



City of Solon Sewer Division



Maintaining Your Detention Basin

A Guidebook for Private Owners
In the City of Solon



Maintaining Your Detention Basin A Guidebook for Private Owners in The City of Solon

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Introduction

Your detention basin is a storm water Best Management Practice (BMP) designed to reduce the impacts of pollutants and increased storm water on local streams caused by development. They are an essential part of the City of Solon's efforts to regulate the flow of storm water and improve the quality of our streams, rivers, and lakes; however detention basins will fail prematurely if not properly maintained. Once a detention basin fails, it will no longer perform its intended function and it is often very expensive to restore to its constructed condition.

- **What are detention basins and why are they important?**
- **Do you have a detention basin near your property?**
- **Are there different types of detention basins?**
- **Are you responsible for maintenance?**
- **Maintenance? Why is it necessary?**
- **What maintenance tasks should be considered?**

Whether you are an individual property owner, a home owners' association representative, or a residential/commercial property manager, this Guidebook will answer all of these questions and provide you with step-by-step instructions for maintenance activities. Routine maintenance will prolong the life of your detention basin, improve its appearance, prevent flooding and property damage and enhance local streams and lakes. This Guidebook is not a set of rules and regulations on how to design or build a detention basin.



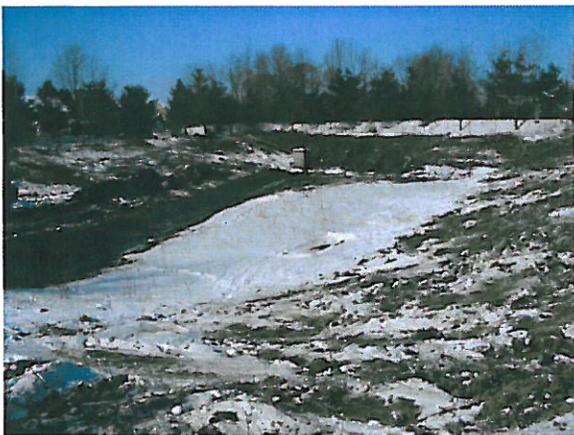


What are detention basins and why are they important?

When land is altered to build homes and other developments, the natural system of trees and plants over relatively spongy soil is replaced with harder surfaces like sidewalks, streets, decks, roofs, driveways, and even lawns over compacted soils. As a result, less rainwater is soaked up and more rain water/storm water flows off the land at a faster rate. This can lead to stream bank erosion within the local streams and possible downstream flooding. As development occurs, storm water runoff contains higher levels of pollutants.

In addition, there are increased concentrations of pollutants in storm water/drain water (called non-point source pollution). These pollutants include sediment, phosphorus and nitrogen from fertilizers, salts, and oil and grease from roads and parking surfaces, and bacteria from pet waste. These pollutants, which are a direct result of a variety of common outdoor human and animal activities in the neighborhood, degrade water quality and limit the habitat for wildlife in the stream. Every storm water detention basin located in the City of Solon plays an important role in improving and protecting water quality.

Your detention basin (along with others in the area) helps to slow the rate of runoff from the neighborhood and improve the quality of the storm water leaving the detention basin. They are important in protecting public and private property, public health and safety, and water quality. The basin collects and traps sediment pollutants and other debris from storm water that would otherwise end up clogging our rivers and streams and degrading the environment for fish, birds, and other wildlife.





Do you have a detention basin near your property?

If your development was built after the mid-1980's you may have a detention basin that manages storm water runoff. If you live in a residential community, your association bylaws or master deed may indicate the location of any detention basins. If you are unsure, then contact the City of Solon Public Works Department.



Are there different types of detention basins?

Yes there are. Some detention basins are dry and have mowed turf grass in the bottom of them. These basins are referred to as dry basins.

Some detention basins are primarily dry, but have a narrow concrete channel for water flow from the inlet to the outlet.

Newer detention basins are designed to have a permanent pool of water and are commonly called wet ponds. These wet ponds store water throughout the year, but also fill with storm water after rain events, but allow the water to exit to a neighboring storm sewer or creek through an outlet structure. If a detention basin does not have an outlet, then it is called a retention basin. Water that collects in retention basins must infiltrate into the ground or evaporate.

The advantages of a wet pond over a dry basin are higher pollutant removal efficiencies and less chance that pollutants will be re-suspended during a storm. Wet ponds can also serve as an aesthetic or recreational amenity as well as habitat for some wildlife.

All detention basins will collect and fill with rain water or storm water runoff during and after rain events. Because there are several categories of detention basins, understanding the type of detention basin you have will help to better plan for its maintenance needs. Contact the Solon Public Works Department for more information regarding your specific detention basin.



Are you responsible for detention basin maintenance?

We are all responsible for protecting water quality. However, if your home owners association or business is subject to a maintenance agreement, most likely you are the responsible party. It is important to check your maintenance agreement to identify your specific legal obligations. If you are not sure who is responsible for maintenance, contact Solon's Public Works Department.



What maintenance tasks should be considered?

A consistent maintenance program is the best way to ensure that a detention basin will continue to perform its water quality and flood control functions. The first step in a maintenance program is to obtain a copy of the detention basin plan from our Engineering Department to determine how your basin was designed to function. In general, a maintenance program should contain the following components:

- **Regular inspections;**
- **Review by service director or city engineer;**
- **Vegetation management;**
- **Embankment and outlet stabilization;**
- **Debris and litter control; and sediment/pollution removal;**
- **Sediment and pollution removal.**

The remaining sections of the Guidebook focus on describing the maintenance tasks required for proper basin function as well as frequency of various tasks. The following categories of maintenance tasks are further described in the Guidebook:

- **Storm sewer system and structural components;**
- **Vegetation management;**
- **Property management activities that benefit your basin.**

It's important to keep records of all inspections, maintenance activities, repairs and associated costs. A table has been provided at the back of this Guidebook for your use to assist in documentation (Maintenance Record and Detention Basin Inspection). Finally, before starting any maintenance activities, check with the Public Works Department to determine what, if any, permits are necessary.





Maintenance Tasks: Detention Basins

The storm sewer system includes pipes, catch basins and the outlet structures that enter and exit the detention basin. It is important to regularly inspect the structural elements (inlet/outlet pipes, headwall and channels) of your detention basin in order to ensure that storm water is flowing in and out of the basin as originally designed. Debris and sediment commonly clog detention basins and reduce the basins overall effectiveness.

The following maintenance and inspection tasks should be included for the structural basin components: (also see Maintenance Record and Detention Basin Inspection located at the end of this Guidebook).

1. **Inspect for clear vehicle and equipment** access into detention basin and in particular the outlet structure.
2. **Inspect the inlet pipes and outlet pipes for structural integrity. (Annually)**
Check inlet/outlet pipes for structural integrity to ensure they aren't crumbling or broken.
3. **Inspect riprap at the inlet pipes.** Replace when the riprap is clogged with sediment and debris.
4. **Conduct routine inspections** for trash sediment or other debris that may be blocking the inlet or outlet pipes or emergency spillway. (Monthly and after rain events). Remove all trash and debris from the basin. Improperly maintained basins can harbor breeding area for mosquito's and reduce the storage volume of the basin.
5. **It's important to clean out sediment** that might be restricting water flow. Remove accumulated sediment with a shovel and wheelbarrow if it is blocking water flow. Small amounts of removed sediment can be spread evenly upland areas and seeded with natural vegetation.
6. **The city will inspect and clean** the storm sewer system and catch basins upstream from the detention basin.
7. **Inspect the stone around the outlet structure.** (monthly and after rain events). If stone has accumulated sediment, vegetation and/or debris to an extent that water is not flowing through the stone and out of the basin as originally designed, then the stone should be replaced.
8. **Inspect for excess sediment** accumulation in the basin or pond. (Annually).
9. **Weekly mowing of grass and vegetation** will keep your basin clean and clear. Less frequent mowing requires collection of large amounts of brush which could cause blockages.



Maintenance Tasks: Property Management

Property management refers to specific activities that you as a property owner can do to enhance the detention basin and minimize long-term maintenance. A number of these activities are described as follow:

- 1) **Do not use pesticides, herbicides, or fertilizers in your basin.**
These products will leach from the basin and pollute our streams and rivers. In addition, these chemicals are harmful to wildlife, including frogs, toads, fish, dragonflies, etc.
- 2) **Do not place yard waste such as leaves, grass clippings or brush**
In or around the detention basin or in the storm drains located near the streets. These materials release excess nutrients as they decompose and will lead to more algae growth in ponds, basins and channels. They also have the potential to cause blockages in the system.
- 3) **Do not dump any materials in the storm sewer system.**
Improperly disposed of materials will pollute the basin and streams.
- 4) **If you must use fertilizers, only use low-phosphorus, slow-release varieties.** Keep fertilizers as directed on the lawn and not on paved areas. Sweep all excess material from sidewalks and paved areas.
- 5) **Pick up and dispose of pet waste with your weekly garbage.**
- 6) **Provide educational updates to the property owners.** Discuss your maintenance plan at regular meetings, provide information in newsletters, and host annual clean-up days.





Maintenance Record and Detention Basin Inspection

Task	Inspection Frequency	Year:		
		Contractor Name & Phone Number	Cost	Notes
Storm Sewer Systems				
Inspect the inlet pipes and outlet pipe for structural integrity	Annual			
Inspect riprap at inlet pipes	Annual			
Inspect concrete trough for settlement, heaving or erosion	Annual			
Conduct routine inspections for sediment, trash or other debris that may be blocking the inlet or outlet pipes or emergency spillway	Monthly and after rain events			
Inspect the stone around the channel and outlet	Monthly and after rain events			
Inspect outlet structure for accumulation of debris	Monthly and after rain events			
Inspect for excess sediment accumulation in the pond or basin bottom	Annually			
Mow grass and vegetation and weed whip where necessary	Weekly during growing season			
Inspect for clear vehicle and equipment access to outlet structure				



Ordinance

1st reading 5/21/07
2nd reading 6/4/07

Requested by the
Council

ORDINANCE NO: 2007-128

INTRODUCED BY: Stolarsky

AN ORDINANCE AMENDING SECTION 1261.02 AND 1288.02 OF THE PLANNING AND ZONING CODE TO ESTABLISH RESPONSIBILITY FOR THE MAINTENANCE OF ALL STORM WATER MANAGEMENT INFRASTRUCTURE, PROVIDING FOR AN ENFORCEMENT PROCEDURE AND ADDING APPLICABLE DEFINITIONS

WHEREAS, it is necessary to establish regulations for the maintenance of all storm water management infrastructure; and

WHEREAS, it is necessary to provide a procedure for enforcement of such regulations.

NOW, THEREFORE, BE IT ORDAINED by the Council of the City of Solon, State of Ohio:

SECTION 1. That **Section 1261.02 (Definitions)** of the Planning and Zoning Code is hereby amended to add the following definitions:

"STORM WATER MANAGEMENT SYSTEM" *All aspects of the system designed to effectively regulate and control storm water runoff emanating from one property or development to another, and which includes but is not limited to retention basins, detention basins, open waterways, and drainage easement areas.*

"DETENTION BASIN" *A flow control structure that is used to contain storm water for a limited period of time, and provides protection for areas below it by containing storm water. The water is discharged from the basin until the basin is empty.*

"RETENTION BASIN" *A flow control structure that is used to contain storm water for a limited period of time, and provides protection for areas below it by containing storm water. Some water remains in the basin area.*

"STORM WATER" *Water that originates during precipitation events, snowmelt, or other runoff sources.*

"STORM SEWER" *A series of buried pipes, manholes, catch basins, or culvert pipes that are designed to drain excess rain and groundwater from paved streets, parking lots, sidewalks, and roofs, and convey to a drainage way.*

"STORM WATER RUNOFF" *Water from rain, snowmelt, or other sources, that flows over the land surface.*

"DRAINAGE WAY" *Use of the land to collect and transport storm water runoff in a swale, ditch, channel, or stream.*

SECTION 2. That **Section 1288.02 (Prohibition of Specific Property Conditions)** of the Planning and Zoning Code is hereby amended to add the following:

8. MAINTENANCE OF STORM WATER MANAGEMENT SYSTEMS

- A. MAINTENANCE REQUIRED** - The Homeowners Association for each residential development and/or the owner of each lot or parcel within the residential development, as well as the owner(s) of any non-residential development, shall be responsible for maintaining in good working order the Storm Water Management System that has been provided to control the storm water runoff generated by such development. However, the City of Solon shall be responsible for maintaining any Storm Water Management System that is located on City owned property.

Minimum required maintenance of detention and/or retention basins shall include but not be limited to the control of vegetation within basin areas so as to not exceed a height of ten (10) inches unless otherwise explicitly approved by the City Planning Commission and/or City Council as part of a professional landscape plan. In addition, detention and/or retention basins shall not be permitted to accumulate with silt, soil, branches, trees, vegetation, debris, or any other obstructions, or to become damaged or compromised in any way so as to prevent the detention and/or retention basin from effectively operating in the manner in which it was designed and intended as determined by the City Engineer.

Open drainage ways, or any portion thereof, located on any lot or parcel shall be maintained free from accumulations of silt, soil, branches, trees, vegetation, debris, or any other obstructions which impede the natural flow and/or course of the open waterway as determined by the City Engineer.

- B. ABATEMENT OF VIOLATIONS** - If the Homeowners Association for the residential development and/or the individual lot or parcel owners within the residential development, or the owner(s) of any non-residential development, after being given notice to comply with the requirements of this section, fail, neglect, or refuse, within thirty (30) days to comply with said order by the City, the City may take such action required by such order, either by force account or by contract, or the City Prosecutor or Director of Law may institute legal proceedings to compel compliance with the order. The City Engineer is authorized to grant an extension of the thirty (30) day compliance period if in his/her professional judgment additional time is reasonably required to correct the violation in question.
- C. COLLECTION OF COSTS** - Any cost or expense incurred by the City pursuant to achieving compliance with the requirements of this Section, shall be reimbursed to the City by the Homeowners Association and/or the individual lot or parcel owners within the residential development, or the

owner(s) of any non-residential development, including an additional twenty five percent (25%) of either the contractors price or the City's remedial expenses to cover the City's administrative cost of maintaining the Storm Water Management System. If not so paid by the Homeowners Association and/or the individual lot or parcel owners within the residential development, or the owner(s) of any non-residential development, within thirty (30) days after billing, such expense or cost may be recovered by an action at law against such responsible parties, and to the extent permitted by law, by Ordinance of Council, and be certified to the County Auditor and placed proportionately on the tax duplicates of any lot(s) and/or parcel(s) owned by the Homeowners Association for the residential development and/or on each individual lot or parcel owned within the residential development, or on the lot(s) and/or parcel(s) owned within any non-residential development, for collection and shall become a lien on such lot(s) or parcel(s).

SECTION 3. That all other ordinances and resolutions inconsistent herewith be, and the same hereby are, repealed.

SECTION 4. This Ordinance shall take effect and be in force from and after the earliest period allowed by law.

Passed: June 18, 2007

Mayor

ATTEST:

Clerk of Council



Detention Basin Inspection and Maintenance



Inspect for excess sediment accumulation in the basin. It is important to clean out sediment that might be restricting water flow.

Remove accumulated sediment with a shovel and wheelbarrow if it is blocking water flow. Small amounts of removed sediment can be spread evenly upland areas.



Mow grass and vegetation and weed whip where necessary. Weekly mowing of grass and vegetation will keep your basin clean and clear. Less frequent mowing requires collection of large amounts of brush which could cause blockages.





Detention Basin Inspection and Maintenance Record

Subdivision: _____

Location: _____

Type: ___ wet ___ dry

Inspection/Maintenance

by: _____

Phone # _____

Date _____

Checklist

Is the basin being mowed on a regular basis?

Is there sediment accumulated in the stream channel?

Are the inlet and outlet pipes, headwall and stream channel free of debris and obstructions?

Was any erosion noted during inspection.

Are there any additional maintenance or repairs needed?

Task:	Inspection Frequency	Contractor Name & Phone#	Cost	Notes
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Record all inspection and maintenance activities on copies of this form. Annually, before June 1st, submit a copy of these records to the Public works commissioner.



Detention Basin Inspection and Maintenance Record

Subdivision: Location: Type: ___ wet ___ dry	Inspection/Maintenance by: _____ Phone # _____
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Checklist

- Is the basin being mowed on a regular basis?
- Is there sediment accumulated in the stream channel?
- Are the inlet and outlet pipes, headwall and stream channel free of debris and obstructions?
- Was any erosion noted during inspection.
- Are there any additional maintenance or repair needs?

Task	Inspection Frequency	Year:		
		Contractor Name & Phone Number	Cost	Notes
Storm Sewer Systems				
Inspect the inlet pipes and outlet pipe for structural integrity	Annual			
Inspect riprap at inlet pipes	Annual			
Inspect concrete trough for settlement, heaving or erosion	Annual			
Conduct routine inspections for sediment, trash or other debris that may be blocking the inlet or outlet pipes or emergency spillway	Monthly and after rain events			
Inspect the stone around the channel and outlet	Monthly and after rain events			
Inspect outlet structure for accumulation of debris	Monthly and after rain events			
Inspect for excess sediment accumulation in the pond or basin bottom	Annually			
Mow grass and vegetation and weed whip where necessary	Weekly during growing season			
Inspect for clear vehicle and equipment access to outlet structure				

Notes:

Record all inspection and maintenance activities on copies of this form. Annually, before June 1st, submit a copy of these records to the Public Works Director, 34200 Bainbridge Road, Solon, OH 44139 or fax to 440-248-8969 or the Sewer Division Manager, 6600 Cochran Road, Solon, OH 44139 or fax to 440-248-8969.

