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NOTES FROM THE EDITOR

Down the Drain

March 12, 2014

How to keep floodwater and heavy rain at bay.

By Maria Martin



Dry creeks are very effective at channeling damaging water away from homes. (Photo by Wild By Design)

When discussing the flood that devastated so many areas in Boulder County last September, Scott Deemer says hindsight wouldn't have helped in a lot of cases.

"The reality is that many people who were affected by the flood were either in a river basin or floodplain, like those in Lyons or Longmont," says Deemer, the owner of Outdoor Craftsmen, a landscape design and construction firm based in Erie. "No matter what precautions they took, they would have lost their homes or been greatly impacted. That was an act of God, and that's beyond human control."

But what may have been avoidable were flooded or damp basements. "Many homes flooded because of improper drainage," he says, "but there are fixes that will help a house avoid damage, especially from water coming off the roof."

Many people "think from the top up" when they landscape,

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says Larry Elmore, business manager at Wild by Design landscapers in Lyons. “You should really work from the bottom up,” he says. “You should consider what’s under everything, from soil to drainage, and then start thinking about where plants should go.”

Site It Right

Elmore knows firsthand how flooding affects lives. He and his wife, Mimi, owner of Wild by Design, live in Lyons and were displaced from their home. “When we left Lyons, we stayed in an east-Boulder subdivision that was also greatly impacted by the flood,” Elmore says. “It was a great big flat area and streets became rushing rivers. The homeowners who had minimal damage or escaped it altogether had built berms out front or had somehow landscaped their property to move water away from the house.”

A minimum 2-percent slope is essential if you want to move water away from a structure. Most landscapers recommend something along the lines of 4 to 6 percent. “I like to see 4 percent or more positive slope away from a home’s foundation and window wells—and for at least 6 feet out,” says Tom Sunderland, owner of Native Edge Associates Inc. in Boulder. “But in some cases, there’s no choice but to settle for less without substantially increasing the scope of work.”

It’s sometimes necessary to re-grade a landscape, especially if the foundation has settled. “When installed, foundations are often not backfilled and compacted properly,” Sunderland explains. “Raising grades and re-compacting the surface is often necessary.”

But adjacent lot lines, fences and trees often make grading improvements “not so easy, or perhaps impossible,” Sunderland says. “In such cases, when fixed points need to be worked around, the water should be diverted underground and piped away from the home.”

Elmore says he worked on a house near Devil’s Thumb “where the slope actually ran into the house, not away from it.” But the problem was solved with clever drainage and other techniques and the house was spared during the deluge, as was a neighbor’s home the Elmore’s also had re-landscaped. “In that case, the house was lower than the street, so the water was moving into their home,” Elmore says. “We redid their entire front yard, put in a drainage sump where the water pooled, and installed a drain underneath the yard and ran it into a dry creek bed we installed. They were over-the-top happy when their home remained dry.”

Gregg Oetting, who owns the neighboring home the Elmore’s re-landscaped, said they avoided a re-grade by considering drainage instead. “We wanted to do this without a really expensive re-grading,” Oetting says, adding that the drainage system was completed only four days before the flood. “It worked perfectly, and we ended up with no damage. For us, the story was in the timing.”

While not every homeowner was as fortunate, the pros say the trick to diverting water is taking the proper measures for your site. Although it has an exotic name, a French drain is simply a perforated pipe covered with filter fabric that’s placed in a trench filled with gravel or rock to direct water from a home. The Oettings’ drain was diverted to a dry rock channel. In other cases, water is diverted to a back or



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front yard. It's important, landscapers say, to ensure you're not diverting water onto a neighbor's property.

Bill Melvin, of Ecoscape Environmental Design in Boulder, says he's installed French drains 2 feet wide and 3 feet deep to divert water. "You can landscape over them, so you don't even see them, and they're incredibly effective," he says.

Artificial swales, channels, trenches and troughs are other options.

Gutters and Drains

Before considering laborious measures, like digging swales around a home, most homeowners would be better served looking for an easier fix like gutters, Deemer says. "Depending on the age of your home, there may be building practices in place that were inferior for long-term viability," he says. Older homes often lack gutters in critical areas where water can run off the roof and collect near the foundation. Inspect your gutter system to make sure you have adequate coverage.

Another thing he frequently sees is black corrugated-plastic tubing attached to downspouts and buried in the ground, intended to carry water away from the house. These tubes easily clog, Deemer says. "Because these tubes are flexible—and corrugated instead of smooth—leaves from the roof often plug up the tubing. As a result, rainwater backs up inside the tube and eventually backflows against the house, which can cause damage to the basement and crawl space." The solution is simple, he says. Instead of tubing, install a system that's easy to clean and maintain, like smooth PVC pipes "that won't have the probability of failure," Deemer says.

That said, digging swales around mountain homes may be a necessity. In the mountains, you have to work around Mother Nature. "With homes in mountain settings, you need multiple layers of protection, which might mean French drains, swales to transport water around the house and plantings," Melvin says.

Berms and Boulders

Extending downspouts and correcting grades sounds more practical than pretty, but Melvin says other drainage improvements actually enhance the look of a landscape. "Plant life makes a difference toward slowing the flow, especially in the mountains," he says. "Ultimately it can create a barrier. I was in Fourmile Canyon during the flood, and I saw dense rosebushes catching so much organic matter that they then deflected water away from a structure."

Shrubs and bushes can also stabilize slopes that might otherwise erode in heavy downpours. Melvin says dogwood, creeping juniper, native grasses and creeping cotoneaster are plants with tough roots that can take a beating. Boulders and berms also divert water toward thirstier plants or away from soggy areas.

Melvin worked with a client who placed 25 tons of boulders to redirect potential water flows. “I said, ‘That would do the trick, but if you spend a bit more, we can also add a berm integrated with the boulders with new landscape plantings that will enhance the view and improve erosion control, and also help filter and slow future water flows.’” The client agreed, and the project is both pleasing to the eye and gives the owners confidence their home will withstand the next downpour.

Sump Pumps

Sump pumps are very effective at draining water—“if they’re plugged in and in proper working condition,” Melvin says. “Many found out during the flood that theirs were not, and it could have saved them thousands of dollars, many sleepless nights and many lost family photos, in some cases.”

Be sure to install exterior sump pumps in the lowest point of the landscape and interior sumps in the lowest point of the floor, where water could potentially pool. The pump will need an electrical outlet and if possible a separate circuit breaker.

Melvin has used a combination of sump pumps with catchments and ejection lines, French drains, troughs, swales, and drain boxes to protect homes from flooding. “A sump pump was the sole reason my house stayed dry,” he says. “That and clean gutters with proper drain boxes to get the water away. I cleared the trapped gutter parts Tuesday night when I saw the storm-cell system setting up.”

In the final analysis, your home might require a combination of these techniques, too, if you want to stay high and dry in future water events.

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