Blackledge River Nursery
New England Environmental Services

IMPORTANT CRITERIA FOR WETLAND CREATION PROJECTS

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Experience with successful wetland creation projects, including soil and water depth requirements of aquatic plants, surface and ground water hydrology, and construction techniques, is essential when designing a wetland.

SITE SELECTION

- Surface and ground water hydrology are the most important considerations in selecting a created wetland site. Without the correct hydrology the wetland will not be successful. It may be necessary to consider alternate sites after groundwater monitoring has been conducted.
- The wetland creation should minimize impacts to both upland habitat and wetland buffers. If possible, utilize wetland or upland areas that were previously degraded.
- Locating the created wetland in an area that is contiguous to other wetlands, buffers, open space or undisturbed areas will increase its wildlife habitat potential.
- The proposed wetland should blend with the natural landscape to the extent feasible.
- Since individual plants have specific lighting requirements, sun exposure should be taken into account.
- The wetland creation site should have an access for construction and maintenance equipment that minimizes impact to significant upland or wetland resources.

HYDROLOGY

- Determining water level fluctuations during the growing season is essential in designing wetland elevations and selecting plant species that will survive and reproduce. Surface or ground water monitoring is imperative in determining hydrology for successful wetland creation. The use of soil mottling (redoximorphic features) from test pits is not reliable in determining the high groundwater elevation during the growing season.
- Ground or surface water monitoring should usually be conducted from April through September. Sites with complicated hydrology may require that monitoring be conducted for more than one year, depending on rainfall patterns.
- Creating a wetland next to an existing wetland may preclude the need for groundwater monitoring. One may use biological benchmarks in the existing wetland.

SOIL REQUIREMENTS

It is important to provide a suitable soil medium for the successful establishment of wetland plants.

- Most wetland plant species have differing soil requirements. Some species need soils high in organic matter (muck), while others prefer sandy soils. In general, most wetland species prefer a soil high in organic matter. Therefore it is important to know the plant species soil requirements before planting them in a created or restored wetland.
- Generally 6” - 12” of an appropriate soil medium should be placed in the created wetland to provide a suitable depth for establishment of wetland plants.
- On mitigation projects, salvaging and reusing the topsoil from impacted wetlands is recommended, provided it does not contain roots or seeds of undesirable species, e.g., *Phragmites*, Purple Loosestrife, etc.

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PLANT SELECTION

- The plant species should be both **native** and **indigenous** to the area. It is important to know the origin of the plant stock. For example, plant species purchased in Connecticut may have originated from a nursery elsewhere in the United States. Utilizing local plant sources increases the chance for plant survival and reduces the risk of introducing differing plant genotypes that my affect native flora and fauna populations.

- Whenever possible the wetland plants should serve several purposes including pollutant renovation, soil stabilization, quick colonization, wildlife food, wildlife cover and aesthetic value. The plant species selection should be based on the design functions of the created wetlands.

- The planting plan should include a good diversity of species. A preview of the area will reveal which species already exist and may colonize naturally and therefore need not be introduced.

- Competition among plant species must be considered when selecting species to be planted. Some wetland species are very aggressive and colonize quickly, and can therefore out-compete some of the other desirable species if planted too closely.

- Planting density should not be uniform for all species, as some colonize and spread at much faster rates than others. Individual spacing requirements should be identified for each species.

- Aquatic plants selected to renovate stormwater should be tolerant of fluctuating water levels.

- Establishing a wetland by seeding alone is very unpredictable. The hydrology and time of year for seeding is very specific for many species. Many wetland seeds float, and therefore it is difficult for them to obtain good germination in wetlands when there is standing water. Seeding can be successfully combined with planting to enhance species diversity and promote ground cover.

- It is very important that the Wetland Construction Supervisor determines the exact location of the planting **after** the wetland has been constructed. The creation of a wetland can alter the ground or surface water hydrology, which would require modifications in planting locations and possibly species selection. The planting plan should allow for minor modifications in plant location and species selection and can be approved by the Wetland Construction Supervisor and Town Wetland Agent. The most common problems in wetland creation projects are that the planned hydrology is different than expected after construction, and the correct hydrology is not provided for the species that are ultimately planted in the wetland.

WETLAND CONSTRUCTION CONSIDERATIONS

- A Wetland Construction Supervisor should be hired to oversee wetland construction. Ideally, this would be the individual who evaluated the groundwater hydrology, selected the wetland plants and designed the wetland. This provides for continuity as well as accountability and further ensures the success of the wetland.

- As with the planting plan, minor modifications may be necessary due to site conditions and should be approved by the Wetland Construction Supervisor and Town Wetland Agent.

- A Wetland Construction Supervisor should have the flexibility and be encouraged to add habitat structure features such as small nesting islands, stumps, boulders and small pools.

- The topsoil material in the created or restored wetland should be placed by an excavator to minimize compaction of the soil medium and to promote root growth. Machinery should not be allowed to travel on the ground surface once the topsoil has been placed.

- Establishing a good wetland vegetation cover quickly is important in reducing potential unwanted invasive plant species growth, e.g., *Phragmites*, Purple Loosestrife, etc.

FOLLOW-UP MONITORING AND MAINTENANCE

- The wetland project, including planting and follow-up maintenance, should be bonded.

- Plans should specify that a Wetland Designer or Construction Supervisor be required to evaluate the success of the wetland for a 1-5 year period after planting (depending on the size and complexity of the wetland) to determine whether any replanting, removal of invasive plant species or other remedial measures need to be taken.

- Long-term maintenance requirements, especially for wetlands created for stormwater renovation, should be clearly defined in the plans.

Please note: The purpose of this handout is to highlight important points which need to be considered in a wetland creation project. It is not meant to serve as either a checklist or a complete guideline for all items that are required for an application or construction plan.

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