

## Rainy season tests county's drainage systems

By John Elias

We are currently well into our rainy season. To many, this can come as a welcome relief after coming out of the extreme drought we experienced this year. Our Southwest Florida weather is what brought so many of us here. It continues to be why so many people visit, vacation and often move here. This has resulted in what many refer to as explosive development. This growth means many folks have moved here from places that have vastly different weather and annual rainfall totals. I would like to take this opportunity to detail Charlotte County's drainage system and to outline some expectations.

The vast majority of our drainage system in Charlotte County is considered an "open swale system". This is relatively common in rural communities throughout the country. This is also distinctly different than curb and gutter systems or "closed systems". Curb and gutter systems convey water through a series of catch basins, curb openings and pipe networks. These systems cost more to design, construct and maintain and are commonly used in more urban environments where space is limited. The benefit of a curb and gutter system is the water is often conveyed to its outfall or final location without anyone seeing it as the pipes are often several feet below the surface of the ground.

Our system, the open swale system, conveys the water through a series of open swales and major outfalls; often draining to one of the canals in our extensive network. Most of this water eventually makes its way to the Peace or Myakka rivers and eventually Charlotte Harbor and the gulf. This type of drainage system is much less expensive to install and maintain. Many consider one of the drawbacks is the water can be seen by anyone who drives throughout our neighborhoods.

Water is the lifeblood of our community and one of the major advantages to this system is it serves as a "scrubber" removing nutrients and other contaminants from the water. It does this a couple of different ways. The first is by flowing through grass-filled swales that take up nutrients while slowing the water down before reaching our local rivers and harbor. The other mechanism that assists with helping to clean our water is that the flat nature of our topography. This means the water flows slowly and can often evaporate into the atmosphere or percolate into our groundwater being filtered by the sand that comprises much of Florida.

Much of Charlotte County was designed many decades ago in an effort to draw visitors to our area to purchase lots and live out the American dream. This design was created by digging an extensive network of canals that was used for fill and to create waterfront communities. To minimize costs they went with an open swale system and it was designed to a five-year storm event standard. This in layman's terms means that our entire drainage system was built to handle approximately five inches of rain over a 24-hour period. This assumes that the rain falls evenly and slowly over a 24-hour period. Anyone who has experienced one of our summer showers can vouch that we can often get rain fall totals that exceed an inch per hour. If you were to extrapolate this out over 24 hours it would mean we received 24 inches of rain in 24

hours. There are virtually no systems anywhere that are designed to handle that volume of rain over that amount of time.

What often happens is that folks see their swales completely full of water and in some cases even in the road. This is actually part of the design. Although not ideal, if our swale systems get overwhelmed our roads then become a conveyance system. This is why houses are required to be constructed higher than the crown of the road. Water can often take several days to run off. A general rule is if you have extensive standing water 72 hours after any rainfall there may be some blockage. This can be impacted by your proximity to tidally influenced canals that slow water flow down during high tides.

Public Works stands ready to serve the citizens of Charlotte County. If you feel you have a drainage concern, please call 941-575-3600.

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