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## 2016 Joint Annual Conference with NCAFPM and SCAHM

The North Carolina Association of Floodplain Managers (NCAFPM) and South Carolina Association for Hazard Mitigation (SCAHM) are proud to jointly host our 2016 Annual Conference: “One Carolina - One Recovery.”

The North Carolina and South Carolina floodplain management organizations have had a long history of collaboration and coordination. Last year, when the terrible floods hit South Carolina, North Carolina sent teams of people to help rebuild homes and businesses that had been damaged or destroyed. NCAFPM also raised \$6,290 to go to Harvest Hope Food Bank in Greenville, SC, to help out those in need.

Organization-wise, we have often collaborated with each other on projects. This will be our third joint annual conference with South Carolina, and it is shaping up to be another amazing floodplain conference! A unique part of our joint conferences that we learn a lot from each other. During our annual state conferences, it's true that we learn that our sister jurisdictions go through some of the same things we do but when North Carolina and South Carolina come together, we learn that those issues even cross state lines. The vast years of experience and education can be eye opening. Both states can relate in so many ways from the coast to the mountains.

We had a record number of abstracts submitted for the conference, and we re-organized our typical schedule to accommodate as many as we could. The presentations are interesting, insightful, and helpful and the speakers range from government officials to consultants to researchers from both

**For more information and to register for the conference, go to [ncafp.org/annual-conf](http://ncafp.org/annual-conf)**

## From the Chairman's Desk



DAVID KEY, PE, CFM  
NCAFPM CHAIRMAN

Fellow floodplain managers, can you believe we are already three months into 2016! Instead of wringing my hands about which presidential candidate to vote for, I like to look on the bright side. After all, we should be happy that we get one extra day this year to decide! Seriously, it's leap year and that means **one extra full day** to outreach flood risk education in your community. **One extra day** for continued education in your field. **One extra day** with your family and friends, and the list goes on and on. There are so many great things happening in our chapter. This newsletter will cover many but I wanted to take a minute and highlight a few of the exciting things planned for 2016 and beyond.

Late last year, our chapter pulled together to support our neighbors to the south and raised \$6,290 to support the victims of the October flooding in SC. 100% of all donations were made to the Harvest Hope Food Bank serving Columbia, Florence, and other locations throughout the entire state. Our chapter donations help the food bank serve over 2,300,000 meals to disaster victims. Thank you all for your generosity. You made a difference in the lives of many people.

On April 10-13, we will join with the SC Chapter in our third NC/SC joint conference. This year's conference will be at the Embassy Suites in Myrtle Beach and our theme is "One Carolina - One Recovery." Both chapter boards toured the facilities and we were highly impressed. It is shaping up to be an awesome event. We are already breaking records with abstract submissions and are expecting to break our all-time attendance record this year.

In May, NCAFPM is proud to be one of three chapters selected nationwide to host the ASFPM's State Flood Risk Symposium. This symposium will be attended by thought leaders from federal, state, and local governments, academia, and private industry. This symposium theme will be "Hot Topics" dealing with improving communications of flood risk to our citizens.

In June, floodplain managers from all across the nation will gather in Grand Rapids for the ASFPM Annual National Conference. In 2016, ASFPM is celebrating its 40th and this conference promises to be one of the best yet! As you may know, Grand Rapids was recently voted as "Beer City, USA." Sounds like perfect match for the annual conference! See page 11 for more details about the ASFPM Annual Conference.

I sincerely hope ya'll are have a wonderful spring season and make the best use of the extra day that we are given this leap year. I thank you for your dedication to protecting property and lives in this state. I look forward to seeing you all in Myrtle Beach!

A handwritten signature in blue ink that reads "David". The signature is stylized and appears to be written in a cursive or semi-cursive font.

## Annual Conference, from front

North and South Carolina. You can view the program on the conference webpage.

Registration is ongoing so don't miss out on this conference! We hope you'll be joining us April 10-13 at the Embassy Suites Myrtle Beach (9800 Queensway Blvd., Myrtle Beach, SC 29572 ).

## Keynote Speaker

Our keynote speaker, Tim Connor, will be addressing "What Success and Happiness Have In Common." Tim is a globally renowned speaker, trainer, and author. He has been a full-time professional speaker and trainer since 1973 and has given over 4,500 presentations in 20 countries, to a wide variety of audiences. His presentations are lively, full of practical content, thought-provoking, and entertaining. Tim previously participated in NCAFPM's 2013 Annual Conference at Wrightsville Beach, NC, and played a major part in the success of that conference. We are excited to have Tim at our 2016 Joint Annual Conference with NCAFPM and SCAHM.



## Annual Golf Tournament

This year's Annual Golf Tournament is sponsored by Atkins. The tournament will be held on Sunday, April 10 at Arcadian Shores Golf Club (710 Hilton Rd, Myrtle Beach, SC 29572). Tee time is 1:00 pm and cost is \$65, which includes green fees, cart, range balls, and prizes. We are expecting 10 four-somes (40 players) and have arranged five tee times to begin simultaneously at both #1 and #10. Contact John Fullerton, for name(s) of players, desired pairings, and more information. Pre-payment is required (payment should be made with your conference registration).



Our tournaments are designed for fun and fellowship and for golfers at all talent levels. The course is within ½ mile of our hotel.

**Don't forget to use the hashtag**

**#CarolinaFP2016**

**when tweeting about – or during the Annual Conference!!**

## Silent Auction

This year marks our THIRD annual silent auction. It will be open for bids all day Monday and Tuesday during the conference. Don't forget to stop by! We have some amazing items once again. ▲



*#OneCarolina #GoPanthers  
South Carolina & North Carolina  
boards at a conference planning  
session.*

## Education & Outreach: 2016 & Beyond

DAN TOMCZAK, EDUCATION AND OUTREACH COMMITTEE CHAIR

The Education and Outreach (E&O) Committee of NCAFPM has been interested in identifying opportunities that could extend the Association's reach beyond conferences and workshops while staying true to the scope and mission. These opportunities can include activities and events for our Association members to become more engaged with communities, schools, and other organizations. Examples of some of the outreach activities that have been identified in 2016 include:

### WARD's Flood Model

[wardsci.com/store/catalog/product.jsp?product\\_id=8889092](http://wardsci.com/store/catalog/product.jsp?product_id=8889092)

1. **WARD's Flood Model** – An article in the Fall 2015 issue of the NCAFPM *FlashFlood News* discussed the use of the Ward's Flood Model as an education and outreach tool and the process for reserving the model. The model is scheduled to be used at upcoming Career Day and National Engineer's Week events, but it is still very "open" for other education and outreach activities by Association members. If you know of any potential opportunities (i.e., schools, groups, town event, etc), please discuss with the E&O Committee.



### Charlotte WeatherFest

[facebook.com/CharlotteWeatherFest](https://www.facebook.com/CharlotteWeatherFest)

2. **Charlotte WeatherFest 2016** – This outreach activity for all weather "enthusiasts" was held on the campus of UNC-Charlotte on Saturday, March 19. NCAFPM had a table at the event and demonstrated the Flood Model (see picture at right).



### Forsyth Creek Week

[forsythcreekweek.squarespace.com](http://forsythcreekweek.squarespace.com)

3. **Forsyth Creek Week** – NCAFPM is a sponsor of this great outreach event in Winston-Salem (April 2-10). Association members will be presenting a short educational activity at Easton Elementary School in Winston-Salem one day during that week using the Flood Model and other resources.

### NC King Tides Project

[nckingtides.web.unc.edu](http://nckingtides.web.unc.edu)

4. **North Carolina King Tides Project** – This is a potential outreach activity for our Association members who live near or along the coast. The NC King Tides Project was recently set up by the UNC Institute of Marine Sciences in September 2015. The idea for the project is to have people photograph (SAFELY!!) areas of high water/flooding during known extreme high tide events so that potential future sea level rise issues can be better visualized. The photographs are uploaded onto a Flickr site (through their website). There is a calendar of these "King" tide events on their website.

5. **“Turn Around Don’t Drown” Program** – NCAFPM continues to evaluate ways to get Turn Around Don’t Drown (TADD) signs to interested communities. E&O has had discussions with sources on the means to acquire or purchase the signs as well as to look at potential grant opportunities.
6. **High Water Mark Initiative** – We are looking more into how NCAFPM can assist communities who are interested with the FEMA High Water Mark (HWM) Initiative program.

**Turn Around Don’t Drown**  
[nws.noaa.gov/os/water/tadd](https://nws.noaa.gov/os/water/tadd)

**High Water Mark Initiative**  
[fema.gov/high-water-mark-initiative](https://fema.gov/high-water-mark-initiative)

There are other potential outreach opportunities to consider, including trainings and teaming with other groups, but E&O wanted to give you a general idea of some of the activities and events that we have been pursuing.



*Drew Blackwell excites the students of the first grade class at Whitaker Elementary School in Winston-Salem about studying floods through working with the Ward’s Flood Model.*



*Laura Arnold works with students from the Transportation YOU mentoring program and the WTS group in Raleigh demonstrating runoff and floodplain processes using the Ward’s Flood Model.*

The E&O Committee is really excited about some of the opportunities that have been identified, but **WE NEED YOUR HELP** in order to make some of these activities happen and help us reach *beyond*. If you are interested in outreach for NCAFPM, please consider what areas or activities you would be interested in volunteering and contact the E&O Committee Chair Dan Tomczak ([daniel.tomczak@ch2m.com](mailto:daniel.tomczak@ch2m.com)) if you would like to discuss further. ▲

## Membership Level Change

In recent years, we have had an increase in NCAFPM Full (Individual) memberships and a significant decrease in Corporate and Agency memberships. In fact, there have been no memberships in those two categories for at least two years. This is likely attributed to the benefits that Individual/Full members receive with their CFM certification.

At our 2015 Fall Floodplain Institute in October, we voted to eliminate the Corporate and Agency membership categories. ▲

## NCAFPM Hosting 2016 North Carolina Flood Risk Symposium

BILL TINGLE, PG, CFM, NCAFPM EXECUTIVE DIRECTOR

The North Carolina State Flood Risk Symposium will take place on May 12 in Raleigh. The invited attendees will come from a variety of backgrounds representing leaders and experts from local, state, and federal government, academia, and other public and private agencies and corporations. The symposium will be facilitated by the ASFPM Foundation which will provide a facilitator and speakers, augmented by local presenters. The invited speakers from North Carolina include John Dorman, North Carolina Floodplain Mapping Program, Dr. Gavin Smith, UNC-Chapel Hill, and Dave Canaan, Mecklenburg County Water and Land Resources.

The goal of the symposium is to discuss specific flood risk challenges facing our state and determine recommendations for future actions to deal with these challenges. The challenges and solutions should incorporate the multifaceted interests of a wide range of potential stakeholders. It is anticipated that discussions will promote the creation of partnerships from the diverse group of attendees which will continue into the future. A comprehensive report will be published and made available to interested parties following the event. The symposium is from 8:00-5:00 on May 12 at the Wake Tech Conference Center located at their main campus on Fayetteville Road in Raleigh. If you are interested in assisting with the event, please contact Bill Tingle at [wtingle@carolina.rr.com](mailto:wtingle@carolina.rr.com). ▲



### ALPHA & OMEGA GROUP

Raleigh, NC 919 981 0310 [www.aogroup.com](http://www.aogroup.com)

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# NOAA Grant Will Bring Resiliency Efforts into Capital Improvement Planning

*Reprinted with permission from ASFPM News & Views Vol. 29, No. 1, February 2016*

The Association of State Floodplain Managers and American Planning Association will work together to develop new national planning guidelines for coastal resiliency, thanks to a \$1,054,543 Regional Coastal Resilience Grant Award from National Oceanic and Atmospheric Administration's Office for Coastal Management.

Trillions of dollars of local infrastructure investments are needed in communities in the next several decades. Planning and constructing capital improvements can be done in such a way that they make coastal communities more resilient from the impacts of climate change – extreme weather events, climate hazards and changing ocean conditions such as sea level rise.

However, very little current capital improvement planning, either a project-by-project basis or multi-year effort, accounts for climate change data or resiliency. This is a very new approach and techniques are currently unknown, or are just starting to develop. This grant will help identify and advance the best techniques for incorporating long-term resiliency efforts into capital improvement planning.

ASFPM Executive Director Chad Berginnis said, “This project will mainstream techniques for building in coastal resiliency. We know there are techniques being tested and used in isolation around this country, but very few are known and widely available to engineers, planners and floodplain managers. So this project will identify, test and present those techniques to the practitioner community.”

“It is a new era for hazard mitigation efforts by combining resiliency efforts into capital improvement planning efforts,” said James C. Schwab, manager of APA's Hazards Planning Center. “This approach will maximize economic benefits and enhance the safety of the community. It will also push the boundaries for how communities will be able to use available federal data to make informed decisions.”

“Building Coastal Resilience through Capital Improvement Planning: Guidance for Practitioners” is a three-year project. The first phase of the project will explore techniques for incorporating climate change into capital improvement planning efforts. The second phase will test the techniques among the two regional pilot program partners – the city of Toledo and Lucas County, Ohio; and Chatham County and Chatham County – Savannah Metropolitan Planning Commission. The regional partners represent two different types of coastal communities. This will ensure the best techniques identified will be applicable to all coastal communities.

APA and ASFPM are long-standing partners of the NOAA Digital Coast program. This grant will further inform professional planners about the coastal data and tools available and enhance use. Other Digital Coast partners will play a role in advising the project. For more information on the other projects awarded 2015 Coastal Resiliency Grants, visit: [coast.noaa.gov/resilience-grant/projects](http://coast.noaa.gov/resilience-grant/projects). ▲

# Takeaways from the 2015 Digital Coast Partner Meeting

*Reprinted with permission from ASFPM News & Views Vol. 28, No. 6, December 2015*

The Digital Coast Partnership — a group of coastal resource management organizations working together to improve access to federal coastal data, training and best practices — gathered in Charleston, South Carolina this month.

Over the course of the meeting, partners worked to identify opportunities to advance the Digital Coast effort through collaborative outreach and joint project activities, provided updates on new tools and products, and received demonstrations of Digital Coast tools. Below are a few key takeaways from the meeting:

- **Coastal management requires a multidisciplinary approach.** The Digital Coast Partnership brings together APA, ASFPM, Coastal States Organization, National Association of Counties, National Estuarine Research Reserve Association, National States Geographic Information Council, NOAA Office for Coastal Management, The Nature Conservancy and Urban Land Institute. The partnership has built a strong alliance of national organizations that are working on coastal and resiliency issues across disciplines in order to build a network of coastal professionals and support coastal decision making. “This is one of the best and innovative forums I know of to tackle the huge problem of coastal resiliency,” said ASFPM Executive Director Chad Berginnis.
- **Coastal data is important for coastal decision making.** The nation has more than 450 coastal counties and 95,000 miles of shoreline. The nation’s coastal areas are more densely populated and more rapidly growing than other areas of the country. Digital Coast provides data, in addition to tools and trainings, to help address coastal issues. The information can be searched by topic, and specific resources are available for states (Digital Coast in Your State) and counties (Coastal County Snapshots).
- **Digital Coast partners are creating great resources.** In addition to the wealth of tools and resources available through the Digital Coast site, Digital Coast partners are working on a range of related projects and creating resources on resilience issues. These include resources such as the Urban Land Institute’s recent report, “Returns on Resilience: The Business Case” and APA’s Planning Information Exchange webinars, in partnership with ASFPM. Additionally, NOAA not only provided Digital Coast Partners demonstrations of new and updated tools, but also sought feedback on tools in development.
- **Digital Coast Partnership meetings provide a forum for technical and interdisciplinary support.** During the meeting, Digital Coast partners had the opportunity to receive input and feedback on current projects. For example, the final day of the meeting included a charrette focused around current work by ASFPM and Coastal States Organization on improving coastal resilience through participation in the National Flood Insurance Program’s Community Rating System.

Berginnis said, “From my perspective the Digital Coast Partnership has provided an invaluable forum for us as national organizations and NOAA to collaborate, identify synergies and develop a big picture sense of what the data and decision support needs exist in the field.” ▲

WRITTEN BY  
ANNA READ,  
SENIOR PROGRAM  
DEVELOPMENT  
AND RESEARCH  
ASSOCIATE WITH  
AMERICAN  
PLANNING  
ASSOCIATION

INSIGHTS FROM  
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BERGINNIS

# NC Floodplain Mapping Program (NCFMP) Update

RANDY MUNDT, AICP, CFM  
OUTREACH COORDINATOR  
RISK MANAGEMENT SECTION

The NCFMP has several projects ongoing across the state, from developing optimized non-encroachment areas for Graham County in the western mountains, to coordinating with Mecklenburg County on their next round of preliminary data (that will spill over into a couple neighboring counties), to finalizing and issuing preliminary flood hazard data and mapping for the last coastal counties.

The five southern coastal counties — Brunswick, Columbus, New Hanover, Pender, and Robeson — received preliminary data back in August 2014. This past November, the northeastern coastal counties — Camden, Chowan, Currituck, Pasquotank, and Perquimans — received their preliminary issuance. Also, this past November, the NCFMP shared *draft* pre-preliminary flood hazard data for Beaufort, Carteret, Craven, Jones, Pamlico, and Onslow counties through a process called Flood Risk Review (FRR). The purpose of sharing the early/unofficial data with those communities was to alert them to areas seeing some significant increases in special flood hazard areas (SFHA) and/or base flood elevations (BFE). The hope was that allowing communities an earlier look would help expedite significant delays due to appeals and challenges to the data, and also help them develop their outreach program in advance of when the general public would be viewing and questioning the communities. Unfortunately, the data was revealed in a public meeting, and has ended up creating more questions (i.e., community liability for sharing/not sharing the data, when to apply the data, why the significant areas of increased SFHA/BFE than it hoped to answer. The NCFMP has sought FEMA guidance on the liability issue, and is also reviewing the *draft* data prior to eventual preliminary issuance, which is anticipated to be in June. It is expected that the remaining coastal counties (in the central part of the coast) will be issued Preliminary at that time.

Regarding the mapping of non-encroachment areas, the NCFMP is coordinating with FEMA on the best way to share the data, which currently is only in tabular form in the Flood Insurance Study (FIS). We have heard from most communities the preference for the data to be mapped, and so have begun to develop plans for doing this and providing the data as a layer on our website (FRIS) over the next year.

Charlotte-Mecklenburg Storm Water Services has been working as a Cooperating Technical Partner (CTP) through FEMA on updating flood data for the northeastern portion of the county, and the NCFMP has been coordinating on the new studies that cross over into Cabarrus County; we anticipate preliminary issuance in the summer of 2016. Our interest is to partner with them on several public outreach meetings. Details are yet to be determined.

Currently, the following counties have been issued preliminary and are currently within the statutory due-process: Alamance, Brunswick, Camden, Chatham, Chowan, Columbus, Currituck, Duplin, Durham, Granville, Johnston, New Hanover, Orange, Pasquotank, Pender, Perquimans, Person, Robeson, Sampson, Vance, Wake, and Wayne. All public meetings have been held for first seventeen listed above. Durham County has yet to conduct their public outreach. The next round of public meetings will likely be in April for the northeast five counties. ▲

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*continued on next page*

# ASFPM Celebrates Its 40th Year

*(from ASFPM's January 2016 "Insider")*

## 40 Years of Fighting for Sound Floodplain Management

So much happened in 1976. The United States was celebrating her bi-centennial; U.S. National Academy of Sciences warned that CFCs used in aerosol cans was damaging the ozone layer; the \$2 bill was issued; Howard Hughes died; the Teton Dam collapsed; two spacecraft landed on Mars; the Big Thompson Canyon Flood in Colorado killed 143 people; Hurricane Belle crashed into the East Coast and Hurricane Liza hit the West and Southwest, killing 1,263; Patty Hearst was sentenced to seven years in prison for her role in a 1974 bank robbery; "One Flew over the Cuckoo's Nest" was released; Jimmy Carter was elected president and the Pittsburgh Steelers won the Super Bowl.

But it was a small gathering of state floodplain managers in a Chicago hotel room in 1976 who, unbeknownst to them at the time, were bringing to life what we all know today as the Association of State Floodplain Managers.



A little background. Congress created the National Flood Insurance Program in 1968 (housed at the time under the U.S. Department of Housing and Urban Development). We all know how important maps are to the program, and in the early 1970s, NFIP staff started working directly with communities to create these maps and bypass state review. The problem, said ASFPM Director Emeritus Larry Larson, was that the six states that made up Region V (Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin) already had floodplain management programs in place and were creating their own maps.

In 1976, representatives from the states decided to get together in Chicago before the annual meeting with the NFIP Region V representative. The hotel room included Larson and Mark Riebau (WI), Peter Finke (Ohio, now deceased), Gordon Lance (IN), Patricia Bloomgren and Jim Wright (MN), Jim Boulton, (MI), and French Wetmore (who at the time lived in Illinois).

"The states came to the meeting a half day early to up-date each other on what we were doing, share notes on how collaboration with the NFIP was or was not working in the state, and discuss how we could work with the NFIP to build state and local capability, avoid duplication of effort and improve flood mapping and floodplain management throughout the region," Larson said.

He said the group agreed that they should continue updating each other throughout the year, and Lance volunteered to "be the chair," to keep the information flowing, which happened via snail mail because, of course, there was no email at the time and long distance calls were expensive. The following year, ASFPM's first conference (then called annual meetings), took place in French Wetmore's office in Chicago. In fact, a document from the Department of Homeland Security called, "A Chronology of Major Events Affecting the National Flood Insurance Program," has a notation for August 1977, that states, "Concerned with delays in issuing flood insurance studies, the [Federal Insurance Administration] decides to circumvent the state review and approval process. The states in Region V object. The FIA subsequently revises the study policy. The states' success in altering the policy change solidifies their cause and pushes them to form an association that eventually becomes the Association of State Floodplain Managers." ▲



## ASFPM 2016 National Conference

### The Premier Flood Conference

The Association of State Floodplain Managers will convene the world’s largest and most comprehensive floodplain management conference – the 40th annual gathering – the week of June 19-24, 2016, at DeVos Place Convention Center in downtown Grand Rapids, Michigan.

Our theme for the 2016 conference — “Great Lakes, Grand Partners” — is a focus on partnership. PARTNER is defined as a person (or entity) who engages in an undertaking with another or others, especially in a business or company with shared risks and profits; being united with others in an activity or sphere of common interest. The State of Michigan has long been a strong partner and leader in the Midwest with innovative mitigation tools and regulations to protect its people and environment.

The Great Lakes (also called the Laurentian Great Lakes, the Third Coast, or the Great Lakes of North America) are a series of interconnected freshwater lakes located in northeastern North America, on the Canada-US border. They connect to the Atlantic Ocean through the Saint Lawrence River. Consisting of Lakes Superior, Michigan, Huron, Erie, and Ontario, they form the largest group of freshwater lakes on Earth, containing 21% of the world’s surface fresh water by volume. The total surface is 94,250 square miles and the total volume (measured at the low water datum) is 5,439 cubic miles.

Due to their sea-like characteristics (rolling waves, sustained winds, strong currents, great depths, and distant horizons) the five Great Lakes have also long been referred to as inland seas. Lake Superior is the second largest lake in the world by area, and Lake Michigan is the largest lake that is entirely within one country. The Great Lakes began to form at the end of the last glacial period around 10,000 years ago, as retreating ice sheets carved basins into the land and they became filled with meltwater. The lakes have been a major highway for transportation, migration and trade, and they are home to a large number of aquatic species. Grand Rapids is 30 miles east of Lake Michigan, with the Grand River snaking through the midst of the city and flowing into Lake Michigan. Clearly water issues abound in this region and we will learn well from our colleagues here!

The conference is conducted by the Association of State Floodplain Managers, the world’s leading voice for sound floodplain management, with 17,000 practitioners, 9,200 Certified Floodplain Managers (CFMs), 36 Chapters, and 73 Corporate and Agency Partners worldwide.

For more information or to register for the ASFPM Annual Conference, go to [asfpmconference.org](http://asfpmconference.org). ▲

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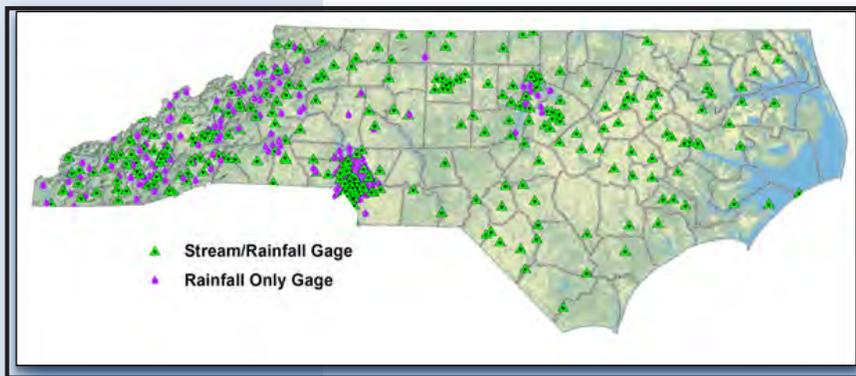
# Aftermath of Disaster – A Program is Established

JOHN DORMAN, CFM  
NC FLOODPLAIN MAPPING PROGRAM

KATIE HERMANN, CFM, GISP  
ESP ASSOCIATES, PA

estimated \$6 billion in damages, and creating major water pollution issues from flooding sewage lagoons and livestock farms. To make matters worse, many impacted residences and businesses did not carry flood insurance that would have greatly facilitated recovery. The floodplain maps at the time were dated and, in many cases, did not accurately depict flood risks. In recognizing the need for more reliable flood hazard information, the Governor and General Assembly established the North Carolina Floodplain Mapping Program (NCFMP) and tasked the program to update, disseminate, and maintain current and accurate flood hazard and risk information statewide.

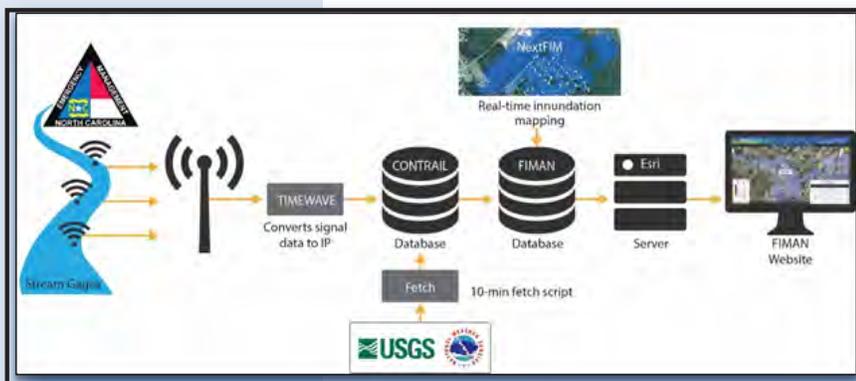
Since its inception, NCFMP has implemented strategies to identify and reduce risk, defined in terms of financial loss, from natural hazards. NCFMP has completed state-wide collection of high-resolution aerial, topography, and feature/asset data; updated the 10,000+ floodplain maps across the state; analyzed and mapped risks from all other major natural hazards; and developed sophisticated GIS-enabled databases and tools for managing all the information. All regulatory and non-regulatory floodplain information (floodplain boundaries, models, Flood Insurance Study information, and supporting data) are stored in the NC FLOOD enterprise geodatabase. Vulnerable asset and natural hazard risk data are stored in the NC RISK enterprise geodatabase.



(Above) North Carolina FIMAN Gage Network

(Below) FIMAN System Components

information, FRIS allows users to download data and floodplain models, and contains tools to assist individuals and local governments with identification and mitigation of risks from natural hazards.



## FIMAN – North Carolina’s Real-Time Flood Warning System

One unique component of NCFMP’s program is its real-time flood warning system known as FIMAN (Flood Inundation Mapping and Alert Network). Whereas traditional floodplain maps are based on model simulations of probabilistic storm events (e.g. the “100-year storm event”), FIMAN provides actual storm-specific rainfall and stream/flood information based on a system of measurement stations

(i.e. gages) located throughout the state. FIMAN integrates existing gages maintained by the USGS and other agencies with state-owned gages resulting in an overall network

— continued on next page

## FIMAN, from page 12

of approximately 550 gages, as shown in the figure on the bottom of the previous page. Gage readings are typically recorded and transmitted every 15 – 30 minutes. The goal of the FIMAN system is to reduce the loss of life and flood-related property damage by providing emergency managers and the public with more timely, detailed, and accurate information.

## Determining Real-Time Flood Conditions and Impacts

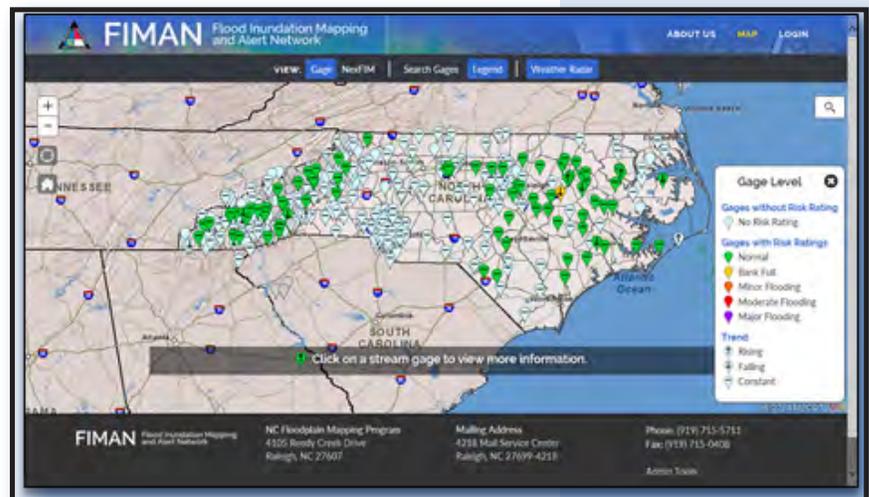
One of the most powerful aspects of FIMAN is its ability to not only measure and display gage information, but to **analyze, map, and communicate flood risks in real-time**. If a gage is identified in flood condition, the database runs tools to develop estimated flood inundation boundaries and compute flood impacts. One inherent challenge with gage based warning systems is that they only give information at the specific gage location. Due to the expense and resources to install and maintain them, gages (when they exist at all) are typically located sporadically along a stream - often many miles apart. Thus, there are often long sections of stream that may be vulnerable to flooding for which no information is available. NCFMP has recently overcome this challenge using an innovative approach. The result is automated generation of **seamless flood inundation boundaries** and subsequent impact analysis between gages and along multiple streams in one process. Collectively, this set of tools used to analyze and map real-time gage readings are referred to as **NexFIM**.

## How It Works

NexFIM is built on tools that leverage multi-frequency flood hazard information and vulnerable asset information from the NC FLOOD and NC RISK databases that NCFMP maintains as part of its overall program. During a flood event, NexFIM algorithms calculate real-time storm event probability (i.e. return period) at each stream gage in the system. Once a flood inundation boundary is developed, NexFIM tools overlay the flood inundation boundary with existing structure information stored in the databases (building type, value, first floor elevation, etc.) to identify impacted buildings and assign storm event probabilities. Estimated damages to each building are then calculated by the tool. Along with individual building depths and damages, the tools calculate rolled-up damage summary statistics for a number of logical categories (e.g. occupancy type, community, stream, etc.). All of this valuable information is provided on the FIMAN web application.



Typical Gage Distribution along Stream



FIMAN System Components



Individual Property View

— continued on next page

Real-Time Flood Inundation Boundaries (showing impacted buildings) along Haw River During October 2015 Storm

## FIMAN, from page 13

### Viewing Gages

The “Gage” view is intended for the general public to learn about flood conditions and alerts in their area of interest. Users can find gages of interest using their current location

(device or browser location), viewing gages within a search radius or by searching by river basin or gage name. Selecting a gage displays the most recent stage, flow and predicted risk. Where available, forecast information from the National Weather Service is displayed. Whereas the “Gage” view focuses on information at a specific gage of interest, the “NexFIM” view provides real-time and scenario flood information for an entire river system using the NexFIM computational algorithms discussed previously. Users can select a river



system of interest from a pull-down list that has been processed in the FIMAN system. The user can click on an individual building to see building-specific information such as building type, flood depth, and estimated damages.

### FIMAN in Action – Hurricane Joaquin, October 2015

In the first week of October 2015, the combination of Hurricane Joaquin passing to the east and a stalled low pressure system produced historic rainfall totals and subsequent flooding within portions of the Carolinas. FIMAN was used by the North Carolina State in Emergency Operations Center throughout the storm to monitor flooding conditions, assess potential impacts of flooding based on weather forecasts, and target the deployment of emergency response personnel and resources.

### Points of Contact

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Flood Warning Program

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919-825-2322 ▲

# New Certified Floodplain Managers

The following people have passed the CFM exam since our last issue of *FlashFlood News*. Congratulations!

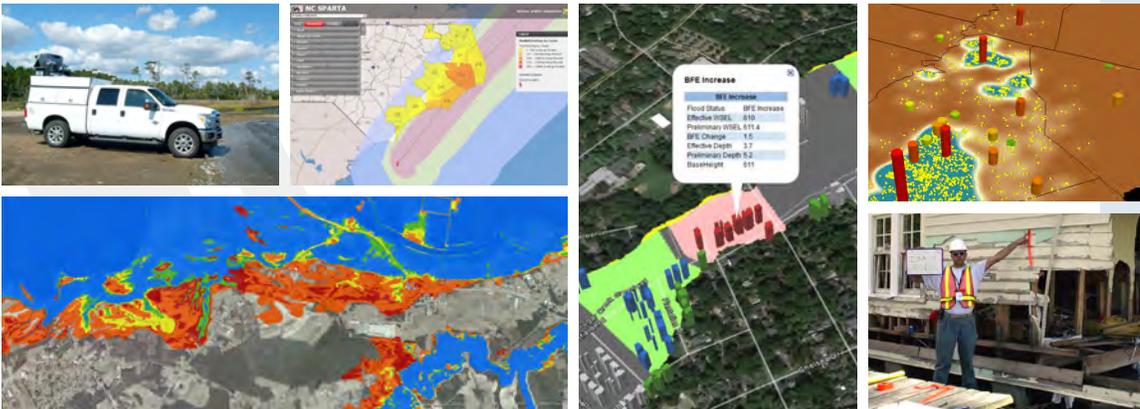
George Anagnostopoulos, City of Raleigh  
 Peter Budge, Town of Belhaven  
 Joseph Colavito, Town of Holly Springs  
 Emily Darr, Freese & Nichols, Inc.  
 Franklin Gover, Rowan County  
 William Hague, AECOM  
 Brian Hawkins, Union County  
 William Ledford, City of Asheville  
 Jeremy McCall, City of Greensboro  
 Jonathan McNeill, City of Raleigh

Jack Meadows, Town of Siler City  
 Peter Minter, Burke County  
 Emily Nash, City of Raleigh  
 Matthew Osborne, City of Winston-Salem  
 Michael Oundersluys, City of Raleigh  
 Guy Peters, STV Inc.  
 Matthew Poling, Town of Fuquay-Varina  
 Vincent Sullivan, City of Asheville  
 Sheila Thomas-Ambat, City of Raleigh



Congratulations to these people who passed the North Carolina CFM exam this calendar year.

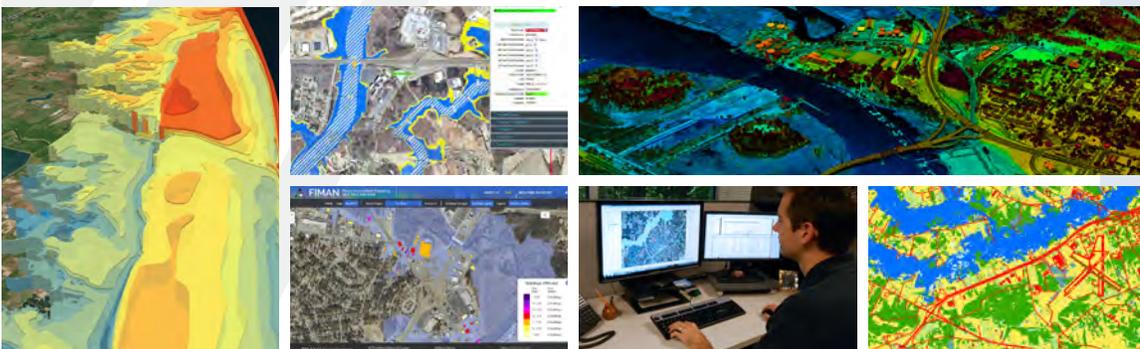
The CFM exam will be offered at the Joint NCAFP/SCAHM Conference in April. Application must be submitted at least two weeks before the test. Information, including the application packet, is on the [NCAFP Certification webpage](#). ▲



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800.960.7317  
 David Key, PE, CFM  
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# The Hill Street Storm Drainage Improvement Project

## XPSWMM Selected to Model System in Downtown Charlotte

DANEE MCGEE, PE, CFM, CHARLOTTE-MECKLENBURG STORM WATER SERVICES  
CRYSTAL WILLIAMS, PE, CFM, DEWBERRY

The City of Charlotte's Storm Water Division manages four programs — Engineering, Water Quality, Design Management, and Construction. The Engineering Program has thirteen project managers who are responsible for the planning, design, and implementation of 41 current and 58 pending capital projects. The Hill Street Storm Drainage Improvement Project (SDIP) has one of the largest budgets in the program, is in a complex urban environment, and features a unique modeling strategy that helped the city identify solutions to remedy chronic flooding for streets and structures and this project addresses channel erosion problems.

Planning Phase activities for the Hill Street SDIP began in 2011 and were completed in the fall of 2015. This project is currently in the Design Phase. The planning process was typical of all of the City's SDIPs. A site survey gathered information on structures in the project area. Finished floor elevations, openings where water can enter, and down spouts were documented. Additional information included open channel information, storm drain inverts, top of headwalls, topography, as well as curb and gutter with inlet locations. Easement areas and utility locations are also shown on the site survey.

The existing conditions models for the project drainage area utilized the site survey information. Engineering consultants for the Storm Water Division can use a few different types of modeling software but for Hill Street it was determined that the hydrologic and hydraulic models should be completed with XPSWMM, a 1D/2D modeling software. The unique challenge with Hill Street was accurately modeling the overland flows and

### NOTE:

All photos courtesy of  
*The Charlotte Observer*



the enclosed system simultaneously. Storm Water Services models with and without drainage attenuation in the enclosed system. Opening up the system (without attenuation) allows the project team to determine land development changes to the system while modeling with constriction (with attenuation) shows the real world conditions. In addition to the modeling, the project team gathered information about past storm events by speaking with residents, taking photographs when flooding occurred, and looking for high water marks on structures.

The City Design Standard is a modeling step that was completed utilizing the Manning's n values for future land use. The future land use was determined by zoning and planning studies. Hill Street is an urban project, but redevelopment from Industrial uses to multi-family housing and commercial projects is expected. Unfortunately, it is impossible to implement the current

— continued on next page

## Hill Street Project, from page 16

city design standards within infill project areas due to space and cost constraints, which is why all projects are modeled with alternatives to the current city design standard. The alternative criteria are set to establish a cost-benefit solution for the implementation of a new system versus the existing drainage problems. The selected alternative is intended to alleviate flooding of building and streets with adequately sized infrastructure that has a manageable cost.

### A Challenging Urban Project

Hill Street has many unusual constraints. It is within the downtown area of Charlotte, which is an impervious urban environment. The project team assumed that a minimum of 25% of the existing downtown Charlotte drainage systems outlet to the Hill Street project area. Therefore, the flow to the project area is much greater at present time than it was anticipated to be in the past when the existing structures were built.

The drainage system was built many years prior to the current level of development within the project area. This means that the system is now expected to carry storm water run-off for a large portion of Charlotte's drainage areas and for infill development within its own drainage area. It also means that the system is also failing because it is outdated. The project team estimates that this system was built in the early 1900s. To rebuild this system today means placing large pipe along narrow roads that are fronted by businesses and multifamily residences. The buildings are very close to the road and there is little space for excavation and construction equipment. The requirements for foundation protection and loss of access to businesses and residences are prohibitive. Construction today would also require that the existing utilities be relocated or replaced, including transmission lines, fiber optic cables, and sanitary sewer and water main trunk lines. Because the project area has a history of being an industrial area, there are many environmental concerns including the abandoned railroad switchyard, old gas station locations, and abandoned underground storage tanks that have caused soil contamination. The team put considerable effort into environmental reports that utilized soil and water sampling to determine the extent and types of contamination.

### XPSWMM Modeling

The hydrologic and hydraulic modeling software XPSWMM was chosen to model Hill Street because of its capability to integrate the modeling of both overland flow (2D) and pipe system flow (1D) together to better understand storm system and flooding issues. With the XPSWMM software, water can flow from the 1D system to the 2D system, and vice versa. For example, if a specific pipe is undersized, flow can back up, surcharge out of a nearby inlet, and spill out onto the surface. An existing conditions XPSWMM model was created as a baseline and multiple proposed XPSWMM models were then devel-



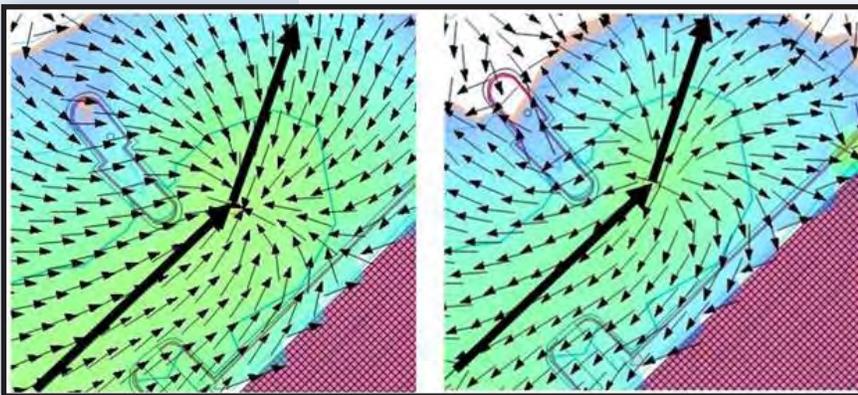
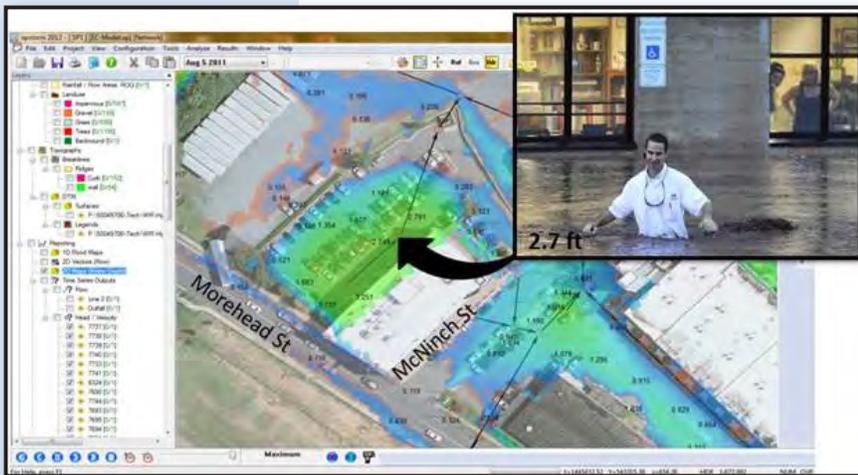
## Hill Street Project, from page 17

oped to offer a wide range of solutions to determine the optimal cost-benefit solutions to resolve the area's flooding issues.

The XPSWMM existing conditions model was created by inputting data collected during the survey phase of the project such as topography, storm inlets, pipes, and building structures. Drainage area characteristics as well as rainfall data were also input into the model to quantify the storm water runoff. The Hill Street storm system outfalls into the FEMA-studied Irwin Creek; therefore the downstream boundary condition of the XPSWMM model was set as a curve of known water surface elevations over time pulled from the FEMA study. Once the existing conditions model was complete, a storm event can be executed such that the model "rains" that event distributed over the entire project area. The water flows over the surface based on slope, roughness, and obstructions, and then enters the underground storm system based on catch basin inlet capacities. In existing conditions, it was determined that 75% of the pipes in the system were deficient in some way, and 70% of the project area buildings were flood prone.

As a way to validate the existing conditions model, rainfall data taken from a nearby USGS rain gauge during a significant rain event in 2011 was entered into the model and executed. The flooding the model displayed during the peak of the simulated rain event matched closely with photographs taken the day of the actual rain event. This exercise provided the project team a level of comfort that the modeled 2D/1D storm system reacted similarly to the real life storm system.

Peak flooding during validation storm event



Water entering Inlet, and then water surcharging from inlet (small arrows indicate direction of flow)

Multiple proposed conditions models were created with varying levels of service in order to determine the most cost-effective solution to the project site's flooding problems. The selected alternative includes four miles of proposed storm system, hundreds of proposed drainage structures, and thousands of feet of utility relocations.

To ensure the Hill Street project had no negative impact to the downstream Irwin Creek with the increase in peak outflow, the outfall hydrograph from the proposed XPSWMM model was inserted into the FEMA HEC-HMS model replacing the Hill Street existing project area. When comparing existing conditions to proposed, no increase in peak flows occurs in Irwin Creek because the Hill Street project area is in the lower part of Irwin Creek's drainage area. The Hill Street project area's peak occurs before the Irwin Creek peak flow at the same location, therefore not impacting Irwin Creek's peak flow.

The use of XPSWMM software was clearly the best option for modeling the Hill Street SDIP—an enclosed system with too few inlets within a dense, urban watershed. Challenges included impervious conditions, large quantities of water due to downtown run-



## Member Alert:

# Notice Of Funds Availability for the 2016 PDM and FMA Programs

CHRIS CREW, STATE HAZARD MITIGATION OFFICER (SHMO)

The Pre-Disaster Mitigation Program was authorized by the Disaster Mitigation Act of 2000, and provides annual funding to state and local governments for the implementation of cost-effective measures to reduce the future impacts of natural hazard events on people and property. This year, Congress authorized \$90,000,000. Each eligible applicant (state or Native American Tribal Organization) may submit up to eighteen (18) applications: eight for projects and eleven for mitigation planning activities. Each state, territory, and federally-recognized Indian Tribe is eligible for a funding set-aside of \$575,000 for their top-ranked applications. The remainder of the funds will be distributed competitively based on the following priorities:

1. Mitigation Planning and Project sub-applications up to \$575,000 Federal share per state or territorial government
2. Up to \$10 million for mitigation planning or project sub-application up to \$575,000 Federal share per tribal applicant
3. Mitigation planning sub-applications from states that do not have HMGP planning funds available
4. Projects from applicants that do not have HMGP funds available
  - a. prioritizing pre- or post-wildfire mitigation activities or any action that uses green infrastructure approaches;
  - b. non-flood hazard mitigation projects and non-acquisition or elevation or mitigation-reconstruction flood mitigation activities (ie stormwater management or flood control)
  - c. acquisition, elevation and mitigation reconstruction projects;
  - d. generators for critical public facilities
5. Planning activities from applicants that have HMGP planning funds available
6. Projects from applicants that have HMGP funds available (a through d under item 4) also applies here.

The Flood Mitigation Assistance Program (FMA) was created by the National Flood Insurance Reform Act of 1994 with the goal of reducing claims against the NFIP. For 2016, Congress has authorized \$199,000,000 to be distributed among the states, territories and tribes. Eligible activities include acquisition/demolition of flood hazard properties, elevation of flood hazard properties, demolition/reconstruction of flood hazard properties, dry-floodproofing of non-residential structures, non-structural retrofits of existing buildings (wet-floodproofing) infrastructure retrofits, and minor localized flood reduction (storm water management).

### Priorities for Funding — Projects that Mitigate OR PROTECT

1. NFIP-insured structures that meet the SRL criteria: two or more losses with the cumulative amount of NFIP claims exceeding the market value of the property (90% federal share)
2. NFIP-insured structures that have incurred claims on two or more occasions where the cost of structural repair exceeded, on average, 25% of the market value

## Funds from page 20

of the structure (90% federal share)

3. NFIP-insured structures that have received four or more separate NFIP claims with the amount of each claim exceeding \$5000 and the cumulative amount of the claim exceeding \$20,000 (100% federal share)
4. Projects that will mitigate flood damage to the largest number of NFIP-insured properties at the neighborhood level.

FEMA is in the process of preparing updated lists of repetitive loss and severe repetitive loss properties for each state and will provide that data to the states shortly.

A Notice Of Funds Availability and Request for Proposals will be distributed from NCEM to all Local Emergency Management, Floodplain Administration, Local Planning, and local government managers shortly.

NCEM will work with local governments to prioritize, review and complete applications from eligible proposals received. Final applications will be due from local governments no later than mid-May, and NCEM final applications will be submitted to FEMA by the first week in June of 2016. Notification of outcome is expected from FEMA by November of 2016. ▲

## Fall Floodplain Institute

**NORTH CAROLINA ASSOCIATION OF FLOODPLAIN MANAGERS**

### Mark your calendar!

The 11<sup>th</sup> annual Fall Floodplain Institute  
will be held October 18-21, 2016, at the  
Harrah's Cherokee Casino Resort in Cherokee, NC.



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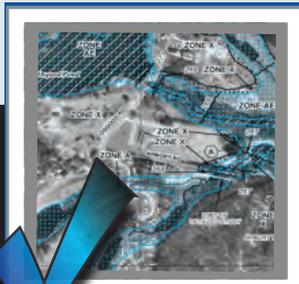
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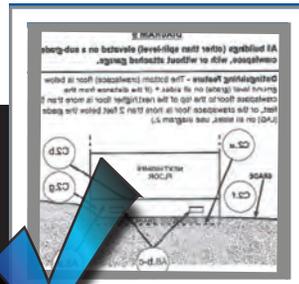
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# NFIP Coordinator's Corner

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John sends out periodic updates on NFIP issues and training opportunities to those on his email distribution list. If you are not currently receiving these emails and would like to be kept informed, please email [john.gerber@ncdps.gov](mailto:john.gerber@ncdps.gov).

## Elevation Certificate Update

FEMA released the updated Elevation Certificate and Floodproofing Certificate on January 6, 2016. While the form is dated July 2015, it is not yet available on the FEMA website. You can obtain a copy of the new EC by accessing the NFIP iService website: [www.nfipiservice.com/Stakeholder/pdf/bulletin/w-16002.pdf](http://www.nfipiservice.com/Stakeholder/pdf/bulletin/w-16002.pdf).

This version of the EC has a number of issues which are explained in this article published in the ASFPM Insider: [www.floods.org/n-news-hottopics/article.asp?id=417](http://www.floods.org/n-news-hottopics/article.asp?id=417).

To address some of the shortcomings of the new EC, the NCFMP updated the EC, and we have made it available at: [www.ncafpm.org/flashflood/FEMA-Form-086-0-33Legal\\_plus\\_photo\\_and\\_seal\\_fields-201601.pdf](http://www.ncafpm.org/flashflood/FEMA-Form-086-0-33Legal_plus_photo_and_seal_fields-201601.pdf).

FEMA has not established a date when the 2012 EC will be phased out. ▲

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## Non-Encroachment Area Mapping Along Limited Detail Studies

JOHN D. BRUBAKER, PE, CFM, NFIP ENGINEER  
NC DEPARTMENT OF PUBLIC SAFETY, NC FLOODPLAIN MAPPING PROGRAM

Many streams in North Carolina have been studied and mapped using limited detail methods. Unlike detailed studies, which use field surveys to determine channel characteristics as well as bridge and culvert geometry, limited detail studies are less rigorous and do not involve field surveys. If bridge and culvert data is available, the data will be reflected in the model. Otherwise, the structure will be field measured for a limited detail study. Also, unlike detailed studies, limited detailed studies do not include a mapped floodway. Instead, a “non-encroachment area” is generated within the bounds of the floodplain.

44 CFR 60.3.c.10 requires a hydraulic analysis for all development in the floodplain when a floodway is not established. The North Carolina Model Flood Damage Prevention Ordinance avoids this regulation on limited detail study streams by applying the floodway requirements to the non-encroachment area. Based on the Model Ordinance, development activity within the non-encroachment area will require a hydraulic analysis and a “No-Rise” or a CLOMR, and development outside of the non-encroachment area would not (although local ordinance requirements may vary).

Limited detail studies have established base flood elevations which can be retrieved using point-and-click on the Flood Risk Information System (FRIS) web site, just like detailed streams. However, the non-encroachment area information must be retrieved from the Flood Insurance Study. The limits of the non-encroachment area are given at each cross-section left and right of the stream centerline. The limits at an intermediate site can

— continued on next page

## NFIP Coordinator's Corner

be determined by interpolating between cross-sections or simply taking the wider distance of the two bounding cross-sections, and then measuring off the stream centerline. This has proven to be difficult for local municipal officials to calculate and enforce, and property owners accustomed to mapped floodways are having a hard time understanding where the different regulations apply to different areas of their property.

The North Carolina Floodplain Mapping Program (NCFMP), with the assistance of our mapping partners, is currently mapping non-encroachment areas throughout the state. The non-encroachment areas will not show up by default on the FRIS web site, but can be selected from the “Layers” menu. Shapefiles of the non-encroachment areas will also

be available to local municipalities for display on their local GIS web sites, just like the current flood hazard area boundaries and floodways. However, they will not be displayed as a floodway, since there are still some state and federal regulatory differences between a floodway and a non-encroachment area.

This information will be released to the western counties as map maintenance proceeds in these areas. Graham County, however, will be released separately. For eastern counties or areas where map maintenance is in the preliminary or effective stage, non-encroachment area boundaries will be mapped as the data becomes available following approval of the new effective maps. Generally, the non-encroachment areas will not be optimized, but will keep the current effective boundaries. Optimization will occur in the Pasquotank, Roanoke, Tar-Pamlico, White Oak, and Lumber River Basins, as well as Graham and Buncombe counties. Communities wishing to optimize the non-encroachment areas or upgrade Limited Detail Streams to Detailed Streams

should identify these areas during NCFMP scoping visits or prepare and submit a Letter of Map Revision. Questions regarding the non-encroachment area mapping or flood hazard mapping in general should be directed to the Regional NFIP Planner or an engineer with NCFMP. ▲



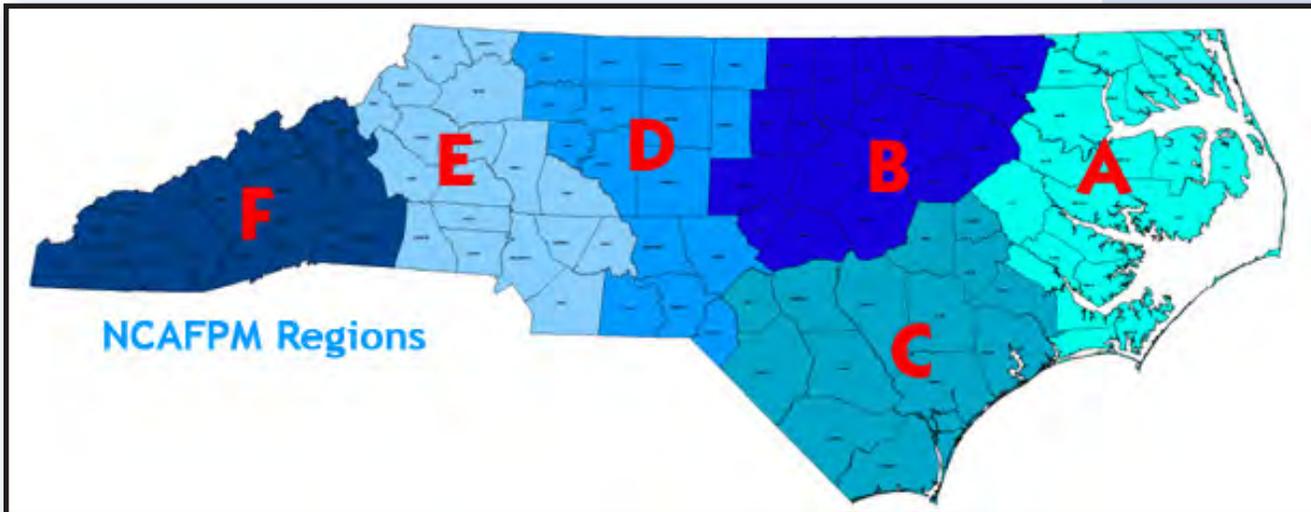
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## Upcoming 2016 Training Courses

- March 31, FPA 101 – Martin County
- May 2-5, Advanced Floodplain Management Concepts III (L-284) – Raleigh
- May 6, CFM Exam – Raleigh
- 2-Day Summer Workshops – dates TBD

Register on TERMS: [terms.ncem.org/TRS/home.do?menuItem=102](https://terms.ncem.org/TRS/home.do?menuItem=102). ▲

# NCAFPM Regional Reports



The old news in Region B is that the new flood risk data issued on March 31 for Wake, Durham, Granville, Person, and Vance Counties is still awaiting the statutory 90-day appeal period. Another flood mapping update of note is that Orange County is awaiting one last round of revised preliminary data; Chatham County's preliminary data will not have any further revisions before FEMA issues their Letter of Final Determination (LFD), which should be later this spring/summer.

Otherwise, nothing to report beyond the primary activity of floodplain managers in Region B continued involvement with processing updates for their community's hazard mitigation plans.

## Region B

*Randy Mundt,  
AICP, CFM*

Kathy Wolfe, GIS Analyst and Floodplain Manager of Iredell County recently went above and beyond to educate her community on hazards of the Floodway and Non-Encroachment Areas. For those who weren't able to attend the fall conference or missed her presentation, she shared an ongoing violation in the floodway and her experience in getting the property owner to bring his/her project into compliance. Her persistence and continuing communication with the property owner resulted in a suitable remedy for the violation. During the process, she realized the need to provide more education on the hazards regarding Floodways/Non-Encroachment Areas and the regulations that manage them.

She organized a workshop with the public as the targeted audience but also extended the invitation to floodplain managers. The workshop provided 3½ hours of CFM credits. Dan Brubaker and Terry Fox from NC Department of Crime Control & Public Safety were there to assist in presenting the material and answering questions from both the public and the floodplain managers. David Key and Neal Banerjee from ESP provided refreshments for the attendees. Robert Billings of Mecklenburg County Water Quality Program, Kelly Keesling, and the NCAFPM Board were also key to the advertisement and organization of the event. What a great example of state/local officials and private sector working together for the common goal of providing public awareness regarding the risk of floodways! ▲

## Region E

*Melonee Brock, CFM*

# Upcoming Training Opportunities

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**NC STATE UNIVERSITY**



## Upcoming Stormwater Training Events

For more information on each training event below, including agenda, registration fees, continuing education credits, and to register online, please click on the links provided for each workshop.

### 2016 Green Infrastructure Summit

**April 6 | 9AM-4:30PM | Raleigh, NC**

Experts from Europe and across North America will be presenting on a variety of topics that holistically examine the benefits of stormwater control measures (aka BMPs). Topics to be explored are wide-ranging and include climate resiliency, air quality benefits, carbon sequestration, green job creation, maintenance of base flow, public perceptions and acceptance of innovative measures, real-time control to improve SCM function while preserving stream health, and a discussion on employing Green Stormwater Infrastructure across the US and Canada.

### Green Streets for Stormwater Treatment

**April 7 | 8AM-5PM | Raleigh, NC**

This technical workshop is taking place in conjunction with the 2016 Green Infrastructure Summit. Material covered includes the design, construction, and multi-faceted benefits of green infrastructure and stormwater BMPs in the transportation corridor. We will explore the multiple angles of design and implementation—from transportation and vehicular safety to aesthetics and water quality improvements.

### Bioretention & Permeable Pavement Design Update

**April 27 | 9AM-4:30PM | Kannapolis, NC**

**May 3 | 9AM-4:30PM | Greensboro, NC**

**May 4 | 9AM-4:30PM | Raleigh, NC**

NC State researchers have created easy-to-use computer models that should facilitate the design of both bioretention and permeable pavements; they allow crediting of runoff reduction and pollutant capture for hundreds of design scenarios. Researchers and educators are teaming up to train on how to design these Low Impact Development practices used across North Carolina.

### Stormwater BMP Inspection & Maintenance Certification

**March 9-10 | 8AM-5PM (Day 1), 8AM-2:30PM (Day 2) | Wilmington, NC**

**April 26 | 10AM-3PM | Kannapolis, NC (Recertification)**

**August 24-25 | 8AM-5PM (Day 1), 8AM-2:30PM (Day 2) | Asheville, NC**

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View the full listing of upcoming trainings and workshops at [www.bae.ncsu.edu/training\\_and\\_credit/workshops.php](http://www.bae.ncsu.edu/training_and_credit/workshops.php). ▲

# Upcoming Conferences & Events

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## 2016 APWA-NC Stormwater Management Division Conference

September 12-13, 2016 | Charlotte, NC

The APWA-NC Stormwater Management Division Conference will be held in Charlotte September 12-13 at the Sheraton in Uptown Charlotte.



We are excited to take our conference to the Queen City! Issues and concerns related to water quality and stormwater management continue to play a significant role in the world of public works, shaping technical focus and policy throughout government and private industry. Join us as we once again provide a variety of learning opportunities in a fun and friendly atmosphere.

### Call for Abstracts

If you have an idea for a presentation topic or case study involving the stormwater industry, regulatory compliance, program management, innovative engineering or technology, or any other topic which is relevant to the stormwater community, please submit an abstract to [beth.chesson@amecfw.com](mailto:beth.chesson@amecfw.com) by close of business on Friday, May 6.

For more information, go to [northcarolina.apwa.net](http://northcarolina.apwa.net).

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## SESWA 2016 Annual Conference

October 19-21, 2016 | Birmingham, AL

Join us in historic Birmingham, Alabama, a city nestled at the foothills of the Appalachian Mountains for the 11th Annual Regional Stormwater Conference. This year's event will focus on Stormwater Solutions in Region 4 by providing attendees with a wide array of technologies and strategies to address challenges in stormwater management across the southeast.



Registration opens in early May. More details about the conference will be added as they are finalized. See the website at [seswa.org](http://seswa.org).

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## 2016 ECU/NCEM Hurricane Conference

May 25, 2016 | Greenville, NC

East Carolina University and North Carolina Emergency Management will be hosting a one-day hurricane conference on May 25 from 9 AM to 4 PM at the Murphy Center on the ECU campus. Registration can be completed through TERMS ([terms.ncem.org](http://terms.ncem.org)). Please direct questions or needed information to Charles Tripp ([charles.tripp@ncdps.gov](mailto:charles.tripp@ncdps.gov)) or Katie Webster ([katie.webster@ncdps.gov](mailto:katie.webster@ncdps.gov)). ▲

# Calendar

**April 10-13, 2016**  
NCAFPM/SCAHM JOINT  
ANNUAL CONFERENCE  
Myrtle Beach, SC  
[ncafpm.org](http://ncafpm.org)

**May 12, 2016**  
NC FLOOD RISK SYMPOSIUM  
Raleigh, NC  
[asfpmfoundation.org](http://asfpmfoundation.org)

**May 25, 2016**  
HURRICANE CONFERENCE  
Greenville, NC  
TERMS

**June 19-24, 2016**  
ASFPM NATIONAL  
CONFERENCE  
Grand Rapids, MI  
[floods.org](http://floods.org)

**September 12-13, 2016**  
APWA-NC STORMWATER  
MANAGEMENT DIVISION  
CONFERENCE  
Charlotte, NC  
[northcarolina.apwa.net](http://northcarolina.apwa.net)

**October 18-21, 2016**  
NCAFPM 11<sup>TH</sup> ANNUAL FALL  
FLOODPLAIN INSTITUTE  
Cherokee, NC  
[ncafpm.org](http://ncafpm.org)

**October 19-21, 2016**  
11TH ANNUAL REGIONAL  
STORMWATER CONFERENCE  
Birmingham, AL  
[seswa.org](http://seswa.org)

# Floodplain Management Resources

## Technical Assistance (State)

### NC Emergency Management National Flood Insurance Program

**NFIP State Coordinator:** John Gerber, PE, CFM  
[john.gerber@ncdps.gov](mailto:john.gerber@ncdps.gov) | 919-825-2317

**NFIP Engineer:** Dan Brubaker, PE, CFM  
[dan.brubaker@ncdps.gov](mailto:dan.brubaker@ncdps.gov) | 919-825-2300

#### NFIP Planners

**Central Area:** Milton Carpenter, CFM  
[milton.carpenter@ncdps.gov](mailto:milton.carpenter@ncdps.gov) | 919-825-2302

**Eastern Area:** Heather Keefer, CFM  
[heather.keefe@ncdps.gov](mailto:heather.keefe@ncdps.gov) | 919-825-2289

**Western Area:** Terry Foxx  
[terry.foxx@ncdps.gov](mailto:terry.foxx@ncdps.gov) | 828-228-8526

### NC CLOMR/LOMR Submittals

[www.ncfloodmaps.com/mt-2\\_forms.htm](http://www.ncfloodmaps.com/mt-2_forms.htm)

**LOMC Manager/Community Development  
Planner:** Steve Garrett, CFM  
[steve.garrett@ncdps.gov](mailto:steve.garrett@ncdps.gov) | 919-825-2316

### Meck. Co. CLOMR/LOMR Submittals

David Love, PE, CFM | 704-432-0006  
[david.love@mecklenburgcountync.gov](mailto:david.love@mecklenburgcountync.gov)

### Hazard Mitigation Grant Program & Flood Mitigation Assistance Prog

Chris Crew, Mitigation Section Chief  
[john.crew@ncdps.gov](mailto:john.crew@ncdps.gov) | 919-825-2305

## Maps & Flood Insurance Studies

### FEMA Map Information eXchange (FMIX)

1-877-336-2627 (1-877-FEMA-MAP)

### NC Floodplain Mapping Program

919-715-5711  
[www.ncfloodmaps.com](http://www.ncfloodmaps.com)

## Technical Assistance (FEMA)

### National Flood Insurance Program Floodplain Management and Insurance Branch: FEMA Region IV

[www.fema.gov/about/regions/regioniv/](http://www.fema.gov/about/regions/regioniv/)

**Branch Chief:** Susan Wilson, CFM  
[susan.wilson@fema.dhs.gov](mailto:susan.wilson@fema.dhs.gov) | 770-220-5414

**Natural Hazards Program Specialist**  
Collis Brown  
[collis.brown@fema.dhs.gov](mailto:collis.brown@fema.dhs.gov) | 770-220-8784

**FEMA Region IV Insurance Specialist**  
Janice Mitchell  
[janice.mitchell@fema.dhs.gov](mailto:janice.mitchell@fema.dhs.gov) | 770-220-5441

### Individual Lot LOMA/LOMR

FEMA LOMA DEPOT  
3601 Eisenhower Avenue  
Alexandria, VA 22304-6425  
Attn: LOMA Manager

### Flood Insurance Policy Issues

**Regional Manager:** Lynne Magel  
[lmagel@ostglobal.com](mailto:lmagel@ostglobal.com) | 813-788-2624

**Regional Liaison:** David Clukie  
[dclukie@ostglobal.com](mailto:dclukie@ostglobal.com) | 813-767-5355

## Websites

NCAFPM..... [www.ncafpm.org](http://www.ncafpm.org)  
ASFPM ..... [www.floods.org](http://www.floods.org)  
FEMA..... [www.fema.gov](http://www.fema.gov)  
NFIP..... [www.floodsmart.gov](http://www.floodsmart.gov)  
NCEM ..... [www.nccrimecontrol.org/nfip](http://www.nccrimecontrol.org/nfip)  
NC Maps ..... [www.ncfloodmaps.com](http://www.ncfloodmaps.com)

**FlashFlood NEWS** is a semi-annual online publication which offers information and education on topics that are of current interest in the field of floodplain management and the National Flood Insurance Program.

Information and opinions do not necessarily reflect the views of the North Carolina Association of Floodplain Managers.

All inquiries and article ideas should be directed to: Kelly Keesling, Editor ([kgkeesling@carolina.rr.com](mailto:kgkeesling@carolina.rr.com)).

For more information about the North Carolina Association of Floodplain Managers, see our website at [ncafpm.org](http://ncafpm.org).

### SPONSORS

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### MEMBERSHIP

For more information about becoming a member of NCAFPM or for a membership application, go to [ncafpm.org/membership](http://ncafpm.org/membership).

# FlashFlood NEWS

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