

## A PONDOWNER'S GUIDE

### Reasons for Pond Management

Each pond has its own social, environmental, and economic values. Improvement and protection strategies vary from pond to pond. Often the **enhancement of private property values** alone can be shown to exceed the cost of pond management. Other economic or environmental benefits, such as improved wildlife habitat can make good cases for pond management. Care (as well as neglect) for a pond is infectious in a community. Once a few people start caring for a pond others will follow. Protection can start as simply as picking up trash before it blows into the pond.

A pond ecosystem is a complex community of plants and animals interacting with each other and their environment. Ecosystems with a great diversity of plant and animal life tend to be relatively stable. However, it is not possible to disturb one part of the ecosystem without affecting other parts. Changes around a pond such as new roads and housing developments can alter a pond's delicate balance. A watershed consists of all of the land that contributes water to a specific body of water. Residential homes introduce new substances into a watershed, many of which degrade water quality. In a developed watershed, water picks up salt, oil, gas and lead from roads; pesticides and fertilizers from home gardens and landscaping; and substances disposed of on the ground by homeowners.

Two of the primary influences on pond water quality today are phosphorus and sediment. Phosphorus is a fertilizer. It promotes plant growth in ponds, just as it does in home lawns and gardens. In ponds, however, the crop is algae rather than green grass and garden vegetables. This phosphorus comes from lawn fertilizers, road dust, grass clippings, yard debris, pet droppings, eroded soil, motor oil and other sources. Sediment (from land disturbance) not only carries fertilizers but also causes poor water clarity and filling in of the pond over time. Most phosphorus and sediment is carried to ponds by surface water running into the pond after rainfall or snowmelt.

The algae blooms resulting from an increase in phosphorus turn water green and reduce water transparency. When algae and aquatic plants die they are degraded by bacteria. Bacteria consume oxygen during decomposition and make it difficult for fish and other aquatic life to survive. Ultimately excessive algae blooms alter wildlife habitat, impair scenic views, and reduce recreational appeal.

Each of these impacts is more challenging to manage in ponds created for stormwater detention. As created systems, few have established ecological balances, which increases the likelihood of nutrient and sediment problems. Often engineering requirements and development goals do not take into consideration future management concerns, such as circulation patterns, fish and wildlife habitat, sedimentation, nutrient loading, water quality, and shoreline erosion. These criteria are examined from an economic and landscape design perspective, but management of these dynamic impacts becomes the responsibility of the residents. When studying pond management strategies, each component – physical, chemical, and biological – must be reviewed. Based on the interactions, balances, and imbalances recommendations for management can be determined. It is important to realize that since the system is living, changes and management projects do not always result in the desired goal, but over time and with fine-tuning of strategies, realistic goals can be achieved.

In summary, some realistic goals of pond management include – stabilizing water chemistry, reducing nutrient and sedimentation loading, reducing algae blooms, controlling invasive species, providing a healthy biological system for fish and wildlife, and enjoying the aesthetic beauty of the pond.

### Steps Every Homeowner Can Take:

- ❖ **Keep land disturbance to a minimum, especially removal of natural vegetation and exposure of bare soil. Roads and paths leading to the ponds should be curved to reduce erosion.** Site disturbance dramatically increases surface runoff and erosion that contributes sediment and phosphorus to ponds. Sediment causes the water to become turbid making it difficult for fish to see and feed.
- ❖ **Maintain a buffer zone of natural vegetation along the shore to contain erosion and assimilate nutrients before they reach the pond. Leave at least 25 feet of undisturbed buffer with more on poor soils or steep slopes.** Buffer strips intercept runoff and filter sediment and phosphorus from water before it reaches the pond.
- ❖ **Seed and mulch bare soil as soon as possible after clearing and place hay bales downslope of disturbed areas.** Hay bales trap sediment and the phosphorus they carry.
- ❖ **Do not use fertilizer near the pond shore. If you must use fertilizer on your lawn and/or garden use it sparingly and in multiple applications rather than one large one. Choose fertilizers that contain low, or no phosphorus.** Solid, inorganic fertilizers are readily dissolved by water and transported to the pond in runoff.
- ❖ **Do not use herbicides and pesticides in excess on your garden and lawn. Avoid their use if possible.** Many of these products are toxic and can get into the water.
- ❖ **Pick up all pet wastes. Do not dump leaves or grass clippings, branches or any kind of organic matter into the pond.** When organic materials such as these enter a pond they are broken down by bacteria. The decomposition process reduces oxygen levels in the water and may release ammonia. Low oxygen levels and ammonia combined with warm temperatures can kill fish. Plant debris adds phosphorus and other nutrients directly to the pond.
- ❖ **Encourage vegetation growth in shoreline areas, especially “native vegetation”. Leave trees along the shoreline.** Trees and natural cover best protect against shoreline erosion and sedimentation.
- ❖ **Do not bathe, shampoo or wash pets or other objects in the pond with soap or phosphorus containing detergents. Do not wash automobiles near ponds or drainage ditches.** Runoff containing detergents can add more phosphorus to the pond contributing to algal growth. Runoff should be diverted to vegetated surfaces and allowed to seep into the ground where phosphorus can be removed.
- ❖ **Do not dispose of paint, paint thinners or chemical products on the ground.** These products cannot be removed by soil and can contaminate groundwater and pond water.
- ❖ **Do not feed ducks or other aquatic organisms; there is plenty of natural food available.** Nutrients in the feed material, which is produced outside the pond’s watershed, will be added to the pond through the organism’s feces.

Talk with your neighbors about working together to protect your pond. Remember that caring for the pond in your development is contagious. If you begin to care others will too.

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