

## **Tropical Storm Debby tested our drainage systems**

By John Elias

Our weather here in Southwest Florida is what attracts so many new residents and visitors to our little slice of paradise. Right on cue for rainy season we recently had our first tropical system skirt our coastline. It was not expected to be severe as far as hurricanes can go, but residents who have experienced hurricanes know it can still create issues. It did serve as a powerful reminder that a system does not need to be Category 3 storm to have devastating impacts. This system simply dropped copious amounts of water on our region. More importantly, it dropped rainfall across the peninsula of Florida and much of that water has to eventually get to the Gulf of Mexico through Charlotte County and our neighboring counties. This can result in delayed impacts as inland watersheds stage up and eventually begin to flow our way. The larger the watersheds, the more water will eventually flow through our community.

To delineate this point, we have water level monitoring systems on some of our bridges on Washington Loop. We monitor these watersheds closely as sometimes we receive very little rain, but inland areas may have had a severe rain event. This can result in our system rising dramatically above peak flood stage several days after the rain event occurs. Locally, our entire drainage network is designed to handle a five-year storm. On any given afternoon during our rainy season, a portion of our county may experience a five-year rain event. These isolated systems can often go unnoticed as they occur in sparsely populated areas or areas that have exceptionally good drainage and groundwater percolation. This same rain event that occurs in a coastal low-lying region like many areas of our county are considered can result in water overflowing our drainage systems and even ponding over roads.

This brings me back to my original point about the recent tropical system we experienced. Our drainage systems handled the vast majority of the rain as it was designed to. So much of our systems can be dramatically impacted by higher-than-normal tides. We are relatively flat, so the water moves slowly to Charlotte Harbor. These slow-moving open swale drainage systems are designed to allow for percolation and for the water to settle out nutrients before it reaches Charlotte Harbor. But if the systems conveying to Charlotte Harbor have two or three feet of tidal surge it simply does not allow for the water that is building up in our local systems, and collecting a larger watershed in many cases, to move at all. This can appear to anyone living in these areas as an obvious drainage issue. Case in point, we were closely monitoring an area adjacent to Charlotte Harbor that receives a large amount of sheet flow. The day after the storm there was minor flooding and water over some local roads.

Prior to the storm we have crews that ensure our major systems are clear and unobstructed and this system was no exception. Residents who called to inform us that something was blocking their drainage, which can happen with floating debris, were surprised to learn the system was working exactly as designed. Our building standards are such that the floor elevation of the house is above the crown of the road. Again, many folks are surprised to learn the road can serve as a secondary system to convey water. This is not ideal, but it keeps the water from entering your home. We responded to residents' concerns about drainage being blocked, but upon inspection confirmed the system was working and we simply needed some time and some

lower tides for the water to completely disperse. This is usually vastly different from what those of us in the north experienced where there may been closed or piped systems or drainage systems that have several feet of rainfall in a small area. At Public Works we are constantly monitoring and maintaining our stormwater systems to ensure they are working as designed.

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