
ENVIRONMENTAL Fact Sheet



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Dug Ponds

What is a dug pond?

A dug pond, also called a farm pond, is a small shallow pond created artificially by digging a depression in the land. Once dug, the depression is filled primarily by groundwater, receiving surface water only from snowmelt and during storm events. Dug ponds are created for recreation such as fishing, swimming, or skating, irrigation, livestock watering, fire protection, wildlife habitat and landscaping. If a proposed pond impacts a stream or wetland, a DES Wetlands Bureau permit is required prior to construction (see fact sheet “WD-WB-10 Wetlands Permitting for Construction and Maintenance of Ponds” and contact the bureau at (603) 271-2147). Once the purpose(s) are identified for a dug pond, a specific continuous maintenance plan can be devised using the management techniques most appropriate to ensure the pond remains fit for the desired uses.

The success of a dug pond depends largely on the water quality. Pond health is dependant on a variety of components such as dissolved oxygen, pH/alkalinity, nitrate, phosphorus, turbidity and temperature. If the management goal is plant control, for example, it may be helpful to focus testing on nutrient concentrations. Bacteria testing are recommended in ponds used for primary water contact like swimming.

What is a Detention Pond?

A detention pond is a type of dug pond commonly used as a best management practice specifically designed to reduce runoff volume from a developed area and lessen its impact on local streams. These ponds function best when full of rooted plant growth. Not only do they reduce runoff flow and absorb the excess water, but they also allow silt to settle out and nutrients to be utilized, thereby protecting downstream waters. Many recent developments will have these ponds. Plants should NOT be removed from these ponds unless the pond has become so filled in that its designed function is impaired. A detention pond design typically includes an outlet structure that allows water to exit to a nearby storm water system or stream. A pond with no outlet is referred to as a retention pond, where water is held and can only infiltrate into the ground or evaporate.

Why do dug ponds frequently have nuisance algae and rooted plant growth?

Plant growth is desirable if the pond is designed for wildlife habitat or stormwater detention. However, the plant growth becomes a nuisance when the intended use of the pond is swimming. Dug ponds have several characteristics that make them susceptible to unwanted plant growth:

- Shallow depth, allowing sunlight to penetrate to the bottom, supporting photosynthesis throughout the pond.
- Very little water flow through, becoming essentially stagnant during the warm summer months.
- Often located in rich bottom lands or in areas receiving runoff from livestock or fertilized fields, thus receiving ample plant nutrients (phosphorus) to support excessive plant growth.

- Often have silty, mucky bottoms, providing suitable substrate for rooted plants.
- If used as a fish pond, fish food pellets are frequently added, providing additional fertilizing nutrients to support plant growth.

How can I reduce the algae growth?

Depending on the situation and the cause of the algae growth, the following procedures can be used to help reduce the amount of algae growth:

- Increase water inflow to the pond.
- Reduce phosphorus inflow to the pond.
- Use native vegetation to stabilize the shoreline, reduce erosion and sediment load, and increase filtering capacity of the vegetative buffer surrounding the pond.
- Remove nutrient-rich sediments from the pond.
- Aerate the pond.

To reduce the phosphorus inflow, all possible sources of phosphorus in the surrounding drainage area must be considered (see fact sheet “WD-BB-20, Phosphorus in Lakes”). When proposing a location for a new pond, select an area with minimal sources of phosphorus within the watershed.

How can I reduce the rooted plant growth?

Rooted plant growth can be managed by a variety of techniques. However, it is important to first identify the species of aquatic plant that you are attempting to control, before instituting any type of management. A Wetlands Bureau permit may be required before using these techniques:

- Dredge the pond to remove unwanted plants, deepen the pond and/or remove mucky sediments.
- Cover the pond bottom with sand, gravel, black plastic or other material that discourages rooted plants.
- Manually remove the plants.
- Drain the pond over the winter to dry and freeze the plants.
- Construct barriers to reduce silt entering the pond.

Please be aware that maintaining a healthy dug pond is a continual process. The possible solutions offered above are not guaranteed to work; and, when they do work, are not necessarily long-lasting. DES discourages the use of herbicides or algaecides to control unwanted plant growth in dug ponds because annual treatments are usually required and unwanted ecological impacts may occur. A pesticide permit is required from the N.H. Department of Agriculture (271-3550) before any pesticide may be applied.

For more information:

For information regarding water quality testing, contact the DES Limnology Center, (603) 271-3414. Permit requirements for constructing or renovating a dug pond can be obtained from the DES Wetlands Bureau at (603) 271-2147.

Information on designing, constructing and maintaining a dug pond can be obtained from district Soil Conservation Service or County Cooperative Extension Service offices. County Extension offices may also be able to help with the identification of nuisance plant species.

For further information on plant species appropriate for planting a native vegetation buffer refer to the N.H. State Forest Nursery, <http://www.dred.state.nh.us/nhnursery/>, or the New Hampshire Greenhouse and Nursery Directory published by the NH Department of Agriculture.