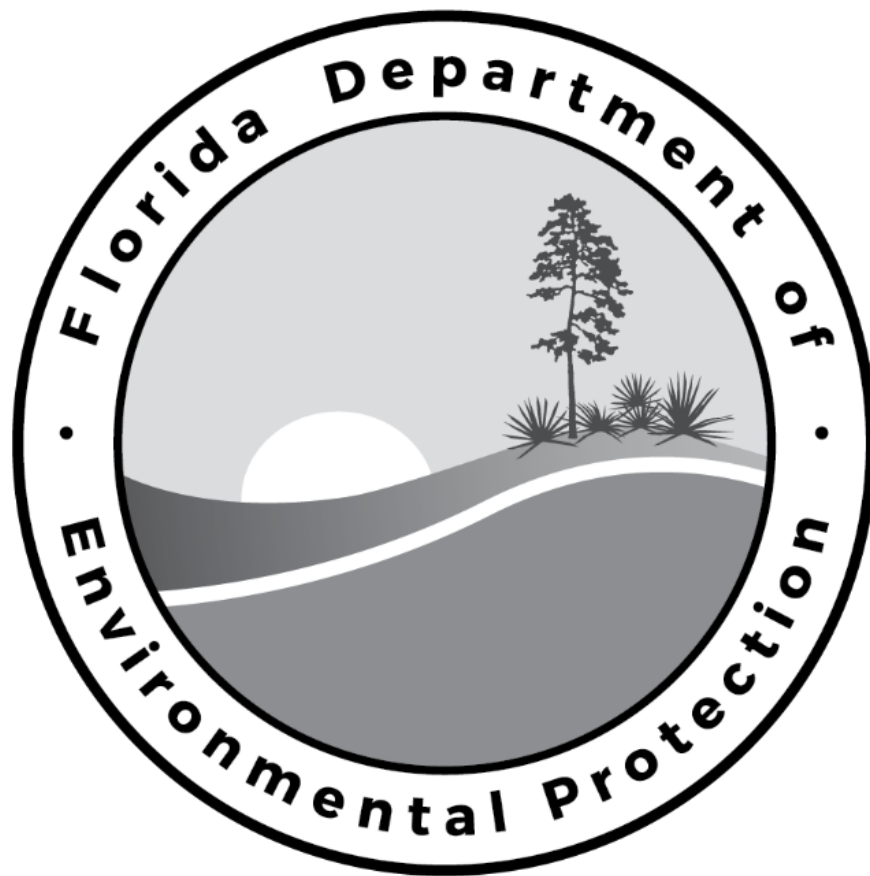


# Chapter 62-340, F.A.C. Data Form Guide

Wetland and Other Surface Water Delineation  
Version: August 2017 ©



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

## 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  
*Acoelorrhaphe 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* tidemarsch 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  
*Anthraenantia 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 elliotii* 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  
*Bigelovia 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  
*Calyocarpum 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 elliotii* 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 elliotii* 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  
*Limnobiium 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 hemitomom* 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 elliotii* 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 elliotii* 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.
- 62-340.200 Definitions.
- 62-340.300 Delineation.
- 62-340.400 Selection of Appropriate Vegetative Stratum.
- 62-340.450 Vegetative Index.
- 62-340.500 Hydrologic Indicators.
- 62-340.550 Wetland Hydrology.
- 62-340.600 Surface Waters.
- 62-340.700 Exemptions for Treatment or Disposal Systems.
- 62-340.750 Exemption for Surface Waters or Wetlands Created by Mosquito Control Activities.

**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 areal 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 8.1, 2017:**

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

## **SOIL AND WATER RELATIONSHIPS OF FLORIDA'S ECOLOGICAL COMMUNITIES**

July, 1992 Adapted

### **Field Identification of Hydric Soils**

#### **Hydric Soil Indicator Concept**

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

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

#### **Hydric Soil Indicator Identification Procedure**

To document a hydric soil, dig a hole and describe the soil profile to a depth of approximately 50 cm (20 inches). Using the completed soil description specify which of the Hydric Soil Indicators have been matched. Deeper examination of soil may be required where Hydric Soil Indicators are not easily seen within 50 cm (20 in.) of the surface. It is always recommended that soils be excavated and described as deep as necessary to make reliable interpretations. Examination to less than 50 cm (20 in.) may suffice in soils with surface horizons of organic material or mucky mineral material because these shallow organic accumulations only occur in hydric soils. Depths used in are measured from the muck or mineral soil surface unless otherwise indicated. All colors refer to moist Munsell colors.

### **Estimating Seasonal High Saturation**

#### **Introduction**

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

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

#### **Field Identification of SHWT**

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

## Procedure

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

1. Soils with the following hydric soil indicators have SHWT at or above the surface:  
A1 (Histosol or Histel), A2 (Histic Epipedon), A3 (Black Histic), A4 (Hydrogen Sulfide), A7 (5 cm Mucky Mineral), A8 (Muck Presence) or A9 (1 cm Muck), S4 (Sandy Gleyed Matrix), and F2 (Loamy Gleyed Matrix).
2. Soils with the following hydric soil indicators have SHWT within 6 inches of the surface:  
A5 (Stratified Layers), A6 (Organic Bodies), A11 (Depleted Below Dark Surface), A12 (Thick Dark Surface), S5 (Sandy Redox), S6 (Stripped Matrix), S7 (Dark Surface), S8 (Polyvalue Below Surface), S9 (Thin Dark Surface), F10 (Marl), and F13 (Umbric Surface).  
Depth to SHWT is the depth at which all requirements of a particular indicator are met. For example, if S6 (Stripped Matrix) starts at 4 inches, depth to SHWT is 4 inches or if S7 (Dark Surface) starts at the soil surface, depth to SHWT is the soil surface.
3. Soils with the following hydric soil indicators have SHWT within 12 inches of the surface:  
F3 (Depleted Matrix), F6 (Redox Dark Surface), and F7 (Depleted Dark Surface). Depth to SHWT is the depth at which all requirements of a particular indicator are met.  
For example, if F3 (Depleted Matrix) starts at 8 inches, depth to SHWT is 8 inches.
4. Soils with the following hydric soil indicators lack significant saturation but are inundated for long or very long duration:  
F8 (Redox Depressions) and F12 (Iron/Manganese Masses).

---

### **Data Form Guide Note:**

**A stand alone D Test soil field indicator is both a hydric soil field indicator and a hydrologic indicator.**

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

**A1 – Histosol or Histel**

**A2 – Histic Epipedon**

**A3 – Black Histic**

**A4 – Hydrogen Sulfide**

**A7 – 5 cm Mucky Mineral**

**A8 – Muck Presence**

**A9 – 1 cm Muck**

**S4 – Sandy Gleyed Matrix**

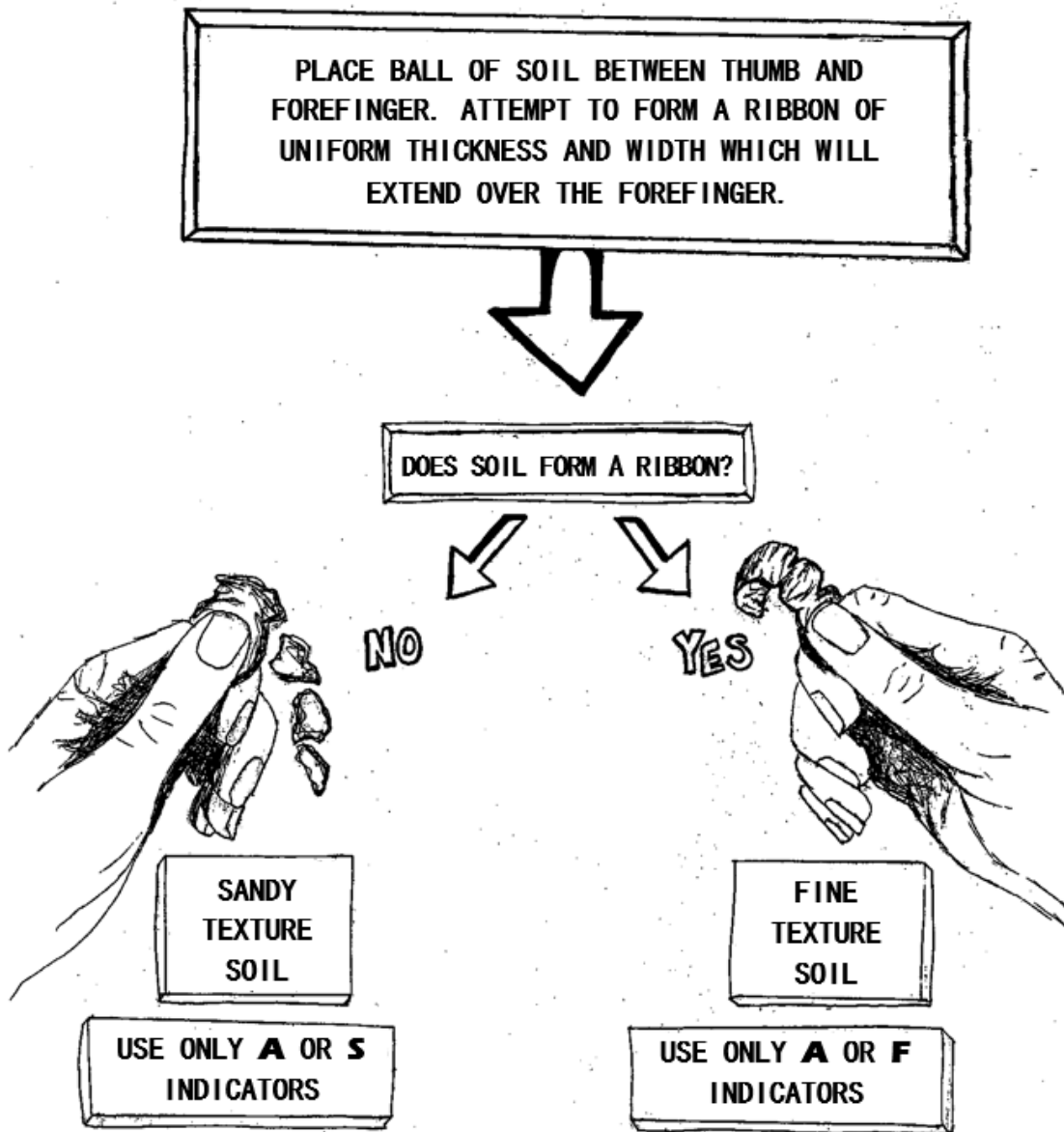
**F2 – Loamy Gleyed Matrix**

**Or any NRCS hydric soil field indicator in which all requirements of that indicator are met starting at the soil surface (see 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



---

## Soil Textures and Their Hydric Soil Indicator Prefix Designations:

**A - All texture soils** “All soils” refers to soils with any USDA soil texture, including muck, mucky peat, and peat

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

**F - Fine texture soils (soils that will ribbon)** “Loamy and clayey soils” refers to those soils with USDA soil texture of loamy very fine sand and finer, and does not include muck, mucky peat, or peat.

## 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.

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

# of Rubs	Feeling	Texture
≤ 2	Gritty	Sandy Mineral <sup>1</sup>
2	Greasy	<i>Continue to next rows</i>
3 to ≤ 5	Gritty	Sandy Mucky Mineral <sup>1</sup>
3 to ≤ 5	Plastic <sup>2</sup>	Check % Organic Carbon <sup>3</sup> to determine if Fine Mineral <sup>1</sup> or Fine Mucky Mineral <sup>1</sup>
5	Greasy	Muck <sup>1</sup>

<sup>2</sup> Plastic: able to be molded or deformed into various shapes by moderate pressure

<sup>3</sup> Sufficiency of organic carbon\* can be approximated using the “Color Test”<sup>4</sup>  
\*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 <sup>5</sup>	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)

<sup>5</sup> Live roots are not considered

## Tips for Approximating Composition of Soil

### “Decant Tests”

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

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

#### <sup>4</sup>“Color Test”

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

Black/Brown  
↓  
Organic Material

Gray/Cloudy  
↓  
Clay and/or Silt

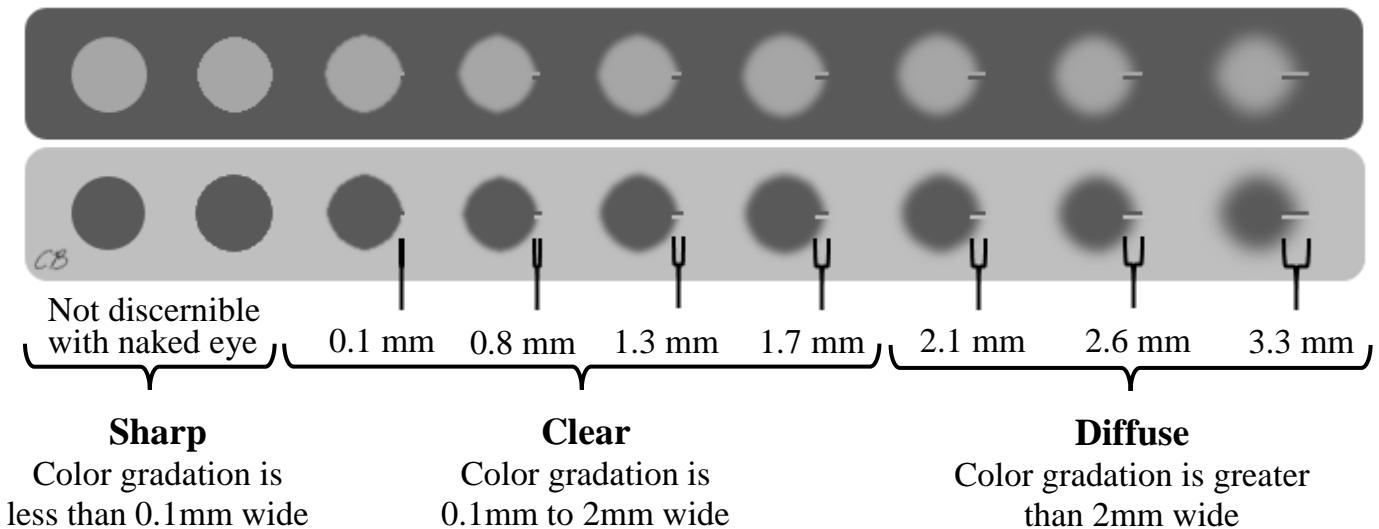
#### “Sand Content Test”

Gently decant liquid solution while keeping solid material in palm.

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

Spread remaining soil material across palm. Compare amount of sand in relation to original pea sized clump, considering relative loss of fine soil material (clay and silt) indicated by the “Color Test”, to approximate organic vs. mineral (sand, silt, clay) content. See Fig. 7 pg. 60 for dry weight soil texture ratio requirements.

## Tips for Determining Boundary Types of Features in Soil



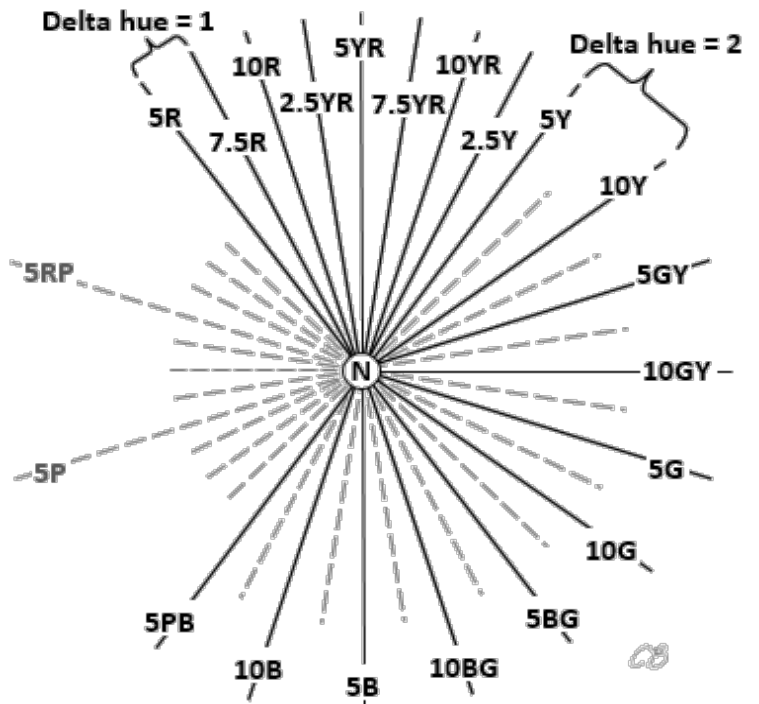
**Figure 1:** Diagram for determining boundary types of features in the matrix.

## Tips for Determining Contrast Between Soil Colors

$\Delta$ Hue	$\Delta$ Value	$\Delta$ Chroma	Contrast
0	$\leq 2$	$\leq 1$	Faint
	$\leq 2$	$> 1$ to $< 4$	Distinct
	$> 2$ to $< 4$	$< 4$	Distinct
	any	$\geq 4$	Prominent
1	$\geq 4$	any	Prominent
	$\leq 1$	$\leq 1$	Faint
	$\leq 1$	$> 1$ to $< 3$	Distinct
	$> 1$ to $< 3$	$< 3$	Distinct
2	any	$\geq 3$	Prominent
	$\geq 3$	any	Prominent
	0	0	Faint
	0	$> 0$ to $< 2$	Distinct
3+	$> 0$ to $< 2$	$< 2$	Distinct
	any	$\geq 2$	Prominent
	$\geq 2$	any	Prominent
	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  $\Delta$ hue,  $\Delta$ value, and  $\Delta$ chroma criteria within that row are met.

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

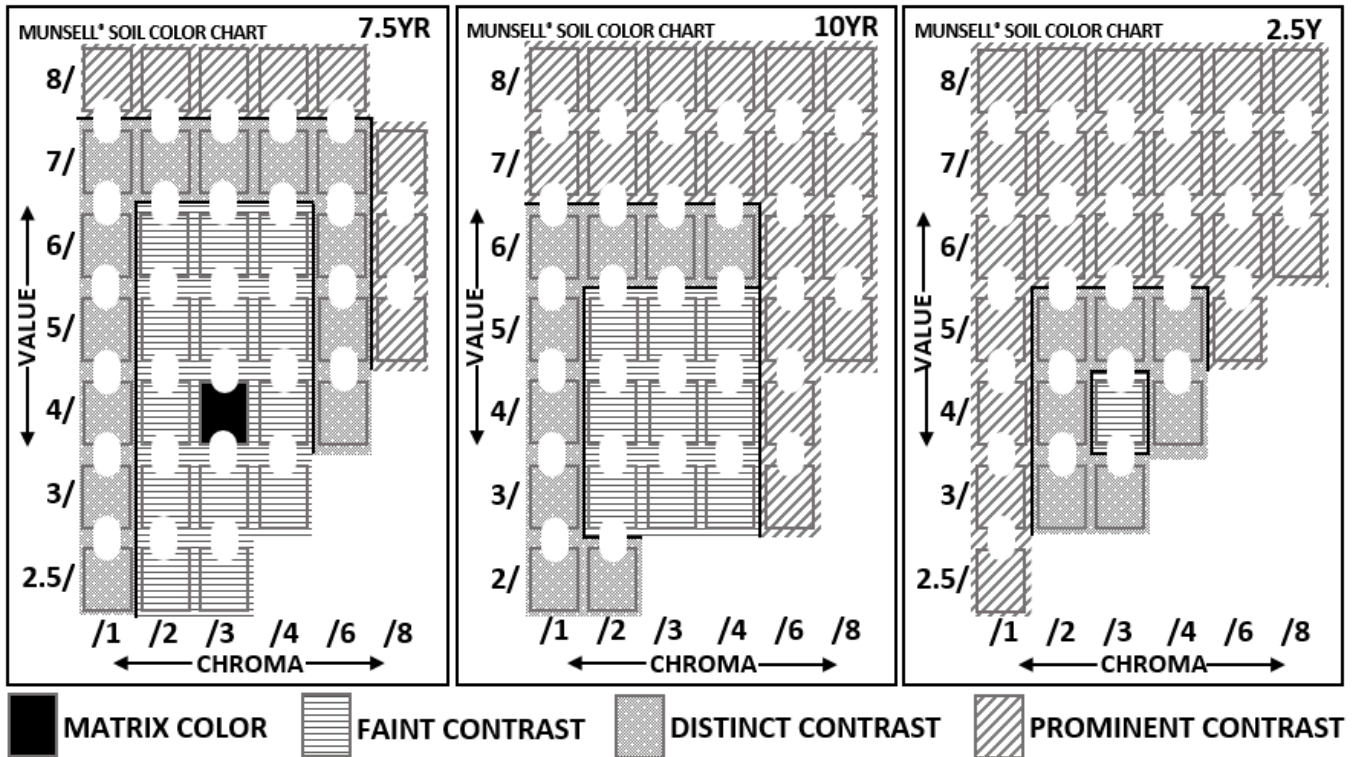


**Figure 2:** Relationships among the hues of the Munsell Color System. Solid lines represent hues contained in the *Munsell Soil Color Charts* (2009). Dotted lines represent all other possible 2.5 unit steps. Moving from one hue line to the adjacent hue line represents a delta hue of 1 (2.5 units).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

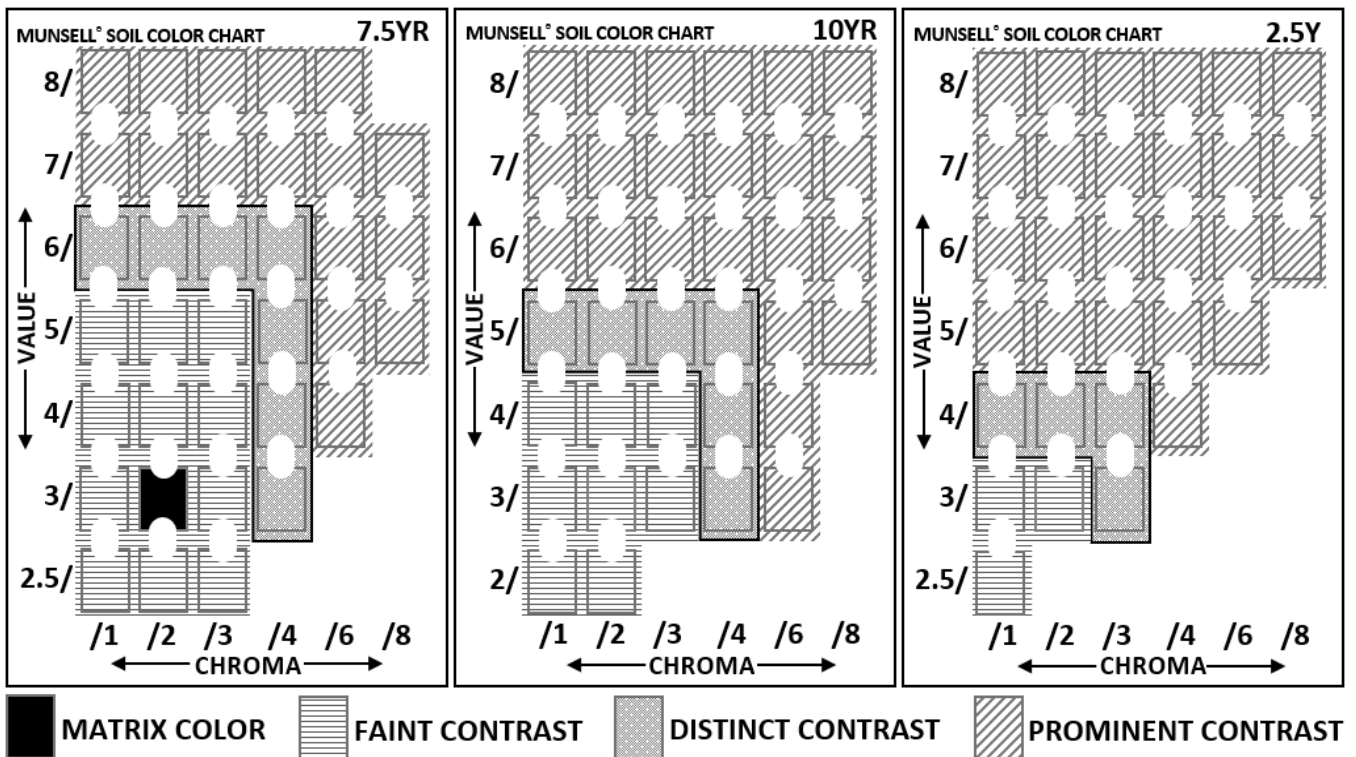
Adapted from the *Soil Survey Manual* (Soil Survey Staff, 1993)



## Tips for Determining Contrast Between Soil Colors (continued)



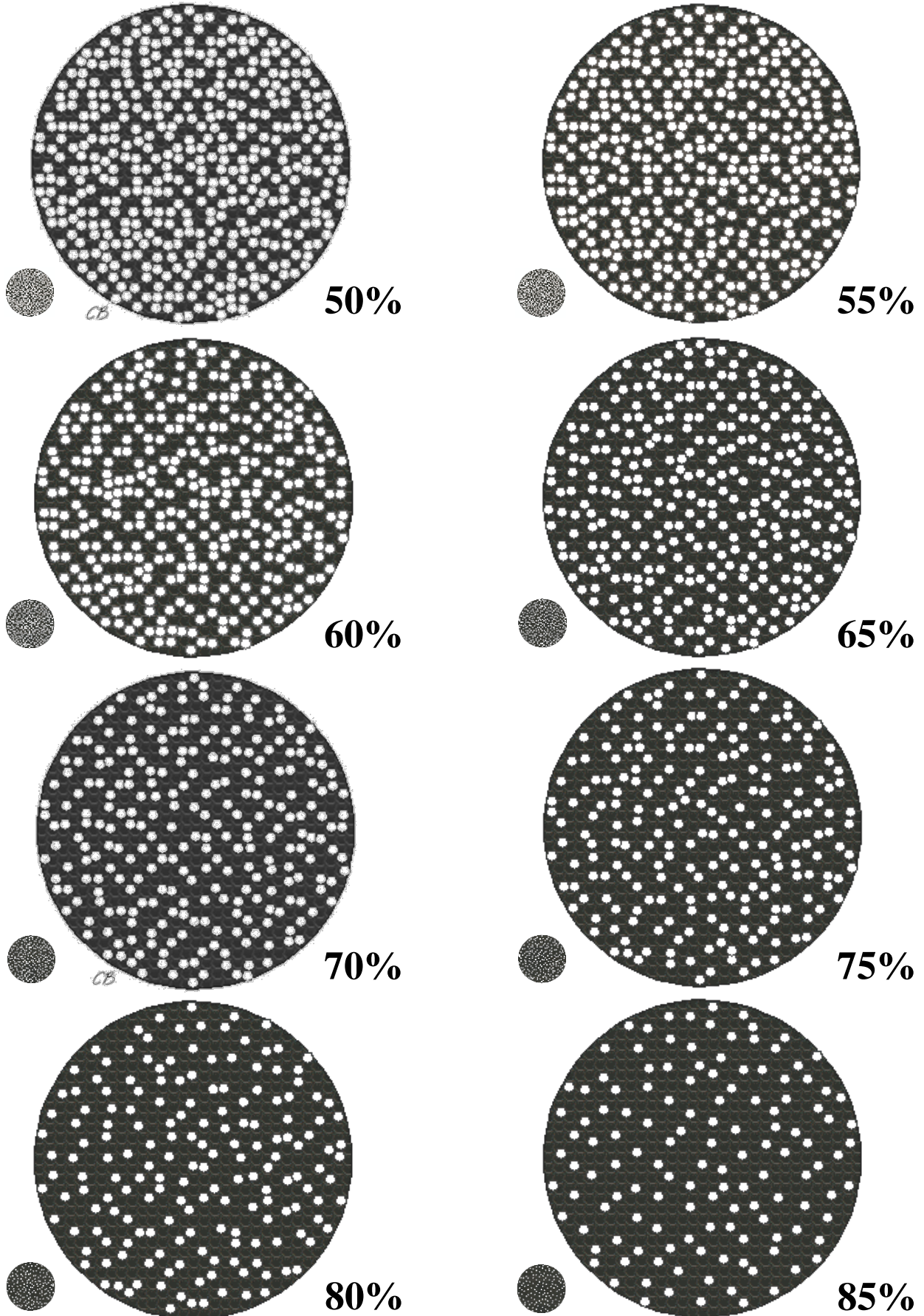
**Figure 3:** Using the 7.5 YR 4/3 color chip as an example matrix color, an illustration of faint, distinct, and prominent contrast between colors in relation to the matrix color in the *Munsell Soil Color Charts* (2009).

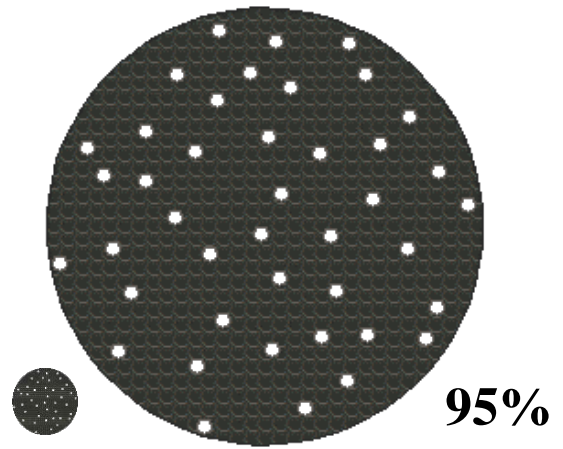
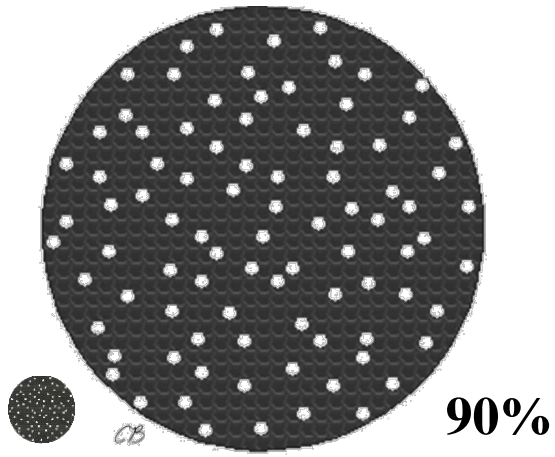


**Figure 4:** Using the 7.5 YR 3/2 color chip as an example matrix color, an illustration of faint, distinct, and prominent contrast between colors in relation to the matrix color in the *Munsell Soil Color Charts* (2009). Note that because the matrix has value  $\leq 3$  and chroma  $\leq 2$ , all other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

### Estimating Percent Organic Coating

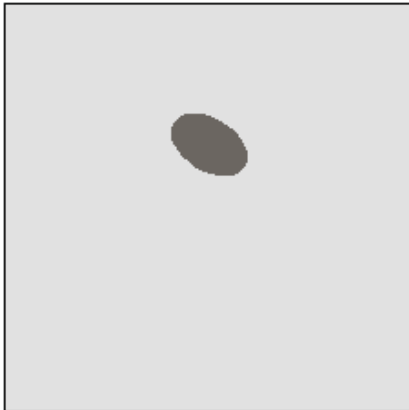
The round diagrams represent the appearance of uncoated (clear or white) sand grains versus coated (gray to black) sand grains within a ped face as viewed through a 10X hand lens.



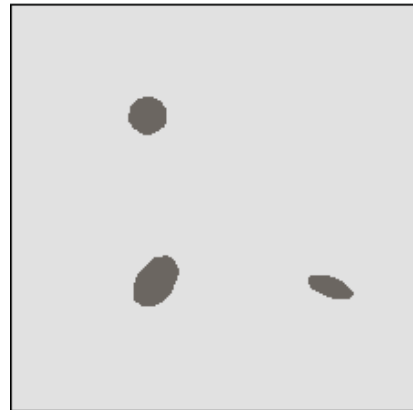


**Estimating Percent Volume**

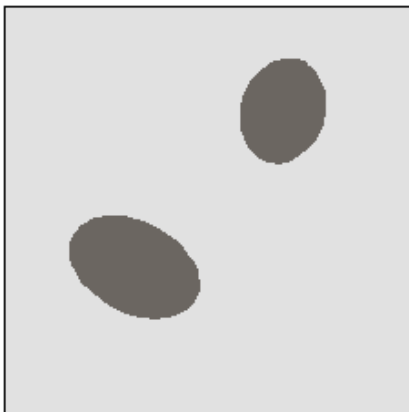
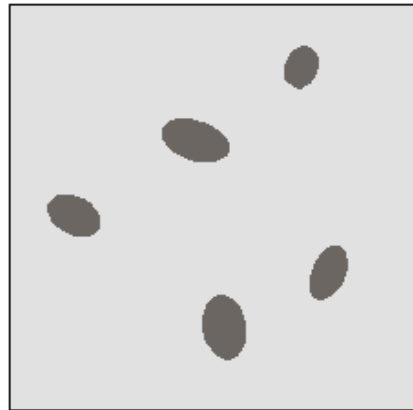
The squares represent part of a grid drawn on the soil profile to estimate volume of light areas, dark areas, or redox concentrations of larger and smaller sizes.



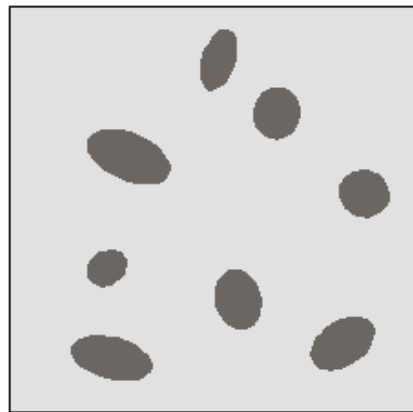
**2%**



**5%**

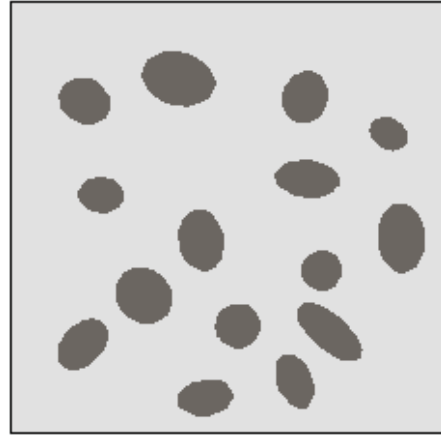


**10%**

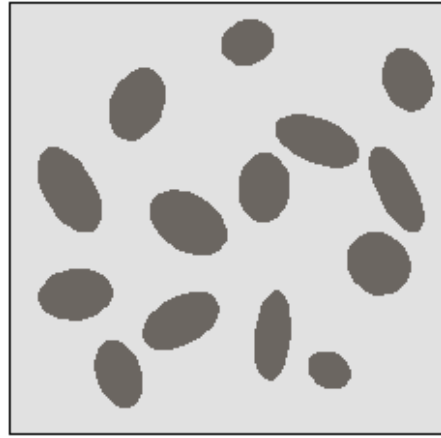




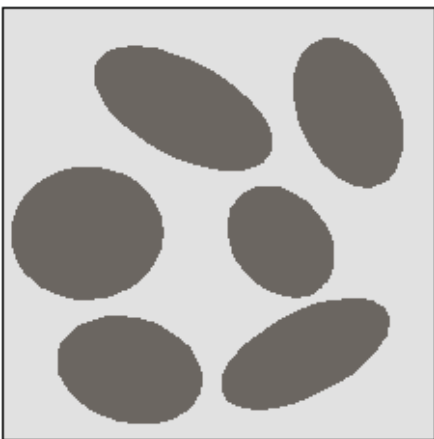
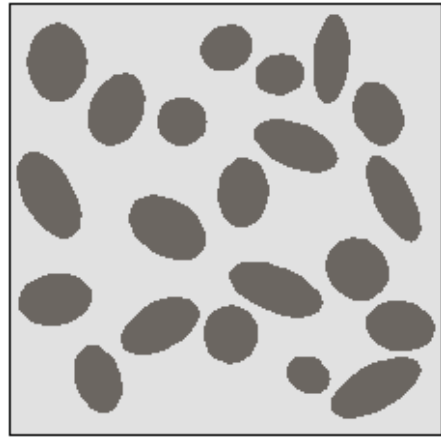
**15%**



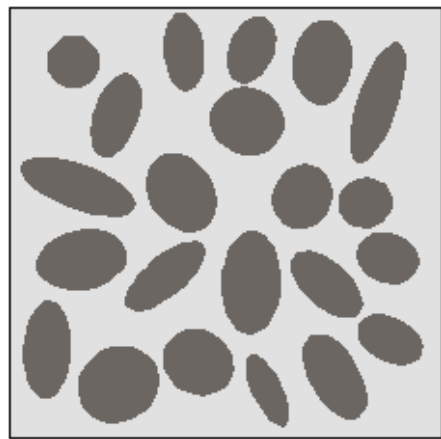
**20%**

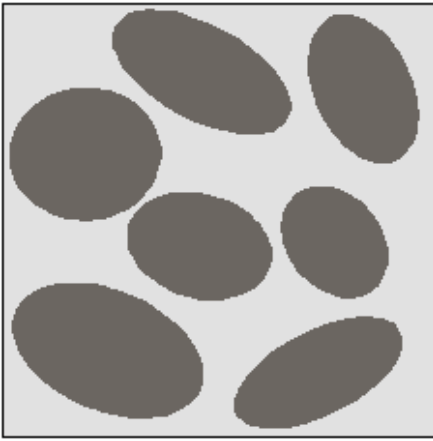


**30%**

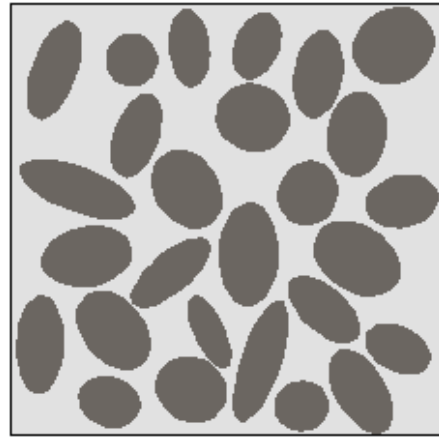


**40%**

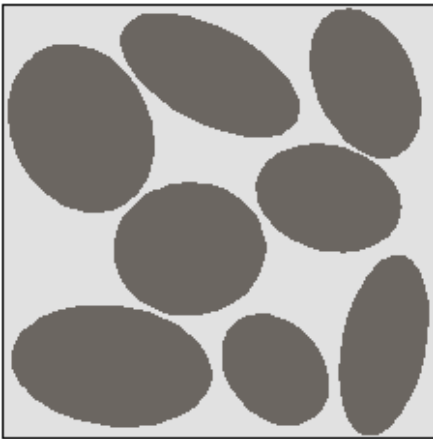




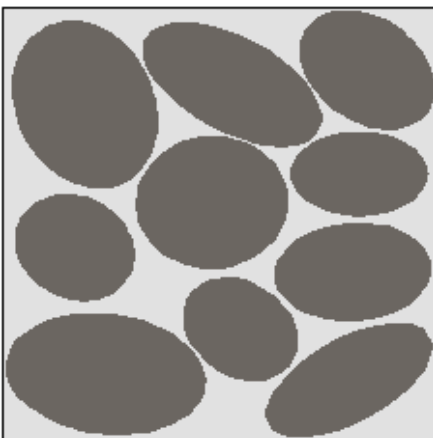
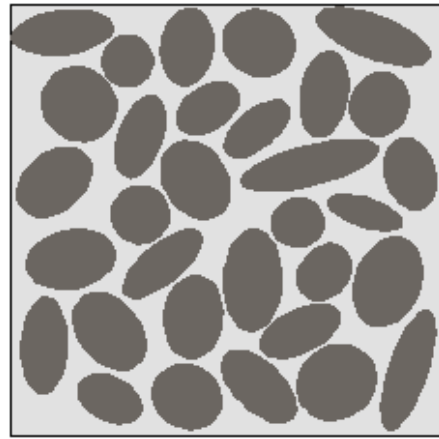
**50%**



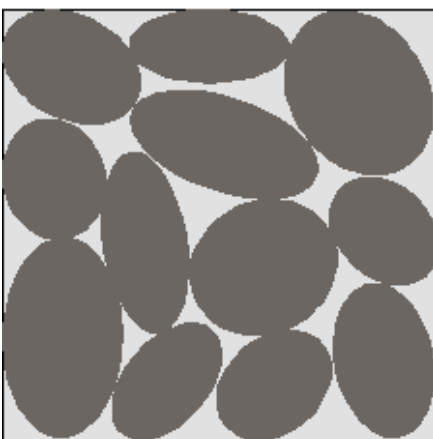
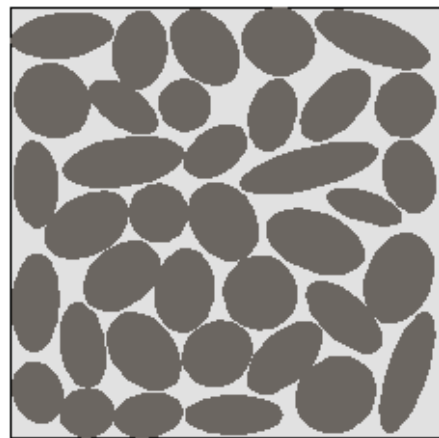
(Note: when a feature (e.g. striped areas) composes more than 50% of the volume, its color is considered to be the matrix color of the soil profile. When more than two colors are present, the color composing the majority of the volume is the matrix color.)



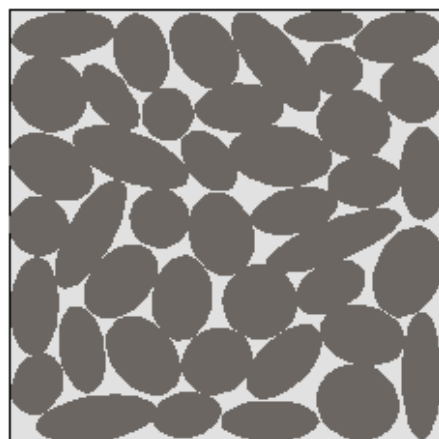
**60%**



**70%**



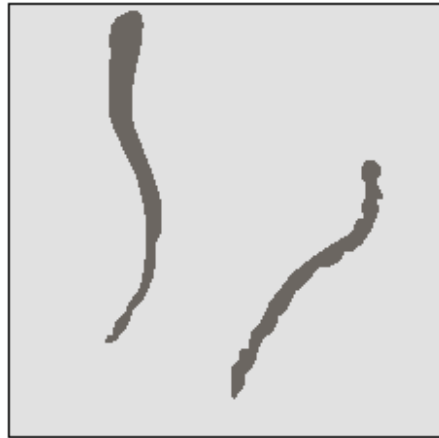
**80%**



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



**2%**



**5%**



**10%**



**17%**



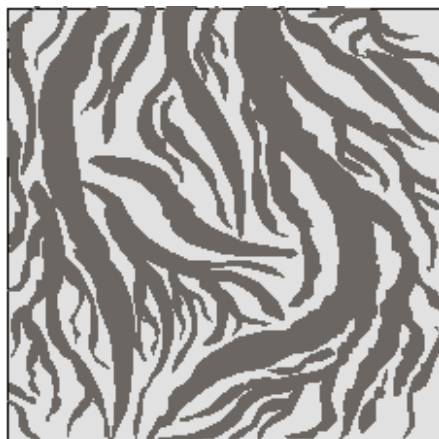
**20%**



**30%**

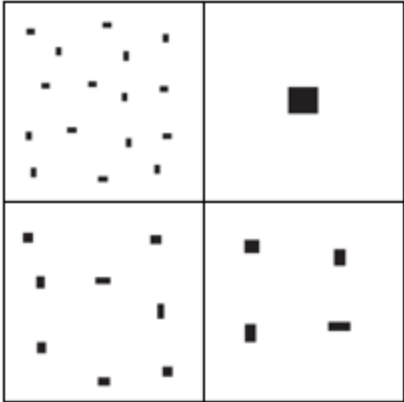


**40%**

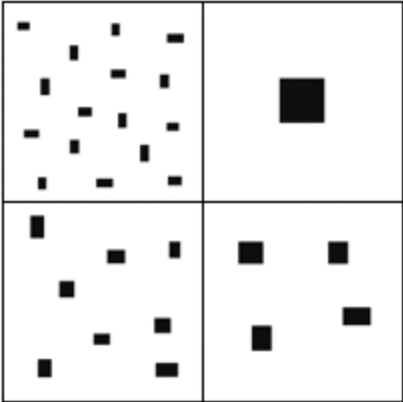


**50%**

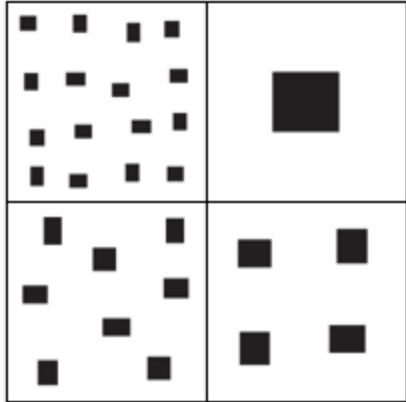
Each square is divided into quarters which depict the same percent volume using features of different sizes. These can also represent areal extents for plants.



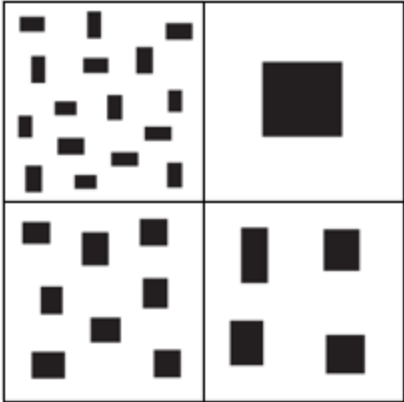
2%



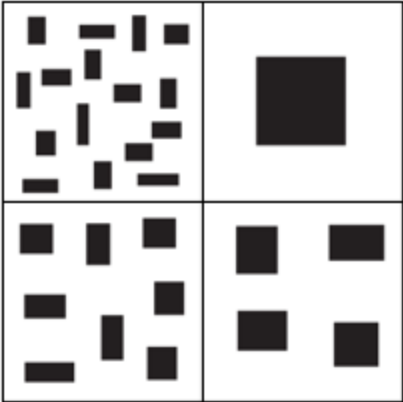
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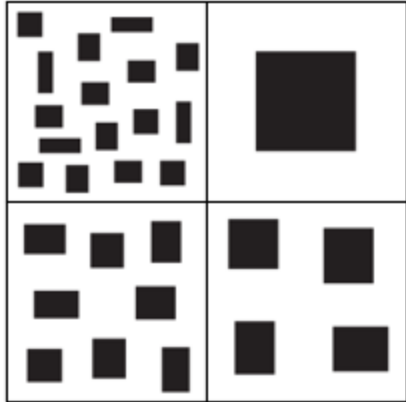
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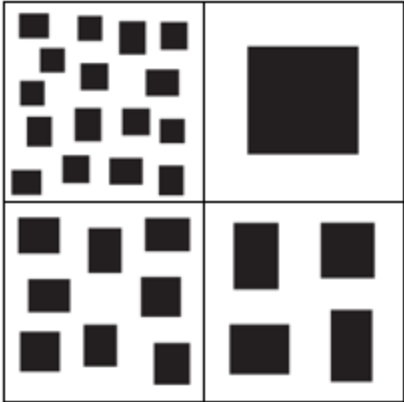
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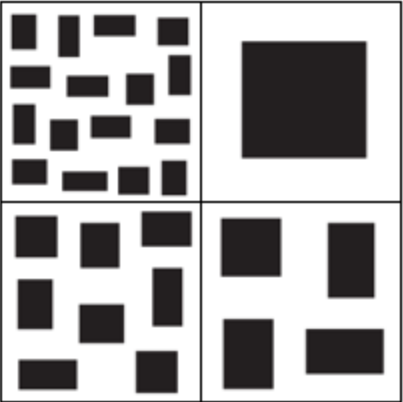
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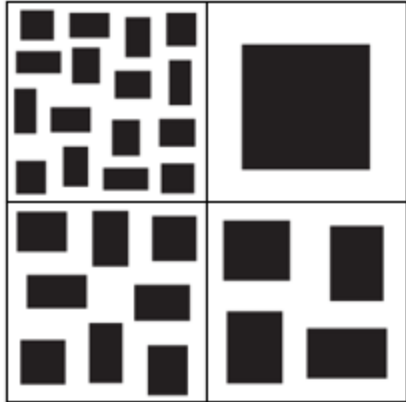
25%



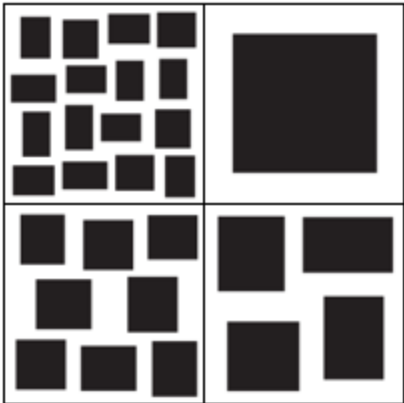
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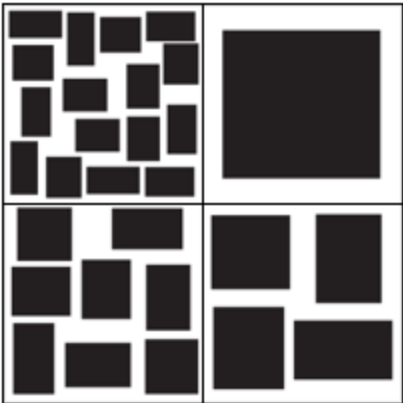
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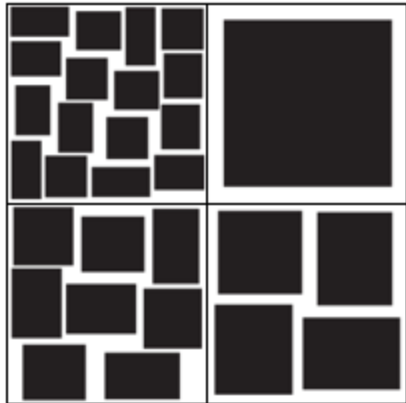
40%



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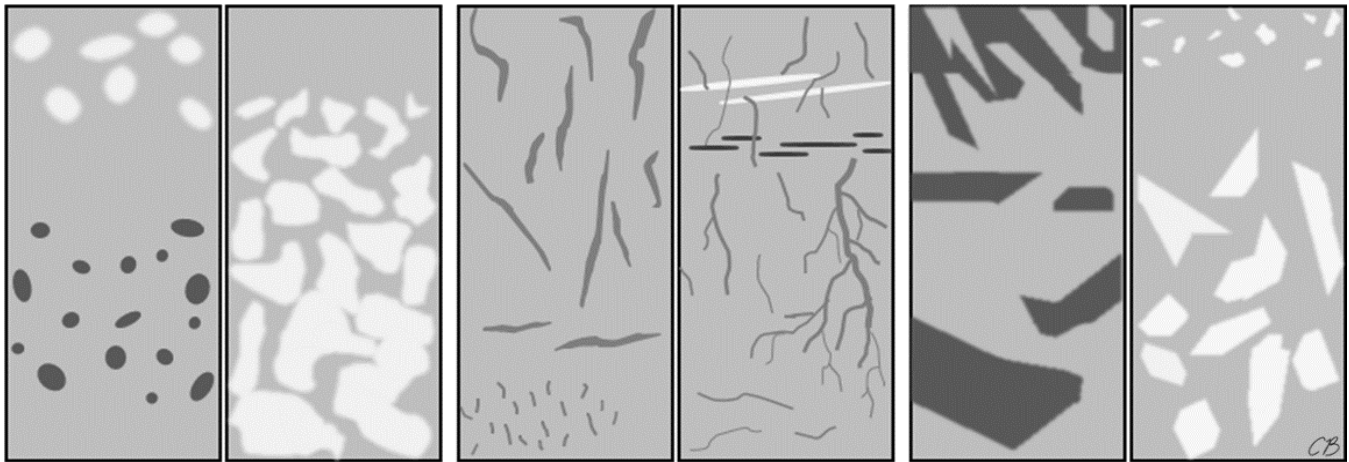


60%



70%

## Tips for Determining Shapes of Features in Soil



### **Rounded**

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

### **Linear**

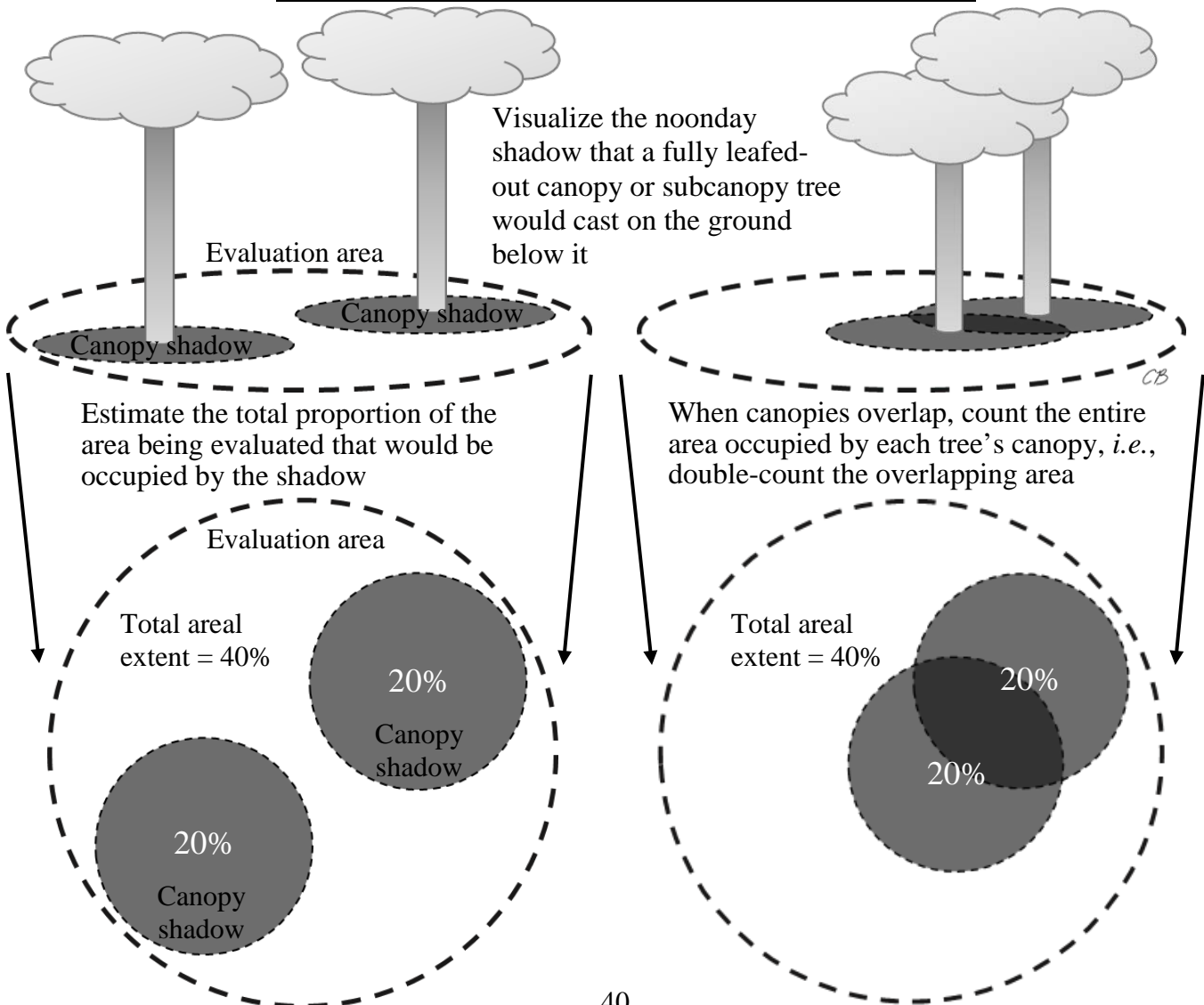
Features that are generally long & narrow (typically associated with roots or burrows, sometimes mixing or deposition)

### **Angular**

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

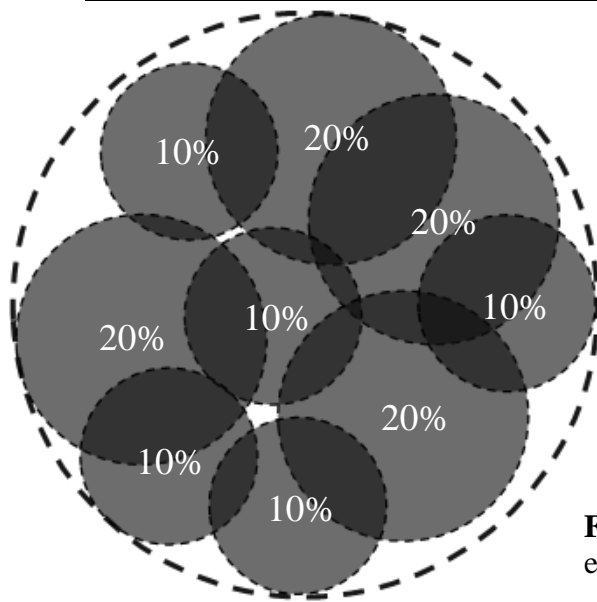
**Figure 5:** Diagram for determining shape categories of features in the matrix.

## Tips for Estimating Areal Extent of Plant Species





**Tips for Estimating Areal Extent of Plant Species (continued)**

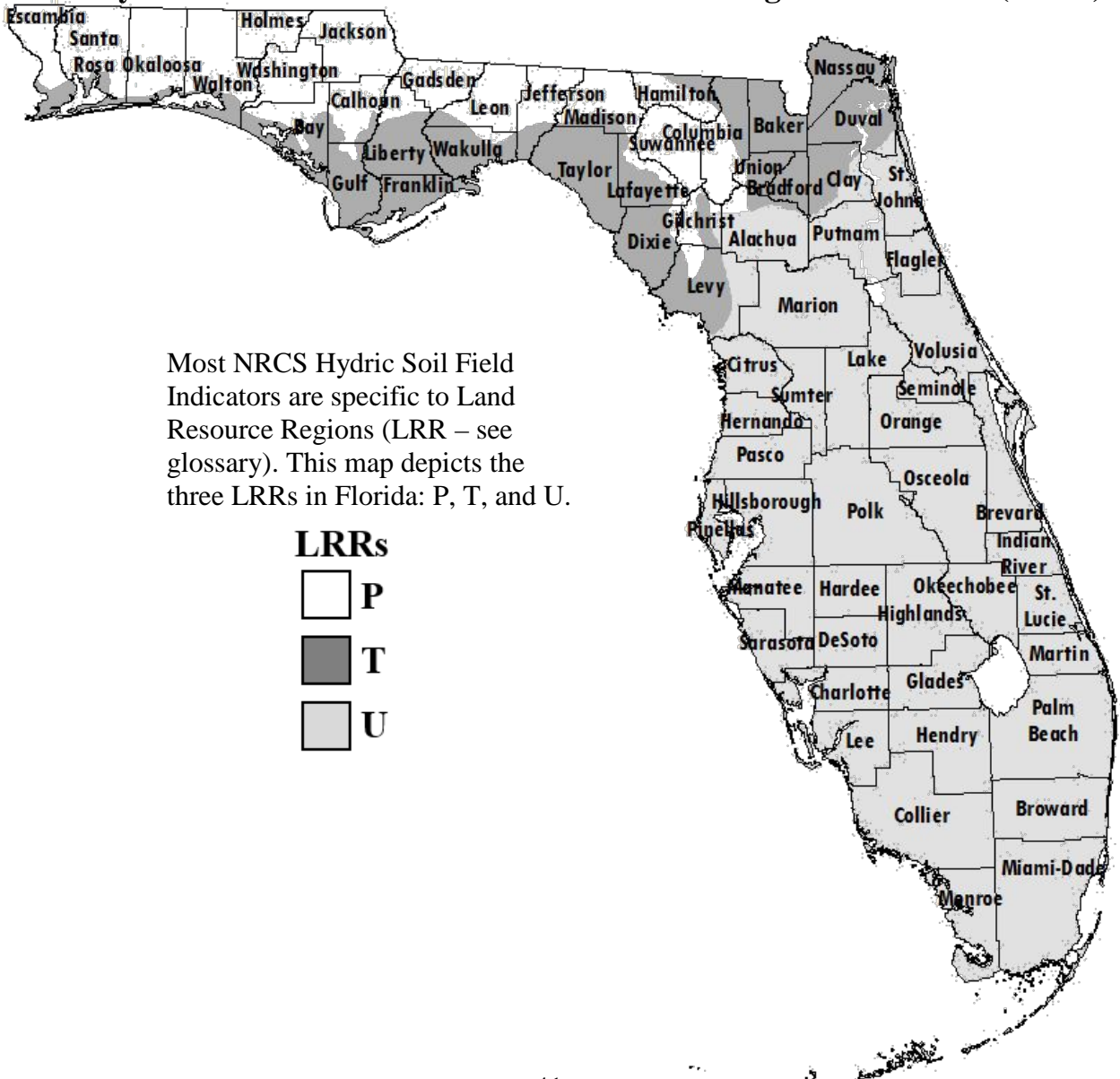


In a dense canopy where many trees overlap one another, the total areal extent of species in the evaluation area may exceed 100%, even if open sky is visible between some canopies

Total areal extent = 130%

**Figure 6:** Diagrams for estimating the areal extents of plants within an evaluation area.

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

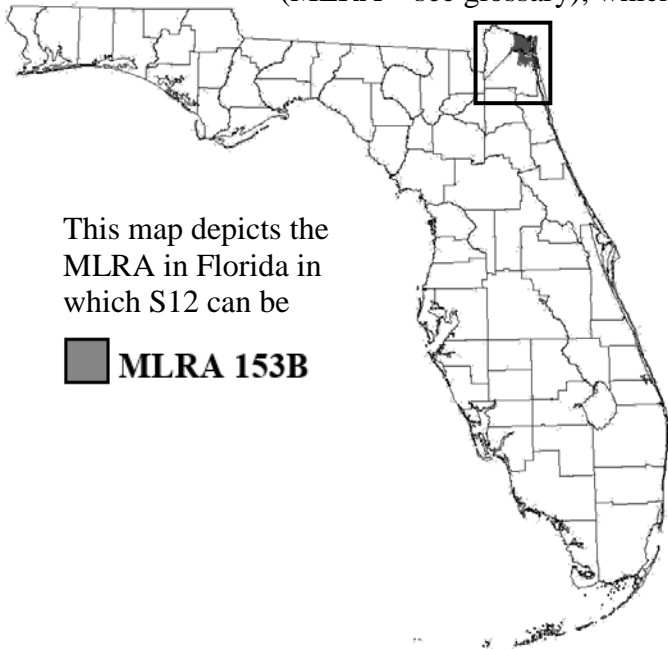


Most NRCS Hydric Soil Field Indicators are specific to Land Resource Regions (LRR – see glossary). This map depicts the three LRRs in Florida: P, T, and U.

- LRRs**
- P
  - T
  - U

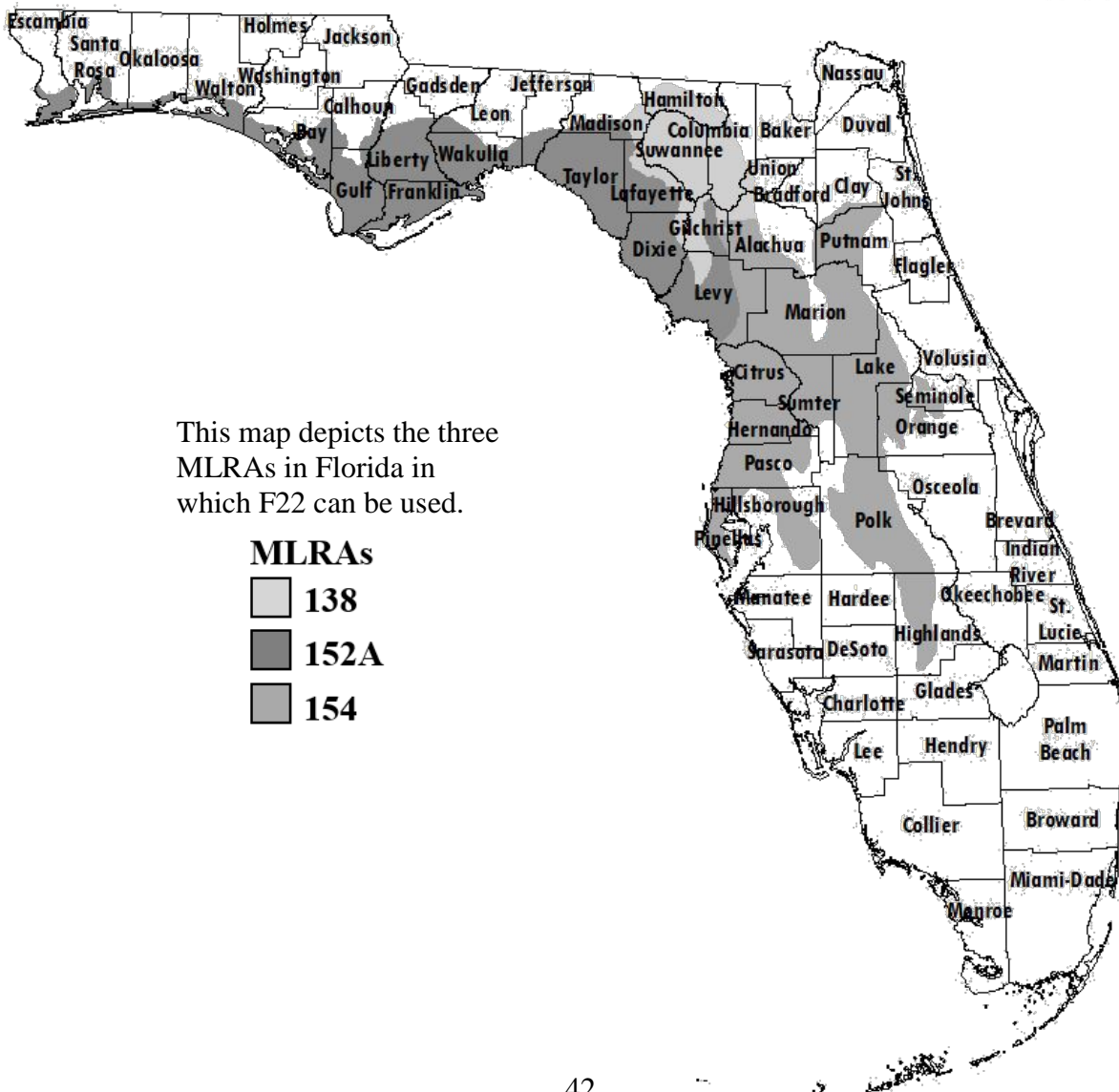
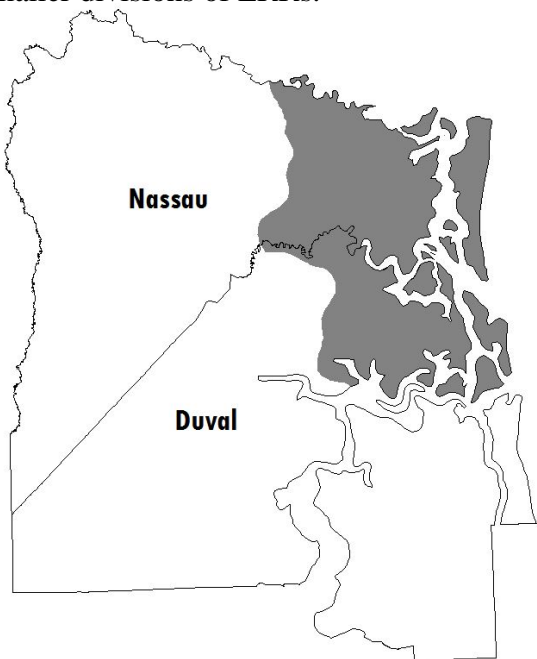
## Major Land Resource Areas (MLRAs)

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:

Adapted from **Field Indicators of Hydric Soils in the United States, Version 8.1 (USDA NRCS, 2017)** 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** – for All texture soils

**S** – for Sandy texture soils

**F** – for Fine texture soils

**LRR or MLRA** – refer to the “Land Resource Region” or the “Major Land Resource Area” in which the indicator may be used

### Data Form Guide Notes

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

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

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

#### **A1. Histosol - LRR: P, T, U**

*Note: This is a stand alone D-Test indicator*

##### **Classifies as a Histosol (except Folist).**

User Notes: In a Histosol, typically 40 cm (16 inches) or more of the upper 80 cm (32 inches) is organic soil material. Organic soil materials have organic-carbon contents (by weight) of 12 to 18 percent or more, depending on the clay content of the soil. These materials include muck (sapric soil material), mucky peat (hemic soil material), and peat (fibric soil material). See *Keys to Soil Taxonomy* (Soil Survey Staff, 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 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  $\leq$  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  $\leq$  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  $\leq$  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 sandy 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  $\leq$  15 cm (6 inches) from the soil surface.**

User Notes: The presence of muck of any thickness at a depth  $\leq$  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  $\leq$  15 cm (6 inches). Muck is sapric soil material with a minimum content of organic carbon that ranges from 12 to 18 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. 1 cm Muck - LRR: P, T**

*Note: This is a stand alone D-Test indicator*

**A layer of muck 1 cm (0.5 inch) or more thick with value of 3 or less and chroma of 1 or less and starting at a depth  $\leq$  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  $\leq$  15 cm (6 inches). Muck is sapric soil material with a minimum content of organic carbon that ranges from 12 to 18 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. Depleted Below Dark Surface - LRR: P, T, U**

**A layer with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less, starting at a depth  $\leq$  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  $\leq$  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  $\leq$  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. Thick Dark Surface - LRR: P, T, U**

**A layer at least 15 cm (6 inches) thick with a depleted or gleyed matrix that has 60 percent or more chroma of 2 or less starting below 30 cm (12 inches) of the surface. The layer(s) above the depleted or gleyed matrix and starting at a depth  $\leq$  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.

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

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

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

**A layer with value of 3 or less and chroma of 1 or less starting at a depth  $\leq$  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  $\leq$  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  $\leq$  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.

**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  $\leq$  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). They have hue of N, 10Y, 5GY, 10GY, 5G, 10G, 5BG, 10BG, 5B, 10B, or 5PB and value of 4 or more. The gleyed matrix only has to be present at a depth  $\leq$  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  $\leq$  10 cm (4 inches) from the soil surface, or**
- b. **15 cm (6 inches), starting at a depth  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  10 cm (4 inches) from the soil surface.**

User Notes: Marl is a limnic material deposited in water by precipitation of CaCO<sub>3</sub> 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<sub>2</sub>. 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  $\leq$  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  $\leq$  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**

**In depressions and other concave landforms, a layer 25 cm (10 inches) or more thick, starting at a depth  $\leq$  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. Microlows (approximately 1 m) are not considered to be concave landforms. Umbric surfaces in the higher landscape positions, such as side slopes dominated by Humic Dystrudepts, are excluded.

**F22. Very Shallow Dark Surface - 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  $\leq$  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  $\leq$  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 colors as above or any other color that has a chroma 2 or less.**

## 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 8.1 (USDA NRCS, 2017) 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:

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  $\geq 70\%$  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  $\leq 16$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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 Sandy texture soils*-----

**S4. Sandy Gleyed Matrix**

*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  $\leq$  6 inches from the soil surface

**S5. Sandy Redox**

- ✓ 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  $\leq$  6 inches from the soil surface

**S6. Stripped Matrix**

- ✓ Is there a layer(s) of sandy and/or sandy mucky mineral soil texture with two or more **faintly**<sup>1</sup> **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<sup>2</sup> 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  $\leq$  6 inches from the soil surface

<sup>1</sup> See Table 1 (p 32) to determine if contrast is faint

<sup>2</sup> See Figure 1 (p 32) to determine if boundaries are diffuse

**S7. Dark Surface**

- ✓ 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  $\leq$  6 inches from the soil surface

**S8. Polyvalue Below 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

- ✓ Does the dark layer(s) start  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  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  $\leq$  4 inches from the soil surface
  - B. Layer(s) is 6 inches or more thick

AND

Starts  $\leq$  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. Redox Dark Surface**

- ✓ 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  $\leq$  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. Depleted Dark Surface**

- ✓ 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  $\leq$  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. Redox Depressions**

- ✓ 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  $\leq$  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  $\leq$  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<sup>3</sup> 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 thickAND
  - Starts  $\leq$  8 inches from the soil surface

<sup>3</sup> See Figure 1 (p 32) to determine if boundaries are diffuse

### **F13. Umbric Surface**

- ✓ Is the soil profile located within a depression or other concave landform
- ✓ 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 lessAND
  - 2. The lower 4 inches of the layer(s) has chroma of 2 or less
- ✓ Does the layer(s) start  $\leq$  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  $\leq$  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 surfaceAND
  - The dark layer(s) is 6 inches or more thickAND
  - Starts  $\leq$  4 inches from the soil surface
  - B. The bedrock occurs  $\leq$  6 inches from the soil surfaceAND
  - 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 8.1, 2017

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.

**CaCO<sub>3</sub> equivalent.** The acid neutralizing capacity of a soil expressed as a weight percentage of CaCO<sub>3</sub> (molecular weight of CaCO<sub>3</sub> 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 CaCO<sub>3</sub>. 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 1 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.**<sup>1</sup> (Table 1 p.32) Readily seen but contrasting only moderately with the color to which compared. The contrast is distinct if:

1. Delta hue<sup>2</sup> = 0, then a) Delta value  $\leq 2$  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  $\leq 1$  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  $<2$ .

<sup>1</sup> Regardless of the magnitude of hue difference, where both colors have value  $\leq 3$  and chroma  $\leq 2$ , the contrast is faint.

<sup>2</sup> 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  $\leq 2$  and delta chroma  $\leq 1$ , or
  2. Delta hue = 1, then delta value  $\leq 1$  and delta chroma  $\leq 1$ , or
  3. Delta hue = 2, then delta value = 0 and delta chroma = 0, or
- Any delta hue if both colors have value  $\leq 3$  and chroma  $\leq 2$ .

**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 H<sub>2</sub>S. It is similar to the smell of rotten eggs.

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

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

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

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

**Many.** When referring to redox concentrations, 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.

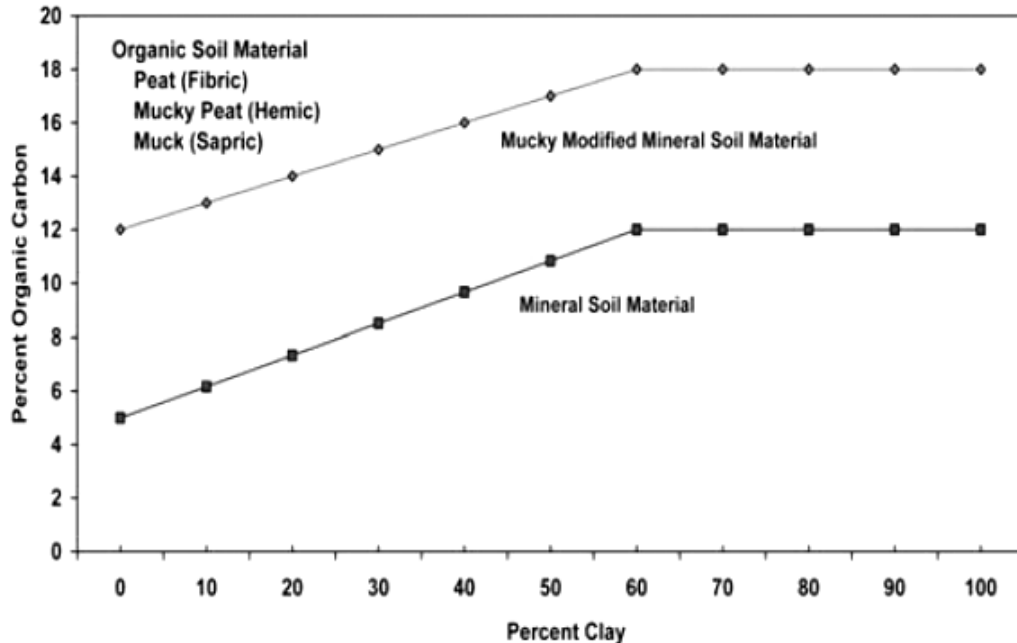
**MLRA.** Major land resource areas. MLRAs are geographically associated divisions of land resource regions. MLRAs are defined in U.S. Department of Agriculture Handbook 296 (USDA, NRCS, 2006b).

**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 7) 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/cm<sup>3</sup>. 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 7) Soil material that is saturated with water for long periods or artificially drained and, excluding live roots, has 18 percent or more organic carbon with 60 percent or more clay or 12 percent or more organic carbon with 0 percent clay. Soils with an intermediate amount of clay have an intermediate amount of organic carbon. If the soil is never saturated for more than a few days, it contains 20 percent or more organic carbon. Organic soil material includes muck, mucky peat, and peat.

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

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

**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<sup>3+</sup>) to ferrous iron (Fe<sup>2+</sup>) 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).

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## Data Form Guide Notes:

### Surface Water Definitions

*Definition from §373.019(19) Florida Statutes*

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

*Definition from §373.019(14) Florida Statutes*

**"Other watercourse"** means any canal, ditch, or other artificial watercourse in which water usually flows in a defined bed or channel. It is not essential that the flowing be uniform or uninterrupted.

*Definition from §62.340.200(15) Florida Administrative Code*

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

*From The Florida Wetlands Delineation Manual pg. 37*

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

*Definition from §403.803(14) Florida Statutes*

**"Swale"** means a manmade trench which:

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

## 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<sup>3</sup>; *or*
    - 2) 40 cm or more if they consist either of Sapric or hemic materials, or of fibric materials with less than three-fourths (by volume) moss fibers and a bulk density, moist, of 0.1 g/cm<sup>3</sup> 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

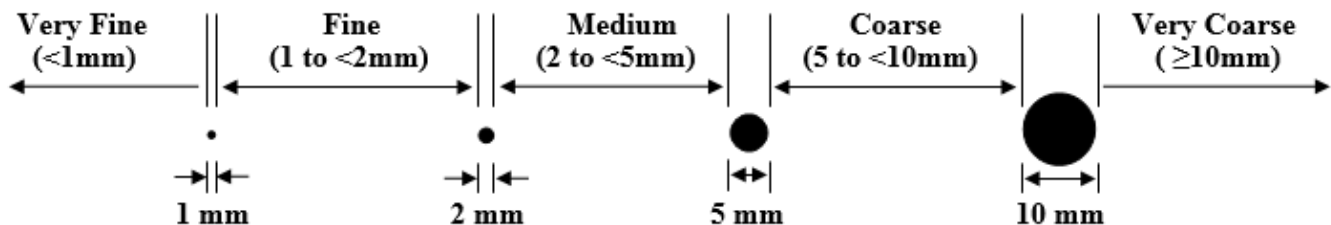
The histic epipedon is a layer (one or more horizons) that is characterized by saturation (for 30 days or more, cumulative) and reduction for some time during normal years (or is artificially drained) and *either*:

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
<b>Contemporary</b>	Diffuse	Irregular, or Smooth with red to yellow corona	Not overlain by iron rich coating	Continuous around live roots	Value $\geq 4$ Chroma $\geq 4$
<b>Relict</b>	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<sub>3</sub>, CaSO<sub>4</sub>; or loss of CaCO<sub>3</sub>; 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

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**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	<i>Acacia auriculiformis</i>	FAC
alder, hazel	<i>Alnus serrulata</i>	OBL
algal bulrush	<i>Websteria confervoides</i>	OBL
allamanda, wild	<i>Urechites lutea</i>	FACW
alligator flag	<i>Thalia geniculata</i>	OBL
alligator-weed	<i>Alternanthera philoxeroides</i>	OBL
alligator-weed, sessile	<i>Alternanthera sessilis</i>	OBL
amaranth, Florida	<i>Amaranthus floridanus</i>	OBL
amaranth, southern	<i>Amaranthus australis</i>	OBL
amaranth, tidemars	<i>Amaranthus cannabinus</i>	OBL
anise, Florida	<i>Illicium floridanum</i>	OBL
anise, star	<i>Illicium parviflorum</i>	FACW
arrowhead	<i>Sagittaria</i> spp.	OBL
arrow-wood	<i>Viburnum dentatum</i>	FACW
arum	<i>Peltandra</i> spp.	OBL
ash	<i>Fraxinus</i> spp.	OBL
ash, white	<i>Fraxinus americana</i>	U
aster, bog	<i>Aster spinulosus</i>	FACW
aster, bushy	<i>Aster dumosus</i>	FAC
aster, calico	<i>Aster lateriflorus</i>	FACW
aster, climbing	<i>Aster carolinianus</i>	OBL
aster, coyote-thistle	<i>Aster eryngiifolius</i>	FACW
aster, Elliott's	<i>Aster elliottii</i>	OBL
aster, flat-top white	<i>Aster umbellatus</i>	FAC
aster, saltmarsh	<i>Aster subulatus</i>	OBL
aster, saltmarsh	<i>Aster tenuifolius</i>	OBL
aster, savannah	<i>Aster chapmanii</i>	FACW
aster, small white	<i>Aster vimineus</i>	FACW
Australian pine	<i>Casuarina</i> spp.	FAC
axilflower	<i>Mecardonia</i> spp.	FACW
azalea, swamp	<i>Rhododendron viscosum</i>	FACW
baby tears	<i>Micranthemum</i> spp.	OBL
baby-blue-eyes, small-flower	<i>Nemophila aphylla</i>	FACW
balsam-scale, Pan-American	<i>Elionurus tripsacoides</i>	FACW
bantam-buttons	<i>Syngonanthus flavidulus</i>	FACW
barbara's-buttons, grass-leaf	<i>Marshallia graminifolia</i>	FACW
barbara's-buttons, slim-leaf	<i>Marshallia tenuifolia</i>	FACW
basswood, American	<i>Tilia americana</i>	FACW
bay, swamp	<i>Persea palustris</i>	OBL
bayberry, evergreen	<i>Myrica heterophylla</i>	FACW
bayberry, odorless	<i>Myrica inodora</i>	FACW
bayberry, southern	<i>Myrica cerifera</i>	FAC
bay-cedar	<i>Suriana maritima</i>	FAC
beach alternanthera	<i>Alternanthera maritima</i>	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 elliotii* 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 elliotii* 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-foxtail** *Agalinis pinetorum* FACW  
**false-foxtail, flax-leaf** *Agalinis linifolia* OBL  
**false-foxtail, large purple** *Agalinis purpurea* FACW  
**false-foxtail, saltmarsh** *Agalinis maritima* OBL  
**false-foxtail, 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** *Limnobiium spongia* OBL  
**frog-fruit** *Phylla* 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  
**napierrgrass** *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  
**hedgelyssop** *Gratiola* spp. FACW  
**hedgelyssop, 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 grains** *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** *Cleistis 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** *Acoelorrhaphe 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 *Bigelovia 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 *Borrchia* 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 elliotii* 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 *Phloxerus 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  
 spadefleaf *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 pennsylvanica* 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.**

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

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

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