Dry Swales and Dry Streambeds

By Susan Camp

Heavy rains throughout March have left Tidewater Virginia with yards, fields, and roads saturated with nowhere for the excess water to go. Our field right now is spongy underfoot with some boggy spots, although the water will seep into the ground after a few dry days. Jim and I are fortunate to have a field that slopes gently toward the creek for about two acres, but what happens to rainwater that runs directly onto a concrete driveway, walkway, or patio? Where will the water go that has sluiced down off a roof, into rain gutters, and onto a lawn? And, most importantly, what harmful chemicals and pollutants does that water carry?

Stormwater runoff from impervious surfaces carries oil, fertilizers, herbicides, pesticides, heavy metals, and potentially harmful microorganisms. Storm drains that are located on commercial and residential streets frequently cannot handle excess runoff after heavy rains and back up, causing temporary street flooding and increased pollution of local waterways.

The rain garden, or bioretention cell, was developed to manage stormwater runoff from impervious surfaces like driveways, roofs, patios, and lawns. Bioretention cells often are used in urban, commercial, and residential areas to treat polluted runoff, but the concept can be applied in suburban and rural areas, especially where fertilizers and herbicides are used on gardens and lawns. I have written in past columns about bioretention cells.

A second possible solution to runoff is a dry swale, which is a bioretention cell without water. A dry swale typically consists of a shallow channel located above the water table (the depth at which the ground is saturated) with a gentle slope. A dry swale serves to temporarily store and filter pollutants from rainwater, allowing it to infiltrate the soil or enter a public storm drainage system. A series of check dams located at intervals along the swale slows the rate of flow and increases the filtration rate.

A 12-inch gravel layer is covered with 18 to 24 inches of topsoil with a low clay, high sand, and low phosphorous content. Dry swales can be overplanted with meadow grasses or turf grass and will remain dry when there is no rainfall.

Compared with the installation cost of a rain garden, a dry swale is relatively inexpensive. Routine maintenance, including debris removal and plant upkeep and replacement are necessary to keep the dry swale functioning.

Virginia Cooperative Extension (VCE) Publication 426-128 “Best Practice Fact Sheet 10: Dry Swale” offers clear, concise information about building and maintaining a dry swale and includes further online resources and a glossary of relevant terms.

A concept similar to the dry swale is a dry streambed or dry creek. Often seen in Japanese landscaping, the dry streambed is created to resemble a meandering stream or creek but remains dry except during and after a heavy rainfall, when it functions to store and filter excess runoff.

Construct a dry streambed by first laying out the course you want the stream to follow with a garden hose or marking it with landscaper’s paint. Dig a trench 12 to 18 inches deep and line it

with landscaping fabric (not plastic) held in place with pins. Place medium to large stones along the streambed margins. Fill the trench with gravel, and a layer of smooth river stones.

Plant native grasses and plants at intervals along the streambed banks to filter the polluted runoff and provide food and habitat for bees, birds, and butterflies. A selection of low, medium, and tall-growing plants will offer the most visual interest. Plant each species in groups of three to five, as you would in any garden. Allow sufficient space between plants for room to spread.

A dry swale or streambed can be a DIY project, or you can have one built. Plans and YouTube videos for these building projects abound online, along with technical articles and papers that are more complex than most home gardeners care to tackle, or you can have one built.