

# Pender County Planning and Community Development

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The following paragraphs will briefly describe the role of GIS during Hurricane Florence. There were a lot of lessons learned during this event. If I really sat down I could probably write a book based on this event. Anyway, hopefully this is what you are looking for.

By the numbers, Hurricane Florence was one of the most devastating events to ever hit our region. The flood waters easily surpassed any storm in our recorded history of hurricanes. We have thousands without homes and hundreds of millions in building values lost. We had citizens that lost everything in Matthew lose everything they had built back once again. It has truly been a humbling experience to say the least and I know it will be years before we are done working on this storm.

Now, to discuss how GIS was utilized before, during and after this storm. One of the main responsibilities I had during this event was to plan and manage damage assessment. This was not a small task and required a lot of assistance. However, we successfully completed our damage assessment using iPad with Collector for ArcGIS and displaying those results using Operations Dashboard. This was a big hit with upper management as they were able to see nearly real time assessment data. I cannot talk about damage assessment without giving recognition to Atlas Geographic out of Wilmington, NC. They volunteered their services to help us both in Matthew and even more so in Florence. They were responsible for setting up the collector app that was used to complete damage assessments. I cannot say enough about their dedication to assist others during a time of need regardless of the time or day! Kent Rothrock, with Highland Mapping, also provided a critical role during this event. He contacted me almost every day for those couple of weeks asking what I needed help with. Both companies were awesome!

The next phase of the event was the rescue stage. I think the most important part GIS played in this event was providing critical mapping support to all 1,000+ outside resources that were utilized in the days after the event. Each day dozens and dozens of GIS data requests and maps came through. The sheer amount of GIS data we generated compared to Matthew just 2 years ago was staggering. We easily printed 500+ maps, most of which were for a different mission or purpose. We also used another Collector app during this phase to verify that no one had been left behind as the waters started to recede in some areas.

The last phase of this event is the recovery phase. Again, we will be in this stage for years to come. However, GIS has and will continue to provide relevant information as needed. Currently there have been dozens of analytics requests that are too detailed to describe here. We have utilized datasets from the State and Federal Government along with our own to complete most of these. We will continue with Local, State & Federal Organizations to provide as much help to our citizens as we can.

The following NC OneMap/State/Federal layers were utilized in GIS for this event and were essential in our efforts:

2016 Orthophotography, Statewide Road Layer, Contours, Hydrography, Flood Zones, Wetlands, Inundation Models and Building Footprints to name a few. We did not upload any data to NC OneMap for backup.

## Lessons Learned

-Never underestimate an event and how it may affect you, your family or your job. This storm was more than we could have ever imagined. I was quickly overwhelmed by the volume of requests that were coming in daily. It exceeded the amount any one person could ever think of doing and as a result, took a toll on me physically and mentally. No sleep, totally cut off from home and an endless project list are not the ingredients for a positive mental attitude, so make sure you are prepared for the worst should it come. At this time, I have to mention the Strike Team that was assembled by North Carolina Local Government Information Systems Association (NCLGISA) through the State Emergency Operations Center (EOC). It was the first GIS Strike Team of its kind through NCLGISA. Those folks will never know what impact they had on me. The fact that they left the comforts of their home and traveled here was inspiring to say the least. I would like to recognize Randy Cress for spearheading this effort. He did a great job. The following names were the ones who came in to assist me: Columbus Hawks from Rowan County, Sarah Wray from NCDOT, Sallie Vaughn from Person County and Chris Contreras from the City of Jacksonville. All 4 of these individuals were absolutely amazing, and I cannot thank them or their organizations enough for what they did for Pender County. Plan, Plan, Plan to have help whether internal or external prior to storm. I lost count of the individuals of the GIS community here in NC that reached out to me, offering their assistance during and after the storms. The GIS community in NC is second to none in my opinion and I am forever grateful to everyone that offered a helping hand.

-You have to be flexible during trying times. Everything really goes out the door when you are going through a disaster such as this one. Standard Operating Procedures and normal workflows are put on hold, so you must adjust accordingly. Be prepared to do things over and over each time someone thinks of a better way to complete a task. The end goal is to help/save as many people as possible, so do what you have to do.

-Cross-train whenever possible and introduce technology to those they are not familiar with it. We have to be better at bridging the gap as it pertains to technology usage across our organization. We utilized employees that had never held an iPad much less completed damage assessment with one. DO NOT WAIT until the storm is bearing down on you to train and bring people up to speed. We had people stranded for days and weeks that could not make it to work. We had employees that lost everything that were not able to come to work for quite some time.

-When making an outside resource request make sure their mission is clear! Establish who the leader(s) or point of contacts are and work with them on what is expected. It was chaotic at times having to deal with multiple individuals from the same group that had alternate opinions of how things should be done.

-The last thing is BE ORGANIZED. I cannot tell you how important this is but especially in stressful situations. I have to commend Sallie Vaughn from Person County once again. Her organizational skills were unbelievable, and she truly saved the day for me. Those first few days were fast and furious and really all a blur, but her organization really put things into perspective. It would not have been possible to accomplish all the tasks we did had we not been organized. I have documented all of our tasks for this event and it is truly remarkable looking back to think that all of that was completed in such a short time.

GIS played a monumental role for Pender County before, during and after this event and I am forever grateful to all that lent a hand or offered a hand.

Respectfully,

Josh Norwood  
Pender County  
GIS Administrator