



# Storm Water Management Pond Maintenance Aquatic Vegetation Management Policy

## 1. Justification

- 1.1. There are many storm water management ponds in the county which permanently retain water by design to improve the region's water quality. Aquatic plants are a beneficial part of the ecology of these ponds. Aquatic plants help remove nutrients from runoff and provide food and habitat for fish, turtles and other pond inhabitants. Some citizens from an aesthetics point of view may at times, consider exceptional growth of aquatic plants in certain ponds objectionable. The desires and interests of the community with the aesthetics of the SWM pond must be balanced with the pond's functionality in improving water quality.
- 1.2. In order to comprehensively address this issue, the Department of Public Works and the Department of Recreation and Parks (Departments) have implemented this policy.

## 2. Applicability

- 2.1. This policy is applicable to control of aquatic vegetation which: is not safety related; is not environmentally undesirable; which is not a component of the required maintenance.
  - 2.1.1. Control of vegetation on dam embankments is safety related and a part of the required pond maintenance
  - 2.1.2. Removal or replacement of vegetation in wetland ponds, bioretention ponds, etc., may not a part of this policy if it is already included in the required maintenance.
- 2.2. This policy is applicable to ponds on County property maintained, in whole or in part, by the Department.
- 2.3. This policy is applicable to ponds on private property maintained, in whole or in part, by the Department.

## 3. Vegetation Management Options

- 3.1. Various methods exist to deal with aquatic vegetation and they range widely in terms of costs, frequency of application, and the amount of manpower to implement.
- 3.2. Physical Removal
  - 3.2.1. Hand or mechanical removal of vegetation is usually considered too labor intensive for the typical SWM pond and has the potential of accelerating the plant growth as some plant fragments can regenerate into new stands of plants.
  - 3.2.2. Dredging to restore the pond capacity will directly remove much of the existing vegetation as well as the nutrients stored in the sediment. Aquatic plants will return over time. Ponds are scheduled to be dredged when they have less than 50% of the design storage capacity needed for water quality improvement functionality.
- 3.3. Habitat Alteration
  - 3.3.1. Chemical and vegetable dyes will suppress light penetration thus depriving underwater plants of food. To be effective the dyes must persist for several continuous weeks, leading to periodic reapplication of the dye. Some individuals consider the unnatural bright green or blue color of the dyed water as more aesthetically objectionable than the aquatic plants.
  - 3.3.2. Draining the pond, especially during harsh winter weather, will eliminate some types of aquatic vegetation. The dead plant material should be removed so it does not add to the nutrient load in the sediment. Most types of aquatic vegetation will come back soon after the pond is refilled via hibernating roots or seeds. This option can have a profoundly negative impact on ponds populated with fish and other wild life which may be desirable to reduce the mosquito population.
  - 3.3.3. Minimizing available nutrients, such as by using less fertilizer in the drainage area and avoiding the introduction of plant or animal waste into the pond, will deprive plants of excess food. This is highly desirable for general water quality improvement. Its short-term effect on controlling aquatic plant growth in specific ponds may be limited due to the longevity of nutrients already trapped in the soil.



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**3.4. Biological Control**

**3.4.1.** This includes the introduction of insects, pathogens or wild life into the pond to control a variety of plant life. Howard County does not endorse the introduction of non-native species into the ponds for the purpose of controlling vegetation.

**3.4.1.1.** The Maryland Department of Natural Resources specifically prohibits the release of the herbivorous Chinese grass carp.

**3.5. Herbicides**

**3.5.1.** There are six herbicides in general use for controlling aquatic vegetation. The EPA regulates all six and contractors using these herbicides must be licensed.

**3.5.2.** When used correctly aquatic herbicides are short lived and are nontoxic to fish, birds and aquatic wildlife.

**3.5.3.** Lowering of dissolved oxygen in the water by decaying plant matter can result in fish kills. The chances of a fish kill can be greatly reduced by proper selection, timing and application of the herbicide.

**3.5.4.** Submerged bales of barley have been shown anecdotally to inhibit the growth of algae. The exact mechanism of this is unknown at this time but it is thought by some that the decomposing barley creates a compound detrimental to algae. The barley bales should be removed in the fall so they do not add to the nutrient load in the sediment; containing the bales in a cage will ease their removal from the pond.

**4. Typical Aesthetic Problems and Solutions**

**4.1.** When trying to remedy growth of existing aquatic plants, selecting the best treatment option or combination of treatments depends upon many factors: proper plant identification; amount of plant growth; economic considerations; local environmental conditions; pond uses to name several. The best treatment may be as simple as improved landscaping to minimize the aesthetic impact of the pond. Each pond has to be evaluated individually.

**4.2. Algae**

**4.2.1.** Excess algae growth is typically the result of an excess of nutrients from fertilizer combined with warm temperatures and sunshine. Algae are environmentally beneficial as this plant growth will remove excess nutrients in the pond before those nutrients get into the natural waterways.

**4.2.2.** The initial effort to control algae usually consists of bales of barley placed in the ponds. This measure will usually keep the algae growth to an amount most people would not find objectionable.

**4.2.3.** Dye can be an effective solution to the establishment of excess algae. This solution is most effective if prior to the start of algae growth. The dye is usually added in spring and treatments continued monthly, depending on pond flow, and after heavy rains until fall.

**4.2.3.1.** Potential concerns with dyes, if applied properly, include: aesthetic objections to the color of the water; cost of repeated treatments in a wet year; and the introduction of dye into the waterways.

**4.2.3.2.** Potential concerns with dyes if applied improperly, i.e., an excess quantity of dye used or making the first application after the establishment of algae, or if treatments are not regularly maintained include: objectionable odor from the decomposing of algae; depletion of dissolved oxygen in the pond due to the decomposition of the algae; fish kill due to the depletion of dissolved oxygen.

**4.2.4.** Herbicide can be an effective solution to excess algae.

**4.2.4.1.** Potential concerns with herbicides, if applied properly, include: aesthetic objections to bleaching of shoreline and wetland plantings; unsuitability of the pond water to be used for irrigation; and the introduction of herbicides into the waterways; possible allergic reactions of residents living or walking nearby.

**4.2.4.2.** Potential concerns with herbicides, if applied improperly, include: objectionable odor from decomposing algae; depletion of dissolved oxygen in the pond due to the decomposition of the algae; fish kill due to the depletion of dissolved oxygen.



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- 4.3.** Duckweed and Water Meal. These are small free-floating plants that are often mistaken for algae. On small ponds sheltered from wind these plants may, at times, cover the entire surface of a pond resulting in the appearance of a solid surface.
- 4.3.1.** Excess Duckweed and Water Meal growth is typically the result of an excess of nutrients from fertilizer combined with warm temperatures and sunshine. These plants are environmentally beneficial as they remove excess nutrients in the pond before those nutrients get into the natural waterways.
- 4.3.2.** Herbicide can be an effective solution to excess Duckweed and Water Meal.
- 4.3.2.1.** Potential concerns with herbicides, if applied properly, include: aesthetic objections to bleaching of shoreline and wetland plantings; unsuitability of the pond water to be used for irrigation; and the introduction of herbicides into the waterways; possible allergic reactions of residents living or walking nearby.
- 4.3.2.2.** Potential concerns with herbicides, if applied improperly, i.e., an excess quantity used include: objectionable odor from the decomposing of plants; depletion of dissolved oxygen in the pond due to the decomposition of the Duckweed; fish kill due to the depletion of dissolved oxygen.
- 4.3.3.** Aerators help improve the overall health of the pond without the environmental risks associated with herbicides. Aerators do not remove these free-floating plants but may concentrate the growths to the pond perimeter, thus likely removing the aesthetic objections. The most effective type of aerator for most ponds is an air diffuser. These are anchored to the pond bottom and create bubbles rising to the surface. A fountain type aerator could also be used for the same purpose but concerns with future dredging preclude its use on the ponds which the Department maintains.
- 4.3.3.1.** Potential concerns with aerators include: the cost (installation, providing power and maintenance); possibility of the aesthetic concerns not being alleviated; complications their presence present in dredging sediment.

**5. Criteria**

- 5.1.** The owner(s) of the pond, if privately owned, or citizens/HOA if the Department owns the pond, must express concern with the aesthetics of the pond in writing. If there is an established HOA in the community surrounding the pond, the Department prefers to work with the HOA in lieu of individual citizens.
- 5.2.** The pond owner, HOA or citizens must agree to absorb all costs and all liability.
- 5.3.** The pond owner, HOA or citizens must agree to appoint a contact person from the community who serve as the liaison between the Department and community.
- 5.4.** The Department must concur in the concerns with the aesthetics and must be able to recommend a general course of treatment that offers a reasonable chance of success while maintaining the functionality of the pond.
- 5.5.** The Department will review the HOA's choice of contractor and detailed plan of treatment.
- 5.5.1.** The contractor must be licensed by the Maryland Department of Agriculture (MDA) for Category V-Aquatic Pesticides and have at least three years experience in that field of aquatic plant management.
- 5.5.2.** If herbicides or chemical dyes are a part of the detailed plan, the herbicides/chemicals must be approved by the MDA and the contractor must agree to have a MDA Certified Aquatic Applicator on site when the herbicide/dye is used.
- 5.6.** The contractor hired by the pond owner, HOA or citizens will be responsible for applying for and obtaining a Toxic Materials Permit (TMC) from the Maryland Department of the Environment (MDE) if the approved plan of treatment includes the use of herbicides or chemicals.