

# WESTMINSTER CRIER

## Westminster and Hurricane Irma, a ground water analysis

Hurricane Irma left a huge scar on the Westminster community and our golf course, a scar that will take months and perhaps years to totally recover from. Both homeowners with damaged properties and those lucky enough to escape problems had feelings/opinions about why our community flooded and how the flooding might have been prevented. This document will attempt to address the many issues and questions raised, and suggest remedial actions.

This analysis has to begin with a rain event two weeks prior to Irma which left our lakes full, an event which also caused local but not damaging flooding. The fact that the Westminster lakes were full and the ground saturated established an unfortunate condition for our community when Irma arrived.

On October 10, 2017 I met with David Lindsay, District Manager of the Lehigh Acres Municipal Services Improvement District (formerly the East County Water Control District) and Michael Cook the Assistant District Manager. This meeting touched on three major areas,

The rainfall estimates for Westminster.

Exhibit 1.\*

the outflow of the Westminster lakes through our two weirs and into their canal system

the operation of their canal system and the destination of our discharge water

**Rainfall:** The closest official rainfall station was located on Lee Boulevard a couple of miles away from us, and shows that the rain total for Sunday the 10<sup>th</sup> was 17.64 inches. Admittedly a huge number but the fact that most of this rain fell over a four hour period was a recipe for disaster. It has been suggested that this rain was a "100 year event" actually the amount and duration put the rain event close to a "500 year event" according to the Lehigh Municipal Services folks.

**The outflow and our weirs.** In 1995 the overflow height of our weirs was set at 23'6" above sea

level by the East County Water Control District. This elevation served as the operational elevation when developing our community and the Westminster storm drainage system. What I learned is that all storm drains in Westminster start with a street elevation and the rain water gravity flows through a concrete pipe system to one of our lakes. A per street count of our storm drains is recorded on Exhibit 7\*

The height of all of our storm drains is recorded on the Westminster Water Management plan Dated July 27, 1995. Exhibit 2\*

**The two Westminster weirs** are not mechanical but rather overflow devices. In 1995 during the design phase of Westminster the out flow height was set at 23' 6" above sea level. The water enters the weirs and overflows into a 12" X 12" cutout 21' above sea level and into the Lehigh canal system, these elevations are recorded on a document by Heidt & Associates, Inc. dated Dec 1 2005 - exhibit 5\*. The overflow from the weirs enters the Lehigh Acres canal system.

A photograph of the weirs and their discharge point into the Lehigh canal system is recorded on Exhibit 3 \*

The weirs functioned as designed during the storm. The amount of rainfall and water simply overwhelmed the system.

With the weirs unable to handle the amount of water associated with this storm lake levels rise and eventually if the lake levels get high enough, water backs up through the storm drains into the streets in front of our homes.

What caused some homes to be flooded and others not? A closer examination of Exhibit 5 \* shows storm drain elevations ranging from a high of 26 feet above sea level to a low of 23 feet above sea level. The home lot elevations seem to be related to the storm drain elevations. What this meant during Irma was that if your home was in front of a storm drain with a low elevation your home was likely to take in some water. All of our streets are pitched to allow rain water to flow to a local storm drain. If your home was well away from a storm drain or near a storm drain with a higher elevation your home most likely stayed dry. We are talking inches here and that is all it took for some of our homes to have soaked carpets and floors and the house next door with water  $\frac{1}{2}$  way up the driveway.

An unknown is the condition of the drain pipes from our storm drains to our lakes. Areas like Hampstead and Governors Run are good distances from the lake(s) their storm waters flow into. Because of the amount of rain associated with Irma it's not likely a perfect drain pipe could have prevented flooding but the need for a condition analysis of our storm drainage system is something that should be done.

**The Canal system.** When starting this report I was under the impression that our out-flow went to the Orange River and onto the Caloosahatchee.

Although that is basically true it does not tell the whole story. The outflow from both of our weirs is directed through the canal system to **Harns Marsh** a 59 acre water retention facility designed in 1981. Exhibit 6.\* In **Harns Marsh** there are two huge (close to 30 acres each) retention ponds seven feet deep that are designed to hold flood waters and mitigate downstream flooding. The overflow point for both retention ponds is 20'16" above sea level. The intake at 17'.4". During the storm Harns Marsh began to discharge water downstream when one of the retention ponds crested at 20'.16". When these elevations are viewed alongside the operating height of the Westminster weirs 23'.6" you can see that the retention ponds take into consideration the Westminster water discharge. This system performed as designed through Irma and the Westminster out-flow was not impeded by a water backup through the canal system.

Following the storm there were many reports that suggested that a loss of power, communication and a damaged control tower were together directly related to localized flooding. It was explained to me that these facts were true but the Lehigh Municipal Services anticipated the storm and control

gates were set in their proper operating positions prior to the storm. It was clear when examining the worst hit areas of Lehigh Acres that these properties were in low lying areas including properties in the flood plain and that canal gate control or the lack of was not responsible for flooding. Noteworthy is the fact that these issues were downstream from the Harns Marsh water retention facility and therefore had no impact on Westminster.

Some homeowners expressed concern that the IRMA flooding experienced in some Westminster homes could change our status and put Westminster in a flood zone. The flood zone designations are created by FEMA and in my opinion are not likely to change because of Irma. I reviewed the flood zone mapping for Lehigh Acres and learned that

much of Lehigh including Westminster is over 26' above sea level. And our entire area/zone is not included in any Lehigh Acres Flood zone map. It is worth pointing out that the worst hit areas of Lehigh Acres were in flood zones including some areas of Buckingham only 4' above sea level. Individual properties flood zone status are easily found on the internet - just google FEMA flood plain maps and you will be able to access the FEMA flood zone status for your home.

Worthwhile internet searches

FEMA flood zone mapping

Harns Marsh Lehigh Acres

Caloosahatchee flood plain mapping

Respectfully submitted

Chuck Bennett

Chair Irrigation and ground water committee

**\* - Large Exhibits can be found in the Westminster Office for viewing.**