

# *Homeowner's Guide to Drainage*



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## INTRODUCTION

Drainage and flooding problems in and around your home can be a costly and damaging nuisance. While you are developing your lot or landscaping your yard, you can inadvertently create flooding and drainage problems for you and your neighbors.

Fortunately following the guidelines listed in this booklet can often prevent most of these problems. These guidelines are based on actual problems encountered, and are intended to provide a brief overview of typical situations.

The guidelines are general in nature and may not fit all situations. If you have an unusual problem or have a specific question please contact your local permitting office. If you live in an unincorporated area Will County, please contact the Will County Land Use Department. If you live within a city/village, then you will need to contact them for assistance.

## FREQUENTLY ASKED QUESTIONS

### **What is stormwater?**

Stormwater is the water from melting snow or falling rain. Impervious surfaces such as rooftops, driveways, and roads prevent water from being absorbed into the ground. The portion of water that is not absorbed into the ground is what is known as stormwater runoff.

This water in motion picks up and carries a wide variety of pollutants and litter which flows into our storm drains and eventually empties directly into our waterways, rivers, lakes, and oceans. Unlike household wastewater, stormwater is not treated. This means the everyday has a direct impact on our local water quality.

### **Why is stormwater management important?**

Water that is not absorbed into the ground flows downstream. If not managed, this excess flow can cause flooding problems. Also, water from rain and irrigation carries fertilizers, pesticides, soil, and other debris off lawns and streets into neighborhood storm drains that lead directly to our streams, rivers and lakes. Traditional stormwater management has focused on removing quantities of water from our streets and neighborhoods, with the primary goal being to prevent flooding. But water quality has quickly become an important aspect as well. Stormwater BMPs (Best Management Practices) can help with both quantity and quality concerns.

## STORMWATER DOS & DON'TS

### **DOS:**

- Keep stormwater facilities (grates, pipe, and culverts, swales) open and clear at all times.
- Sod, seed, or mulch exposed soil as soon as possible to prevent soil from entering the stormwater system.
- Talk with your neighbors about drainage in your area.
- Have downspouts and sump pumps discharge on your property and direct the flow away from the home and property line.
- Try to minimize impervious area (sidewalks, patio, pavers, roof etc)
- Keep fences out of drainage easements and stormwater facilities.
- Install a small concrete flow channel below roof drain outlets and sump pump discharge locations to minimize erosion in these areas.

### **DON'TS:**

- Pour contaminants down the storm water drains.
- EVER remove grates or manhole lids, not even to remove an obstruction to flow. Only public works personnel are authorized to remove these types of structures for maintenance.
- Put grass clippings, leaves, or other yard waste into stormwater facilities (i.e. ditches, channels, swales, drains).
- Direct gutters and sump pumps onto neighboring properties or onto your property line.
- Construct fences perpendicular to the water flow.
- Place dirt, sand, rock, retaining walls, or other construction material in a stormwater facility (grates, pipe and culverts, swale).
- Expect stormwater facilities to be completely dry immediately after a rain event.

## DRAINAGE AROUND YOUR HOME OR PROPERTY

*It is important to understand that all stormwater facilities have their own limits of capacity, and each swale, ditch, storm sewer etc., at times, may be exceeded during an event. No person or property is ever truly free of the risk of flooding and drainage concerns.*

*How do I tell if I have a potential drainage or flooding problem on my property?*

- Is any part of my house lower than the surrounding ground such that water cannot flow freely away from the house?

- Is your property located within a FEMA mapped floodplain?
- Is there a wetland near or on your property?
- Are you aware of a relatively high water table in the area?
- Does your sump pump run often?
- Is there a dedicated drainage easement on or near your property?
- Is there a natural drainage way (stream or channel) or manmade drainage channel (swale or ditch) on or near your property?
- Is there a stormwater detention basin on or near your property?
- Can roof runoff and sump pump discharge flow safely away from your house?
- Does my yard have areas that have settled over time?

***How can I determine if any of the above conditions exist on my property?***

- Safely observe how your property drains during a storm event.
- Look for evidence of flow (erosion, debris), ponding (overgrown vegetation, water-stained walls), or drainage features (grates, drainpipes, storm sewer, culvert) on your property.
- Examine the deed and title of your property for disclosures and restrictions.
- Talk with neighbors and understand their perspectives and experiences with drainage in the area.
- Check the recorded plat for your subdivision and/or lot for Stormwater and/or Drainage Easements. Read their descriptions to understand their purpose and your maintenance responsibility.
- Check the approved grading and improvement plans for your lot or subdivision to understand the required grading for best drainage function in the area.
- Check the FEMA flood insurance rate maps for floodplain locations.  
(Available to view at your local permitting authority)
- Check with the permitting authority's website or visit their office to view regulations, maps, aerial photos, and records and plans.

***What types of things should I avoid if I have a drainage way, channel, swale etc on my property?***

- Avoid crossing drainage ways with your primary access or the only driveway to your home. Avoid diverting drainage ways from their flow path. Typical ordinances require that runoff should enter and depart from property in substantially the same manner as under pre-development conditions. If, for some reason, you must divert flow within your lot, avoid designing channels that turn the water flow more than 45 degrees.
- You must not alter a watercourse without permit approval from the local permitting authority and certification from a professional engineer that any alterations will not increase flood levels or hazards within, upstream or downstream from the altered portion of the watercourse.
- Do not place structures (i.e. sheds, garages), landscaping walls, trees/bushes, fences, and any debris in these areas. The fewer obstructions in the drainage way the better.
- Keep the area clean from, grass clippings, loose debris, and other items that may restrict water flow or clog drainage features.

***Are there things I need to consider related to drainage if I install a block wall, fence, or other structures?***

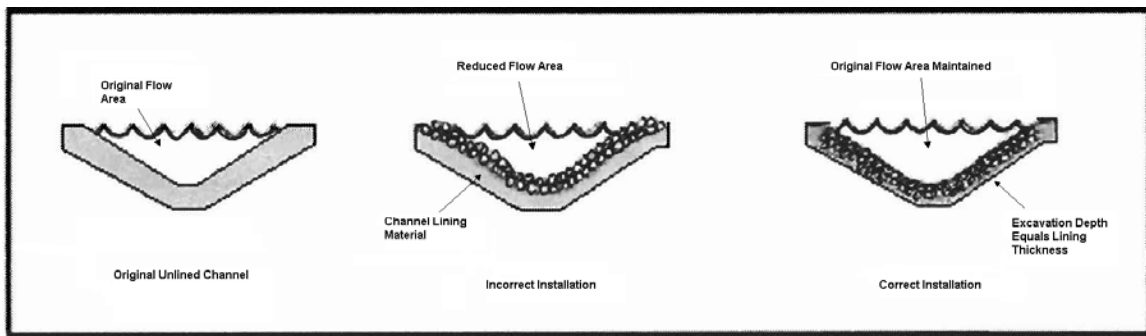
- Structures and landscaping built across drainage flow paths or channels can dam up runoff water or divert it, creating some of the most serious flooding problems. Walls, fences, and other structure and materials should avoid encroaching into a drainage area and/or drainage easement. If your lot has a designated building area that limits the developable area, then walls, fences etc should not extend beyond that area. The area outside the building area is often needed for drainage as well as natural open space.
- Consider alternatives to concrete or asphalt-paved surfaces. If you have a choice, consider more porous surfaces such as brick, gravel, wood chips, stone slab, or geotextile materials. If areas must be paved, keep it to a minimum and direct runoff onto grassy areas and storm sewers. Avoid altering the shape and contouring of the swale.
- Design and construct the landscape topography to facilitate stormwater drainage and infiltration. For example, use low areas to create “rain gardens,” which are landscaped areas planted with wildflowers and other native vegetation that soaks up rainwater.
- Use natural vegetation in your landscaping, which has a deeper root system than turfgrass and, thus, allows for more water infiltration.
- Mulch and plant any exposed soil as soon as possible after construction. Use sediment barriers(silt fencing and/or erosion control matting or blanketing) when necessary. Washed off soil can clog storm sewers/drains over time and cause swales and drainage ways to lose capacity.
- Avoid excessive soil compaction and disturbance to the lot.
- Avoid hooking downspouts/sump pumps directly into the storm sewer system or onto paved surfaces. These should discharge directly on a grassed or planted surface; however, be careful not to discharge directly onto the property line and/or impact neighboring properties. A good rule of thumb is to keep the discharge pipe 40 feet

from the property line. Some Village/City ordinances require direct connection to a storm sewer, so this suggestion may be in conflict with that. Regardless, local ordinance must be followed.

***Do I need to excavate before bringing in fill or landscaping material?***

If the material would block or change drainage conditions, then prior to placing the material, the soil in the area to be covered should be excavated (lowered/dug out) and removed to the depth or thickness of the landscaping material being brought in. The excavated material can be hauled off or used for mound building (landscaping) in other parts of the yard as long as:

- The mound or material doesn't cause water to drain toward the house;
- The mound doesn't prevent water from draining away from the house;
- The extra dirt doesn't cause added flow or drainage issues for surrounding properties, and
- Avoid altering the shape and control of drainage swales.



### Typical Terminology

**(BMP) Best Management Practices.** A measure used to control the adverse stormwater related effects of development. BMPs may include structural devices (e.g., swales, filter strips, infiltration trenches, and detention basins) designed to remove pollutants, reduce runoff rates and volumes, and protect aquatic habitats. BMPs may also include nonstructural approaches, such as public education efforts to prevent the dumping of household chemicals into storm drains.

**Channel.** Any river, stream, creek, brook, branch, natural or artificial depression, ponded area, flowage, slough, ditch, conduit, culvert, gully, ravine, wash, or natural or manmade drainage way, which has a definite bed and bank or shoreline, in or into which surface, groundwater, effluent, or industrial discharges flow either perennially or intermittently.

**Detention Basin.** A constructed structure for the temporary storage of stormwater runoff with a controlled release rate.

**Easement.** A grant by a property owner for the use of a parcel of land by the general public, a corporation, or a certain person or persons for a specific purpose or purposes.

**Erosion.** The process whereby soil is detached by the action of water or wind.

**Filter Strips.** Densely planted strips of ground used primarily to help filter and reduce runoff from paved areas such as roadways, small parking lots, play grounds, etc. This method uses natural sedimentation to filter pollutants.

**Floodplain.** That land typically adjacent to a body of water with ground surface elevations at or below the base flood or the 100-year frequency flood elevation including detached special flood hazard areas, ponding areas, etc. The floodplain is also known as the special flood hazard areas (SFHA).

**Grassed Swales.** A shallow channel or depression planted with vegetation commonly used in highly developed areas. The storm runoff collects in the swale and natural sedimentation removes the pollutants.

**Green Roofs.** Rooftops that have been spread with top soil and planted with vegetation. These have been used in large urban areas for centuries to reduce the amount of runoff from roof tops.

**Groundwater.** Water that is located within soil or rock below the surface of the earth. Same as subsurface water.

**Impervious.** Surfaces that cause the majority of rainfall to be converted to direct runoff. Asphalt, concrete and roofing systems are considered impervious.

**Infiltration Basin.** Man made basins planted with hardy vegetation that collects storm water and uses natural sedimentation to remove pollutants. The water will normally drain within 24 to 48 hours.

**Infiltration Planters.** Man made raised areas planted with vegetation to act as strip filters for parking lots, sidewalks and other paved urban areas. They are commonly seen around large buildings. **Raised planters should not be placed in a drainage path.**

**Infiltration Trenchs.** Man made excavations that are lined with filter material. The trench holds and filters the storm water until it eventually seeps into the surrounding soil. These are used in areas when the natural soil doesn't drain that quickly.

**Natural/Native Vegetation.** This is a method of planting natural grasses and other vegetation to reduce and slow runoff and trap sediment.

**Pervious Pavement.** Pervious or porous pavement, when properly maintained can remove from 65% to 95% of pollutants and sediments. Maintenance involves making sure the holes don't get clogged.

**Rain Barrels.** Rain barrels are used to collect runoff from roofs and downspouts and can be used later by home owners to provide water for gardens, lawns and flower beds. This method does not remove pollutants and sediments will have to be removed periodically from the barrel or cistern.

**Rain Garden.** A rain garden is a small depression planted with native wetland and prairie vegetation designed to collect stormwater runoff and encourage infiltration.

**Runoff.** The waters derived from melting snow or rain falling within a tributary drainage basin that exceeds the infiltration capacity of the soils of that basin.

**Seasonal High Groundwater Table.** The upper limits of the soil temporarily saturated with water, being usually associated with spring wetness conditions.

**Sedimentation.** The process that deposits hydraulically moved soils, debris, and other materials either on other ground surfaces or in bodies of water or stormwater drainage systems.

**Stormwater Facility.** All ditches, channels, conduits, bridges, culverts, levees, ponds, natural and man-made impoundments, wetlands, riparian environment, tile, swales, sewers, or other natural or artificial structures or measures which serve as a means of draining surface and subsurface water from land.

**Water Table.** The upper limit of a free water surface in a saturated soil or underlying material.

**Wetland:** Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Under normal conditions, the area will have present hydrophytic vegetation, hydric soils, and hydrology to be classified as a wetland. Classification of areas shall follow the U.S. Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1.