NC COASTAL RESOURCES ADVISORY COUNCIL
November 7, 2017
Hilton DoubleTree
Atlantic Beach, NC

10:00 CALL TO ORDER
  • Roll Call – Welcome New Members
  • Announcements
  • Approval of July 12, 2017 Meeting Minutes

10:10 CRAC NOMINATIONS
    (Memorandum attached)

10:25 STORMWATER OUTFALLS
    Cliff Ogburn
    Nags Head

10:45 LOCAL GOVERNMENT TOP ISSUES
    (Memorandum and Spreadsheet attached)

11:30 OLD/NEW BUSINESS
    Flood Insurance Rate Maps

11:50 ADJOURN

Greg Rudolph, Chair

N.C. Division of Coastal Management
www.nccoastalmanagement.net
Next Meeting: TBA
NC Coastal Resources Advisory Council  
July 11, 2017  
Holiday Inn  
Greenville, NC  
Meeting Summary

Attendance
Greg “rudi” Rudolph (Chair)  
John Brodman  
Jett Ferebee  
Johnny Martin  
Michael Moore  
David Moye  
Spencer Rogers (Co-Vice Chair)  
Kris Noble  
Robert Outten  
Todd Roessler  
Dave Weaver  
Lee Wynns

Call to Order
Rudi Rudolph called the meeting to order with 12 members in attendance and the minutes were approved unanimously.

CRAC Nominations
Rudi Rudolph began discussing possible new members to the CRAC. Rudi explained that the CRAC consists of 20 at-large members and currently there are four vacancies and that the CRAC needs more representation from the inner banks. The CRAC unanimously approved recommending to the CRC the following nominations to the CRAC:
Seth Laughlin  
Cindy Bohmert  
Nancy White  
David Kellum

Prioritizing Top Issues
The council began discussing the need to prioritize top issues that have been submitted by the local governments. The council agreed to create a subcommittee consisting of Johnny Martin, David Moye, Rudi Rudolph, and Robert Outten to help narrow the top issues for the council to discuss.

Adjourn
With no further business the Council adjourned and joined the CRC meeting,
Memorandum

From: Greg "rudi" Rudolph  
Date: September 27, 2017  
Re: CRAC Nomination

Subsequent to our July meeting, Frank Rush (Emerald Isle) elected to step down from the CRAC creating a vacancy on the Council. To this end, we just solicited nominations for CRAC membership earlier this year and selected four new members at our July meeting that were subsequently appointed by the CRC. Rather than starting a new search for nominations, it is recommended we revisit the nominations that were submitted to us previously and select a nomination for the CRC’s consideration at our September 27th meeting. The list of nominations provided to us formerly (and one late submission) is below and the resumes for the individuals are attached. We currently have 19 sitting CRAC members out of the allotted 20.

<table>
<thead>
<tr>
<th>Name</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samuel Corbett, III</td>
<td>Pender County</td>
</tr>
<tr>
<td>Harvey M. (Skip) Lee</td>
<td>Town of Bayboro</td>
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<tr>
<td>Seth M. Laughlin</td>
<td>Beaufort County</td>
</tr>
<tr>
<td>Nancy White, Ph.D.</td>
<td>Town of Nags Head</td>
</tr>
<tr>
<td>Ann Keyes</td>
<td>Washington County</td>
</tr>
<tr>
<td>Candy Bohmert</td>
<td>Pamlico County</td>
</tr>
<tr>
<td>George E. Taylor, Jr., Ph.D.</td>
<td>City of Elizabeth City</td>
</tr>
<tr>
<td>Frank V. Tursi</td>
<td>Town of Swansboro</td>
</tr>
<tr>
<td>David Kellam</td>
<td>Figure Eight Homeowners’ Association</td>
</tr>
<tr>
<td>Dallas O. Blackiston</td>
<td>City of New Bern</td>
</tr>
</tbody>
</table>

Division of Coastal Management  
Department of Environmental Quality  
400 Commerce Ave., Morehead City, North Carolina 28557  
Phone 252-808-2608  FAX 919-733-1495
During the Bayboro Town Council meeting of June 6, 2017, the council nominated and approved Harvey M. (Skip) Lee as it's CRAC member. Skip is the Pamlico County Chief Building Inspector, CAMA LPO and serves as Zoning Administrator and CAMA/LPO for Bayboro.

Thank you,

--

Joan Spain Leary
Town Clerk/Finance Officer
Town of Bayboro
PO Box 519
301 Main Street
Bayboro, NC 28515
252-745-4238 Phone
252-745-6030 Fax
May 31, 2017

NC Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

Attn: Angela Willis (Angela.Willis@ncdenr.gov)

Dear Ms. Willis:

Pursuant to a letter received by the City of Elizabeth City dated April 19, 2017 from the North Carolina Coastal Resources Advisory Council, the City Council of the City of Elizabeth City voted unanimously to nominate for appointment Dr. George E. Taylor, Jr. to the Coastal Resources Advisory Council.

Dr. Taylor is a retired professor at George Mason University living in Pasquotank County. As you will see from his attached resume, his background lies in biogeography, the sciences and ecology. The Elizabeth City Council believes that his experience makes him uniquely qualified to serve on the CRAC.

If you require additional information regarding this matter, please feel free to let me know.

Sincerely,

[Vivian D. White]

Vivian D. White, CRC/NCCMC
City Clerk

/\dw
Attachment
Resume

GEORGE E. TAYLOR, JR.

Retired Professor
Department of Geography and Geoinformation Science
George Mason University
4400 University Drive
Fairfax, VA  22030-4444

gtaylor@gmu.edu

getaylornc@gmail.com

professortaylorGMS@gmail.com

EDUCATION

B.S., Randolph-Macon College, 1971
Ph.D., Emory University, 1976
Postdoctorate in Plant Physiology and Ecology, National Academy of
Sciences/National Research Council, 1977-1979

CIVIC ACTIVITIES

Coastal Wildlife Refuge Society, Alligator River NWR
  Board member (2009-2014) and (2016-present)
  President (2010-2014)
Elizabeth City Sunrise Rotary Club (2008-2010)
Fairfax City Rotary, 1998-2006
  Vice-President, President-Elect and President (2001-2003)
  Executive Committee
Paul Harris Fellow
  President, Fairfax Rotary Foundation, 2003-2005
Reno Downtown Rotary Club, 1993-1998
  Rotary Youth Exchange Program
  Executive Committee

PROFESSIONAL ACADEMIC EXPERIENCE

George Mason University (1998-2016)
  Retired - 2016
  Professor, Department of Geography and Geoinformation Science
  2001-2016
Senior Associate Dean, School of Computational Sciences, 2002-2007
Science Coordinator, Undergraduate Honor’s Program, 2000-2007
Chair and Professor, Department of Biology, 1998-2000
University and Community College System of Nevada (1990-1998)
Assistant Dean, College of Agriculture at UNR, 1997-1998
Chair and Professor, Department of Environmental and Resource
Sciences at UNR, 1990-1997
Associate Director, Center for Environmental Sciences and
Engineering (UNR), 1994-1995
Director, Graduate Program in Environmental Sciences and Health
(UNR), 1994-1995
Oak Ridge National Laboratory (1979-1989)
R&D Group Leader in Physiological Ecology, Environmental Sciences
Division, 1985-1989
Research Staff Member, Environmental Sciences Division, 1983-1989
Research Associate, Environmental Sciences Division, 1980-1983
Instructor, Agnes Scott College, 1975-1977

RESEARCH INTERESTS

Biogeography
Science and the Public Policy
Science and Mathematics Education and Training
Application of Remote Sensing and GIS to Ecology
Ecology, Physiology and Population Biology of Plants
Ecological Toxicology and Risk Assessment
Atmospheric Chemistry and Air Quality

BUSINESS ENDEAVORS

Scientific and Technical Editing (2015-present)
http://www.professortayloredit.com/

COURSES TAUGHT (Graduate and Undergraduate)

Guns, Germs and Steel (Honors Program)
Scientific Thought and Processes (Honors Program)
Astrobiology: Origin of Life in the Universe
Regional and Global Issues in Environmental Science
Biogeography: Distribution of Plants and Animals
Biology of Invasive Species
Plant Ecophysiology
Oral and Written Communication Skills for Scientists
Issues in Atmospheric Chemistry and Air Quality

PROFESSIONAL HONORS, ACTIVITIES, AND APPOINTMENTS

Coastal Wildlife Refuge Society, 2007-2012 and 2016-present
President, 2007-2012
Editor, Terrestrial Ecology and Plants, Environmental Toxicology and Chemistry, Society for Environmental Toxicology and Chemistry, 2001-2006
Scientific Advisory Committee, National Park Service, National Capitol Region, 2002-2003
Science Advisory Panel, U.S. Environmental Protection Agency
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Committee, 2001-2005
Food Quality Protection Act Board, 2001-2005
Organizing Committee, International Conference on Ecotoxicogenomics, September, 2002 (Pensacola, Florida)
Invasive Species Advisory Committee, Risk Assessment and Management
Subcommittee, 2000-2003
Science Advisory Committee, Department of Environmental Quality, State of Virginia, 2000-2003
Science Advisory Board, U.S. Environmental Protection Agency
Member, Ecological Risk Assessment Committee, Iron Smelters, 2000-2005
Member, Clean Air Act Compliance Council, Physical Effects Review Subcommittee, 1994-2002
Member, Health and Ecological Effects Subcommittee, 1997-2002
Member, Residual Risk Subcommittee, 1998-2006
Member, Clean Air Scientific Advisory Committee, 1986-1997 and 2001-2003
Editorial Advisory Board, Tree Physiology, 1989-1998
Scientific Planning Committee, "3rd Urals Symposium: Human Health and Radioecology of Contaminated Landscapes in the Ural Mountains", Ekaterinburg, Russia, May 1995
Organizer, "Symposium on Mercury Contamination in Arid and Semi-arid Landscapes" November, 1994, Denver, Colorado
Science Advisory Committee, University of California-Davis' Center of Excellence in Ecological Health, U.S. Environmental Protection Agency, 1992-1993
Member, Coal Fuel Cycle Peer Review Panel, Secretary of Energy's Advisory Committee, 1992-1993
Natural Sources Task Group, U. S. Interagency Task Force on Acid Precipitation, 1982-1990
Editor, Physiological Section Newsletter, Botanical Society of America, 1983-1985
Executive Steering Committee, International Air Pollution Workshop, 1980-1983
Society of Sigma Xi, 1974
Phi Beta Kappa, 2001
Who's Who in American Colleges and Universities, 1971
Omicron Delta Kappa, Beta Beta Beta and Chi Beta Phi, 1970

PUBLICATIONS: Book


PUBLICATIONS: Manuscripts (underlined co-authors are students)

Lostritto, P.L. and G.E Taylor Jr. Effects on Piping Plover (Charadrius


Hanson, P.J. and G.E. Taylor, Jr. 1992. Experimental laboratory measurements


pollutant dose. pp. 458-460. IN: M. Unsworth and D. Ormrod (eds.)

response to sulfur dioxide in Geranium carolinianum L. Oecologia 49: 76-82.

ozone: A conceptual model of physiological events. pp. 113-138. IN: M.
Unsworth and D. Ormrod (eds.) Effects of Gaseous Air Pollutants in
Agriculture and Horticulture, Butterworth Publishing Co., London, United
Kingdom.


to sulfur dioxide: A physiological analysis. p. 252. IN: Effects of
Pollutants on Mediterranean and Temperate Forest Ecosystems: An

Taylor, G.E., Jr. 1978. Plant and leaf resistance to gaseous air pollution

Taylor, G.E., Jr. 1978. Genetic analysis of ecotypic differentiation within
an annual plant species, Geranium carolinianum L., in response to sulfur

Taylor, G.E., Jr. 1976. The evolutionary process of population differentiation
of an annual plant species, Geranium carolinianum L., in response to

annual plant species, Geranium carolinianum L., in response to sulfur
September 6, 2017

Ms. Angela Willis
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

Dear Ms. Willis:

This letter is to inform you that at the September 5, 2017 meeting of the Pender County Board of Commissioners, the Board voted to recommend Samuel Corbett to serve on the Coastal Resources Advisory Council (CRAC). Mr. Corbett’s application to Pender County is attached for your review.

If you have any questions or concerns on this matter, please call me directly at (910) 259-1200.

Respectfully,

Melissa Long
Clerk to the Board
# Pender County

Application for Appointment to Boards/Commissions/Committees

Appointees to Pender County Boards/Commissions/Committees must be a Pender County resident and must be at least 18 years of age. Please complete this application and return to: Pender County Manager's Office, PO Box 5, Burgaw, NC 28425.

<table>
<thead>
<tr>
<th>Last Name</th>
<th>Corbett, III</th>
<th>First Name</th>
<th>Samuel</th>
<th>M.L.J.</th>
<th>Date</th>
<th>8/2/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Address</td>
<td>691 Washington Acres Road</td>
<td>City</td>
<td>Hampstead</td>
<td>State</td>
<td>NC</td>
<td>ZIP</td>
</tr>
<tr>
<td>Mailing Address (If different from above)</td>
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<tr>
<td>City</td>
<td></td>
<td>State</td>
<td>NC</td>
<td>ZIP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Phone</td>
<td>910-620-1094</td>
<td>Work Phone</td>
<td></td>
<td>E-mail Address 1</td>
<td><a href="mailto:samjcobett3@gmail.com">samjcobett3@gmail.com</a></td>
<td>E-mail Address 2</td>
</tr>
<tr>
<td>Board Interest(s)</td>
<td>Coastal Resource Advisory Committee</td>
<td>How long have you been a resident of Pender County?</td>
<td>17 years</td>
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</table>

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<thead>
<tr>
<th>High School</th>
<th>Hoggard High School</th>
<th>Location</th>
<th>Wilmington NC</th>
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<tbody>
<tr>
<td>From</td>
<td>1976</td>
<td>To</td>
<td>1978</td>
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<tr>
<td>College</td>
<td>Location</td>
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<td></td>
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<tr>
<td>From</td>
<td></td>
<td>To</td>
<td>Did you graduate?</td>
</tr>
<tr>
<td>Other</td>
<td>Location</td>
<td></td>
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<tr>
<td>From</td>
<td></td>
<td>To</td>
<td>Did you graduate?</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Current Employment</th>
<th>self employed</th>
<th>Job Title</th>
<th>commercial fisherman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Employment</td>
<td>Old Fort and Duck Haven Golf</td>
<td>Job Title</td>
<td>General Manager, Head Pro and Pro</td>
</tr>
<tr>
<td>Previous Employment</td>
<td></td>
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</tr>
</tbody>
</table>

Please list current and past membership in civic or other organizations and offices held:
16 years of service on Marine Fisheries Advisory Committees
Chairman of NC Marine Fisheries Commission from 2014 to current
Have you ever served or are you currently a member of any Pender County or other local government board/commission/committee?

YES ☐ NO ☑
If yes, explain (including length of service).

State reasons why you feel qualified for the appointment(s):
Growing up on Wrightsville Beach and commercial fishing off of New Hanover and Pender Counties for over forty years, I have seen many changes in the estuaries and beach front communities. As chairman of the Marine Fisheries Commission I handle many cases that are dock related, Inlet dredging and beach renourishment related, as well as sediment encroachment in our estuaries. Having oyster leases in the sound, I have interaction with the Army Corp of Engineers and have some knowledge of their rules involving oyster leases. I have worked closely with Braxton Davis, Director of Division of Coastal Management and NC Division of Marine Fisheries.

<table>
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<tr>
<th>Branch</th>
<th>From</th>
<th>To</th>
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</thead>
<tbody>
<tr>
<td>Rank at Discharge</td>
<td>Type of Discharge (optional)</td>
<td></td>
</tr>
</tbody>
</table>

Are you aware of any legal, ethical or personal conflict of interest by serving as a member of the Pender County board/commission/committee?

YES ☐ NO ☑
If yes, explain.

Are you or any member of your family employed by Pender County, or currently serving on any Board/Committee/Commission appointed by or affiliated with Pender County?

YES ☐ NO ☑
If yes, list family member name(s) and position/board or committee(s).

Please add any additional information you would like to share supporting your interest and qualifications for this appointment.

NOTE: This information will be used by the Pender County Board of Commissioners in making appointments to Pender County Boards/Commissions/Committees. In the event you are appointed, it may be used as a news release to identify you to the community. This application is considered a public record.

Signature: Samuel J. Corbett III
Date: 8/2/17
Willis, Angela

From: Scott Chase <schase@ci.swansboro.nc.us>
Sent: Monday, May 08, 2017 9:52 AM
To: Paula Webb; Willis, Angela
Cc: Andrea Correll
Subject: RE: CRAC Nomination - Swansboro and coastal issues response

Angela

Thank you for taking our nomination. As part of the letter you requested: What are your local community’s two (or more) top coastal issues the CRAC/CRC may be of assistance in coordination with the administrative staff at the N.C. Division of Coastal Management (DCM)? While regulations and permitting are the backbone of the Coastal Management Program, the CRAC and CRC wants to be proactive with respect to your more policy-centric issues.

1. Land Use Plan (updates). The grant money available most recently is not enough to do updates to our local plans. Our town has seen significant growth since our last update. We have requested grant funding this year however concerned that the amount will not be enough to cover the expenses.

2. CRC/DCM proactive in local planning. When this funding was available, the CRC/DCM used to be more proactive regarding land use. I believe it essential that more resources be given to local governments in the CAMA counties (i.e. follow up from planners at DCM, checking in on local partners on our planning implementation, etc). Would help identify need/shortcomings in local government implementation. Local governments in CAMA counties seeing significant growth and need help with management.

Thanks!

Scott

From: Paula Webb
Sent: Monday, May 01, 2017 11:47 AM
To: Angela.Willis@ncdenr.gov
Cc: Scott Chase <schase@ci.swansboro.nc.us>
Subject: CRAC Nomination - Swansboro

Angela – please find attached resume for Commissioner Frank Tursi for consideration as a member of the CRAC. Should you have any questions, please don’t hesitate to contact me.

Paula W. Webb, MMC-NCCMC
Town Clerk/Administrative Services Director
601 W. Corbett Avenue
Swansboro, NC 28584
pwebb@ci.swansboro.nc.us
(910) 326-4428 phone
(910) 326-3101 fax
...>(((t>)....>(((t>)....>(((t>
Frank V. Turisi

270 River Reach Dr., Swansboro, N.C.

252-241-3505

EXPERIENCE

Swansboro Town Commissioner, 2015-present

Founding Editor, Coastal Review Online, North Carolina Coastal Federation, 2011-1016 (retired)

- Conceived the online news service and responsible for its launch in February 2011
- Responsible for the budget and daily content of news service
- Manages a staff of two and about a dozen freelance writers

Coastkeeper, North Carolina Coastal Federation, 2001-2011

- Responsible for directing NCCF's Coastkeeper Program, including policies, plans, budgets and equipment purchases.
- Implement effective programs to improve enforcement of environmental regulations.
- Liaison with Board of Directors' Coastkeeper Committee.


- Special projects/environmental reporter, June 1988-December 2001. I was the senior environmental reporter in the state. My duties included reporting on CRC meetings and on the N.C. Division of Coastal Management.
- Science/medical reporter, October 1985-June 1988
- Copy editor/Sunday news editor, May 1981-October 1985
- Sports writer, sports copy editor, August 1978-May 1981

Reporter and Editor, The Miami Herald, Miami Fla., 1977-1978

- Suburban sports editor and writer, January 1977-May 1978


- Responsible for the news content of the twice weekly newspaper and managing an editorial staff of five reporters and two photographers.

Reporter, The Key Biscayne Islander News, Key Biscayne, Fla, 1974-1975

RELATED EXPERIENCE

BOOKS

- Author, *Lost Empire: The Fall of R.J. Reynolds Tobacco Co.*, John F. Blair, Publisher, 2000

AWARDS

- Numerous writing awards from the N.C. Press Association, including four Public Service Awards.
- Directed the staff of Coastal Review Online that won 40 press association awards over two years, including a General Excellence Award.
- Books have won the History Book Award by the N.C. Society of Professional Historians and the Special Commendation Medal of the Society for State and Local History.

EDUCATION

- Bachelor of Science, English and Geology, East Carolina University, Greenville, N.C., 1973

PROFESSIONAL AFFILIATIONS

- Board Member, East Carolina Council
- Former Board Member, N.C. Conservation Network
- Former Member, National Advisory Board, Institute for Journalism and Natural Resources
- Former Member, Waterkeepers' Alliance
- Former Member, Coastal Caucus
May 8, 2017

Mr. Greg Rudolph, CRAC Chair
Carteret County Shore Protection Office
P.O. Box 4297
Emerald Isle, NC 28594

Dear Mr. Rudolph:

At their regular meeting on May 1, 2017, the Washington County Board of Commissioners nominated Ms. Ann Keyes, Washington County’s Planning/Safety and Emergency Management Director, to be a member of the Coastal Resources Advisory Board. Ms. Keyes has worked with the County for over 40 years in these roles and is well-qualified to be on this Board.

Her contact information is below:
Ms. Ann Keys, Director of Planning/Safety and Emergency Management
P.O. Box 1007
Plymouth, NC 27962
252-793-4114
akeyes@washconc.org

Washington County’s two top coastal issues are flooding and drainage. We do hope that CRAC could coordinate assistant with these issues.

Please don’t hesitate to contact me if you need further assistance.

Sincerely,

Julie J. Bennett, CMC, NCCCC
Clerk to the Board

Cc: A. Keyes, Director, Planning/Safety and Emergency Management
    Mr. Curtis Potter, Washington County Interim County Manager
Memorandum

From: Greg "rudi" Rudolph
Date: September 27, 2017
Re: Top Issues – Hierarchy/Prioritization

At our last meeting in July, we discussed the top coastal issues local governments submitted in response to our request. Subsequent to an initial screening by the CRAC; a committee comprised of members Martin, M oy e, Outten, and Rudolph were appointed to group and prioritize the issues – the manifestation of this effort is included in the attached spreadsheet.

The issues were first divided into broad categories such as “Oceanfront”, “Permit/Regulatory”, “Public Access”, etc. and provided a perceived difficulty ranking. Each issue was also assessed to whether or not General Assembly assistance could be required, if the issue would need to heavily involve other Department of Environmental Quality agencies, if the issue is already being addressed by the Coastal Resources Commission, and/or if the issue will require N.C. Division of Coastal Management (NCDCM) assistance (all of the issues do). The “x’s” and “o’s” in the spreadsheet are very much subjective and it should be a goal of our September meeting to come to a general consensus on the issues to the effects presented in the spreadsheet. Moreover, we should be able to identify the top two, three, or four issues (or sub-issues) that we and NCDCM staff can start working upon with respect to rules, policy, or just education.
<table>
<thead>
<tr>
<th>Top Coastal Issues</th>
<th>Already Being Addressed</th>
<th>Cooperation with other DEQ Agencies.</th>
<th>Will need NGCA Assistance</th>
<th>Staff/CRC</th>
<th>Perceived Difficulty (4 = most)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oceanfront</td>
<td></td>
<td></td>
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<tr>
<td>Beach Nourishment</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
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<tr>
<td>Removal of condemned houses from the oceanfront</td>
<td></td>
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<tr>
<td>Sand relocation</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Dune management – integrity of the dune</td>
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<tr>
<td>Policy on sand placement landward of frontal dune needs to be reviewed</td>
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<td>Cape sand exempted from sediment criteria is questionable – should be reviewed</td>
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<tr>
<td>Offshore sand resources – using existing data and coordination</td>
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<td>Erosion control structures along the open oceanfront</td>
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<td>Re-think groins, breakwaters, etc.</td>
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<tr>
<td>Review of sandbags and geotubes</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>0</td>
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<tr>
<td>Permit/Regulatory</td>
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<tr>
<td>Streamline residential &amp; commercial waterfront development permitting</td>
<td></td>
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<tr>
<td>Terminal groin permitting – approval needs to be quicker</td>
<td></td>
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<tr>
<td>Necessity and efficacy of CAMA permit adjacent landowner notification</td>
<td></td>
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<tr>
<td>Oceanfront cantilevers should be reviewed</td>
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<tr>
<td>CAMA rules are vague, not self-explanatory, and difficult to navigate</td>
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<tr>
<td>Allow wider, public-finger docks to provide more handicap access</td>
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<tr>
<td>Funding for Land Use Plan updates and more State coordination/assistance</td>
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<td>Drainage</td>
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<td>Ease permitting and assist in debris removal along waterways and drainage ditches</td>
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<td>By mechanical means and/or dredging</td>
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<td>Storm water drainage – canals and ditches</td>
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<td>Public Access</td>
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<td>Increase funding programs for public waterfront access</td>
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<td>Public water access</td>
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<td>Other</td>
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<td>Protect active farmland from wetland banking</td>
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<td>Septic tank impacts</td>
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<td>Effectiveness of waterway buffers</td>
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<tr>
<td>No authority</td>
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<td>Sustained funding to treat the invasive waterweed, <em>Hydriilla</em></td>
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<td>Insurance rates based on sea level rise</td>
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<td>Impacts of trawling restrictions in Secondary Nursery Areas related to beaches</td>
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<td>None in Regs.</td>
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August 11, 2017

Mr. John K. Dorman, Program Director
NCFMP
4105 Reedy Creek Road
Raleigh, NC 27607

Luis Rodriguez, Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration
FEMA
500 C Street SW Room 423
Washington, DC 20472

Dear Gentlemen:

For the past several months, local officials have been reviewing the Dare County preliminary flood maps released by FEMA. At the August 7, 2017 Board of Commissioners meeting, the Board voted to submit comments about some concerns that have been identified locally. These concerns are as follows:

Street Addresses on the FRIS webpage

The Flood Risk Information System (FRIS) webpage has deficiencies in the address search function resulting in inaccurate identification of property locations. In some instances, the search feature identifies addresses that are off by several numbers and in other cases, the addresses identified do not even exist in the Dare County street address system. The Dare County staff uses the Dare GIS system to locate the property and then works from this location to identify the property on the FRIS. The inability to use the FRIS address system is frustrating for county staff, property owners and other users such as insurance agents and mortgage professionals who must contact Dare County for a letter certifying the correct address due to the inaccuracies of the FRIS webpage. The street address issue should be adjusted to function accurately.

Land of Beginnings
Map Legends

The legends on the maps created by the FRIS webpage use the technical description of the Shaded X zone -- 0.2% of the annual flood hazard -- with no accompanying label of Shaded X included on the final product. The X zones do not include any label. Individuals not familiar with flood map terminology find this to be confusing since the legend does not convey the appropriate information. We request the legend options on the map output be revised to include the Shaded X label and the X zone label. This revision would result in a product that fully conveys all of the appropriate information for end users of the map output feature.

Local Government Involvement

The preliminary flood maps for Dare County include the unincorporated areas of the county and the six municipal areas of Manteo, Nags Head, Kill Devil Hills, Kitty Hawk, Southern Shores and Duck. The Dare County staff often serves as the liaison with the towns during the map development and review process. In an effort to better facilitate input from all local governments, Dare County requests that staff from all local governments be fully engaged during the initial stages of any future map development process. Such engagement would enable firsthand accounts of areas of concern. Periodic updates from the State to the local governments during map development would also be beneficial by ensuring property owners and officials are apprised of any future changes that may be forthcoming.

Update FEMA coastal flood model

In February 2017, Spencer Rogers of the NC SeaGrant program presented information on the preliminary flood maps to the Dare County Board of Commissioners. He discussed the changes in the various flood zones on the Dare preliminary maps and how these areas were impacted during Tropical Storm Hermine and Hurricane Matthew. Mr. Rogers indicated the FEMA coastal flood models are somewhat outdated and other models exist that reflect flood risks more accurately than the FEMA coastal flood model. He also stated that FEMA protocols require the State to use the FEMA models despite better models being available. We encourage FEMA to update their coastal flood models and to review their protocols to ensure any models used in the development of FIRMs provide the best available analysis of flood risks.
Shallow Flooding

The preliminary flood maps for Dare County include AO zones along some portions of the oceanfront of Dare County. These AO zones reflect shallow flooding resulting from overtopping of the primary dunes along the oceanfront. In 2016, Dare County experienced flooding from Tropical Storm Hermine in September and Hurricane Matthew in October. Although some of the flooding during these events was from rising sound tides, many areas flooded from extreme rainfall associated with these storms. Some of the flooded areas are currently designated Shaded X and X zones on the 2006 FIRMs including areas along NC 12 Highway that experienced significant flooding from the torrential rains of Hermine and Matthew. Future FIRMs should address shallow flooding from rainfall in addition to those areas that may experience shallow flooding from the overtopping of primary dunes.

BFEs and X zones on preliminary maps

The preliminary maps feature widespread changes in the boundaries of the special flood hazard areas with a significant number of properties being removed from the SFHAs into Shaded X or X zones. For those properties remaining in the SFHA, BFEs are decreasing as much as four feet. These changes, as explained by the NCFMP staff, are the result of more precise flood modeling of the potential flood risks for Dare County. Some of the areas with lower BFEs and Shaded X/X zone properties are areas for which there is empirical knowledge of flooding from Hurricane Irene, TS Hermine and Hurricane Matthew. Although the preliminary maps should positively affect insurance rates for many property owners in Dare County, locally we are concerned that many property owners may cancel flood insurance coverage on their homes and businesses. Then, years from now when the FIRMs are updated again, these property owners may face costly insurance rates if their property reverts back to a SFHA or higher BFE. Dare County is considering the implementation of local elevation standards to be used in conjunction with the preliminary maps and we sincerely hope our local efforts will account for any future flood insurance maps. We encourage the State and FEMA to undertake outreach activities to educate property owners on the flooding conditions depicted on FIRMS and more importantly what flood hazards are not addressed by the FIRMs. Property owners and citizens may not understand that only some hazards are addressed by the flood maps for any given area and they should be advised to act accordingly to protect their property.
On behalf of the Dare County Board of Commissioners, I respectfully submit these comments outlining the issues and concerns that have been identified. We in Dare County have direct experience of the destructive nature of flooding and the importance of mitigating flood hazards. We look forward to your response to these comments on the preliminary flood maps.

Sincerely,

Robert L. Woodard, Chairman
Dare County Board of Commissioners

Cc: Dare County Board of Commissioners
Robert Outten, County Manager
Donna Creef, Planning Director
Chris Layton, Town of Duck
Peter Rascoe, Town of Southern Shores
Andy Stewart, Town of Kitty Hawk
Debbi Diaz, Town of Kill Devil Hills
Cliff Ogburn, Town of Nags Head
Kermit Skinner, Town of Manteo
Mr. John K. Dorman
Program Director
North Carolina Floodplain Mapping Program
4105 Reedy Creek Road
Raleigh, North Carolina 27607

Luis Rodriguez, Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration
FEMA
500 C Street SW Room 423
Washington, DC 20472

RE: Comments on the Preliminary Flood Maps for the Town of Nags Head

Dear Mr. Dorman,

The Town of Nags Head has reviewed the Preliminary Flood Insurance Rate Maps that were released for Dare County in June of 2016. As you are aware, many areas of the town have been proposed to be removed from the Special Flood Hazard Area. Additionally, the Base Flood Elevations have been significantly reduced in areas remaining in the Special Flood Hazard Area. The town has compared the preliminary Special Flood Hazard Areas and Base Flood Elevations to our historical records of storm surge and rainfall flooding as well as flood damage. Based on this comparison, the Nags Head Board of Commissioners believes that these maps underrepresent the actual flood risk observed during previous flood events for certain parts of the town. If adopted “as is” (i.e. without the addition of higher regulatory standards) construction will occur in the town that will be subject to routine flooding. Those property owners who choose to forego flood insurance in these areas will be unprotected.

The Town of Nags Head strongly believes that the National Flood Insurance Program, through the use of Flood Insurance Rate Maps and associated regulations, has been one of the primary and most effective ways to minimize flood damage to properties within the town and communicate flood risk to the general public. The flood maps are often the primary source of information people use to evaluate risk when making real estate purchases or
planning property improvements. To date, the National Flood Insurance Program has served to limit significant damage that would have otherwise occurred without these preventative measures. This has largely been due to gradual improvements in the floodplain mapping program. The preliminary maps represent a departure from previous map revisions, particularly with respect to the current maps which were adopted in 2006. This is a policy decision that will reintroduce risk into the town and represents a step backwards in our collective efforts to protect property. As a town and regulatory agency, we believe it is our responsibility to protect property owners from these risks, particularly since many property owners are from other areas of the country and may not be familiar with local conditions. Therefore, we provide the following comments for your consideration:

1. On March 1, 2017, the town adopted a resolution outlining our initial concerns with the flood maps and the modeling process used to develop the maps. Please incorporate the attached resolution as part of the town’s official comments.

2. Reduction of Special Flood Hazard Areas (SFHA) and Base Flood Elevations (BFE)

The preliminary maps rezone large areas of the town from the AE and VE flood zones to unregulated Shaded X zones. In addition to the reduction in overall acreage of the Special Flood Hazard Area, Base Flood Elevations (BFE’s) in all flood zones are reduced significantly. In AE flood zones, BFE’s will be reduced from a range of 9-11 feet on the 2006 Flood Maps to 4-5 feet on the preliminary flood maps. In some cases, VE flood zones from the 2006 flood maps will become AO flood zones or Shaded X flood zones on the preliminary maps.

During Hurricane Irene, the town documented soundside flooding with flood heights reaching properties as high as seven feet above mean sea level. Many structures along the sound were damaged, and post-storm inspections revealed flood heights within structures between one and three feet. The average ground elevation in these same areas ranges between four and six feet above mean sea level. Fortunately, in most cases only ground floor unheated enclosures were flooded due to the fact that these homes were constructed in accordance with existing or previous flood damage regulations. The preliminary flood maps place these areas either in an AE flood zone with a BFE of four feet or within a Shaded X flood zone. Since many of these areas would no longer be regulated under the new maps, new structures could be positioned at existing grade and existing enclosures could be converted to heated space. (See Maps 1-5).

Further, in the northern portion of town, flooding associated with rainfall from hurricane Matthew was documented up to 3.5 feet within structures. This area is currently in the AE flood zone with a BFE of 10 feet. The extent of the floodwater surface elevations were documented between 10.0’ msl and 11.5’ msl (See Map 6). Topographic grades in this area generally range between five and eight feet. On the preliminary flood maps, this entire area will now be in a Shaded X flood zone. Many of the structures in this area are elevated with limited unheated storage beneath the structure. If the preliminary maps are adopted, enclosures could be converted to heated space. If this occurs on a widespread basis, the damage estimates from future storms such as Matthew will be exponentially higher. Please
note in section 4 below that Matthew is not the only historic event to cause flooding in this area.

3. Natural Topography

The natural topography of the barrier island creates a low-lying “trough” between the maritime forest zone west of US 158 and the primary beach and foredunes in the vicinity of NC 12. In general, the maritime ridge serves as the breakpoint for overland surface runoff and subsurface groundwater flow between the Atlantic Ocean and the Roanoke Sound. A majority of the developed properties exist east of the maritime ridge and are concentrated in the lower lying areas between the beach and maritime forest zones. With the general eastern direction of flow, runoff tends to accumulate in the lower elevations in the developed areas, creating a “bowl” like effect which leads to localized flooding by way of elevated groundwater conditions, surface runoff, or a combination of the two. When the town experiences frequent, intense and prolonged rainfall events, as observed during Hurricane Matthew in 2016 and during the summer of 2017, the ground becomes saturated, prohibiting any further infiltration from occurring. This exacerbates flooding in these low lying areas resulting in widespread impacts to structures, roadways, and septic systems.

As mentioned above, frequent, intense and prolonged rainfall events can elevate the surrounding shallow surficial aquifer, saturating the sandy soils and restricting infiltration, the town’s primary means of managing flooding and runoff. Where available, what does not infiltrate is conveyed through 55 miles of the town’s network of open channels and storm pipes to five ocean outfall discharge points and twelve soundside discharge points. The outfall discharges, which are strategically located at low elevations within the town’s drainage basins, are maintained by the North Carolina Department of Transportation (NCDOT) and were installed in the early 1960’s in response to the Ash Wednesday Storm. The outfalls were originally constructed to provide a mechanism for draining ocean overwash events when the storm surge from the ocean overtopped the dunes.

According to the document “Guidance for Flood Risk Analysis and Mapping, Shallow Flooding Analyses and Mapping, November 2016” published by FEMA, “Shallow flooding can occur as the result of several meteorological and watershed conditions. However, there are two broad classifications of shallow flooding into which almost all individual cases can be assigned — ponding and sheet runoff. Ponding is the result of runoff or flows collecting in a depression that may have no outlet, subterranean outlets, rim outlets or manmade outlets such as culverts or pumping stations. Impoundments behind manmade obstructions (e.g., levees, road fill, railroad grades, canal banks, or similar structures) are included in this type of shallow flooding as long as they are not backwater from a defined channel or do not exceed 3.0 feet in depth.” The town understands that shallow flooding studies are not typically completed as part of the coastal floodplain mapping process. Since it is clear that our local conditions reveal problems associated with shallow flooding, the town would request a shallow flooding study be conducted in areas where this “bowl” like effect is occurring as part of the mapping process (See Map 6).
4. Chronic Flooding

The town has seen an increase in chronic flooding. The increase in occurrences of “extreme” rainfall events has led to extended periods of inundation in developed low-lying areas beyond what could be considered nuisance flooding. This has been evidenced by recent rainfall events. Flooding in the coastal environment is not only caused by soundside and ocean surge events, but also from frequent, intense and prolonged rainfall events.

The following is a list of the most notable, recent storms that have impacted Nags Head with varying levels of surge and rainfall flooding. Of the 17 documented events causing significant damage in the town, eight flooding events were caused by excessive amounts of rainfall both related to a storm event as well as extended periods of intense rainfall. Of the nine remaining flooding events, seven events were ocean surge, and two were soundside surge events.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Source of Flooding</th>
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<tbody>
<tr>
<td>1962</td>
<td>Ash Wednesday Storm</td>
<td>ocean overwash event</td>
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<tr>
<td>1991</td>
<td>Halloween Storm</td>
<td>ocean overwash event</td>
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<tr>
<td>1992</td>
<td>July/August</td>
<td>extended rainfall pattern created flooding</td>
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<tr>
<td>1993</td>
<td>March storm</td>
<td>ocean overwash event</td>
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<tr>
<td>2000</td>
<td>July/August</td>
<td>extended rainfall pattern created flooding</td>
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<tr>
<td>2003</td>
<td>Hurricane Isabel</td>
<td>ocean overwash event</td>
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<tr>
<td>2004</td>
<td>July/August</td>
<td>extended rainfall pattern created flooding</td>
</tr>
<tr>
<td>2006</td>
<td>Tropical Storm Ernesto</td>
<td>ocean surge event</td>
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<tr>
<td>2009</td>
<td>Veteran’s Day Storm (Nor’easter)</td>
<td>ocean overwash event</td>
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<tr>
<td>2011</td>
<td>Hurricane Irene</td>
<td>soundside storm surge event created extensive flooding town wide for properties adjacent to the sound</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
<td>Source of Flooding</td>
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<tr>
<td>-------------</td>
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<td>------------------------------------------------------------------------------------</td>
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<tr>
<td>2012</td>
<td>July/August</td>
<td>extended rainfall pattern created flooding</td>
</tr>
<tr>
<td>2012 (October)</td>
<td>Hurricane Sandy</td>
<td>ocean overwash event</td>
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<tr>
<td>2014</td>
<td>Hurricane Arthur</td>
<td>soundside storm surge event</td>
</tr>
<tr>
<td>2015</td>
<td>Tropical Storm Joaquin</td>
<td>rainfall associated with the storm resulted in flooding throughout the town</td>
</tr>
<tr>
<td>2016 (September)</td>
<td>Tropical Storm Hermine</td>
<td>rainfall associated with the storm resulted in flooding throughout the town</td>
</tr>
<tr>
<td>2016 (October)</td>
<td>Hurricane Matthew</td>
<td>rainfall associated with the storm resulted in flooding throughout the town</td>
</tr>
<tr>
<td>2017</td>
<td>July to September</td>
<td>extended rainfall pattern created flooding</td>
</tr>
</tbody>
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More recently, Hurricane Matthew delivered record amounts of rainfall throughout Nags Head in October 2016. Rainfall measurements recorded range between 11.7 inches to 13.7 inches across the Town of Nags Head, most of which occurred during a six hour period between 10 pm on October 8, 2016 and 4 am October 9, 2016. Peak flood water levels measured in the low-lying areas were documented as much as 3.5 feet deep. Significant portions of NC 12, and to a smaller extent US 158, were flooded creating conditions where public health and safety were endangered. Flood depths ranging between one and three feet remained for several days. Approximately 600 homes were impacted with a significant number of impacted properties residing within an area that will be converted from an AE flood zone to an unregulated Shaded X flood zone on the preliminary maps. Floodwater moved through the town’s stormwater infrastructure system but could not flow out of the NCDOT outfall pipes because of the exceptionally elevated tailwater conditions associated with storm surge and higher than normal tide. This situation prevented floodwater from being transported to the ocean and sound via the outfall pipes and created extensive town wide flooding.

Between July 2017 and August 2017, an exceptional amount of rainfall occurred and the time interval can derived from the North Ridge Weather station located in the north section of the Town of Nags Head. For the Period between July 2, 2017 and July 16, 2017, three separate significant rainfall events occurred; a 25-yr rainfall event, a 50-yr rainfall, and a 200-yr event (see attached tabular rainfall records and associative recurrence interval, North Ridge July Rainfall Totals). Cumulatively, when combined with other rainfall occurrences and extended over a 47-day time period, this equates to an approximate 200-yr recurrence interval. The
rainfall amount during this period accounts for approximately one-half of the annual average rainfall for the town. These circumstances were similar to conditions experienced in the Fall of 2016 when approximately one-half of the annual average rainfall occurred over the course of a 45-day period. Again, flood depths ranged between one and three feet and approximately 300 homes were impacted, with a significant number of impacted properties being removed from the Special Flood Hazard Area on the preliminary maps.

The town would request that a more comprehensive approach be employed by the state and through FEMA modeling in determining flood risk when creating flood maps. The Town of Nags Head and other coastal communities are impacted by flooding from rainfall as frequently as surge type events. FEMA models and the state mapping process should better account for these rainfall events coupled with the high groundwater table.

5. Updates to FEMA Model

Spencer Rogers, with NC Sea Grant, made a presentation to the town in February of 2017. Based on his presentation and research, the town believes that the coastal model used by FEMA to develop Flood Insurance Rate Maps has inherent flaws which are reflected in the Special Flood Hazard Areas and Base Flood Elevations shown on the preliminary maps. Mr. Rogers explained that the modeling process is highly quantitative and dependent on simulations. This reduces the ability to make inferences from historical storm and storm gauge records. The key to improving coastal flood maps lies in revising the coastal flood models that are used to calculate the areas subject to flood inundation as well as Base Flood Elevations. The modeling process also needs to better address estimates of storm return period and consider areas of shallow flooding. Mr. Rogers indicated that these concerns are further noted in the document, “Mapping the Zone: Improving Flood Map Accuracy” produced by the Committee on FEMA Flood Maps and National Research Council of the National Academies. The town would request that the FEMA models be updated based on the research of Spencer Rogers and the documentation provided in Mapping the Zone: Improving Flood Map accuracy.

6. Storm Selection

In September of 2017, Dr. Rick Luetich, Director of the UNC Center for Natural Hazards Resilience, made a presentation to the Nags Head Board of Commissioners describing the modeling process used to develop the preliminary flood maps. Dr. Luetich has completed further analysis of the preliminary flood maps using data from a new gauge that was installed in Hatteras in 2011. Based on his research and analysis, Dr. Luetich is concerned that the selection of historical storms utilized in the first phase of the preliminary mapping process does not adequately describe what communities in the northern beaches (Hatteras north) are likely to encounter, especially along the soundside. Dr. Luetich indicated that this has resulted in the low BFE’s and reduced Special Flood Hazard Area acreage as shown on the preliminary flood maps. The town would request that additional storms be included in the mapping process to reflect recent storm tracks, such as Hurricane Irene, that have caused damage along soundside portions of our community.
7. Other Issues

- Street addressing on the FRIS webpage - The Flood Risk Information System (FRIS) webpage is not able to correctly locate addresses. Some searches yield addresses that are off by several numbers. In other cases, the addresses identified do not exist in the town’s addressing system. Because the addressing does not work on the FRIS site, it is difficult and often impossible for users to find an address. Users often call town staff to help them locate properties. Town staff are having to use a combination of the Dare County GIS site as well as the FRIS webpage to provide information. The town requests that this function be fixed.

- Map Legend - The legend on the maps, created by the FRIS webpage, uses the technical description of the Shaded X Zone - 0.2% of the annual flood hazard, but with no accompanying label of the Shaded X Zone on the final product. The X Zones are not labeled. Individuals not familiar with flood map terminology find this confusing since the legend does not convey the appropriate information. The town requests that the legend options on the map output be revised to include the Shaded X and X Zone labels.

- Local Government Involvement - The preliminary flood maps for Dare County include the unincorporated areas of the county and the six municipal areas of Manteo, Nags Head, Kill Devil Hills, Kitty Hawk, Southern Shores, and Duck. Dare County staff often serves as the liaison with the towns during the map development and review process. In an effort to better facilitate input from all localities, the town requests that staff and elected officials of all Dare County government agencies be engaged prior to and during the initial stages of future mapping processes. Such engagement would enable local officials to share recent issues related to flooding and clearly identify problem flooding areas. Additionally, more frequent updates early on in the mapping process could prevent the omission of relevant flooding data.

8. Conclusion

As a small barrier beach municipality, we are vulnerable to flooding both from storm surge and rainfall. The effects of sea-level rise and climate change further complicate and exacerbate the effects of flooding. The town is committed to developing policies as well as completing planning and infrastructure projects to proactively mitigate the effects of flooding. This is evidenced by the adoption of a Comprehensive Plan (July 2017) that will implement policies on flooding and coastal resiliency as well as the commitment of funding for a Stormwater Masterplan and Decentralized Wastewater Management Plan update. Further, the town is working with Dare County and other municipalities to develop higher regulatory flood damage prevention standards for future development in conjunction with the preliminary maps.
Based on the town’s historical, first-hand knowledge of repetitive flooding events, it is difficult for the town to support the preliminary maps that would allow future construction that is more vulnerable to flooding than what exists presently. After consultation with NCEM staff, NC Sea Grant, and the UNC Center for Natural Hazards Research, the town would like the North Carolina Floodplain Mapping Program and FEMA to address mapping issues associated with the modeling process including the evaluation of storms utilized as the basis for subsequent phases of the mapping process. The town would also request that consideration be given to a shallow flooding study as suggested in this letter.

Again, if the preliminary maps are adopted, this would allow new development to be constructed in areas subject to known flood risk without the benefit of construction techniques designed to mitigate flood damage. Although the preliminary maps should positively affect insurance rates for many property owners in the town, there is a concern that property owners may cancel flood insurance coverage because they are no longer in a flood zone. Then, if flood maps are updated in the future to reflect expanded Special Flood Hazard Areas or higher BFE’s, these property owners may become non-conforming and subsequently face costly insurance rate increases.

On behalf of the Town of Nags Head Board of Commissioners, please accept the above comments and concerns. The town has direct experience with the destructive nature of flooding and to the importance of mitigating flood hazards. We look forward to your response to these comments on the preliminary flood maps.

Sincerely,

Robert Edwards, Mayor
Town of Nags Head

Attachments:
- Resolution adopted by Nags Head Board of Commissioners – March 1, 2017
- Maps 1 - 6
- Tabular rainfall records and associative recurrence interval, North Ridge

cc: Cliff Ogburn, Town Manager
Dare County Board of Commissioners
Robert Outten, Dare County
Chris Layton, Town of Duck
Peter Rascoe, Town of Southern Shores
Andy Stewart, Town of Kitty Hawk
Debbi Diaz, Town of Kill Devil Hills
Kermit Skinner, Town of Manteo
RESOLUTION REQUESTING THAT THE FEDERAL EMERGENCY MANAGEMENT AGENCY
REVISE THE COASTAL FLOODPLAIN MAPPING MODEL AND CONSIDER SHALLOW FLOODING
AND OTHER SOURCES OF FLOOD RISK AS PART OF THE PROCESS TO UPDATE
FLOOD INSURANCE RATE MAPS

WHEREAS, the Town of Nags Head has been a member of the National Flood Insurance Program since 1972; AND

WHEREAS, the Town of Nags Head strongly believes that the National Flood Insurance Program, through the use of Flood Insurance Rate Maps and associated regulations, has been one of the primary and most effective ways to minimize flood damage to properties within the Town and communicate flood risk to the general public; AND

WHEREAS, the Town of Nags Head received preliminary Flood Insurance Rate Maps on June 30, 2016 as part of the North Carolina Floodplain Mapping Program's most recent effort to update flood maps in partnership with the Federal Emergency Management Agency (FEMA); AND

WHEREAS, the Town has compared the proposed Special Flood Hazard Areas and associated Base Flood Elevations to previous maps as well as local historical storm records and documented flooding; AND

WHEREAS, a large portion of the Town has been removed from the Special Flood Hazard Area and the remaining non-VE zone Special Flood Hazard Areas have a Base Flood Elevation of 4 feet above mean sea level, which is generally lower than the land surface elevations in much of the Town; AND

WHEREAS, based on this analysis, the Town has determined that the preliminary Flood Insurance Rate Maps underrepresent the flood risk for a significant portion of the Town, including areas flooded and/or damaged in Hurricanes Isabel, Irene, Matthew as well as Tropical Storm Beryl; AND

WHEREAS, the preliminary maps, if adopted without modification, would allow new construction and/or improvements to existing buildings that would be at risk of flooding from storms of similar intensity and/or duration as the aforementioned events; AND

WHEREAS, buildings constructed outside of the Special Flood Hazard Area are not grandfathered for flood insurance purposes and, if later mapped into a flood zone, may realize significant flood insurance premium increases if not constructed in compliance with new flood damage prevention regulations; AND

WHEREAS, the Town has consulted with North Carolina Emergency Management, the North Carolina Floodplain Mapping Program, NC Sea Grant and conducted other research to collect information on how the maps were developed including the models and analyses used to develop Special Flood Hazard Areas and associated Base Flood Elevations; AND

WHEREAS, the Town believes that the coastal models used by FEMA to develop Flood Insurance Rate Maps has inherent flaws which are reflected in the Special Flood Hazard Areas and Base Flood Elevations shown on the preliminary maps; AND

WHEREAS, the modeling process is highly quantitative and dependent on simulations which reduces the ability to make inferences from historical storm and storm gage records; AND

WHEREAS, the key to improving coastal flood maps lies in improving the coastal flood models that are used to calculate the areas subject to flood inundation, Base Flood Elevations, as well as improving estimates of storm return period and consideration of areas of shallow flooding.

NOW, THEREFORE BE IT RESOLVED that the Nags Head Board of Commissioners calls upon our Federal and State representatives to request that the Federal Emergency Management Agency revise the models used to generate the Flood Insurance Rate Maps and consider all appropriate sources of flooding to better and more accurately reflect the risk from flooding and deep surge, particularly in coastal communities.

This the 1st day of March 2017.

ATTEST:
Carolyn P. Morris, Town Clerk

Mayor
Town of Nags Head
Map 1
Comparison of Irene Damaged Properties to Preliminary Special Flood Hazard Areas (Southridge)

Damaged Property (Irene) (Number indicates documented flood height in building)

- AE, BFE 4
- AE, BFE 5
- AO
- VE
- 4-5' msl
- Below 4' msl
Map 2
Comparison of Irene Damaged Properties to Preliminary Special Flood Hazard Areas
(Old Nags Head Cove)

Damaged Property (Irene) (Number indicates documented flood height in building)

- AE, BFE 4
- AE, BFE 5
- AO
- VE
- 4-5' msl
- Below 4' msl
Map 3
Comparison of Irene Damaged Properties to Preliminary Special Flood Hazard Areas (Roanoke Shores)

Damaged Property (Irene) (Number indicates documented flood height in building)

- AE, BFE 4
- AE, BFE 5
- AO
- VE

- 4-5' msl
- Below 4' msl
Map 4
Comparison of Irene Damaged Properties to Preliminary Special Flood Hazard Areas (Pond Island)

Damaged Property (Irene) (Number indicates documented flood height in building)

- AE, BFE 4
- AE, BFE 5
- AO
- VE

- 4-5’ msl
- Below 4’ msl
Map 5
Comparison of Irene Damage Properties to Preliminary Special Flood Hazard Areas (South Nags Head)

Damaged Property (Irene) (Number indicates documented flood height in building)

- AE, BFE 4
- AE, BFE 5
- AO
- VE

- 4-5' msl
- Below 4' msl
Map 6
Hurricane Matthew Inundation Area – North Nags Head

Elevation above msl
- 12.0000001 - 13.000000
- 11.0000001 - 12.0000000
- 10.0000001 - 11.0000000
- 9.0000001 - 10.0000000
- 8.0000001 - 9.0000000
- 7.0000001 - 8.0000000
- 6.0000001 - 7.0000000
- 5.0000001 - 6.0000000
- 4.5100000 - 5.0000000
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The recurrence interval is referenced from NOAA PDS3 based on Poisson Frequency estimates with 90% confidence intervals for Nags Head North Carolina. Latitude 35.9794, Longitude -75.836, Elevation 9.18 ft. It should be noted that based on that interpolation between the event duration intervals was required to estimate the average recurrence interval (years).