Yavapai County Flood Control District
1120 Commerce Dr., Prescott AZ 86305
928-771-3197

10 S. 6th Street, Cottonwood, AZ 86326
928-639-8151

THE YAVAPAI COUNTY HOMEOWNER'S

GUIDE TO DRAINAGE AROUND YOUR HOME

INTRODUCTION

Drainage and flooding problems in and around your home can be a costly and damaging nuisance. Common actions taken by you, the homeowner, in the process of developing your lot or landscaping your yard can create flooding and drainage problems. These problems can, however, often be prevented by following the guidelines listed below. These guidelines are based on actual problems frequently encountered in the rapidly growing and complex urban, suburban, and rural environments now under development, as well as, in the older established neighborhoods and communities in Yavapai County.

These guidelines are general in nature and may not fit all specific situations; if you have an unusual problem or have a specific question please contact the Yavapai County Flood Control District, at 928- 771-3197 in Prescott, or 928-639-8151 in Cottonwood.

GUIDELINES

NOTE: Before any work beings on your property or within the public right-of-way, contact Yavapai County. A Permit may be required.

1. Washes, Channels, Ditches and Drainage Easements

On Your Property:

Look to see if there are washes (streams, swales, arroyos) or drainage channels (ditches) adjacent to, on, or through your property. If any of these drainage features are located on your property the next step is to determine the location of designated drainage easements, if any.

County Records:

There may be a dedicated drainage easement for significant washes or channels. Obtain a copy of the current title report or plat of your lot or subdivision from County records, which will show the location, and boundaries of the easement.

Determining Maintenance Responsibilities:

The subdivision plat and/or the grading and drainage plan and/or the CC&R's should show who is responsible for maintenance of the easement. It is generally the responsibility of the individual homeowner to maintain the portion of the channel on their property.

On larger washes or regional drainage facilities the Homeowners Association, or County may be responsible for maintenance.

Maintenance responsibilities for the individual homeowner on a wash or drainage channel running through their property consists mainly of keeping it clean. This means free of trash, debris and sediment, clear of overgrown choking or clogging vegetation, and free of obstructions or structures. The purpose being to maintain unobstructed conveyance of storm water without impeding or reducing the water carrying capacity of the wash or channel. Washes must not be filled-in, plugged or altered in anyway.

Whenever Possible:

Avoid crossing washes with walls or fences. Stop walls at the edge of the drainage easement or the channel's floodplain and leave the wash area as common open space.

Avoid crossing washes with your primary or only driveway to your house.

2. Erosion and Sediment Control at Construction Sites

Erosion:

The planning for the installation of permanent and temporary soil erosion controls needs to begin in advance of soil disturbance activities on the site.

Soil surface stabilization protects soil from the erosive forces of raindrop impact and flowing surface water. Erosion control practices include surface roughening, mulching, establishment of vegetative cover, and early application of gravel base on areas to be paved.

Sediment:

The installation of sediment control facilities has to begin before land disturbance activities begin on a construction site. Control facilities are necessary to reduce sediment discharges to downstream properties and drainageways.

Sediment control will be site specific and include terracing, straw bale barriers, silt fences, vegetated filter strips, sediment traps, or a combination of any or all of these measures.

All temporary and permanent erosion and sediment control practices shall be maintained and repaired by the owner during construction to assure continual performance of their intended function.

3. Culverts or Bridges

Washes Not Originating on Your Lot:

Avoid locating culverts and bridges, even decorative footbridges, over washes that originate upstream, offsite from your property. Homemade or improperly designed or installed culverts or bridges can be disastrous for the homeowner, the neighbors, and adjacent streets. A bridge or culvert will generally alter the flow characteristics of the wash and should be designed by a professional.

Washes That Originate on Your Lot:

Usually small channels, which only carry runoff originating onsite (from your own lot), can be designed and installed by the homeowner. Shallow dip crossings (fords) or free span bridges that don't constrict the channel flow area are recommended over culverts, in order to avoid clogging.

When driveway culverts are used, within County rights-of-way or easements, a minimum 15-inch arch pipe is required, again, to avoid the problem of clogging. The bottom of the culvert should be placed in-line with, and not above or below, the bottom of the channel it is installed on.

- If installed below - the pipe will fill up with sediment at the first runoff event.
- If installed too high - water will pond up or be diverted around the pipe. Damage is typically incurred to the driveway landscaping and on public roadway.

4. Depressed or Bermed Yards:

Depressed Areas are Designed to Collect and Pond (store) Water:

Some yards may be depressed and/or with berms around them. It might include the front, side, and/or the back yard. The purpose is to collect and retain runoff from the roof, driveways and the lot itself. The CC&R's and/or plat for your subdivision should contain information on any on-lot/ off-lot detention requirements.

These Depressed Areas Should Not be Filled-In:

In the process of landscaping or re-landscaping your yard, the storage capacity of the depressed areas must be maintained somewhere within your yard. If filled in, runoff form your lot may end up in your house or pool, your neighbor's yard, or in the adjacent street or nearby channels which weren't designed to handle this extra water. Care should be exercised to avoid ponding adjacent to foundation walls of the structure.

5. Landscaping Around Your House

Water Must be Able to Drain Away from All Sides of Your House:

Your house should be built on a pad (cut or compacted fill dirt) that is above surrounding adjacent ground a minimum of 6 inches (preferably 12 inches). The pad should slope away from the house at a 5:1 slope for a minimum of 10 feet. Any additional landscaping done after purchase of the house must not interfere with the original lot grading plan.

You Probably Need to Over-Excavate Before Bringing in Fill:

If the pad is at the minimum or preferred height listed above, then, before any fill dirt or desert gravel is brought in, the area must first be excavated to the depth or thickness of the proposed fill. The excavated material can be used for mound building in the yard as long as the mound doesn't prevent water from draining away from the house and the total storage capacity of the depressed area is maintained.

6. Landscaping or Lining Washes, Channels, or Basins

Avoid One of the Most Common Mistakes in Landscaping:

Make sure that river rock or any channel lining material is "inlaid". Do not place material on top of the swale bottom, wash bed, retention basin, or channel bottom. Don't just dump or place fill material, landscaping gravel, or riprap material on top of the ground, bottom or sides, of the drainage facility. First you must excavate, the thickness of the material you are placing, then inlay the material.

You Must Over-Excavate First:

By not over-excavating**,** before placing landscaping or lining material in a drainage facility, you can significantly reduce a channel or basin's capacity and cause it to overflow, backwater upstream, or divert flow.

7. Avoid Diverting Natural Washes Out of Their Natural Flow Path

Drainage Law Requires:

That runoff should enter and depart from property in substantially the same manner as under pre-development conditions; and that a watercourse may not be altered without prior District approval.

You cannot block, impede or divert the flow of stormwater runoff from its natural course.

Any Alterations to a Watercourse Must be Approved:

The District must approve, and a professional engineer must certify that these alterations will not increase flood levels or flooding hazards within, upstream, or downstream of the altered portion of the watercourse.

If you do divert flows within your lot, avoid designing channels that try to turn water flow more than 45 degrees.

8. Avoid Intercepting Flow from a Natural Wash or Surface Channel and putting it Directly into a Pipe or Underground Storm Sewer System.

Open Channels Collect Sediment and Debris:

Natural washes, as well as, man-made channels carry a never-ending supply of sediment and debris (trash and weeds), which can be a constant clogging and maintenance problem. If there is no alternative to a piped system, water should first be routed (directed) into a sediment/debris basin, which will allow debris and sediment to settle out before entering the inlet. It is pertinent that any sediment/debris basin be cleaned on a regular basis and after every flood event.

Provide an Overflow:

If this type of system is absolutely necessary, be sure and have an overflow channel available that can safely carry the overflow in the likely event that the inlet facility plugs or its capacity is exceeded.

Keep the Opening Clean:

Continual periodic maintenance is usually necessary on these types of systems. Any grated cover should have as large of openings as possible between the bars, a minimum distance of 4 inches between bars is recommended. The grate should be sloped 60 degrees away from the opening, not vertical or flush with the opening.

9. Block Walls and Fences

One of the Most Common Causes of Serious Flooding Problems:

Block walls or fences, if at all possible, should not cross channels or washes. Block walls should not go beyond the designated building envelope of your lot or encroach into any drainage easement.

If a Wall has to Cross a Wash:

A clear open span should be used or an open span with a standard trash rack.

Keep Weepholes and Decorative Block Drains Clean:
Decorative blocks or weep holes should be avoided or replaced, if possible, when used to convey water through a natural wash or drainage channel. Weep holes or decorator block opening are generally so small they easily catch debris and clog, causing water to pond or divert. This can result in backyards, pools, and houses being flooded and walls being undermined and knocked over.

10. Driveways and Roadside Drainage Ditches

Roadside Ditches are Designed to Carry Runoff:

Streets with no curbing and no sidewalks are usually crowned with a high spot in the center of the road or they have a straight slope to one side or the other. Pavement runoff then drains into the roadside ditches located on one or both sides of the road. These roadside ditches are designed to carry the street runoff to the nearest wash or culvert crossing. You may have one of these roadside ditches adjacent to your yard.

Ditch Maintenance Responsibilities:

These roadside ditches, although normally located within the street's right-of-way (R/W), are usually the individual homeowner's responsibility for maintenance. Vegetation must be kept out of roadside ditches or closely trimmed and maintained so as not to retard flows or trap debris and clog the ditch. Roadside ditches if landscaped or lined should only be landscaped with large diameter rock that will not be washed away. Landscaping or lining material must not fill up or reduce the capacity of the ditch. You must first excavate the thickness of the material before placing it in the ditch.

Driveways Must Not Block or Divert Flow:

Driveways should not be placed across roadside ditches without dipping them or installing a properly sized culvert (minimum size within County R/W is a 15-inch arch pipe). When the driveway is dipped it also needs to be tilted (lower on the downstream side) slightly. If the driveway isn't dipped, water will be diverted into the street and/or into your house or garage. If the dip in the driveway is installed flat, not tilted, the sediment will slow down and deposit, possibly filling up your driveway.

Drainage problems can and will occur as a result of heavy rains in Yavapai County. These guidelines are an attempt to let you know how you can help prevent drainage problems in your neighborhood, while protecting your property, landscape, and other improvements.

Yavapai County

Contact Numbers

	Prescott Area	Verde Valley Area
Flood Control	**928-771-3197**	**928-639-8151**
Public Works/Roads	**928-771-3183**	**928-567-7728**
Planning & Zoning	**928-771-3214**	**928-639-8151**