and-swale complexes on barrier islands.

----------*For use in Fine texture soils*----------

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 at a depth ≤ 30 cm (12 inches) from 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 (X-Rite, 2009) that 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 at a depth ≤ 30 cm (12 inches) from 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 starts at a depth ≤ 10 cm (4 inches) from the soil surface, or
b. 15 cm (6 inches), starting at a depth ≤ 25 cm (10 inches) from 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, starting at a depth ≤ 20 cm (8 inches) from the mineral soil surface, 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 are commonly 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 surface layer 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, starting at a depth ≤ 20 cm (8 inches) from the mineral soil surface, 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 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 starts at a depth ≤ 10 cm (4 inches) from the soil surface.

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 chroma 2 or less starting at a depth ≤ 10 cm (4 inches) from the soil surface.

User Notes: Marl is a limnic material deposited in water by precipitation of $CaCO_3$ 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 CO_2. 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 at a depth ≤ 10 cm (4 inches) from the soil surface. Normally, this indicator occurs at the soil surface.

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 starts at a depth ≤ 20 cm (8 inches) from 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**
A layer 25 cm (10 inches) or more thick, starting at a depth ≤ 15 cm (6 inches) from 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.

F22. Very Shallow Dark Surface - MLRA: **138, 152A, 154**
In depressions and flood plains subject to frequent ponding and/or flooding, one of the following must be observed:

a. **If bedrock occurs between 15 cm (6 inches) and 25 cm (10 inches) of the soil surface, a layer at least 15 cm (6 inches) thick starting at a depth ≤ 10 cm (4 inches) from 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 at a depth ≤ 15 cm (6 inches) from the soil surface, 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 color as above or any other color that has a chroma 2 or less.**

NRCS Hydric Soil Field Indicators
Deepest Starting Depth Summary Table

Depth (in)	Indicator
0	A2
< 3	F22(b)
4	F3(a), F8, F10, F22(a)
6	A3, A5, A6, A7, A8, A9, A11, A12, S4, S5, S6, S7, S8, S9, S12, F13
8	F6, F7, F12
10	F3(b)
12	A4, F2
16	A1

Appendix B: Histosol and Histic Epipedon Definition

From *Keys to Soil Taxonomy* (Soil Survey Staff, 2014)

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 interstices *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/cm^3; *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/cm^3 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

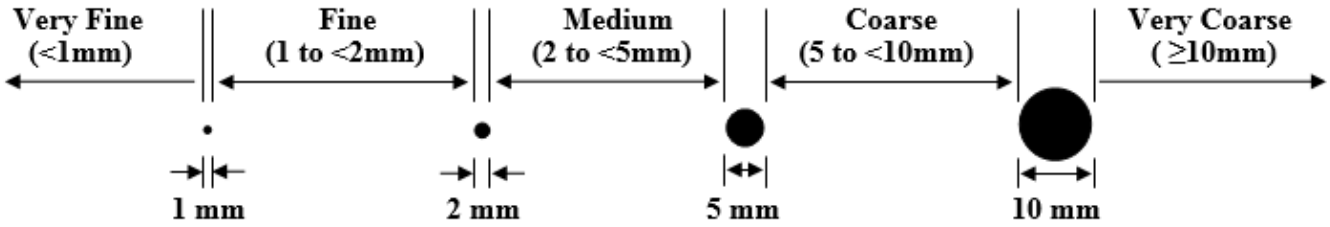
The histic epipedon is a layer (one or more horizons) that is characterized by saturation (for 30 days or more, cumulative) and reduction for some time during normal years (or is artificially drained) and e*ither*:

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. 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.

Root Size Estimation Chart

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



Quantity Classes for Redox Features or Roots

Quantity Class	Few	Common	Many
Redox: % of Observed Surface	Less than 2%	2% to 20%	Greater than 20%
Roots: Average Count per Area*	< 1 per area*	1 to < 5 per area*	≥ 5 per area*

*Root assessment area = 1x1cm for <2mm roots, 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 activities	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 $\geq$4 Chroma $\geq$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

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 inundation 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)

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

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

Appendix A2: subsection 62-340.450(1), (2), (3), F.A.C.
Vegetative Index Plant List by Common Name

Common Name / Botanical Name / Wetland Status

acacia, ear-leaved *Acacia auriculiformis* FAC
alder, hazel *Alnus serrulata* OBL
algal bulrush *Websteria confervoides* OBL
allamanda, wild *Urechites lutea* FACW
alligator flag *Thalia geniculata* OBL
alligator-weed *Alternanthera philoxeroides* OBL
alligator-weed, sessile *Alternanthera sessilis* OBL
amaranth, Florida *Amaranthus floridanus* OBL
amaranth, southern *Amaranthus australis* OBL
amaranth, tidemarsh *Amaranthus cannabinus* OBL
anise, Florida *Illicium floridanum* OBL
anise, star *Illicium parviflorum* FACW
arrowhead *Sagittaria* spp. OBL
arrow-wood *Viburnum dentatum* FACW
arum *Peltandra* spp. OBL
ash *Fraxinus* spp. OBL
ash, white *Fraxinus americana* U
aster, bog *Aster spinulosus* FACW
aster, bushy *Aster dumosus* FAC
aster, calico *Aster lateriflorus* FACW
aster, climbing *Aster carolinianus* OBL
aster, coyote-thistle *Aster eryngiifolius* FACW
aster, Elliott's *Aster elliottii* OBL
aster, flat-top white *Aster umbellatus* FAC
aster, saltmarsh *Aster subulatus* OBL
aster, saltmarsh *Aster tenuifolius* OBL
aster, savannah *Aster chapmanii* FACW
aster, small white *Aster vimineus* FACW
Australian pine *Casuarina* spp. FAC
axilflower *Mecardonia* spp. FACW
azalea, swamp *Rhododendron viscosum* FACW
baby tears *Micranthemum* spp. OBL
baby-blue-eyes, small-flower *Nemophila aphylla* FACW
balsam-scale, Pan-American *Elionurus tripsacoides* FACW
bantam-buttons *Syngonanthus flavidulus* FACW
barbara's-buttons, grass-leaf *Marshallia graminifolia* FACW
barbara's-buttons, slim-leaf *Marshallia tenuifolia* FACW
basswood, American *Tilia americana* FACW
bay, swamp *Persea palustris* OBL
bayberry, evergreen *Myrica heterophylla* FACW
bayberry, odorless *Myrica inodora* FACW
bayberry, southern *Myrica cerifera* FAC
bay-cedar *Suriana maritima* FAC
beach alternanthera *Alternanthera maritima* FACW

This index is for reference purposes only. Scientific names shall be used in all applications of Ch. 62-340, F.A.C. This index contains all plant species in subsection 62-340.450(1), (2), (3), F.A.C., listed alphabetically by their most widely used common names. In this index, plant species within a genus that has a consistent common name are listed by the common name of their genus, followed by the descriptor. For example, *Quercus nigra* is listed as oak, water. For families or larger taxonomic divisions in which all members are collectively referred to by a consistent common name, such as grasses, sedges, palms, orchids, and ferns, all members are listed under that group name, with the last member alphabetically being underlined to denote the end of the group. Plant species may appear multiple times within this list, as many have multiple common names. However, this list is not exhaustive.

beach creeper *Ernodea littoralis* FAC
bedstraw, stiff marsh *Galium tinctorium* FACW
beefwood *Guapira discolor* FAC
beggar-ticks *Bidens* spp. OBL
beggar-ticks, white *Bidens pilosa (B. alba)* FAC
bellflower, American *Campanula americana* FAC
bellflower, Florida *Campanula floridana* OBL
bellwort, Florida *Uvularia floridana* FACW
bindweed, dwarf *Evolvulus convolvuloides* FACW
bindweed, silky *Evolvulus sericeus* FACW
birch, river *Betula nigra* OBL
birds-in-a-nest *Macbridea* spp. FACW
bitter-cress *Cardamine bulbosa* OBL
black senna *Seymeria cassioides* FAC
blackbead *Pithecellobium keyensis* FAC
blackbead, catclaw *Pithecellobium unguis-cati* FAC
blackberry *Rubus* spp. FAC
blackgum *Nyssa sylvatica var. biflora* OBL
bladdernut, American *Staphylea trifolia* FACW
bladderpod *Sesbania* spp. FAC
bladderwort *Utricularia* spp. OBL
blazing star *Liatris gracilis* FAC
blolly *Guapira discolor* FAC
blueberry, Elliott *Vaccinium elliottii* FAC
blueberry, highbush *Vaccinium corymbosum* FACW
blue-eye-grass *Sisyrinchium capillare* FACW
blue-eye-grass, eastern *Sisyrinchium atlanticum* FACW
blue-eye-grass, Michaux's *Sisyrinchium mucronatum* FACW
bluestar, eastern *Amsonia tabernaemontana* FACW
bluethread *Burmannia* spp. OBL
bluets, water *Oldenlandia* spp. FACW
bog hemp *Boehmeria cylindrica* OBL
bogbutton, Engler's *Lachnocaulon engleri* OBL
bogbutton, pineland *Lachnocaulon digynum* OBL
bogbutton, Small's *Lachnocaulon minus* OBL
bogbutton, southern *Lachnocaulon beyrichianum* FACW
bogbutton, white-head *Lachnocaulon anceps* FACW
boneset *Eupatorium perfoliatum* FACW
box briar *Randia aculeata* FAC
box-elder *Acer negundo* FACW
bractspike, yellow *Yeatesia viridiflora* FACW
Brazilian pepper-tree *Schinus terebinthifolius* FAC
broomspurge, spreading *Euphorbia humistrata* FACW
buckwheat-tree *Cliftonia monophylla* FACW
bugleweed *Lycopus* spp. OBL
bully, buckthorn *Bumelia lycioides* FAC
bully, Florida *Bumelia reclinata* FAC
bumelia, buckthorn *Bumelia lycioides* FAC
bumelia, coastal *Bumelia celastrina* FAC
bumelia, smooth *Bumelia reclinata* FAC
bunchflower, Virginia *Melanthium virginicum* OBL

burhead *Echinodorus* spp. OBL
burnweed, American *Erechtites hieraciifolia* FAC
burreed *Sparganium americanum* OBL
bushy goldenrod *Euthamia* spp. FAC
butter-cup *Ranunculus* spp. FACW
butterweed *Senecio glabellus* OBL
butterwort *Pinguicula* spp. OBL
buttonbush *Cephalanthus occidentalis* OBL
button-plant, smooth *Spermacoce glabra* FACW
button-weed *Diodia virginiana* FACW
buttonwood *Conocarpus erectus* FACW
cajeput *Melaleuca quinquenervia* FAC
camphor-weed *Pluchea* spp. FACW
canker-berry *Solanum bahamense* FACW
canna *Canna* spp. OBL
canna, common *Canna x generalis* FAC
caperonia *Caperonia* spp. FACW
caper-tree *Capparis flexuosa* FACW
cardinal flower *Lobelia cardinalis* OBL
carrotwood *Cupaniopsis anacardioides* FAC
catsclaw *Pithecellobium unguis-cati* FAC
cattail *Typha* spp. OBL
cayaponia, five-lobe *Cayaponia quinqueloba* FAC
celestial lily *Nemastylis floridana* FACW
chaff-flower, beach *Alternanthera maritima* FACW
chaffhead, bristle-leaf *Carphephorus pseudoliatris* FACW
chaffhead, hairy *Carphephorus paniculatus* FAC
chaffhead, pineland *Carphephorus carnosus* FACW
chamber-bitter *Phyllanthus urinaria* FAC
chicken-spike *Sphenoclea zeylandica* FACW
chickweed, West Indian *Drymaria cordata* FAC
chocolate-weed *Melochia corchorifolia* FAC
chokeberry, red *Aronia arbutifolia* FACW
Christmas berry *Lycium carolinianum* OBL
clearweed *Pilea* spp. FACW
climbing-dogbane *Trachelospermum difforme* FACW
clubmoss *Lycopodium* spp. FACW
cocoplum *Chrysobalanus icaco* FACW
coinwort *Centella asiatica* FACW
colic-root *Aletris spp* FAC
colicwood *Myrsine guianensis* FAC
coneflower, cut-leaf *Rudbeckia laciniata* FACW
coneflower, grass-leaf *Rudbeckia graminifolia* FACW
coneflower, Mohr's *Rudbeckia mohrii* OBL
coneflower, orange *Rudbeckia fulgida* FACW
coneflower, Shiny *Rudbeckia nitida* FACW
coralberry *Ardisia* spp. FAC
corkwood *Leitneria floridana* OBL
corkwood *Stillingia aquatica* OBL
cottonwood, eastern *Populus deltoides* FACW
cottonwood, swamp *Populus heterophylla* OBL

coughbush *Ernodea littoralis* FAC
cowbane *Oxypolis* spp. OBL
cow-lily, yellow *Nuphar luteum* OBL
coyote-thistle, Baldwin's *Eryngium baldwinii* FAC
coyote-thistle, blue-flower *Eryngium integrifolium* FACW
coyote-thistle, creeping *Eryngium prostratum* FACW
creeping ox-eye *Wedelia trilobata* FAC
croton, Elliott's *Croton elliottii* FACW
crow poison *Zigadenus densus* FACW
crownbeard, Chapman's *Verbesina chapmanii* FACW
crownbeard, diverse-leaf *Verbesina heterophylla* FACW
crownbeard, white *Verbesina virginica* FAC
culver's-root *Veronicastrum virginicum* FACW
cupseed *Calycocarpum lyonii* FACW
cypress, bald *Taxodium distichum* OBL
cypress, pond *Taxodium ascendens* OBL
dangleberry *Gaylussacia frondosa* FAC
danglepod *Sesbania* spp. FAC
darling-plum *Reynosia septentrionalis* FAC
dasheen *Colocasia esculenta* OBL
dayflower *Commelina* spp. FACW
dayflower, sandhill *Commelina erecta* U
deathcamas, Atlantic *Zigadenus glaberrimus* FACW
deer-tongue *Carphephorus paniculatus* FAC
desert-thorn, Carolina *Lycium carolinianum* OBL
devil's claws *Pisonia rotundata* FAC
dewberry *Rubus* spp. FAC
dewflower *Murdannia* spp. FAC
ditch stonecrop *Penthorum sedoides* OBL
dock *Rumex* spp. FACW
dog-fennel *Eupatorium capillifolium* FAC
dog-hobble *Leucothoe* spp. FACW
dogwood, silky *Cornus amomum* OBL
dogwood, swamp *Cornus foemina* FACW
dollarweed *Hydrocotyle* spp. FACW
doll's daisy *Boltonia* spp. FACW
dragon-head, false *Physostegia virginiana* FACW
dragon-head, Godfrey's *Physostegia godfreyi* OBL
dragon-head, purple *Physostegia purpurea* FACW
dragon-head, slender-leaf *Physostegia leptophylla* OBL
drymary *Drymaria cordata* FAC
duck potato *Sagittaria* spp. OBL
dwarf morning-glory, bindweed *Evolvulus convolvuloides* FACW
dwarf morning-glory, silver *Evolvulus sericeus* FACW
elder, American *Sambucus canadensis* FAC
elderberry *Sambucus canadensis* FAC
elephant's ear *Colocasia esculenta* OBL
elephant's ear *Xanthosoma sagittifolium* FACW
elm *Ulmus* spp. FACW
elm, slippery *Ulmus rubra* U
false buttonweed, smooth *Spermacoce glabra* FACW

false daisy *Eclipta alba* FACW
false indigo, bastard *Amorpha fruticosa* FACW
false-asphodel, coastal *Tofieldia racemosa* OBL
false-croton *Caperonia* spp. FACW
falsefennel *Eupatorium leptophyllum* OBL
false-fiddle-leaf *Hydrolea* spp. OBL
false-foxglove *Agalinis pinetorum* FACW
false-foxglove, flax-leaf *Agalinis linifolia* OBL
false-foxglove, large purple *Agalinis purpurea* FACW
false-foxglove, saltmarsh *Agalinis maritima* OBL
false-foxglove, scale-leaf *Agalinis aphylla* FACW
false-nettle *Boehmeria cylindrica* OBL
false-pimpernel *Lindernia* spp. FACW
false-pimpernel, Malayan *Lindernia crustacea* FAC
false-willow, broom-bush *Baccharis dioica* FAC
false-willow, eastern *Baccharis halimifolia* FAC
false-willow, saltwater *Baccharis angustifolia* OBL
feather-bells, eastern *Stenanthium gramineum* FACW

FERNS

bead fern *Hypolepis repens* FACW
Boston fern *Nephrolepis exaltata* FAC
brake, giant *Pteris tripartita* FACW
bramble fern, creeping *Hypolepis repens* FACW
chainfern, netted *Woodwardia aereolata* OBL
chainfern, Virginia *Woodwardia virginica* FACW
cinnamon fern *Osmunda cinnamomea* FACW
comb fern, brown-hair *Ctenitis submarginalis* FACW
lady fern, subarctic *Athyrium filix-femina* FACW
leather fern *Acrostichum* spp. OBL
maiden fern *Thelypteris* spp. FACW
marsh fern *Thelypteris* spp. FACW
royal fern *Osmunda regalis* OBL
sensitive fern *Onoclea sensibilis* FACW
shield fern *Thelypteris* spp. FACW
swamp fern *Blechnum serrulatum* FACW
sword fern *Nephrolepis* spp. FAC
wood fern, southern *Dryopteris ludoviciana* FACW

fetter-bush *Lyonia lucida* FACW
fetter-bush, climbing *Pieris phillyreifolia* FACW
fever-tree *Pinckneya bracteata* OBL
fig, Florida strangler *Ficus aurea* FAC
fire flag *Thalia geniculata* OBL
fireweed *Erechtites hieraciifolia* FAC
flameflower *Macranthera flammea* OBL
flattop goldenrod *Euthamia* spp. FAC
flax, Carter's *Linum carteri* FACW
flax, Florida yellow *Linum floridanum* FAC
flax, ridged yellow *Linum striatum* FACW
flax, stiff yellow *Linum medium* FAC
flax, West's *Linum westii* OBL
fleabane, early whitetop *Erigeron vernus* FACW

fleabane, oakleaf *Erigeron quercifolius* FAC
floating hearts *Nymphoides* spp. OBL
frogbit *Limnobium spongia* OBL
frog-fruit *Phyla* spp. FAC
frostweed *Verbesina virginica* FAC
gayfeather, garber's *Liatris garberi* FACW
gayfeather, slender *Liatris gracilis* FAC
gayfeather, spiked *Liatris spicata* FAC
gentian *Gentiana* spp. FACW
germander, American *Teucrium canadense* FACW
ginger *Hedychium coronarium* FACW
gingerlily, white *Hedychium coronarium* FACW
glasswort *Salicornia* spp. OBL
goat-weed *Scoparia dulcis* FAC
golden club *Orontium aquaticum* OBL
golden creeper *Ernodea littoralis* FAC
golden-crest *Lophiola americana* FACW
golden-rod, Elliott's *Solidago elliottii* OBL
golden-rod, leavenworth's *Solidago leavenworthii* FACW
golden-rod, marsh *Solidago fistulosa* FACW
golden-rod, rough-leaf *Solidago patula* OBL
golden-rod, seaside *Solidago sempervirens* FACW
golden-rod, willow-leaf *Solidago stricta* FACW
golden-rod, wrinkled *Solidago rugosa* FAC
grass-of-parnassus *Parnassia* spp. OBL
grasswort *Lilaeopsis* spp. OBL

GRASSES

arrowfeather grass *Aristida purpurascens* FACW
arrow-grass *Triglochin striatam* OBL
barnyardgrass *Echinochloa* spp. FACW
basketgrass *Oplismenus setarius* FAC
blue maidencane *Amphicarpum muhlenbergianum* FACW
bluestem *Schizachyrium* spp. FAC
bluestem, big *Andropogon gerardii* FAC
bluestem, broom-sedge *Andropogon virginicus* FAC
bluestem, bushy *Andropogon glomeratus* FACW
bluestem, Mohr's *Andropogon liebmanii var. pungensis (A. mohrii)* FACW
bluestem, savannah *Andropogon arctatus* FAC
bluestem, short-spike *Andropogon brachystachys* FAC
bluestem, slim *Andropogon perangustatus* FAC
bristlegrass *Setaria geniculata* FAC
broom-sedge *Andropogon virginicus* FAC
Burma reed *Neyraudia reynaudiana* FAC
carpet grass *Axonopus* spp. FAC
cockspur grass *Echinochloa* spp. FACW
common reed *Phragmites australis* OBL
cordgrass, big *Spartina cynosuroides* OBL
cordgrass, gulf *Spartina spartinae* OBL
cordgrass, saltmarsh *Spartina alterniflora* OBL
cordgrass, saltmeadow *Spartina patens* FACW
cordgrass, sand *Spartina bakeri* FACW

crabgrass, dwarf *Digitaria serotina* FAC
crabgrass, twospike *Digitaria pauciflora* FACW
cupgrass *Eriochloa* spp. FACW
cupscale, American *Sacciolepis striata* OBL
cupscale, Indian *Sacciolepis indica* FAC
cutgrass *Leersia* spp. OBL
cut-throat grass *Panicum abscissum* FACW
dallisgrass *Paspalum dilatatum* FAC
dropseed, Florida *Sporobolus floridanus* FACW
dropseed, seashore *Sporobolus virginicus* OBL
elephantgrass *Pennisetum purpureum* FAC
everglades grass *Digitaria pauciflora* FACW
fingergrass, pinewoods *Eustachys petraea* FAC
fingergrass, saltmarsh *Eustachys glauca* FACW
fluffgrass, pineland *Tridens ambiguus* FACW
foxtail, giant *Setaria magna* OBL
foxtail, knotroot *Setaria geniculata* FAC
foxtail, tufted *Alopecurus carolinianus* FAC
gamagrass, eastern *Tripsacum dactyloides* FAC
giant cane *Arundinaria gigantea* FACW
giant cutgrass *Zizaniopsis miliacea* OBL
giant reed *Arundo donax* FAC
hilograss *Paspalum conjugatum* FAC
indian rice *Zizania aquatica* OBL
jointgrass; jointtailgrass *Manisuris* spp. FACW
jointgrass, pitted *Manisuris cylindrica* FAC
jungle-rice *Echinochloa* spp. FACW
keygrass *Monanthochloe littoralis* OBL
kissimmeegrass *Paspalidium geminatum* OBL
knotgrass *Paspalum distichum* OBL
lovegrass *Eragrostis* spp. FAC
maidencane *Panicum hemitomon* OBL
mannagrass, fowl *Glyceria striata* OBL
muhly grass, hairawn *Muhlenbergia capillaris* OBL
muhly grass, nimblewill *Muhlenbergia schreberi* FACW
muhly, cutover *Muhlenbergia expansa* FAC
napiergrass *Pennisetum purpureum* FAC
needlegrass, Florida *Stipa avenacioides* FACW
panic grass, cypress *Panicum ensifolium* OBL
panicum, beaked *Panicum anceps* FAC
panicum, bluejoint *Panicum tenerum* OBL
panicum, Eaton's *Panicum spretum* FACW
panicum, fall *Panicum dichotomiflorum* FACW
panicum, fringed *Panicum strigosum* FAC
panicum, Ft Myers *Panicum pinetorum* FACW
panicum, gaping *Panicum hians* FAC
panicum, red-top *Panicum rigidulum* FACW
panicum, savannah *Panicum gymnocarpon* OBL
panicum, shining *Panicum dichotomum* FACW
panicum, tall thin *Panicum longifolium* OBL
panicum, variable *Panicum commutatum* FAC

panicum, velvet *Panicum scoparium* FACW
panicum, warty *Panicum verrucosum* FACW
panicum, white-edge *Panicum tenue* FAC
panicum, woolly *Panicum scabriusculum* OBL
paragrass *Brachiaria purpurascens* FACW
paspalum, brook *Paspalum acuminatum* FACW
paspalum, brown-seed *Paspalum plicatulum* FAC
paspalum, bull *Paspalum boscianum* FACW
paspalum, early *Paspalum praecox* OBL
paspalum, field *Paspalum laeve* FACW
paspalum, Florida *Paspalum floridanum* FACW
paspalum, gulf *Paspalum monostachyum* OBL
paspalum, hairy-seed *Paspalum pubiflorum* FACW
paspalum, joint *Paspalum distichum* OBL
paspalum, mudbank *Paspalum dissectum* OBL
paspalum, Panama *Paspalum fimbriatum* FAC
paspalum, sour *Paspalum conjugatum* FAC
paspalum, thin *Paspalum setaceum* FAC
paspalum, water *Paspalum repens* OBL
plumegrass, narrow *Erianthus strictus* OBL
plumegrass, short-beard *Erianthus brevibarbus* FACW
plumegrass, sugarcane *Erianthus giganteus* OBL
rabbit-foot grass *Polypogon* spp. FAC
redtop *Agrostis stolonifera* FACW
reed grass, Curtiss' *Calamovilfa curtissii* FACW
reimargrass, Florida *Reimarochloa oligostachya* FACW
rice, cultivated *Oryza sativa* FAC
saltgrass, seashore *Distichlis spicata* OBL
sandgrass, Curtiss' *Calamovilfa curtissii* FACW
silk reed *Neyraudia reynaudiana* FAC
silky-scale, purple *Anthaenantia rufa* FACW
spanglegrass *Chasmanthium* spp. FACW
spanglegrass, indian *Chasmanthium latifolium* FAC
spanglegrass, long-leaf *Chasmanthium sessiliflorum* FAC
switchcane *Arundinaria gigantea* FACW
switchgrass *Panicum virgatum* FACW
three-awn grass, bottlebrush *Aristida spiciformis* FAC
three-awn grass, long-leaf *Aristida affinis* OBL
three-awn grass, pineland *Aristida stricta* FAC
three-awn grass, rhizomatous *Aristida rhizomophora* FAC
three-awn grass, wand-like *Aristida purpurascens* FACW
toothache grass *Ctenium* spp. FACW
torpedograss *Panicum repens* FACW
tridens, long-spike *Tridens strictus* FACW
tridens, savannah *Tridens ambiguus* FACW
trompetilla *Hymenachne amplexicaulis* OBL
vaseygrass *Paspalum urvillei* FAC
watergrass *Hydrochloa caroliniensis* OBL
West Indian marsh grass *Hymenachne amplexicaulis* OBL
wildrice, annual *Zizania aquatica* OBL
wildrice, southern *Zizaniopsis miliacea* OBL

wiregrass *Aristida stricta* FAC
witchgrass, cypress *Panicum ensifolium* OBL
witchgrass, erect-leaf *Panicum erectifolium* OBL
witchgrass, roughhair *Panicum strigosum* FAC
witchgrass, shining *Panicum dichotomum* FACW
witchgrass, variable *Panicum commutatum* FAC
witchgrass, velvet *Panicum scoparium* FACW
witchgrass, woolly *Panicum scabriusculum* OBL
woodoats *Chasmanthium* spp. FACW
woodoats, indian *Chasmanthium latifolium* FAC
woodoats, long-leaf *Chasmanthium sessiliflorum* FAC
woodsgrass *Oplismenus setarius* FAC
green-dragon *Arisaema* spp. FACW
green-haw *Crataegus viridis* FACW
gregory wood *Bucida buceras* FAC
groundsel tree *Baccharis glomeruliflora* FAC
guava, strawberry *Psidium cattleianum* FAC
hackberry *Celtis laevigata* FACW
hardscale, one flower *Sclerolepis uniflora* FACW
Harper's beauty *Harperocallis flava* FACW
hartwrightia, Florida *Hartwrightia floridana* FACW
hatpin *Eriocaulon* spp. OBL
hatpins, yellow *Syngonanthus flavidulus* FACW
haw, green *Crataegus viridis* FACW
haw, may *Crataegus aestivalis* OBL
haw, parsley *Crataegus marshallii* FACW
hazel-alder *Alnus serrulata* OBL
hedgehyssop *Gratiola* spp. FACW
hedgehyssop, rough *Gratiola hispida* FAC
hedgenettle *Stachys lythroides* OBL
heliotrope, four-spike *Heliotropium procumbens* FACW
heliotrope, pineland *Heliotropium polyphyllum* FAC
heliotrope, seaside *Heliotropium curassavicum* FAC
hickory, water *Carya aquatica* OBL
hobble-bush *Agarista populifolia* FACW
holly, American *Ilex opaca var. opaca* FAC
holly, bay-gall *Ilex coriacea* FACW
holly, dahoon *Ilex cassine* OBL
holly, deciduous *Ilex decidua* FACW
holly, myrtle *Ilex myrtifolia* OBL
holly, sarvis *Ilex amelanchier* OBL
holly, yaupon *Ilex vomitoria* FAC
honeycomb-head, one-flower *Balduina uniflora* FACW
honeycomb-head, purple *Balduina atropurpurea* FACW
honey-locust *Gleditsia triacanthos* FACW
hornbeam, American *Carpinus caroliniana* FACW
hornpod *Mitreola* spp. FACW
horse-purslane *Trianthema portulacastrum* FACW
horsetail *Equisetum hyemale* FACW
huckleberry, dwarf *Gaylussacia dumosa* FAC
hummingbird-flower *Macranthera flammea* OBL

hygrophila *Hygrophila* spp. OBL
hyssop, hispid *Gratiola hispida* FAC
indian-plantain, egg-leaf *Arnoglossum ovatum* FACW
indian-plantain, Georgia *Arnoglossum sulcatum* OBL
indian-plantain, sweet-scent *Cacalia suaveolens* FACW
indian-plantain, variable-leaf *Arnoglossum diversifolium* FACW
indigoberry, white *Randia aculeata* FAC
indigo-bush *Amorpha fruticosa* FACW
iris *Iris* spp. OBL
iris, dwarf *Iris verna* U
ironweed *Vernonia* spp. FACW
ironweed, narrow-leaf *Vernonia angustifolia* U
ironwood *Carpinus caroliniana* FACW
ixia, Bartram's *Sphenostigma coelestinum* FACW
ixia, fall-flowering *Nemastylis floridana* FACW
jack-in-the-pulpit *Arisaema* spp. FACW
Java plum *Syzygium* spp. FAC
jessamine, day *Cestrum diurnum* FAC
jewel weed *Impatiens capensis* OBL
joe-pye-weed *Eupatoriadelphus fistulosus* FACW
Joewood *Jacquinia keyensis* FAC
joint-vetch, India *Aeschynomene indica* FACW
joint-vetch, meadow *Aeschynomene pratensis* OBL
joyweed, seaside *Alternanthera maritima* FACW
joyweed, sessile *Alternanthera sessilis* OBL
joyweed, smooth *Alternanthera paronychioides* FAC
jumpseed *Polygonum virginianum* FACW
juniperleaf *Polypremum procumbens* FAC
justiceweed *Eupatorium leucolepis* FACW
keygrass *Monanthochloe littoralis* OBL
lakecress *Armoracia aquatica* OBL
large gallberry *Ilex coriacea* FACW
latherleaf *Colubrina asiatica* FAC
leaf-flower, Carolina *Phyllanthus caroliniensis* FACW
leaf-flower, Florida *Phyllanthus liebmannianus* FACW
leaf-flower, water *Phyllanthus urinaria* FAC
lily, atamasco *Zephyranthes atamasco* FACW
lily, panhandle *Lilium iridollae* OBL
lily, southern red *Lilium catesbaei* FAC
lizard's tail *Saururus cernuus* OBL
lobelia *Lobelia* spp. FACW
lobelia, Florida *Lobelia floridana* OBL
loblolly-bay *Gordonia lasianthus* FACW
locust-berry *Byrsonima lucida* FAC
loosestrife *Lysimachia* spp. OBL
loosestrife, marsh *Lythrum* spp. OBL
lotus, American *Nelumbo* spp. OBL
magnolia, sweetbay *Magnolia virginiana var. australis* OBL
Malabar plum *Syzygium* spp. FAC
maleberry *Lyonia ligustrina* FAC
mallow, coastal *Kosteletzkya pentasperma* FAC

mallow, mangrove *Pavonia spicata* FACW
mallow, seashore *Kosteletzkya virginica* OBL
mangrove, black *Avicennia germinans* OBL
mangrove, red *Rhizophora mangle* OBL
mangrove, white *Laguncularia racemosa* OBL
maple, red *Acer rubrum* FACW
maple, silver *Acer saccharinum* OBL
marlberry *Ardisia* spp. FAC
marsh elder *Iva frutescens* OBL
marsh elder, little *Iva microcephala* FACW
marsh loosestrife *Lythrum* spp. OBL
marsh St. John's-wort *Triadenum* spp. OBL
marsh-gentian *Eustoma exaltatum* FACW
marshpennywort *Hydrocotyle* spp. FACW
marshweed *Limnophila* spp. OBL
mayhaw *Crataegus aestivalis* OBL
mayten, Florida *Maytenus phyllanthoides* FAC
meadow-beauty *Rhexia* spp. FACW
meadow-beauty, panhandle *Rhexia salicifolia* OBL
meadow-beauty, white *Rhexia parviflora* OBL
meadow-rue *Thalictrum* spp. FACW
melonleaf, five-lobe *Cayaponia quinqueloba* FAC
mermaid-weed *Proserpinaca* spp. OBL
milkweed, aquatic *Asclepias perennis* OBL
milkweed, fen-flower *Asclepias lanceolata* OBL
milkweed, large-flower *Asclepias connivens* FACW
milkweed, long-leaf *Asclepias longifolia* FACW
milkweed, red *Asclepias rubra* OBL
milkweed, savannah *Asclepias pedicellata* FACW
milkweed, southern *Asclepias viridula* FACW
milkweed, swamp *Asclepias incarnata* OBL
milkwort *Polygala* spp. FACW
milkwort, racemed *Polygala polygama* U
milkwort, sandhill *Polygala leptostachys* U
milkwort, scrub *Polygala lewtonii* U
milkwort, tall *Polygala cymosa* OBL
milkwort, whorled *Polygala verticillata* U
mille graines *Oldenlandia* spp. FACW
mimosa, black *Mimosa pigra* FAC
mistflower *Conoclinium coelestinum* FAC
miterwort *Mitreola* spp. FACW
mock bishop-weed *Ptilimnium capillaceum* FACW
monkey-flower *Mimulus alatus* OBL
mountain-laurel *Kalmia latifolia* FACW
mountain-mint, coastal-plain *Pycnanthemum nudum* FACW
mouse-tail, tiny *Myosurus minimus* FAC
mudflower *Micranthemum* spp. OBL
mud-plantain, kidney-leaf *Heteranthera reniformis* OBL
mudwort, wild *Dicliptera brachiata* FACW
mulberry, red *Morus rubra* FAC
musclewood *Carpinus caroliniana* FACW

musky mint *Hyptis alata* FACW
myrsine, guiana *Myrsine guianensis* FAC
nakedwood, Asian *Colubrina asiatica* FAC
necklacepod, yellow *Sophora tomentosa* FACW
nettletree *Trema* spp. FAC
neverwet *Orontium aquaticum* OBL
nightshade, Bahama *Solanum bahamense* FACW
nightshade, shrub *Solanum erianthum* FACW
nodding nixie *Apteria aphylla* FACW
oak, cherry-bark *Quercus pagoda* FACW
oak, laurel *Quercus laurifolia* FACW
oak, overcup *Quercus lyrata* OBL
oak, swamp chestnut *Quercus michauxii* FACW
oak, water *Quercus nigra* FACW
oak, willow *Quercus phellos* FACW
obedient plant *Physostegia virginiana* FACW

ORCHIDS

adder's-mouth, Florida *Malaxis spicata* OBL
fringed orchid *Platanthera* spp. OBL
grass-pinks *Calopogon* spp. FACW
hidden orchid *Maxillaria crassifolia* OBL
jug orchid *Erythrodes querceticola* FACW
ladies'-tresses *Spiranthes* spp. FACW
liparis, tall *Liparis elata* OBL
noddingcaps *Triphora* spp. FACW
pogonia, rose *Pogonia ophioglossoides* OBL
pogonias, nodding *Triphora* spp. FACW
rein orchid *Habenaria* spp. FACW
rosebud orchid *Cleistes divaricata* OBL
shadow-witch *Ponthieva racemosa* FACW
snakemouth orchid *Pogonia ophioglossoides* OBL
twayblade *Listera* spp. FACW
widelip orchid *Liparis elata* OBL
wild coco *Eulophia alta* FACW
ox-eye, creeping *Wedelia trilobata* FAC
oxeye, seaside *Borrichia* spp. OBL

PALMS

palm, bluestem *Sabal minor* FACW
palm, cabbage *Sabal palmetto* FAC
palm, Florida thatch *Thrinax radiata* FAC
palm, needle *Rhapidophyllum hystrix* FACW
palm, paurotis *Acoelorraphe wrightii* OBL
palm, royal *Roystonea* spp. FACW
palmetto, dwarf *Sabal minor* FACW
panal *Cypselea humifusa* FAC
paperbark tree *Melaleuca quinquenervia* FAC
parsley-haw *Crataegus marshallii* FACW
peatmoss *Sphagnum* spp. OBL
pellitory *Parietaria* spp. FAC
pennywort *Hydrocotyle* spp. FACW
penny-wort, floating *Hydrocotyle ranunculoides* OBL

pentodon, Hall's *Pentodon pentandrus* OBL
persimmon, common *Diospyros virginiana* FAC
pickerelweed *Pontederia cordata* OBL
picklewort *Salicornia* spp. OBL
pimpernel, Florida *Anagallis pumila* FAC
pimpernel, water *Samolus* spp. OBL
pine, pond *Pinus serotina* FACW
pine, spruce *Pinus glabra* FACW
pineland daisy *Chaptalia tomentosa* FACW
pineweed *Hypericum gentianoides* U
pink-root *Spigelia loganioides* FACW
pipestem *Agarista populifolia* FACW
pipewort *Eriocaulon* spp. OBL
pitcher-plant *Sarracenia* spp. OBL
pitcher-plant, hooded *Sarracenia minor* FACW
planer tree *Planera aquatica* OBL
planetree, American *Platanus occidentalis* FACW
pleatleaf, fall-flowering *Nemastylis floridana* FACW
poison sumac *Toxicodendron vernix* FACW
poisonwood *Metopium toxiferum* FAC
pond apple *Annona glabra* OBL
pondberry *Lindera melissaefolia* OBL
pondlily, yellow *Nuphar luteum* OBL
pondspice *Litsea aestivalis* OBL
pony-foot *Dichondra caroliniensis* FAC
popcorn tree *Sapium sebiferum* FAC
portia tree *Thespesia populnea* FAC
possum-haw *Viburnum nudum* FACW
potatotree *Solanum erianthum* FACW
prairie-gentian *Eustoma exaltatum* FACW
pride-of-Big-Pine *Strumpfia maritima* FACW
primrosewillow *Ludwigia* spp. OBL
privet, swamp *Forestiera acuminata* FACW
punk tree *Melaleuca quinquenervia* FAC
queen's-delight, marsh *Stillingia sylvatica var. tenuis* FAC
quillwort *Isoetes* spp. OBL
ragwort, golden *Senecio aureus* OBL
rainlily *Zephyranthes atamasco* FACW
raspberry *Rubus* spp. FAC
rattlebox; rattle-bush *Sesbania* spp. FAC
rattlesnake master *Eryngium yuccifolium* FACW
rayless golden-rod *Bigelowia nudata* FACW
redgal *Morinda royoc* FACW
redroot *Lachnanthes caroliniana* FAC
redstem *Ammannia* spp. OBL
rose myrtle, downy *Rhodomyrtus tomentosus* FAC
rose, swamp *Rosa palustris* OBL
rose-apple *Syzygium* spp. FAC
rose-gentian *Sabatia* spp. FACW
rose-gentian, Bartram's *Sabatia bartramii* OBL
rose-gentian, coast *Sabatia calycina* OBL

rose-gentian, large *Sabatia dodecandra* OBL
rosemallow *Hibiscus aculeatus* FACW
rosemallow, crimson-eyed *Hibiscus moscheutos* OBL
rosemallow, halberd-leaf *Hibiscus laevis* OBL
rosemallow, scarlet *Hibiscus coccineus* OBL
rosemallow, sea *Hibiscus tiliaceus* FAC
rosemallow, swamp *Hibiscus grandiflorus* OBL
rush *Juncus* spp. OBL
rush, grassleaf *Juncus marginatus* FACW
rush, path *Juncus tenuis* FAC
rush, shore *Juncus marginatus* FACW
rush-featherling *Pleea tenuifolia* OBL
rustweed *Polypremum procumbens* FAC
sachsia *Sachsia polycephala* FACW
saffron plum *Bumelia celastrina* FAC
saltbush *Baccharis halimifolia* FAC
saltbush, halberd-leaf *Atriplex patula* FACW
saltwort *Batis maritima* OBL
sandmat, spreading *Euphorbia humistrata* FACW
sandspurry, saltmarsh *Spergularia marina* OBL
sandwort, Godfrey's *Arenaria godfreyi* FACW
savory, Brown's *Micromeria brownei* OBL
sawgrass *Cladium* spp. OBL
scaly-stem, Carolina *Elytraria caroliniensis* FAC
scouring-rush *Equisetum hyemale* FACW
screwstem *Bartonia* spp. FACW
sea myrtle *Baccharis halimifolia* FAC
sea oxeye *Borrichia* spp. OBL
sea-blite *Suaeda* spp. OBL
sea-lavender *Limonium carolinianum* OBL
sea-purslane *Sesuvium* spp. FACW
seaside mahoe *Thespesia populnea* FAC
sebastian-bush, gulf *Sebastiana fruticosa* FAC

SEDGES

baldrush *Psilocarya* spp. OBL
beakrush *Rhynchospora* spp. FACW
beakrush, Chapman's *Rhynchospora chapmanii* OBL
beakrush, clustered *Rhynchospora cephalantha* OBL
beakrush, few-flower *Rhynchospora oligantha* OBL
beakrush, giant-fruited *Rhynchospora megalocarpa* U
beakrush, Gray's *Rhynchospora grayi* U
beakrush, Harper's *Rhynchospora harperi* OBL
beakrush, horned *Rhynchospora inundata* OBL
beakrush, large *Rhynchospora macra* OBL
beakrush, millet *Rhynchospora miliacea* OBL
beakrush, mingled *Rhynchospora mixta* OBL
beakrush, narrow *Rhynchospora stenophylla* OBL
beakrush, pinebarren *Rhynchospora intermedia* U
beakrush, short-bristle *Rhynchospora corniculata* OBL
beakrush, southern *Rhynchospora microcarpa* OBL
beakrush, spreading *Rhynchospora divergens* OBL

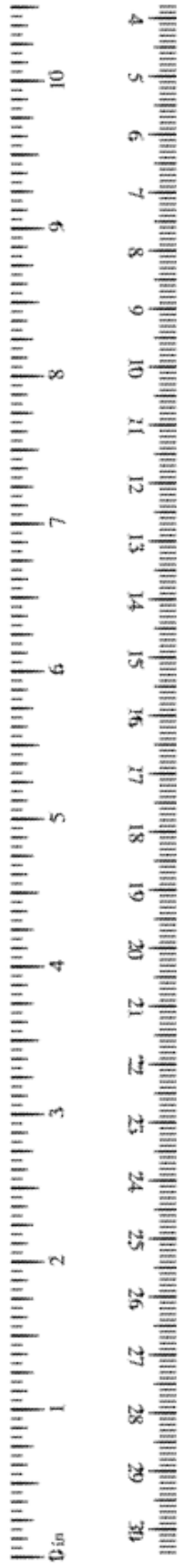
beakrush, swamp-forest *Rhynchospora decurrens* OBL
beakrush, Tracy's *Rhynchospora tracyi* OBL
black-sedge *Schoenus nigricans* FACW
bogrush, black *Schoenus nigricans* FACW
bulrush *Scirpus* spp. OBL
dwarf-bulrush *Hemicarpha* spp. FACW
fimbry *Fimbristylis* spp. OBL
fimbry, annual *Fimbristylis annua* FACW
fimbry, hairy *Fimbristylis puberula* FACW
flatsedge *Cyperus* spp. FACW
flatsedge, alternate-leaf *Cyperus alternifolius* OBL
flatsedge, Asian *Cyperus metzii* FAC
flatsedge, baldwin *Cyperus globulosus* FAC
flatsedge, bentawn *Cyperus reflexus* U
flatsedge, black *Cyperus huarmensis* FAC
flatsedge, coastal-plain *Cyperus cuspidatus* FAC
flatsedge, Drummond's *Cyperus drummondii* OBL
flatsedge, epiphytic *Cyperus lanceolatus* OBL
flatsedge, giant *Cyperus giganteus* FAC
flatsedge, globe *Cyperus ovularis* U
flatsedge, hammock *Cyperus tetragonus* U
flatsedge, jointed *Cyperus articulatus* OBL
flatsedge, marshland *Cyperus distinctus* OBL
flatsedge, papyrus *Cyperus papyrus* OBL
flatsedge, pinebarrenf *Cyperus retrorsus* FAC
flatsedge, purple *Cyperus rotundus* FAC
flatsedge, red-root *Cyperus erythrorhizos* OBL
flatsedge, rough *Cyperus retrofractus* U
flatsedge, sandhill *Cyperus filiculmis* U
flatsedge, sheathed *Cyperus haspan* OBL
flatsedge, variable *Cyperus difformis* OBL
flatsedge, woodrush *Cyperus entrerianus* OBL
flatsedge, yellow *Cyperus esculentus* FAC
flatspike rush *Abildgaardia ovata* FACW
fringe-rush *Fimbristylis* spp. OBL
fringe-rush, annual *Fimbristylis annua* FACW
fringe-rush, Vahl's *Fimbristylis puberula* FACW
halfchaff sedge *Lipocarpha* spp. FACW
hurricane-grass *Fimbristylis spathacea* FAC
nut-grass, purple *Cyperus rotundus* FAC
nut-grass, yellow *Cyperus esculentus* FAC
nutrush *Scleria* spp. FACW
sedge *Carex* spp. FACW
sedge, bearded *Carex comosa* OBL
sedge, bristly-stalk *Carex leptalea* OBL
sedge, cypress-knee *Carex decomposita* OBL
sedge, Elliott's *Carex elliottii* OBL
sedge, fringed *Carex crinita* OBL
sedge, hop *Carex lupulina* OBL
sedge, Howe's *Carex howei* OBL
sedge, large *Carex gigantea* OBL

sedge, long *Carex folliculata* OBL
sedge, Louisiana *Carex louisianica* OBL
sedge, prickly bog *Carex atlantica* OBL
sedge, raven-foot *Carex crus-corvi* OBL
sedge, shallow *Carex lurida* OBL
sedge, shoreline *Carex hyalinolepis* OBL
sedge, stalk-grain *Carex stipata* OBL
sedge, Walter's *Carex walteriana* OBL
spikerush *Eleocharis* spp. OBL
three-way sedge *Dulichium arundinaceum* OBL
umbrella-sedge *Fuirena* spp. OBL
white-top sedge, Everglades *Dichromena floridensis* FACW
white-top sedge, giant *Dichromena latifolia* OBL
white-top sedge, starbrush *Dichromena colorata* FACW
seedbox *Ludwigia* spp. OBL
seedbox, hairy *Ludwigia hirtella* FACW
seedbox, headed *Ludwigia suffruticosa* FACW
seedbox, savanna *Ludwigia virgata* FACW
seedbox, seaside *Ludwigia maritima* FACW
seepweed *Suaeda* spp. OBL
seven-sisters *Crinum americanum* OBL
shaggytuft *Stenandrium floridanum* FACW
she-oak *Casuarina* spp. FAC
shrimp plant *Justicia brandegeana* U
silver-bell *Halesia diptera* FACW
silverhead *Philoxerus vermicularis* FACW
silverling *Baccharis glomeruliflora* FAC
skullcap, blue *Scutellaria lateriflora* OBL
skullcap, Florida *Scutellaria floridana* FAC
skullcap, rough *Scutellaria integrifolia* FAC
skullcap, South American *Scutellaria racemosa* OBL
skyflower *Hydrolea* spp. OBL
slimpod, eastern *Amsonia tabernaemontana* FACW
slimpod, stiff *Amsonia rigida* FACW
smartweed *Polygonum* spp. OBL
smartweed, silversheath *Polygonum argyrocoleon* U
smooth chaff-flower *Alternanthera paronychioides* FAC
snakeherb, swamp *Dyschoriste humistrata* FACW
snakeroot, corn *Eryngium aquaticum* OBL
snakewood, Asian *Colubrina asiatica* FAC
sneezeweed *Helenium* spp. FACW
sneezeweed, pasture *Helenium amarum* FAC
snowbell *Styrax americana* OBL
snowberry *Chiococca* spp. FAC
spadeleaf *Centella asiatica* FACW
Spanish needles *Bidens bipinnata* U
spatterdock *Nuphar luteum* OBL
speedwell, water *Veronica anagallis-aquatica* OBL
sphagnum moss *Sphagnum* spp. OBL
spicebush, northern *Lindera benzoin* FACW
spicebush, southern *Lindera melissaefolia* OBL

spider-lily *Hymenocallis* spp. OBL
spiderwort, trailing *Tradescantia fluminensis* FAC
spike-moss, meadow *Selaginella apoda* FACW
spindle-root *Ludwigia hirtella* FACW
spoon flower *Peltandra* spp. OBL
spotflower, creeping *Spilanthes americana* FACW
sprangle-top *Leptochloa* spp. FACW
sprangle-top, tropic *Leptochloa virgata* FAC
spring-cress *Cardamine pensylvanica* OBL
spurge, Florida *Euphorbia inundata* FACW
spurge, many-leaved *Euphorbia polyphylla* FACW
squarestem *Melanthera nivea* FACW
St. Andrew's cross *Hypericum hypericoides* FAC
St. John's-wort *Hypericum* spp. FACW
St. John's-wort, Atlantic *Hypericum reductum* U
St. John's-wort, Carolina *Hypericum nitidum* OBL
St. John's-wort, Chapman's *Hypericum chapmanii* OBL
St. John's-wort, dotted *Hypericum punctatum* U
St. John's-wort, Drummond's *Hypericum drummondii* U
St. John's-wort, Edison's *Hypericum edisonianum* OBL
St. John's-wort, four-petal *Hypericum tetrapetalum* FAC
St. John's-wort, marsh *Triadenum* spp. OBL
St. John's-wort, peelbark *Hypericum fasciculatum* OBL
St. John's-wort, scrub *Hypericum cumulicola* U
St. John's-wort, shrubby *Hypericum prolificum* U
St. John's-wort, small-sepal *Hypericum microsepalum* U
St. John's-wort, smooth-bark *Hypericum lissophloeus* OBL
St. John's Susan *Rudbeckia nitida* FACW
staggerbush, piedmont *Lyonia mariana* FACW
stargrasses, yellow *Hypoxis* spp. FACW
stitchwort, Godfrey's *Arenaria godfreyi* FACW
Stoke's aster *Stokesia laevis* FACW
storax *Styrax americana* OBL
string-lily *Crinum americanum* OBL
stripeseed *Piriqueta caroliniana* FAC
sugar-berry *Celtis laevigata* FACW
sumpweed, bigleaf *Iva frutescens* OBL
sunbonnet *Chaptalia tomentosa* FACW
sundew, dwarf *Drosera brevifolia* FACW
sundew, Gulf coast *Drosera tracyi* OBL
sundew, pink *Drosera capillaris* FACW
sundew, spoon-leaf *Drosera intermedia* OBL
sundew, thread-leaf *Drosera filiformis* OBL
sunflower, Florida *Helianthus floridanus* FAC
sunflower, lakeside *Helianthus carnosus* FACW
sunflower, muck *Helianthus simulans* FACW
sunflower, southeastern *Helianthus agrestis* FACW
sunflower, swamp *Helianthus angustifolius* FACW
sunflower, wetland *Helianthus heterophyllus* FACW
sunny bells, white *Schoenolirion elliottii* FACW
sunny bells, yellow *Schoenolirion croceum* FACW

swamp-lily, southern *Crinum americanum* OBL
swamp-loosestrife *Decodon verticillatus* OBL
swampprivet, eastern *Forestiera acuminata* FACW
swampprivet, Florida *Forestiera segregata* FAC
swampweed *Hygrophila* spp. OBL
sweet broom *Scoparia dulcis* FAC
sweet pepper bush *Clethra alnifolia* FACW
sweetbay *Magnolia virginiana var. australis* OBL
sweetgum *Liquidambar styraciflua* FACW
sycamore, American *Platanus occidentalis* FACW
tallow-tree, Chinese *Sapium sebiferum* FAC
thistle, Leconte's *Cirsium lecontei* FACW
thistle, Nuttall's *Cirsium nuttallii* FACW
thistle, swamp *Cirsium muticum* OBL
thoroughwort, marsh *Eupatorium leptophyllum* OBL
thoroughwort, semaphore *Eupatorium mikanioides* FACW
thoroughwort, white-bract *Eupatorium leucolepis* FACW
thoroughworts *Eupatorium* spp. FAC
tickseed, ciliate-leaf *Coreopsis integrifolia* FACW
tickseed, Florida *Coreopsis floridana* FACW
tickseed, Georgia *Coreopsis nudata* OBL
tickseed, Leavenworth's *Coreopsis leavenworthii* FACW
tickseed, sickle *Coreopsis falcata* FACW
tickseed, southeastern *Coreopsis gladiata* FACW
tickseed, tall *Coreopsis tripteris* FAC
tickseed, Texas *Coreopsis linifolia* FACW
titi, black *Cliftonia monophylla* FACW
titi, swamp *Cyrilla racemiflora* FAC
toothcup *Ammannia* spp. OBL
toothcup *Rotala ramosior* OBL
torchwood, black *Erithalis fruticosa* FAC
touch-me-not, spotted *Impatiens capensis* OBL
trema *Trema* spp. FAC
tulip tree *Liriodendron tulipifera* FACW
tupelo, ogeechee *Nyssa ogeche* OBL
tupelo, swamp *Nyssa sylvatica var. biflora* OBL
tupelo, water *Nyssa aquatica* OBL
turtleweed *Batis maritima* OBL
twinflower, swamp *Dyschoriste humistrata* FACW
vanillaleaf; vanilla plant *Carphephorus odoratissimus* FAC
Venus' flytrap *Dionaea muscipula* FACW
vervain, sandpaper *Verbena scabra* FACW
vetch, Florida *Vicia floridana* FACW
vetch, four-leaf *Vicia acutifolia* FACW
vetch, Ocala *Vicia ocalensis* OBL
viburnum, possum-haw *Viburnum nudum* FACW
viburnum, walter *Viburnum obovatum* FACW
violet, edible *Viola esculenta* FACW
violet, lance-leaf *Viola lanceolata* OBL
violet, Leconte's *Viola affinis* FACW
violet, primrose-leaf *Viola primulifolia* FACW

Virginia willow *Itea virginica* OBL
water drop-wort *Oxypolis* spp. OBL
water snowflake *Nymphoides* spp. OBL
water-cress *Nasturtium* spp. OBL
water-elm *Planera aquatica* OBL
water-hemlock *Cicuta* spp. OBL
water-hoarhound *Lycopus* spp. OBL
water-hyssop *Bacopa* spp. OBL
water-lily *Nymphaea* spp. OBL
water-locust *Gleditsia aquatica* OBL
water-lotus *Nelumbo* spp. OBL
water-meal *Websteria confervoides* OBL
water-parsnip *Sium suave* OBL
water-plantain, subcordate *Alisma subcordatum* OBL
waterpod *Hydrolea* spp. OBL
water-poppy *Hydrocleis nymphoides* OBL
water-primrose *Ludwigia* spp. OBL
water-starwort *Callitriche* spp. OBL
water-willow *Justicia* spp. OBL
wax myrtle *Myrica cerifera* FAC
waxweed, Columbia *Cuphea carthagenensis* FAC
waxweed, common *Cuphea aspera* FACW
wedgescale, swamp *Sphenopholis pensylvanica* OBL
white-cedar, Atlantic *Chamaecyparis thyoides* OBL
whitenymph *Trepocarpus aethusae* FACW
wild coffee *Psychotria* spp. FAC
wild corndog *Typha* spp. OBL
wild dilly *Manilkara bahamensis* FAC
wild petunia *Ruellia caroliniensis* FAC
wild taro *Colocasia esculenta* OBL
wild-petunia, Britton's *Ruellia brittoniana* FAC
wild-petunia, night-flowering *Ruellia noctiflora* FACW
willow *Salix* spp. OBL
winterberry *Ilex verticillata* OBL
witch-alder, dwarf *Fothergilla gardenii* FACW
wood-nettle, Canada *Laportea canadensis* FACW
wood-sage *Teucrium canadense* FACW
woolly-berry *Gaylussacia mosieri* FACW
yellow stargrasses *Hypoxis* spp. FACW
yellow-cress *Rorippa* spp. OBL
yellow-eyed grass *Xyris* spp. OBL
yellow-eyed-grass, Carolina *Xyris caroliniana* FACW
yellow-eyed-grass, Richard's *Xyris jupicai* FACW
yellow-poplar *Liriodendron tulipifera* FACW
yellow-root, shrubby *Xanthorhiza simplicissima* FACW
yellowtop, clustered *Flaveria trinervia* FAC
yellowtop, coastalplain *Flaveria bidentis* FAC
yellowtop, Florida *Flaveria floridana* FACW
yellowtop, narrowleaf *Flaveria linearis* FACW
yerba de Tajo *Eclipta alba* FACW



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.

FDEP Chapter 62-340, F.A.C. Data Form
FDEP Data Form Guide
Sharpshooter Shovel (minimum soil examination of 20 inch+)
Munsell Soil Color Charts
Hand Lens (10x-15x)
Soil survey map for inspection area
Soil knife
Spray bottle (misting)
Tape measure
Compass
Camera (not a personal phone)

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

Appropriate plant identification manuals
Appropriate soil information documents
A copy of Chapter 62-340, F.A.C.
Florida Wetlands Delineation Manual
Towel
Pens and pencils
Permanent Markers
GPS Units
Flagging tape
Pin flags
4-foot level
Line level and string
Extra camera batteries
First Aid
Sunscreen
Insect Repellent
Plant presses
Auger
Waterproof equipment case