

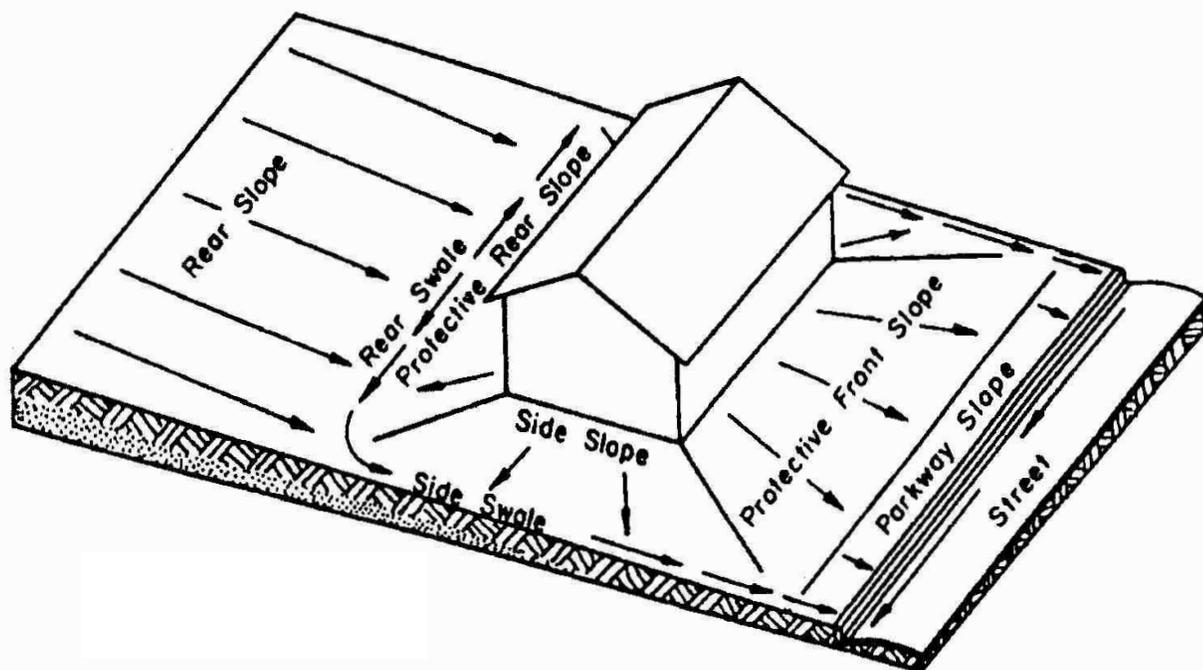


# Surface Drainage

Rainwater that hits the ground and travels on the surface is known as surface water. Some problems associated with surface water are ponding and direction complications which can cause basement flooding and wood rot. These problems can be caused by improper grading, downspout location, slow soil permeability, and/or a high water table.

Improper surface drainage is the most common problem of a sloping lot. Remember water drains down and takes the path of least resistance. Notice in the figure below, the uphill side of the house must have a drainage waterway (swale) to direct the water around the house. This drainage swale should be at least 10 feet from the house and sloped to convey accumulated water away from the house efficiently and into a proper outlet. The figure below illustrates how a lot should be graded to convey surface drainage away from a house.

Installing suitable downspouts to control runoff water from the roof is necessary to prevent potential problems with water damage to your foundation and basement. To direct the water correctly, downspouts should be emptied into a subsurface drain or an outlet spreader which disperses water into a thin layer over a grassy area **away** from the house foundation. Other alternatives include directing downspouts to gardens, cisterns, wetlands, and ponds depending on interest and money.



Lot Grading / Surface Drainage

If slow soil permeability is the problem you should restrict heavy foot traffic on your lawn during wet periods to prevent soil compaction. If you still have a problem you might want to put a heavy mulch down in the traffic area. If problems continue take more structural measures such as using infiltration trenches and subsurface drainage.

If a high water table affects a limited portion of your lawn, a small excavated pond may be a focal point solution. If you have the time and energy for such a project, you can transform a soggy nuisance area into an attractive landscape feature. Before beginning, however, remember to check with your local zoning department and the Franklin SWCD for laws and zoning regulations.

Larger wet areas in the lawn will require the installation of 4 to 6 inch (inside diameter) subsurface drains at a depth of 2 to 5 feet. Backfill the trench with 6 to 12 inches of limestone gravel #57 of the American Association of State Highway and Transportation Officials (AASHTO). For maximum effectiveness, the trench should be backfilled to within one foot of the ground surface. Use topsoil to fill up to the surface layer. For soils that lack cohesive properties, like sandy soil, a filter fabric around the tile is recommended to prevent movement of soil particles into the drain.

If you must drain surface water from your lawn please check the fact sheet Subsurface Drainage. Note that when you drain excess surface water you **cannot** outlet it to an existing tile system, you must outlet it to the storm drain or stream.

**Other Important Notes:**

- For more information on how water moves please check our fact sheets; Rainwater, Sub-surface Drainage, and Wet Basements.
- These are traditional approaches. For new innovative solutions please see Simple Solutions fact sheet for background information and alternatives.
- This is for background information, please contact a qualified technician or contractor for project design and implementation.

**References and Resources:**

- Cuyahoga and Lake Soil and Water Conservation District and USDA, Natural Resources Conservation Service, [Improper Drainage: A Homeowner's Nightmare](#).
- Pennsylvania Department of Environmental Protection, [Guidelines for Surface Drainage Around the home](#). Web page: [www.dep.state.pa.us/dep/deputate/enved/Can\\_Do/drainage.htm](http://www.dep.state.pa.us/dep/deputate/enved/Can_Do/drainage.htm)

The Franklin SWCD and NRCS Field Office strive to serve all people equally.

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