Article 98

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Practical Tips for Establishing Freshwater Wetlands

No shortage of books and manuals exist to design freshwater wetlands for mitigation, restoration or stormwater treatment. A recent series of articles by Garbisch and others, however, suggest that successful establishment of freshwater wetlands often hinges on writing practical and thorough construction specifications for the contractor who implements the design. Lack of attention to these important details can lead to serious problems in establishing a dense and diverse freshwater wetland.

Ed Garbisch founded the nonprofit corporation **Environmental Concern** (EC) in 1972 to educate, research, develop, and apply technology for the restoration and construction of wetlands. Over this period, EC has been involved in hundreds of tidal and non-tidal wetland establishment projects and has gained a great deal of experience in wetland propagation and creation techniques. Some of the practical lessons they have learned on how to construct successful wetlands are summarized in Table 1.

Matching the design hydrology of the planned wetland with the appropriate wetland plant species is perhaps the most critical task in the design of diverse pondscapes. However, many wetland construction drawings fail to even show the design hydrology on the plan. Without a good understanding of the future water surface elevations and the frequency of inundation it is nearly impossible make the right match. Therefore, it is important to clearly show design hydrology on all construction drawings (plan view and cross section).

Another frequently encountered problem is that while the planting plan may contain an extensive wetland plant list, most of the species may not be available in quantity from local wetland nurseries at the time of construction. As a consequence, plant species are substituted at the last minute that may not meet the

Table 1: Useful Construction Specifications for Freshwater Wetlands (Garbisch, 1993, 1994)

1. Always clearly specify the proposed wetland hydrology on construction plans and drawings to ensure that proper wetland plants are selected. Be wary of wetland projects that only rely on groundwater for water supply.
2. Consider procuring wetland plants through growing contracts with wetland nurseries. These contracts ensure that the desired species and quantities of wetland plants will be available to implement the planting plan.
3. Use care before automatically requiring topsoil amendments to prepare the substrate for planned wetlands. Topsoiling may not always be needed, can be expensive and may introduce undesirable species from the seedbank.
4. Although it is very important to quickly stabilize disturbed upland areas during construction, avoid specifying the use of Tall Fescue for this purpose, because of its allelopathic character.
5. Be careful when specifying hydroseeding to establish stormwater and other types of wetlands without strong confidence that seeds will germinate and root in the substrate before the site is inundated. Otherwise, both mulch and seeds will float away or be unevenly distributed through the marsh.
6. If seeding is to be used as the key propagation method to establish the wetland, be sure to specify the quantity of pure live seed needed, the commercial source of seed, seeding technique, filler, and window and other key aspects leading to a successful result.
7. Clearly specify watering requirements during the first growing season for seasonally or temporarily inundated wetland areas. Drought conditions can severely reduce growth and survivorship for these wetlands without initial watering by truck or by a shallow aquifer well.