

CAMALOCH WATER RETENTION POND MAINTENANCE PLAN

Objective:

The purpose of this plan is to supplement and update the current Camaloch Association Smith Lake (pond) operation document last revised 09/19/12. The objective is to provide an adequate water source for golf course irrigation by collecting surface water runoff from the Association roadways while providing a multi-use amenity that the entire community can both utilize and benefit from.

Operation Personnel:

It is highly recommended that existing inhouse personnel be trained and certified to apply the needed chemical applications to meet our needs on a timely basis. Previous attempts to utilize outsourcing methods have produced substandard and uneven application of products that failed to meet our needs or timeframe. These same personnel could be utilized to maintain the pond condition in an ongoing capacity.

Water level:

When the pond is at full capacity it provides all of the needed resources listed above. As the level drops by more than (1) foot the quality of the product provided starts to decline and by (2) feet the effects on the East end of the pond become quite apparent. Weed and algae growth accelerate at a much faster rate when these conditions occur. This causes an unsightly appearance and foul smell to emanate from that area. Fish kill is increased for this area adding to the increased odors. For these reasons the pond level should receive supplemental input from the pumping station located at the East end of the pond when the level drops by more than (8"). During the summer months when rain fall drops significantly and demand increases the East end pumping station may not be able to keep up with demand. When this occurs, the domestic system may need to be utilized on a limited basis to keep the pond levels at optimum operating depths. Utilization of the East end pumping station will provide an added benefit of keeping higher oxygen levels in this part of the pond as it is the farthest location from the oxygen distribution system which is located at the West end of the pond.

Water Quality:

The quality of the water contained in the retention pond correlates directly to the level of noxious odors that may emanate from the lake with regard to fish kill and aquatic plant decay. The water in the pond is subjected to high levels of nitrates from plant decay, septic runoff and fertilizer applications on home lawns that are brought to the pond through rain runoff from the road drainage system.

Chemical applications are now available that are fish safe and will cause the nitrates to bond together and fall to the bottom of the lake reducing their effect on the water at the mid and upper levels of the water column. This process has an added benefit of reducing the turbidity level in the pond waters allowing for increased visibility deeper in the water column. To the maintenance team this will allow more accurate viewing of where aquatic weed control is needed and the effects of an application of control products. With regard to the fishing enthusiast it provides added safety from submerged snags and stumps which dot the pond floor.

The pond contains a four head four location aeration system to mix the water column at strategic locations within the pond. Care should be taken to ensure that all four stations are in operating order throughout the year.

Aquatic Weed Control:

The chemical application process for this pond has in the past been temperature dependent with a minimum temperature needed for effective results of the chemical applied. This caused a shortened application season and resulted in too large an area being treated at one time. The negative effects of these events were a wild fluctuation on oxygen levels in the water column which produced higher stress levels on the fish population and in some cases large fish kills. The chemicals available today are not temperature dependent allowing for an increased application season.

It is important to not treat the entire retention pond at the same time. Such actions will increase the plant decay in the pond again causing the oxygen levels to radically fluctuate. The treatment should be applied to no more than one third (1/3) of the pond at any one time. The highest priority portion of the pond is the

western third as this is where the water outlet for the irrigation system that feeds the golf course needs is located. The next highest priority area is the eastern third (1/3) of the pond as the depth of the water column in that area is the shallowest. The central one third (1/3) of the pond has a deeper water column and is wider allowing for a better mixing of the water column. Oxygen levels should be monitored on an as needed basis to keep the oxygen levels at the lower depths at no less than a 6.0 reading with a more acceptable rate of 7.0 to 8.5 range.

Shoreline Maintenance Plan:

The area within 50 feet of the pond overflow outlet should be weed and plant life free to allow for proper water flow through the outlet during peak flow periods. This same plant free condition should be maintained along the entire western end of the pond as this is where the irrigation pumping station and the draw pipes for the system are located. Lack of attention to weed control in the past has caused aquatic plants to be ingested into the pumping system fowling numerous sprinkler heads on the course and adding many manhours to the maintenance costs that were not value added.

The cattails, lily pads and shrubs along the sides of the pond pose a dual condition. They cause additional decaying material and potential clogging condition on the negative side. On the positive side they provide nesting areas for several types of birds as well as tailless amphibians that frequent the area and protection areas for the fish that populate the pond. It is recommended that these be allowed in an area that does not exceed 15 feet in length with at least 100 feet between them and to not extend into the pond more than 4 feet from the shoreline. This will allow for maximum utilization of the pond while maintaining a balance with the nature that surrounds it. Do to the large volume of deciduous trees and shrubs that surround the shore of the pond it is suggested that the Board of Trustees work with the property owners to remove non-decorative deciduous trees and shrubs within 15' of the shoreline. This will greatly reduce the leaves falling into the pond which add to the decaying process.

Summation:

It is recommended by this committee that a pond review team be established. This team should consist of three at large members of the community with one being the team focal. This team would interface with the Business Manager of the community to review the pond condition on a bi-monthly basis throughout the year. The Business Manager would then interface with the Board of Trustees *on any actions needed to properly maintain the retention pond and its operating systems.*

Respectfully submitted for your consideration and adoption,

Larry Shaw

Water retention pond team focal