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Stormwater Wetland Vegetation: A Cheat Sheet for Designers

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Four secrets to a well-groomed appearance

- Consistently inundated shallow water zones (3" – 6" BELOW normal pool) naturally weed resistant. Plant a mass of one species next to a mass of another species, and the wetlands will look amazingly neat, year after year.
- Shallow land / temporary inundation zones (1" to 12" ABOVE normal pool) are extremely prone to weeds. The only large scale, inexpensive solution we have found is to cover most of the shallow land with gallon shrubs, spaced 1 per 16 square feet. The shrubs will knit together and smother the weeds.
- If you refrain from planting water lilies and their allies (*Nuphar, Nelumbo,* and *Nymphaea*), your deep pools will have open water surrounded by nice, neat edges of shallow water plants.
- Turf adjacent to expanses of open water attracts geese and encourages erosion. Turf adjacent to well vegetated shallow water is less attractive to geese, more resistant to erosion, and gives a clean edge to the wetland.

Five common reasons for vegetation failure

- The shallow water areas are more than 6" deep. If you must have plants 6" – 12" below normal pool, use *Sparganium americanum* and/or *Zizaniopsis miliacea*.
- The shallow water zones were seeded – seed doesn't work underwater.
- The "wetland" was built on porous sand, many feet above the water table. Wetland plants tolerate drought very well, but on persistently dry sites they will be overrun by upland weeds.
- The drawdown orifice (the hole that sets depth of normal pool) clogged, drowning the plants.
- Extensive open water next to turf attracted geese, which then ate the plants.

Design Points

- Make the wetland an integral part of the site's landscaping.
- Provide cultural cues (paths, benches, vibrant flowers, a well-groomed appearance) to indicate the wetland's desirability.
- Drifts of the various species, each with its own foliage texture, form, and color, provide most of the beauty of a wetland.
- Predators (from bacteria to birds) do a wonderful job of controlling mosquitoes. Provide them with a variety of plants (at least 5 species each for shallow water and shallow land) for food and shelter, and open sunny areas in which to hunt.
- Except for woody species, plants in wetlands gradually migrate to wherever they're most comfortable. So specify the zone they belong in, not a precise location.
- Don't plant cultivars. Compact growth, variegated or twisted foliage, oversized flowers, and uniform seed germination are handicaps in the rough world of wetlands.
- Shallow land flowers need grasslike plants as companions. So make sure you include *Carex, Chasmanthium, Juncus, Saccharum,* and/or *Rhynchospora* in the mix.
- Never, ever, plant a wetland with any species not native to your area. Never!

Installation Tips

- Try to install shallow water plants between 4/1 and 7/15. Avoid installing shallow water plants during winter.
- Try to stockpile topsoil from your wetland site, then reapply it to the wetland after construction. Otherwise, apply slow release fertilizer to each plant as it is installed. Don't broadcast fertilizers within the wetland, fertilize after installation, or apply lime.
- Install container grown wetland plants from a reputable nursery which propagates from local wild plants. Do not import plants from Florida or Minnesota and expect them to adapt to Carolina conditions.
- The ideal container for herbaceous wetland plants is narrow but deep and holds 4.9 - 7 cubic inches of roots and media. We call these containers "large plugs". The tops of the plants should be at least 6" tall. Most shallow water plants of this size will cover 4 square feet in 1 full growing season. Quart, 4 inch, and gallon containers of herbaceous plants are expensive to purchase and install and most don't seem to perform better than large plugs. On the other extreme, small plugs (98's, 128's, etc.) are just too small for the rough environment of a stormwater wetland.
- The ideal container for shrubs is a trade or full gallon. Three gallon containers are OK too, but cost more.
- Do not harvest plants from wild wetlands – it damages a valuable natural resource, it's a good way to introduce invasive species to your wetland, and it's too much work!

Great plants for permanent shallow water (0" – 6" BELOW normal pool; a.k.a. low marsh) . Choose at least 5 species, with no more than 30% of any one species.

- *Acorus americanus* (Sweet Flag)
- *Alisma subcordatum* (American Water Plantain) *piedmont only*
- *Cladium jamaicense* (Sawgrass) *coastal plain only*
- *Echinodorus subcordatum* (Creeping Burhead)
- *Iris virginica* (Blue Flag Iris)
- *Peltandra virginica* (Arrow Arum)
- *Pontederia cordata* (Pickerelweed)
- *Sagittaria lancifolia* (Bulltongue)
- *Sagittaria latifolia* (Duck Potato)
- *Saururus cernuus* (Lizard Tail)
- *Schoenoplectus tabernaemontani* (Softstem Bulrush)
- *Scirpus americanus* and allies *(Three-square)*
- *Sparganium americanum* (Burreed)
- *Zizaniopsis miliacea* (Water Millet) *coastal plain only*

Great herbaceous plants for saturated, soggy soil which does not remain flooded (0" - 12" ABOVE normal pool; a.k.a. temporary inundation zone, shallow land, high marsh). Choose at least 5 species, with no more than 30% of any one species.

- *Asclepias incarnata* (Swamp Milkweed)
- *Carex albolutescens, crinita, lupulina, lurida,* and *tribuloides*
- *Chelone glabra* (White Turtlehead)
- *Chasmanthium latifolium* (River Oats)
- *Conoclinium coelestinum* (Wild Ageratum)
- *Eupatorium fistulosum* (Joe Pye Weed)
- *Helianthus angustifolius* (Swamp Sunflower)
- *Hibiscus coccineus* and *moscheutus* (Rose Mallows)
- *Juncus effusus* and *coriaceous* (Rushes)
- *Kosteletskya virginica* (Seashore Mallow)
- *Lobelia cardinalis* and *elongata* (Cardinal Flowers)
- *Scirpus cyperinus* (Woolgrass)
- *Pycnanthemum tenuifolium* (Narrowleaved Mountainmint)
- *Rhynchospora colorata* and allies (White-top Sedge)
- *Saccharum giganteum* and allies (Plumegrasses)
- *Vernonia noveboracensis* (New York Ironweed)

Great shrubs for saturated, soggy soil which does not remain flooded (0" - 12" ABOVE normal pool; a.k.a. temporary inundation zone, shallow land, high marsh). Optional.

- *Alnus serrulata* (Hazel Alder)
- *Aronia arbutifolia* (Red Chokeberry)
- *Cephalanthus occidentalis* (Buttonbush)
- *Cornus amomum* and *foemina* (Silky and Stiff Dogwoods)
- *Itea virginica* (Sweetspire)
- *Myrica (Morella) cerifera* (Wax Myrtle)
- *Sambucus canadensis* (Elderberry)
- *Viburnum nudum* (Possumhaw)