

It is the hope of the Village that Homeowners Associations use this information as a **guideline** when developing a maintenance plan and budget for the maintenance of their outlot containing a wet detention basin. The plan and budget can include contracted items as well as maintenance items that are completed by homeowners. Please note that the design standards for outlot basins have been changing over the years to improve water quality. Due to many design factors and standards in place at the time of construction, not all the outlot basins in the Village have the same construction design or maintenance requirements. This document was designed as an aid for Homeowners Associations. Please contact the Public Works Department at 262/925-6765 for more information.

The following is a list of suggested maintenance for a wet detention basin and surrounding green space to achieve a “pleasing park like setting.” There are two types of maintenance items that are addressed. The first are ***maintenance items that affect aesthetics of the wet detention basin***. The second are ***relevant maintenance items from the Village’s Storm Water Management Plan that affect the quality and volume quantity functions of the wet detention basin***.

***Maintenance Items That Affect the Aesthetics of the Wet Detention Basin***

The Village has defined the maintenance required to achieve a “pleasing park like setting” to be equal to the maintenance that a resident in a subdivision would perform on their own yard. Please note that the time of year and weather conditions will ultimately dictate many of these items. The recommended times to perform the maintenance line item are based on anticipated need. The second part will provide a detailed description of how to perform each of the maintenance line items.

**Part 1. Maintenance Item**

|                     | <u>Maintenance Activity</u>           | <u>Estimated Times Per Year</u> |
|---------------------|---------------------------------------|---------------------------------|
| Maintenance Item 1. | Lawn Mowing, Trimming                 | (28 times)                      |
| Maintenance Item 2. | Lawn Fertilization                    | (three times per year)          |
| Maintenance Item 3. | Weed Control                          | (two applications per year)     |
| Maintenance Item 4. | Tree Circle & Plant Bed Spraying      | (6 times)                       |
| Maintenance Item 5. | Clean Pond Edges                      |                                 |
| Maintenance Item 6. | Pond Treatment Chemicals              |                                 |
| Maintenance Item 7. | Pump Maintenance                      |                                 |
| Maintenance Item 8. | Water Meter and Sprinkler Maintenance | (If drought conditions exist)   |
| Maintenance Item 9. | Spring Cleanup                        |                                 |

Please note that the Homeowners Associations have the opportunity to perform any or most of the above listed maintenance items to reduce the maintenance costs of an Outlot. A helpful idea is to take turns mowing the grass, and have a maintenance weekend where clean up, fertilizing and mulching of the trees can be performed. This can reduce the annual maintenance cost for maintaining an Outlot. It is recommended that some of the items, such as application of pond treatment chemicals and pump maintenance, be completed by professionals. Residents interested in contracting for maintenance should seek bids from reputable contractors.

**Part 2. Detailed Description of Maintenance Items Listed Above:**

**Maintenance Item 1. Lawn Mowing, Trimming**

It is recommended to mow grass when the average grass height is four (4) inches. The recommended length cut during a mow session is one (1) inch. That should leave the cut grass at a height of three (3) inches. If the grass is unable to be cut due to weather restrictions and mowing of the grass results in windrowing, it is recommended that the excess grass be bagged and brought to the Village Compost drop-off site located at 8600 Green Bay Road during operating hours. This will keep the grass from matting underneath the excessive deposited grass. The number of mow sessions per year is largely dictated by weather conditions. It can be safely averaged at one (1) mow session per week. The mowing season normally begins in the spring of each year around mid-April and continues through the third week of October (28 weeks). Trimming the grass around areas that cannot be safely maintained with a lawn mower is recommended each time that the grass is mowed.

## **Maintenance Item 2. Lawn Fertilization**

It is recommended that grass areas of the Outlot be fertilized in order to maintain healthy grass. Healthy grass will restrict the amount of erosion on the side slopes and increase the aesthetic appearance of an Outlot. Fertilizing the grass area is recommended three (3) times per season, once each in the spring, summer and fall. If the Homeowners Association chooses to apply fertilizer in house, it is important to follow the manufactures instructions for application. It is highly recommended to apply fertilizer that contains low or no phosphorous. This can be purchased at local garden centers or farm coops.

## **Maintenance Item 3. Weed Control in the Turf Areas**

It is recommended that weeds in the turf areas be controlled. A broadleaf and crab grass weed control should be applied two (2) times per season, once in the spring and again in the fall. Controlling the weeds will help to keep the turf healthy. Promoting healthy grass will restrict the amounts of erosion on the side slopes and increase the aesthetic appearance of the Outlot, providing a “pleasing park like appearance.” If the Homeowners Association chooses to apply weed control in house, it is important to follow the manufactures instructions for application. Weed control products can be purchased at local home improvement centers, garden centers or farm coops.

## **Maintenance Item 4. Maintain Tree Circle & Plant Bed Spraying**

It is recommended to cut a clean edge into the turf in a circle that has the diameter equal to the drip edge (the widest area of branches from the trunk of the tree). The area within the drip edge to the trunk of the tree should be mulched. It is also recommended to control the weeds and grass in the tree circles (the mulched area around the trees) and around any mulched areas by plant beds six (6) times per year. Controlling the weeds and grass in these areas will improve the aesthete appearance of an Outlot. If the Homeowners Association chooses to control the weeds and grass in the tree circles and around any mulched areas by plant beds in house, it is important to follow the manufactures instructions for application. Weed and grass control products can be purchased at local home improvement centers, garden centers or farm coops.

## **Maintenance Item 5. Clean Vegetation From Pond Edges**

If the pond edges by the rocks show vegetation growth, it is recommended that the vegetation be removed from the pond edges. This task can also be completed by weed trimming the areas around the rocks during the grass cutting and trimming task. If chemical treatment is required, it is recommended that a landscape professional apply chemicals around the pond edge. Special permits from the DNR and special chemicals formulated to use around ponds and wetland vegetation are required.

## **Maintenance Item 6. Pond Treatment Chemicals**

The purpose of adding chemicals to the pond is to control algae. Blue color tint can added to the water (this reduces the sunlight into pond, controlling the algae). It is recommended that a professional add any chemicals to a pond. If cattails are present, they can be removed manually or chemically. If chemical treatment surrounding a pond is required, it is recommended that a landscape professional apply the chemicals around the pond edge. Special permits from the DNR and chemicals formulated to use around ponds and wetland vegetation are required.

## **Maintenance Item 7. Fountain Pump Maintenance and Run Times (only if the outlot was originally constructed with Fountain Pump provisions)**

The pump is required to be taken out of the pond in the fall, inspected for wear or damage, winterized and stored during the winter months, and installed back into the pond in the spring each year. It is recommended that a qualified company perform this maintenance to inspect and properly store the pump for the winter. Improper maintenance techniques used during this process are not covered under most manufacturers’ warranties.

The DNR allows fountains in wet detention basins. Fountains in ponds: add oxygen, reducing the amounts of surface algae; keeps the water from becoming stagnant, deterring insects and minimizing West Nile Virus and the spread of Eurasian milfoil; and improves the aesthetic appearance of the water body. Please follow the fountain manufacturer's guidance with regards to recommended run times. For more information on fountains contact the Public Works Department at 262/925-6568.

**Maintenance Item 8. Water Meter and Sprinkler Maintenance**  
**(only if the outlot was originally constructed with irrigation provisions)**

A water meter needs to be installed and sprinkler system operated only when drought conditions exist. This can be determined when the grass turns brown during summer months and there has been less than average precipitation. If there is not a drought condition, there will not be a charge for this item. It is a good practice to budget some money in case it is required.

**Maintenance Item 9. Spring Cleanup**

It is recommended that clean up be performed on an Outlot each spring to remove any leaves, garbage or other debris that has accumulated over the winter months. This would be a good project for the neighborhood to complete as a group on a weekend in the spring to save money on maintenance costs.

*The following are relevant maintenance items from the Villages Storm Water Management Plan that affect the quality and volume quantity functions on the wet detention basin.*

**Recommended Pond Maintenance Guidelines**

It is therefore important that a rigorous Pond Maintenance plan be implemented to ensure the continued operation of these facilities. Pond Maintenance Guidelines include the areas of vegetation and planting inspection, structural inspection, and sediment removal. It is recommended that the following items are included in a regularly scheduled maintenance plan.

**Vegetation**

**Trees and Brush:** Trees and brush will not be permitted on structural berms or embankments engineered for runoff storage purposes. Extensive root systems can provide seepage paths for water. Trees that blow down or fall over can leave large holes in the slope or berm surface that will cause instability can lead to increased erosion. Brush obscures the surface limiting visual inspection, provides a haven for burrowing animals, and retards growth of grass vegetation. Tree and brush growth adjacent to concrete walls and structures may eventually cause damage to the concrete and therefore will be removed.

**Stump Removal and Sprout Prevention:** Stumps of trees should be removed so vegetation can be established and the surface mowed. Stumps can either be removed by pulling or with machines that grind them down. All woody material should be removed to about 6 inches below the ground surface. The cavity should be filled with well-compacted soil and grass vegetation established.

Stumps of trees in riprap cannot usually be pulled or ground down, but can be chemically treated so they will not continually form new sprouts. Certain herbicides are effective for this purpose and can even be used at water supply reservoirs if applied by licensed personnel. These products should be painted, not sprayed, on the stumps. Other instructions found on the label should be strictly followed when handling and applying these materials. Only a few commercially available chemicals can be used along shorelines or near water.

**Landscaping:** Vegetation shall be examined regularly, at least twice during the first two growing seasons, and then on a yearly basis after that. Stunted growth of pond vegetation or growth and excessive invasive species indicate that increased maintenance and intervention will be necessary.

**Pond Slopes and Berms**

Structural embankments and berm slopes, areas adjacent to outlet structures will require continual maintenance of the vegetated cover. Grass mowing, brush cutting, and removal of woody vegetation (including trees) are all necessary for the proper maintenance of the berms. It is important to remember not to mow when the slope is wet. It is also important to use proper equipment for the slope and type of

vegetation to be cut. Aesthetics, unobstructed viewing during inspections, and discouragement of groundhog habitation are reasons for proper maintenance of the vegetated cover.

Acceptable methods include the hand removal of invasive species, use of weed whips, or power brush-cutters and mowers. Chemical spraying to first kill small trees and brush is acceptable if precautions are taken to protect the local environment.

Going one step beyond controlling vegetation, a lack of vegetation may produce erosion. All areas experiencing erosion should be vegetated immediately.

### **Pond Dredging**

One of the chief goals of inspection, operation, and maintenance practices is the preservation of the storage volume in ponds. Sedimentation below the normal water elevation reduces the volume of the permanent pool and thereby reduces water quality benefits. Any sediment accumulation above the normal water elevation will reduce the available flood storage capacity.

Excessive sediment buildup at the pond bottom required pond dredging as part of the regular maintenance of the facility. It is expected that under normal operation and circumstances, dredging will be required approximately every 15 to 20 years. The following practices help ensure dredging is not warranted prematurely:

- Construction site erosion control,
- As-built survey of the pond at time of completion,
- Successful re-vegetation and/or restoration of pond surroundings.

Unusual circumstances, very high flows, flooding, or slope instabilities may result in higher than normal sediment buildup. If such build up is observed or measured, dredging on a limited basis may be necessary. No buildup of sediment above the normal water level will be allowed and such buildup will be removed as soon as practically possible to do so.

### **Mechanical Maintenance**

**Galvanized Steel Grating:** The galvanized steel grating should require minimal maintenance. Maintenance should be scheduled as the result of deficiencies found in the detailed inspections. Possible maintenance includes replacement of the steel hold-down clips, cleaning, treating, and applying surface finishes.

**Concrete:** During inspections, the concrete portions of the outlet box structure should be examined for spalling, cracking, slipped joints or other movements, erosion, etc. Cracking can indicate excessive stress and can lead to seepage. Seepage through cracks and joints promotes further deterioration of concrete through freeze-thaw cycles. If ignored, these conditions can lead to exposure of reinforcing steel, which in turn can lead to failure of the structure. The speed at which the cracks widen should be tracked and documented with photographs or instrumentation records. Any cracks or displacement of joints in the concrete require the immediate attention of a qualified engineer. Do not attempt repair of cracks.

Other observed surface deterioration should be repaired with a concrete patching material. In areas that may be submerged during flooding conditions, the material should be a polymer-modified, Portland cement-based, two component, fast setting, trowel grade patching mortar suitable for continuously submerged applications. For applications greater than 1 inch in thickness, aggregate should be added per manufacturer's recommendations. Prior to application, a bonding agent compatible with the patching mortar should be used to prepare the existing concrete surface.

### **Miscellaneous Pond Maintenance**

**Debris and Obstructions:** It is important to regularly remove any accumulation of debris, which may act to block the primary outlet, the trash rack leading into the outlet pipe, or the outlet pipe itself. If any of these items become obstructed, a rise in the pond level could occur, creating undue stress and endangering the slopes and berms. In addition, debris can promote deterioration of the slopes through abrasive actions.

**Animal Burrows:** Animal burrows provide a seepage path for water through the berms. Concentrated seepage can result in slope failure. All burrows should be filled in with soil or grout, topped and seeded for erosion protection.

**Riprap (broken stone):** Riprap protection against scouring and erosion shall be provided at pond inlet and outlet pipe discharge locations. Riprap can also be placed at overflow berms and emergency overflow locations to ensure the structural stability of berms and embankments.

Maintenance of riprap areas should be relatively minor. Any displaced riprap should be replaced. This may be occurring near the water surface, when ice accumulation can move riprap.

The riprap at the site shall be placed over geotextile fabric. Roots from vegetation may act to compromise this fabric, thereby reducing its effectiveness. Therefore, all vegetation in riprap areas should be removed using methods described in Vegetation Maintenance.

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