

Shore Protection Manager

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**CARTERET COUNTY BEACH COMMISSION MEETING
SEPTEMBER 28, 2020; 2:00 pm
PINE KNOLL SHORES TOWN HALL**

Remote Access Information (Zoom Meeting):

Video & Integrated Computer Phone:

<https://carteretcountync.zoom.us/j/87051701544?pwd=bE5SZlRudnpBdlZER0pHT2FDZHVSdz09>

Meeting ID = 870 5170 1544; Password = rw7B2x

Phone Only Access: = 1.929.205.6099 (Meeting ID = 870 5170 1544; Password = 145862)

AGENDA

(1)	Call to Order.	<i>Chairman Cooper</i>
(2)	Approval of Minutes. (Regular Beach Commission Meeting – August 24, 2020)	<i>Chairman Cooper</i>
(3)	Room Occupancy Tax (ROT) and “Beach Fund” Update.	<i>Greg “rudi” Rudolph</i>
(4)	Bogue Banks Coastal Storm Risk Management Project.	<i>Beach Commission</i>
(5)	2019 - 2020 Annual Report: Bogue Banks Beach & Nearshore Mapping Program.	<i>Nicole VanderBeke (Moffatt & Nichol) Kurt Baker (Geodynamics)</i>
(6)	Other Business.	
(7)	October 2020 Meeting Date. (October 26, 2020)	<i>Chairman Cooper</i>
(8)	Adjourn.	<i>Chairman Cooper</i>

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CARTERET COUNTY BEACH COMMISSION

Agenda Topic Cover Sheet

Approval of Minutes

Regular Beach Commission Meeting – August 24, 2020

Meeting Date: **9/28/2020**

Topic No. **2**

Suggested Action: A motion should be entertained to approve the August 24, 2020 meeting minutes with any recommended changes from the Beach Commission.

Attached for the Beach Commission's review, comments, and subsequent approval are the minutes for the Commission's August 24, 2020 regular meeting.

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CARTERET COUNTY BEACH COMMISSION MEETING

Minutes

Emerald Isle Board Room (<10 persons with spatial distancing - COVID-19 Precaution)

Remotely via Carteret County Zoom Account (<https://carteretcountync.zoom.us/>)

August 24, 2020, 2 pm

Attendance.

Commission Members A.B. "Trace" Cooper (chair), Jim Normile (vice-chair), Harry Archer (remotely), Larry Baldwin (remotely), Larry Corsello, Jimmy Farrington, Tom Rule, Woody Warren, secretary Greg Rudolph, and the general public. Members Joel Fortune and Douglas Guthrie were absent.

- (1) **Call to Order.** – Chairman Cooper called the meeting to order and thanked everyone for attending either in-person with proper spatial distancing measures employed or via conference call/Zoom.
- (2) **Approval of Minutes - Regular Beach Commission Meeting (July 27, 2020).** – Chairman Cooper asked the Commission if there were any corrections, additions, or comments regarding the July 27th regular session minutes presented in the agenda packet. With no comments forthcoming, member Corsello subsequently made a motion to adopt the minutes as presented, which was seconded by member Farrington and unanimously approved.
- (3) **Room Occupancy Tax (ROT) and "Beach Fund" Update.** – Chairman Cooper introduced the subject by noting the occupancy tax collections for the past few months have been akin to a roller coaster with respect to COVID-19, and the June collection was no different. Secretary Rudolph continued the June collection up by nearly +17%, and represents the highest June collection total ever in the history of the occupancy tax ([Slides 1 and 2](#)). Despite this record June collection, our FY 2019-20 total was down by -5.4% compared to FY 2018-19, which corresponds directly to the "COVID months" when there were restrictions on lodging and meal services. The secretary also noted the on-line collections were up significantly in June, and for all the latter months in the fiscal year as well.

The estimated reserve balance as of the end of June (FY 2019-20) is \$16.3 million and the secretary proceeded to review our anticipated budget developed a few months ago to help cost scope the upcoming Post-Florence Phase III Renourishment Project ([Slide 3](#)). In theory we could cash flow (cash advance) Emerald Isle for a \$29 million project. Thus all in all, we're looking really good – we had an excellent bid opening on August 10th (\$32 million winning bid) and roughly \$20 million of the project will be FEMA reimbursable. Thus if we are reimbursed for the 1st and possibly the 2nd invoice in due time, then we should have no problems cash flowing the entire project.

Member Warren helped conclude the topic by noting that the bookings (via Bluewater Realty) for July and August are going to be in record territory, and even September and October is

trending way upward compared to years past. Chairman Cooper noted that he is hearing the same type of trends for other realty agencies in the County as well. Robert Keistler, Stephen Gager, and Major Robert Burnham with the U.S. Army Corps of Engineers stepped into the meeting at this time and Chairman Cooper welcomed and introduced the guests.

- (4) **Bogue Banks Coastal Storm Risk Management (CSRM) Project.** – Secretary Rudolph introduced the topic and our speakers/presenters today which includes the Town Manager of Topsail Beach, Michael Rose, and the Coastal Program Manager and Water Resources Engineer for the City of Virginia Beach, Daniel F. Adams, P.E. and Phillip J. Roehrs, P.E., respectively. These gentlemen have graciously agreed to speak to us and have unique experiences and perspectives regarding the CSRM program. Topsail Beach is part of Topsail Island and their project is the [“West Onslow Beach” CSRM Project](#), which has been authorized, and akin to Bogue Banks, recently received construction funding. The towns of Surf City and North Topsail comprise the remaining part of Topsail Island and they have a [separate CSRM project](#). The City of Virginia Beach’s main CSRM effort is the 5.3-mile long [Sandbridge Project](#), which was initially authorized by Congress for construction in 1992, initially constructed in 1998 and has undergone several maintenance (renourishment) cycles since.

Mr. Rose expanded that the sand source for the Town Program is New Topsail Inlet and the adjacent interior waterway of Banks Channel, and State funding is provided via the Shallow Draft Navigation Channel Dredging and Aquatic Weed Fund. Conversely the Corps’ West Onslow Beach CSRM Project would use an offshore borrow source. This issues (different borrow sources) also becomes a cost issue even with federal funds in hand. Other issues pertaining to parking/access and easements are also somewhat problematic for the Town, and it likely the Town is going to continue with their own engineered projects and seek FEMA reimbursement in the event of federally declared disasters. Member Rule inquired to the parking challenges Mr. Rose alluded to, which in order to meet Corps guidance would have resulted in the Town pursuing on-street parking; and that would have proved to be tremendously challenging. Member Corsello also asked about the cost differences using State funding (Shallowdraft) and FEMA funding when applicable vs. CSRM funding. Mr. Rose replied that he didn’t have the exact number in front of him but added that another benefit for the Town was their local plan would nourish in front of non-conforming lots/structures while the CSRM Project would not. Thus any FEMA reimbursable projects would also nourish the same non-conforming lost/structures. The secretary and chairman proceeded to thank Mr. Rose for his time and presentation before Mr. Adams and Mr. Rhoehrs spoke.

Mr. Adams provided a general overview of the Virginia Beach coastline including the north-facing Chesapeake Bay side and the east-facing Atlantic Ocean side. There are federally authorized navigation projects within the City’s jurisdiction that include concurrent beach nourishment and other types of activity, thus working with the Corps of Engineers is very commonplace for the City. Virginia Beach has two CSRM Projects – one is the Resort Beach and the other Sandbridge, located south of Resort Beach. The borrow sources are Rudee Inlet, and Norfolk Harbor/a separate offshore area at Resort Beach and Sandbridge, respectively. In terms of Sandbridge, the City financed initial construction of the Sandbridge CSRM Project in 1998, and via a subsequent 2002 Project Cooperation Agreement; the Corps and City have since successfully undergone four maintenance (renourishment) cycles with the last recently completed earlier this year. However federal funding has been sporadic – some years there have been no federal funding, one time 20% of the total effort instead of the full 65%, and most recently no federal

funding. However there is a lot continuity at stake to keep the Corps managing the project – permitting, contracting, etc. Also the Corps (Norfolk District) has been very good to work with. Mr. Rhoers added the Office of Management & Budget has been the root of a lot of the Corps funding decisions (i.e., they develop the Administration’s budget), and that has been problematic for not just the Sandbridge Project but the CSRSM Program as a whole.

Chairman Cooper asked if there has been any storm-response funding provided by the Corps in between maintenance cycles. Mr. Rhoers replied that the Corp’s Flood Control and Coastal Emergencies (FCCE) line item has been used for this purpose – but again the FCCE has to “filled” for each storm by Congress/the Administration.

Mr. Keistler disclosed that an apparent low bidder has been identified for this year’s dredging work at the Morehead City Harbor that includes concurrent nourishment along Ft. Macon and Atlantic Beach (Weeks Marine at roughly \$18 million). Mr. Keistler continued by discussing some of the elements of the CSRSM Project that catalyzed a question from member Corsello concerning where does any unspent funding go in the Corps budget (i.e., if Topsail Beach does not participate in the CSRSM Project, then where would the construction funding go)? Mr. Keistler that it would almost certainly go back into the Corps’ portfolio. Mr. Brodman asked if more CSRSM Projects are added nationally yet the Corps is receiving generally the same amount of funding, then what are the prospects for the Bogue Banks CSRSM Project to receive maintenance funding in the future? Mr. Keistler replied that on the surface, it would appear that there would be less money to go around; but the decision to construct a project is not taken likely with respect to future maintenance obligations.

- (5) **Public Comment.** – None.
- (6) **Other Business.** – Secretary Rudolph provided the Commission a status concerning the proposed Old Ferry Channel Dredging Project ([Slides 4 – 9](#)).
- (7) **September 2020 Meeting Date.** – The Commission agreed that the next Beach Commission meeting would be held on September 28, 2020.
- (8) **Adjourn.** – Chairman Cooper asked for any additional comments or questions, and with none forthcoming, the meeting was adjourned.

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CARTERET COUNTY BEACH COMMISSION

Agenda Topic Cover Sheet

Room Occupancy Tax (ROT) and “Beach Fund” Update.

Meeting Date: **9/28/2020**

Topic No. **3**

Suggested Action: None.

A copy of Carteret County’s July Room Occupancy Tax (ROT) collection report is attached to this month’s “Beach Fund” update signifying the beginning of the 2020-21 fiscal year from a reporting standpoint. The July data has been utilized to revise four summary tables presented at the end of this coversheet including; **Table 1** - a running summary of ROT collections comparing monthly revenues from FY 2020-21 to FY 2019-20, **Table 2** - a summary of ROT revenue from a Calendar Year perspective (CY 2020 - CY 2013), **Table 3** - a more detailed FY 2020-21 to FY 2019-20 revenue comparison of the collection by sectors (hotel/motel, condo/cottage, and “other”), and **Table 4** - a fiscal year-to-date estimate of the Beach Nourishment Reserve Fund.

As disclosed via email to the Beach Commission earlier this month, the July 2020 occupancy tax collection was \$2,416,802 and eclipsed the previous high set in July 2017 (\$2,022,661) by over +19%, which was the only time we have went over \$2 million for a month before now (Tables 1 and 2). There could be some cross pollination revenue from August that got reported in July but regardless this is a massive number and confirms our anecdotal speculation that the tourists who usually get on a plane to travel for their summer vacation couldn’t because of COVID-19 precautions and consequently have “discovered” Bogue Banks via automobile instead. Also as hypothesized, more of the public is working remotely which allows them the freedom to spend time at destination locations like the beaches of Carteret County and we should see this trend continue into the shoulder and winter months. Couple these demographical trends with the fact we can accommodate more visitors this year than last because the condos and hotels that were damaged during *Florence* are repaired and back in operation this year. We can also see the July 2020 surge was “across the board” of the hotel/motel, condo/cottage, and “other” sectors – the “other” sector was particularly high, which makes intuitive sense as there were many visitors making last minute, on-the-fly vacation plans based on the ever-changing COVID-19 situation (Table 3).

And lastly as illustrated in Table 4 below, our estimated value for the “Beach Fund” at the conclusion of July 2020 is approximately \$27.4 million and was generated by taking our opening balance on July 1, 2020 (beginning of the fiscal year), our revenue through July 2020, and our expenditures to date through July 2020 into account. A copy of the expenditure report for the month of July is also attached to this cover sheet for the Commission’s review and is constrained to more of the Shore Protection Office’s administrative functions. We have also incorporated the financial transactions (invoicing and reimbursement payments) associated with all aspects of the Phase II and III Post-*Florence* Renourishment Projects into our reserve estimate – again current through July 2020. We received a significant amount of reimbursement in July from Pine Knoll Shores and Emerald Isle associated with Phase II FEMA fixed-cost funding transfers (~\$8.9 Million) which buoys our reserve amount significantly as we head into the construction of Phase III.

**Cumulative Analysis and Monthly Comparison
Room Occupancy Tax (ROT) and the "Beach Fund"
FY 2020-2021 v. 2019-20
Carteret County**

Month	Gross Receipts		Beach Fund (Monthly)*		Beach Fund (YTD)*		Occ. Tax Total Monthly Difference	Occ. Tax Total YTD Difference
	TDA & Beach		FY 19-20	FY 20-21	FY 19-20	FY 20-21		
	FY 19-20	FY 20-21						
Jul	\$1,713,896	\$2,416,802	\$856,948	\$1,208,401	\$856,948	\$1,208,401	41.01%	41.01%
Aug	\$1,565,053		\$782,526		\$1,639,475			
Sep	\$609,740		\$304,870		\$1,944,345			
Oct	\$412,272		\$206,136		\$2,150,481			
Nov	\$240,881		\$120,440		\$2,270,921			
Dec	\$144,499		\$72,249		\$2,343,171			
Jan	\$149,611		\$74,806		\$2,417,976			
Feb	\$159,825		\$79,913		\$2,497,889			
Mar	\$118,782		\$59,391		\$2,557,280			
Apr	\$40,378		\$20,189		\$2,577,469			
May	\$533,963		\$266,981		\$2,844,451			
Jun	\$1,582,344		\$791,172		\$3,635,623			
Totals=	\$7,271,245	\$2,416,802	\$3,635,623	\$1,208,401	\$3,635,623	\$1,208,401	Avg. = 41.01%	41.01%

Note: 6% overall collection rate (* = 50 TDA/50 Beach Fund split).

TABLE 1 – Monthly and cumulative summary of the Carteret County room occupancy tax collection reflecting the current and previous fiscal year in terms of the gross revenue and the portion of revenue legislatively mandated for beach nourishment (i.e., the “Beach Fund”).

**Cumulative Analysis and Monthly Comparison
Room Occupancy Tax (ROT) and the "Beach Fund"
Calendar Year 2020 - 2013
Carteret County (6% collection rate)**

Month	2020	2019	2018	2017	2016	2015	2014	2013	
	6%	6%	6%	6%	6%	6%	6%	6%	5%
Jan.	\$149,611	\$166,761	\$108,736	\$90,369	\$72,738	\$65,107	\$54,359	\$48,955	\$40,796
Feb.	\$159,825	\$153,978	\$147,363	\$102,895	\$80,744	\$66,976	\$60,118	\$52,897	\$44,081
Mar.	\$118,782	\$241,029	\$194,638	\$198,697	\$197,020	\$142,289	\$121,346	\$128,088	\$106,740
Apr.	\$40,378	\$367,884	\$426,106	\$378,586	\$267,064	\$238,039	\$218,570	\$187,767	\$156,472
May	\$533,963	\$558,112	\$314,986	\$574,112	\$495,403	\$519,427	\$530,041	\$373,921	\$311,601
June	\$1,582,344	\$1,353,693	\$1,582,294	\$1,211,103	\$1,254,762	\$1,194,984	\$1,119,788	\$1,126,150	\$938,458
July	\$2,416,802	\$1,713,896	\$1,951,256	\$2,022,661	\$1,945,706	\$1,799,562	\$1,714,309	\$1,440,439	\$1,200,365
Aug.		\$1,565,053	\$1,339,735	\$1,345,057	\$1,310,899	\$1,310,391	\$1,327,500	\$1,270,274	\$1,058,562
Sept.		\$609,740	\$720,343	\$651,908	\$632,513	\$598,281	\$514,648	\$471,580	\$392,983
Oct.		\$412,272	\$304,571	\$424,176	\$354,178	\$357,967	\$348,348	\$296,997	\$247,497
Nov.		\$240,881	\$380,894	\$260,361	\$192,591	\$148,172	\$125,217	\$145,665	\$121,388
Dec.		\$144,499	\$150,872	\$97,436	\$98,029	\$89,584	\$92,698	\$72,597	\$60,498
Totals =	\$5,001,706	\$7,527,797	\$7,621,795	\$7,357,361	\$6,901,648	\$6,530,780	\$6,226,944	\$5,615,329	\$4,679,441
YTD =	9.80%								
(+/-) previous year		-1.23%	3.59%	6.60%	5.68%	4.88%	10.89%	6.55%	

TABLE 2 – Monthly and cumulative summary of the Carteret County Room Occupancy Tax collection reflecting the current and previous seven calendar years in terms of the gross revenue only.

HOTELS/MOTELS

Month	2019-20		2020-21		FY 2020-21 v. 2019-20	
	Monthly	Year-to-Date	Monthly	Year-to-Date	Monthly	Year-to-Date
Jul	\$311,918	\$311,918	\$472,457	\$472,457	\$160,539	51.47%
Aug	\$252,144	\$564,062				
Sep	\$167,716	\$731,778				
Oct	\$168,045	\$899,824				
Nov	\$90,380	\$990,203				
Dec	\$62,371	\$1,052,574				
Jan	\$61,738	\$1,114,312				
Feb	\$77,605	\$1,191,917				
Mar	\$56,610	\$1,248,528				
Apr	\$23,288	\$1,271,816				
May	\$130,486	\$1,402,302				
Jun	\$307,441	\$1,709,743				
Totals=	\$1,709,743	\$1,709,743	\$472,457	\$472,457	\$160,539	51.47%

CONDOS/COTTAGES

Month	2019-20		2020-21		FY 2020-21 v. 2019-20	
	Monthly	Year-to-Date	Monthly	Year-to-Date	Monthly	Year-to-Date
Jul	\$1,291,633	\$1,291,633	\$1,625,767	\$1,625,767	\$334,135	25.87%
Aug	\$1,245,633	\$2,537,266				
Sep	\$399,296	\$2,936,562				
Oct	\$209,600	\$3,146,162				
Nov	\$109,563	\$3,255,725				
Dec	\$48,031	\$3,303,756				
Jan	\$32,126	\$3,335,882				
Feb	\$21,635	\$3,357,517				
Mar	\$37,818	\$3,395,335				
Apr	\$8,580	\$3,403,915				
May	\$251,304	\$3,655,219				
Jun	\$976,893	\$4,632,112				
Totals=	\$4,632,112	\$4,632,112	\$1,625,767	\$1,625,767	\$334,135	25.87%

OTHER, LESS THAN 5, & ON-LINE TOTAL

Month	2019-20		2020-21		FY 2020-21 v. 2019-20	
	Monthly	Year-to-Date	Monthly	Year-to-Date	Monthly	Year-to-Date
Jul	\$110,346	\$110,346	\$318,578	\$318,578	\$208,232	188.71%
Aug	\$67,276	\$177,621				
Sep	\$42,728	\$220,350				
Oct	\$34,627	\$254,976				
Nov	\$40,938	\$295,914				
Dec	\$34,096	\$330,011				
Jan	\$55,747	\$385,758				
Feb	\$60,586	\$446,344				
Mar	\$24,354	\$470,698				
Apr	\$8,510	\$479,207				
May	\$152,173	\$631,380				
Jun	\$298,010	\$929,390				
Totals=	\$929,390	\$929,390	\$318,578	\$318,578	\$208,232	188.71%

TABLE 3 – Monthly and cumulative summary of the Carteret County occupancy tax collection segregated by each of the three collection sectors (hotel/motel, condo/cottage, and “other”) for the current and previous fiscal years in terms of the gross revenue only. Note: On-line collection was first implemented in January 2016.

**Estimated Year-to-Date "Beach Fund" Reserve Balance
FY 2020-21**

Opening Fund Balance (7/1/20)	\$17,793,642
 Revenues	
Occupancy Tax (to date)	\$1,208,401
Reimbursement from Municipalities (Pine Knoll Shores & Emerald Isle)	\$8,887,820
Coastal Storm Damage Mitigation Fund (S.L. 2018-134 & 138)	\$0
Interest on Reserve	NA
Total Revenues	\$10,096,221
 Expenditures	
Shore Protection Office (7/31/2020)	\$13,011
Post- <i>Florence</i> Renourishment Project - Phase II & III	\$454,866
County Occupancy Tax Administration Fee*	\$17,084
Total Expenditures	\$484,961
 (Deficit)/Surplus for Year	 \$9,611,259
 Fund Balance	 \$27,404,901

*Up to 3% of first \$500,000 of gross proceeds and 1% of remaining gross receipts collected each year.

TABLE 4 – Estimated value of the “Beach Fund” utilizing the opening fund balance at the beginning of the current fiscal year, coupled with the revenues and expenditures to date.

OCCUPANCY TAX COLLECTION

Reporting period: **Jul-20**

Type	Tax Received	Penalties & Interest	Total Reporting Tax	Total No Tax
CONDOS/COTTAGE	\$ 1,625,668.02	\$ 98.98	60	125
HOTEL / MOTEL	\$ 472,439.33	\$ 17.59	32	3
OTHER	\$ 20,234.01	\$ 192.79	39	95
ONLINE	\$ 298,151.15	\$ -	6	1
TOTAL ALL TYPES	\$ 2,416,492.51	\$ 309.36	137	224
Total Collected	\$ 2,416,801.87			

July-20

Reporting Location	Condos/Cottage Tax	Hotel/Motel Tax	Other Tax	On Line	Total
Atlantic Beach	\$160,218.60	\$179,758.10	\$4,037.27	\$0.00	\$344,013.97
Beaufort	\$1,150.23	\$51,955.83	\$7,216.03	\$0.00	\$60,322.09
Cape Carteret	\$0.00	\$16,045.78	\$0.00	\$0.00	\$16,045.78
Emerald Isle	\$1,446,603.04	\$45,404.41	\$6,398.81	\$0.00	\$1,498,406.26
PKS / Salter Path/ Indian Beach	\$10,212.30	\$96,013.36	\$1,091.62	\$0.00	\$107,317.28
Morehead City	\$66.00	\$70,248.95	\$51.54	\$0.00	\$70,366.49
On Line	\$0.00	\$0.00	\$0.00	\$298,151.15	\$298,151.15
Unincorporated	\$7,516.83	\$13,030.49	\$1,631.53	\$0.00	\$22,178.85
Totals	\$1,625,767.00	\$472,456.92	\$20,426.80	\$298,151.15	\$2,416,801.87

Notes:

- (a) The collection value represents the location of the reporting office only, and may not be 100% correlative to the actual lodging location.
- (b) The locations listed as "Unincorporated" are collectors not located in a municipality.

*** USER MAY NOT HAVE ACCESS ***		ANNUAL	ACT MTD	ACT YTD	REMAINING	
*** TO ALL ACCOUNTS IN RANGE ***		AMENDED BUDGET	AND IN PROCESS	AND IN PROCESS	BALANCE	PCT

110	GENERAL FUND					
40	ECONOMIC & PHYSICAL DEVELOP					
4901	BEACH NOURISHMENT					
12100	SALARIES	108,830.00	0.00	5,441.90	5,441.90	103,388.10 5
12600	PART TIME WAGES	0.00	0.00	0.00	0.00	0.00 0
18100	FICA EXPENSE	8,495.00	0.00	401.93	401.93	8,093.07 4
18200	RETIREMENT CONTRIBUTION	11,270.00	0.00	556.17	556.17	10,713.83 4
18300	HOSPITALIZATION INSURANCE	10,510.00	0.00	622.09	622.09	9,887.91 5
18500	UNEMPLOYMENT	0.00	0.00	0.00	0.00	0.00 0
18600	WORKMENS COMP	2,000.00	0.00	1,927.00	1,927.00	73.00 96 -----
18700	401 K PLAN	5,550.00	0.00	272.09	272.09	5,277.91 4
20000	SUPPLIES	2,000.00	0.00	0.00	0.00	2,000.00 0
28000	SMALL EQUIPMENT	2,000.00	0.00	0.00	0.00	2,000.00 0
31400	TRAVEL IN-COUNTY	2,400.00	0.00	0.00	0.00	2,400.00 0
32100	TELEPHONE & DATA SERVICES	3,660.00	0.00	0.00	0.00	3,660.00 0
32500	POSTAGE	1,000.00	0.00	0.00	0.00	1,000.00 0
39500	TRAVEL	5,880.00	0.00	0.00	0.00	5,880.00 0
44000	CONTRACTED SERVICES	395,470.00	0.00	0.00	0.00	395,470.00 0
44100	FEASIBILITY AGREEMENT	0.00	0.00	0.00	0.00	0.00 0
44200	SECTION 933 REIMBURSEMENT	0.00	0.00	0.00	0.00	0.00 0
49100	DUES AND SUBSCRIPTIONS	5,000.00	0.00	3,790.00	3,790.00	1,210.00 75 -----
69900	GRANT CONTRIBUTIONS EDC	0.00	0.00	0.00	0.00	0.00 0
TOTAL:	BEACH NOURISHMENT	564,065.00	0.00	13,011.18	13,011.18	551,053.82 2
TOTAL:	ECONOMIC & PHYSICAL DEVELOP	564,065.00	0.00	13,011.18	13,011.18	551,053.82 2
TOTAL:	GENERAL FUND	564,065.00	0.00	13,011.18	13,011.18	551,053.82 2

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CARTERET COUNTY BEACH COMMISSION

Agenda Topic Cover Sheet

Bogue Banks Coastal Storm Risk Management Project.

Meeting Date: **9/28/2020**

Topic No. **4**

Suggested Action:

The Beach Commission is encouraged to come to a decision regarding whether or not to move forward with the Bogue Banks Coastal Storm Risk Management Project, and agree to take this recommendation to the Bogue Banks municipalities for their concurrence as well.

For the past four months we have made the U.S. Army Corps of Engineers' (Corps) Bogue Banks Coastal Storm Risk Management (CSRSM) Project a focal point of our regular Beach Commission meetings as predicated by an infusion of \$44,500,000 in January of this year that was appropriated to construct the project - 65% federal (\$28,925,000) and 35% non-federal (\$15,575,000 furnished akin to a no interest loan). Our next step to codify our participation in the Project is to execute a Project Partnership Agreement (PPA) between the County and Corps, which is also required before construction can be initiated. The PPA also stipulates the terms and conditions of local cooperation such as providing all the lands, easements, rights-of-way, relocations, and parking and accesses that are necessary for the construction and maintenance of the Project. The CSRSM Project's lifespan is 50-years and includes periodic maintenance (renourishment) at a 50% federal - 50% non-federal cost share under an ideal federal appropriation schedule.

In 2001 we executed a Feasibility Agreement with the Corps initiating the CSRSM Project that involved the preparation and completion of an Integrated Environmental Impact Statement/Feasibility Report and concomitant Chief's Report (both in 2014), and ultimately the Record of Decision (2016). The CSRSM Project was authorized by Congress via the "Water Infrastructure Improvements for the Nation Act" of 2016 (WIIN 2016), which was signed into law by the President in December of that year. We executed a Preconstruction, Engineering & Design (PED) Agreement thereafter in 2017 whereby the Corps develops the plans and specifications for the construction of the Project, refines the borrow sources of sand, ensures real estate easements are in-place, etc. Thus the entire formulation of the CSRSM Project has also been running parallel with our "Master Plan" and consequent implementation as the phased Post-Florence Renourishment Project. The \$44,500,000 appropriated by Congress to construct the CSRSM Project was unexpected and has required us to revisit both of these concurrent shore protection pathways and reconcile which one is

best for the future of Bogue Banks. If do move forward with the Bogue Bank CSRSM Project, then we need to execute the PPA soon (~February 2021) and begin the easement acquisition process. While this timeline seems loose and somewhat malleable, we will need to make a decision soon in order to get ready to execute the PPA when the time comes (i.e., attorneys review draft agreements, secure a contractor for easement/rights-of-entry procurement, etc.).

As a review of our discussions to date, reference is made to our [May Meeting](#) when we received a [detailed briefing](#) from Lee Wrenn & Associates concerning the procurement process for Real Estate Easements & Right-of-Entry Authorizations and was followed by our [June Meeting](#) as we reviewed and had a good dialogue concerning some of the “Pros and Cons” regarding our potential participation in the CSRSM Project and comparing these positive and negative elements to our current Master Plan/FEMA reimbursement approach ([slides](#)). For our [July Meeting](#) we received first hand perspectives of the CSRSM program from both a local sponsor (New Hanover County, N.C.) who has undergone construction and numerous maintenance cycles for multiple CSRSM Projects, and from the Corps (Wilmington District) themselves ([slides](#)). And lastly for our [August Meeting](#), we received additional perspectives from the Town of Topsail Beach that is also undergoing a similar decision-making process as we are with respect to constructing a CSRSM Project and a separate presentation from the City of Virginia Beach focusing on their experiences with constructing and maintaining a CSRSM Project and working with the Norfolk District of the Corps.

One outstanding item that we need to address relates to the differences between the construction/maintenance templates of the CSRSM Project compared to our Master Plan. We have been working with the Corps and Moffatt & Nichol to create a cross-section diagram(s) depicting the variances, and should have this available by our September meeting date. Generally-speaking in the interim however, the Corps has a prescribed dune height and berm width and these parameters constrain the amount of cubic yards required to adhere to these dimensions during each maintenance cycle. The Master Plan on the other hand has a set dune and berm geometry as well but is predicated on volumetric triggers – once the volume is lost (eroded), then the berm width is based on the cubic yardage that has eroded and the pre-nourished beach shape. Thus I would suspect the templates themselves will be pretty similar despite a subtle but important difference in how they are evaluated and designed for maintenance.

The Shore Protection Office is recommending the Commission decide whether or not to participate in the CSRSM Project based on all the information and perspectives we have been discussing over the past several months. Regardless of the decision, it will be important to ascertain each of the Bogue Banks municipalities’ concurrence or objections and reach consensus after further dialogues (if needed). As discussed previously we will visit each municipal Board/Council to this end, and ultimately; I envision the Beach Commission/Shore Protection Office preparing a formal correspondence to the Corps and a separate transmission to the County regardless if we elect to enter into the PPA or not. Carteret County has been the sponsor of the CSRSM Project ever since the Feasibility Agreement was signed in 2001 and also is the permit holder, sponsor, and lead financier for the Master Plan – it’s important the County leadership receives and understands the guidance the Beach Commission and Bogue Bank municipalities are providing.



CARTERET COUNTY BEACH COMMISSION

Agenda Topic Cover Sheet

2019 - 2020 Annual Report: *Bogue Banks Beach & Nearshore Mapping Program.*

Meeting Date: **9/28/20**

Topic No. **5**

Suggested Action: Besides receiving the results of our annual surveying activities, the Commission is requested to evaluate the usefulness of the full topographic, swath laser-scanning scope of work we have completed along the “hot-spot” zone in central Bogue Banks. We stipulated a 2-year trial period in our current 5-year monitoring contract that was executed in 2018.

Introduction and General Observations

Nicole VanderBeke with the engineering firm of Moffatt & Nichol (M&N) will be providing a PowerPoint presentation to the Beach Commission at our September meeting highlighting the key results and main conclusions regarding the 2019-20 Bogue Banks Beach & Nearshore Mapping Program (i.e., beach monitoring or surveying). Ms. VanderBeke’s presentation will summarize our annual, comprehensive survey of Shackleford Banks, Bogue Banks, and Bear Island conducted earlier this year (late Spring 2020). Particularly for Bogue Banks, the 2020 survey encompasses a couple of “events” that have transpired since our annual survey conducted last Spring (2019) – namely Hurricane *Dorian* that impacted our area in early September 2019 and Phase II of our *Post-Florence* Renourishment Project that included the placement of 2,022,807 cubic yards (cy) within the political jurisdictions of Atlantic Beach, Pine Knoll Shores, Salter Path (State), and West Emerald Isle during the February to April 2020 timeframe. Note that we conducted a formal [post-Dorian survey](#) in mid-September 2019 solely for Bogue Banks and the results of this survey are also used in the Presentation and forthcoming Report.

On a contractual note, the Commission may remember we entered into a new 5-year contract extension with M&N in 2018 encompassing the 2018 to 2022 timeframe, and our original contract with M&N was also for five years (2008 to 2012) and was subsequently extended for another five years (2013 to 2017), before this most recent extension (2018 to 2022). M&N’s responsibilities for the mapping program include; **(1)** oversight of annual surveying by Geodynamics, LLC for the profiles established along Bogue Banks, Bear Island, and Shackleford Banks, **(2)** preparation of an annual report, and if needed; **(3)** a rapid response post-hurricane survey along Bogue Banks only, and **(4)** an accompanying Impact

Evaluation Report. Also in 2018, **(5)** we begun incorporating full-coverage, swath-based, mobile laser scanner technology along the topographic stretch of approximately 14 miles of central Bogue Banks capturing our traditional “hot spots”. This hot spot reach is surveyed (laser scanned) twice per year – once during routine annual surveying activities before the hurricane season and once after the season passes. Per conditions stipulated in our most recent contract extension, we will re-assess the usefulness of the laser scan surveys after the first two years (2020 report) and elect to continue or not with this survey component thereafter. To this latter end, Kurt Baker with Geodynamics, LLC will also be providing the Beach Commission a presentation at our September meeting.

Moreover with respect to the laser-scanning, we (Shore Protection Office and Geodynamics, LLC) have sharpened our objectives over the course of the past two years, which can be summarized as follows; (a) To dive deeper into “what is happening between the transects”, (b) Constrain the boundaries of the hot spot, which was somewhat of a mystery to start with, (c) Compare the “ambient” beach to the “hotspot” beach and quantify the differences (e.g., average loss in the hot spot compared to outside hotspot, the shape of the beach in these two areas in terms of slope and other parameters, etc.), and (d) If possible describe why the hot spots are occurring although in all reality, we’re measuring the results of the cause on the dry sand beach, not other metrics offshore for example that might provide better clues to why the hot spots are occurring in the first place.

As introduced above and back to the annual report, M&N’s September 2020 presentation will summarize survey activities conducted from Spring 2019 to Spring 2020 encompassing the three islands (Bogue Banks, Shackleford Banks, and Bear Island). The past two years have been somewhat anomalous compared to our longer monitoring history in respect that we have experienced consecutive hurricanes (*Florence* in 2018 and *Dorian* in 2019) and large nourishment projects (Phase I in 2019 and Phase II in 2020). In many of the years since the monitoring program was initiated (1999), we have neither experienced hurricanes nor nourishment events. Thus we would have to make inferences to what minor events triggered episodes of erosion and accretion throughout the year (e.g., a coastal low or distant tropical storm).

To all of these effects, the Beach Commission is acutely aware that we rely heavily on a “credit – debit” volumetric approach with respect to our overall beach management philosophy and to track change throughout time. Debits are usually in the form of hurricanes, tropical storms, or other high energy events that remove sand from the beach profile, while credits are almost always attributed to beach nourishment, or to the rare occurrence of storms actually moving sand up the beach profile as we observed with Hurricane *Matthew* (2016) and *Dorian* (2019). Hence from spring 2019 to spring 2020 we experienced very notable episodes of “credit” in the form of hurricane *Dorian* and even more so with the Spring 2020 Phase II Nourishment Project.

Methodology/Historic Overview

The methodology used for our beach monitoring program was initiated in 1999 when Coastal Science & Engineering (CSE) established 111 shore-perpendicular profiles along Bogue Banks spaced approximately 1,000 feet apart across the entire island. This profile network has in the past or continues to help us achieve the following objectives; **(1)** Establish a monitoring network to determine volume deficiencies during formulation of the Bogue Banks Restoration Project (early 2000s) and future nourishment efforts, **(2)** Help assess the volume of sand lost (or gained) during Hurricanes *Floyd* (1999), *Isabel* (2003), *Ophelia* (2005), *Irene* (2011), *Matthew* (2016), *Florence* (2018), and *Dorian* (2019); and where applicable, obtain FEMA reimbursement to replace the sand lost during many of these

disasters, **(3)** Serve as spatial control during beach construction events, **(4)** Assess the fate of various beachfills constructed along Bogue Banks since 2001, **(5)** Provide a method to determine the overall condition (health) and changing geomorphology of Bogue Banks and adjacent islands, and **(6)** Serve as the primary database foundation in formulating the Bogue Banks Master Plan.

CSE originally augmented the monitoring network with an additional 9 profiles in 2005 for a total of 120 profiles along Bogue Banks, and also as part of our modified contract with CSE for 2005, 18 new profiles were established on Bear Island for monitoring purposes, and similar to Bogue Banks, the spacing between profiles is approximately 1,000 feet. CSE also established 24 profiles along Shackleford Banks in 2005 for repetitive monitoring activities spaced at intervals closer to 2,000 feet. As part of our original five-year contract with M&N, we added two additional profiles in 2008 along the inlets bordering Bogue Banks (Bogue and Beaufort), which increased our Bogue Banks total from 120 to 122 profiles, and the overall total (Bogue Banks, Shackleford Banks, and Bear Island) from 162 to 164.

Examining Bogue Banks from an aerial or “map view” perspective, we currently divide the island into ten major management reaches (7 oceanfront and 3 inlet) and our 2020 report utilizes these same, and further subdivisions as well - see Table 1 immediately below and Figure 1 on the next page.

Reach ID	Profile Range	Cell Reach Description (approximate – west to east)
Bogue Inlet – channel	117, 117a – 120	The Point (Inlet Ct. towards the west and north)
Bogue Inlet – ocean	1 – 11	Inlet Ct. towards the east to Deer Horn Dunes
EI – west	12 – 25	Deer Horn Dunes eastward to Chapel by the Sea
EI – central	26 – 36	Chapel by the Sea eastward to 21 st Street
EI – east	37 – 48	21 st Street to the Old IB Pier
IB/Salter Path	49 – 58	Old IB Pier eastward to Ocean Terrace
Pine Knoll Shores	59 – 76	Ocean Terrace eastward to DoubleTree Pier
Atlantic Beach	77 – 102	DoubleTree Pier eastward to Ft. Macon State Park entrance
Ft. Macon	103 – 112	Ft. Macon State Park entrance eastward to boulder jetty
Beaufort Inlet	112, 112a – 116	Boulder Jetty northward towards inlet overlook

Table 1 – Summary of the management ranges and profile nomenclature utilized for beach/nearshore monitoring purposes along Bogue Banks.

The precise boundaries for the management reaches changed in 2014-2015 with the advent of our “Bogue Banks Beach Nourishment Master Plan”. A significant component of the Master Plan included a re-evaluation of the beach based not on purely geo-political boundaries, but coupled with physical attributes as well. In essence beach profiles were grouped together based on similar dune/berm shape and height to determine discrete reaches along the island. This re-grouping of the management reaches continues to be fully incorporated in the monitoring report.

From a cross-sectional vantage point, M&N subdivides the beach into five compartments separated by distinct elevations reported in feet (ft.) referenced to the National American Vertical Datum of 1988 (NAVD88), where “0” is approximately -0.5 ft. below present mean sea level. The five analytical zones include; (1) volume changes above the mean high water line (+1.5 ft. NAVD88) capturing the recreational (dry sand) beach area, (2) volume changes above -5 ft. NAVD88 capturing wading depth and the recreational beach, (3) volume changes above -12 ft. NAVD88 capturing the outer bar and the wading

depth/recreational beach area, (4) volume changes above -20 ft. NAVD88, and (5) volume changes above -30 ft. NAVD88. The latter two zones are utilized to gain a sense of changes occurring at deeper depths offshore, and in the past have provided some very good insights to how the beach behaved in the wake of hurricanes *Irene* (2011), *Matthew* (2016), *Florence* (2018), and *Dorian* (2019) while also augmenting our ability to constrain the geometry of the inlet complexes.

To help make the data more manageable/understandable and to consistently measure changes over time, we normally reference the compartment encompassing volume changes **above -12 ft. NAVD88** incorporating the recreational beach, wading depth, and the outer bar. We also take a close look at the volume changes above +1.5 ft. NAVD88 (mean high water) as this represents the changes occurring along the recreational dry sand beach where most of the visual observations/opinions regarding beach health are formulated. Importantly these categories help us determine if the dry beach is gaining or losing sand, and whether or not the material is being transferred to the underwater portion of the beach profile. For instance, there could be examples where the dry beach alone has lost sand compared to the year prior, but the overall volume to -12 ft. NAVD88 has remained the same – this would indicate the sand from the beach has been deposited just offshore, so the overall volume is in balance compared to the year prior.

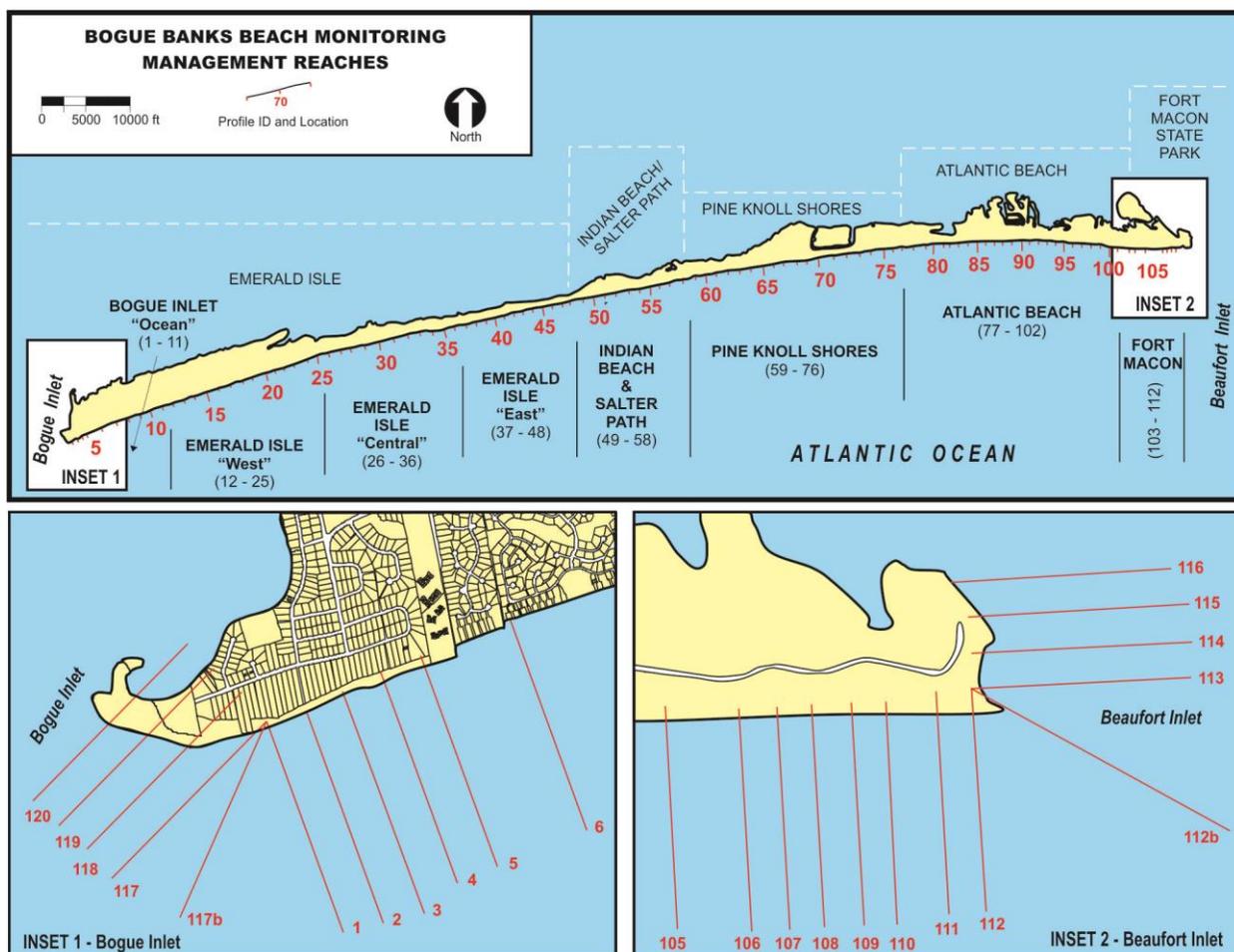


Figure 1 – Site map depicting the location/identification scheme of the 122 profiles positioned along Bogue Banks utilized for beach/nearshore monitoring purposes and the management reaches provided in the Bogue Banks Beach “Master Plan”.

Results (Bogue Banks)

Beach Volume - As inferred above, one of the means to quantify beach health is to compare the volume of sand lost or gained over time along Bogue Banks and the adjacent islands, and this tenet has been a hallmark of our beach/nearshore monitoring program. Utilizing the “above -12 ft. NAVD88” benchmark, the 128,393 linear feet of oceanfront along Bogue Banks (profiles 1 – 112, figure 1) **gained** +3,034,764 cubic yards (cy) of sand in 2019-20, equating to an average gain of +23.6 cy/foot (cy/ft). As mentioned above, the Phase II Post-*Florence* Renourishment emplaced +2,022,807 cy of sand along 9.5 miles of Bogue Banks, which means we had an additional +1,011,957 cy that moved “upslope” from depths below -12 feet NAVD 88 to above that demarcation. The Commission may remember we lost a tremendous amount of sand during *Florence* (-3,546,411 cy) and continued losing sand offshore in the non-Phase I areas of the beach in the interval between the *Florence* survey (September 2018) and our annual Spring 2019 survey. Thus in the past year we have experienced natural recovery (again, sand moving upslope) coupled with the benefits of the Phase II nourishment project. Table 2 includes a reach-by reach summary and we will delve more into each reach during the presentation.

Reach	Profiles	Linear Feet	Average Shoreline Change (Spring 2019 - Spring 2020)	Average Volume Change (Spring 2019 - Spring 2020)
Bogue Inlet - Ocean	1 - 11	11,488	+59.4 feet seaward (+)	+43.5 cubic yard / linear foot
Emerald Isle - West	12 - 25	18,288	+18.9 feet seaward (+)	+15.5 cubic yard / linear foot
Emerald Isle - Central	26 - 36	15,802	+28.3 feet seaward (+)	+11.0 cubic yard / linear foot
Emerald Isle - East	37 - 48	13,220	+9.8 feet seaward (+)	-10.8 cubic yards / linear foot
Indian Beach/Salter Path	49 - 58	12,850	+43.9 feet seaward (+)	+15.7 cubic yards / linear foot
Pine Knoll Shores	59 - 76	23,878	+82.0 feet seaward (+)	+56.8 cubic yards / linear foot
Atlantic Beach	77 - 102	26,176	+43.2 feet seaward (+)	+27.1 cubic yards / linear foot
Ft. Macon State Park	103 - 112	6,691	-7.0 feet landward (-)	-6.8 cubic yards / linear foot
Totals or Average =	112	128,393	+40.6 feet seaward (+)	+23.6 cubic yards / linear foot

Table 2 – Average shoreline and volume change from Spring 2019 to Spring 2020 for eight oceanfront reaches positioned along Bogue Banks.

Also, 2020 marks the twenty-first anniversary of hurricane *Floyd* and since 1999; Bogue Banks has *gained* roughly +9.1 million cy of sand, which again is mostly attributed to the many beach nourishment projects that have been constructed along the island beginning in 2001. A total of approximately 17.5 million cy of sand have been placed directly on Bogue Banks as a result of beach nourishment, meaning 8.4 million cy have since eroded off the beach (17.5 million cy placed on the beach *minus* 9.1 million cy remaining). If we average the volume loss (-8.4 million cy) across the entire 128,393 feet (24.3 miles) of Bogue Banks oceanfront, the island has lost sand at a rate of -3.1 cy/ft/yr since 1999 (a 21-year window). Our average volumetric change for the previous year (1999 - 2019) was -3.9 cy/ft/yr – that’s a large jump in the background erosion rate value and again demonstrates the type of impact our Post-*Florence* Renourishment Project is having along Bogue Banks.

A common question we ask ourselves every year is, “Where does the sand go?”. The volume in our “sand box”, and shoreline positions for that matter, have reacted to an influx of nourishment sand or efflux of sand related to storms/background erosion over the

past several years and movement of that sand in the alongshore and shore-perpendicular directions. Sand may be moving east or west along the beachfront or in some places, could be migrating in the offshore direction or conversely even welding itself to the visible dry beach.

Historically we do not think there is “much” sand from a gross standpoint migrating (and staying) from one management reach to the other (shore-parallel). In other words, we almost never experience a large loss in one management reach coupled with a significant gain in an adjacent reach. Or *vice versa* – immediately adjacent reaches to those that received direct nourishment rarely experience significant gains the following year. Obviously this is just a general rule of thumb and is not valid for profiles/reaches near inlets. 2020 provides no exception to these trends and even reinforces this notion – most of the gains can be traced up and down the beach slope (shore perpendicular) in each and every profile.

As mentioned several times above, the volume of sand residing along the entire island is still significantly higher than 1999, and is attributable to the many beach nourishment projects that have been constructed since 2001. All the island management reaches are in excess of our Master Plan “volumetric thresholds”. Our Master Plan management reaches were developed by; (A) evaluating dune/berm shape and height to modify some of our management reach boundaries, and (B) subsequently utilize a 25-year storm event to model the volumetric needs in each of the new management reaches. Our 2020 management reach values in terms of average cy/ft and our minimum volumetric thresholds (i.e., nourishment triggers) are presented graphically in Figure 2 below.

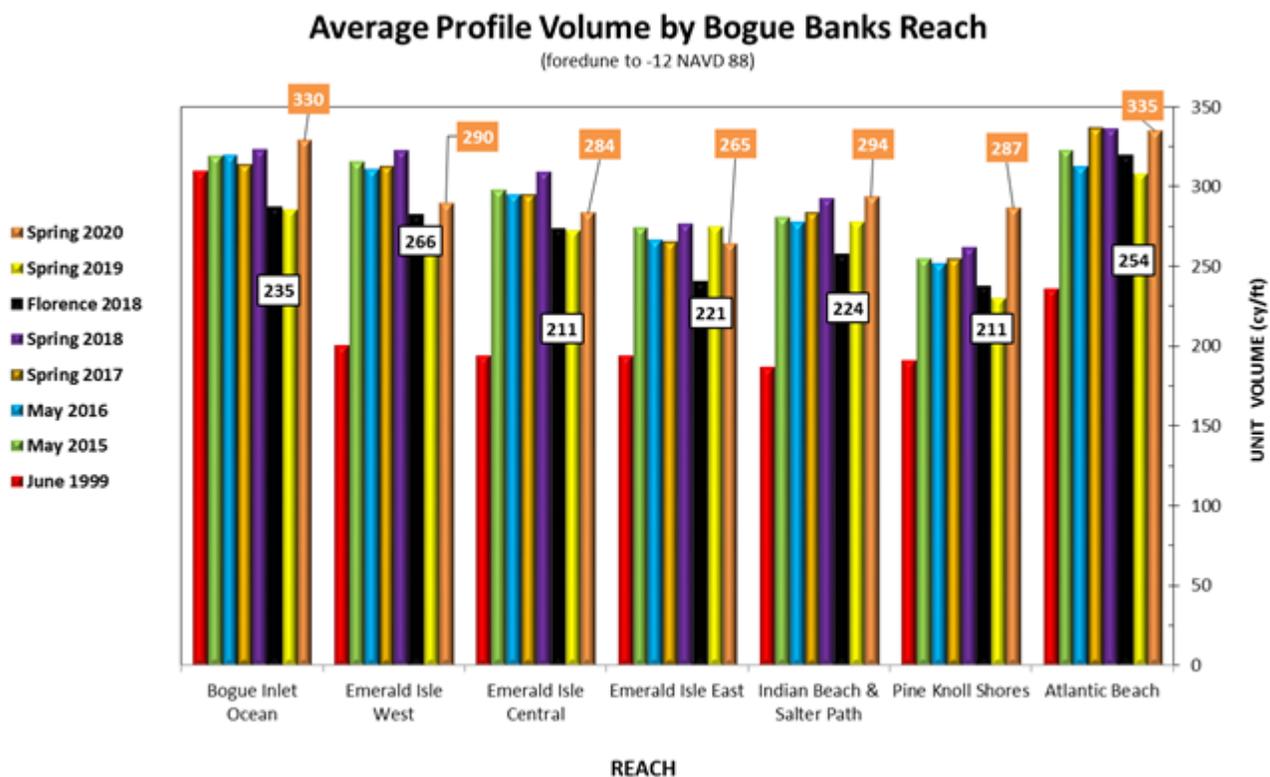


Figure 2 – Average profile volumes for September 1999 (baseline year), 2020 (the most recent survey), 2019, Florence (2018), 2018, 2017, 2016, and 2015 for seven oceanfront management reaches along Bogue Banks. The minimum volumetric thresholds (i.e., nourishment triggers) are provided in the white call-out boxes while the 2020 average volume is represented in the coral colored call-out boxes.

And lastly with respect to “nourishment triggers”; our Static Line Exception Plans and FEMA Monitoring Maintenance Plans all previously possessed unique and different sets of triggers. In 2014 however we consolidated and formally resubmitted these Plans to the appropriate State and federal agencies using our new Master Plan as a unifying, umbrella document to address overall beach health, project permitting, and financial commitments.

Shoreline Change – Of course another and more common/familiar measurement of beach health is shoreline change. To quantify and consistently compare shoreline positions over time, the “shoreline” is determined as the Mean High Water elevation established at [+1.5 feet NAVD88](#). This measurement parameter is sometimes referred to as a “datum-derived shoreline” as we can numerically determine where along a profile the +1.5 feet elevation resides rather than depending upon more subjective determinations that are required by other methods, such as aerial photography (i.e., wet/dry line, the wrack line, etc.).

Utilizing a datum-derived shoreline, changes from Spring 2019 to Spring 2020 for Bogue Banks at any given reach ranged from +82.0 feet seaward in Pine Knoll Shores to -7.0 feet landward in Ft. Macon resulting in a net average change of +40.6 feet seaward for the entire oceanfront. The largest advances of the shoreline were correlative to the Phase II Renourishment Project (see bold in Table 2). Changes in the beach slope resulting from subtle differences in grain sizes and reshaping of the swash zone because of tides, storms, *et cetera* can also impact the spatial position of the mean high water elevation a few feet in either the positive (seaward) or negative (landward) direction.

Closing

Once finalized, the 2020 Monitoring Report will be made available on-line at our “www.protectthebeach.com” website and the shoreline data will also be incorporated into our interactive beach mapping website at “www.protectthebeachmaps.com”. Hard copies of the 2020 report will be provided to all of the municipalities along Bogue Banks, Park Services, and others who have participated in the monitoring effort. The fieldwork window associated with the 2020-21 monitoring event will likely commence in May 2021 subsequent to the construction of the Phase III Post-Florence Beach Nourishment Project in Emerald Isle; and we will have the presentation completed shortly thereafter, hopefully by August/September of 2021 (notwithstanding any hurricanes, etc.). To that effect our contract includes a post-hurricane survey that can be exercised in the case we are impacted by a federally-declared disaster akin to *Irene* in 2011, *Matthew* in 2016, *Florence* in 2018, and *Dorian* in 2019.

In terms of the laser-scanning scope of work, the two surveys adds \$50,313 to the \$274,850 overall yearly cost of the monitoring program (\$155,050 annual survey + \$119,800 post storm survey if required). The Shore Protection Office recommends continuing the laser-scanning surveys for a couple of multi-layered reasons. For one, between *Isabel* (2003), *Ophelia* (2005), *Irene* (2011), and *Florence* (2018); the Bogue Banks municipalities have received a total of \$87,862,725 of reimbursement/fixed-cost funds to replace sand lost from these four federally-declared disasters. Our justification to FEMA/NCDEM is predicated on our monitoring program, which is considered one of the most (if not the most) comprehensive and progressive programs in the entire Country. Pushing the envelope with new technology adds to our credibility in this and other arenas (e.g., with the State regarding static line exceptions, for modeling and other academic interests, justifying our Master Plan to the resource agencies, etc.). Second, there are some practical applications we have already gleaned from the laser-scanning data. As the Commission is aware, we will be nourishing East Emerald Isle as part of our Phase III effort this upcoming

Spring, which will be the second time sand will be placed in this zone since 2019 (Phase I). The numbered streets in East Emerald Isle have been considered as a hot spot but by incorporating the laser scanning data into our analysis, we are going to alter our fill densities/berm widths and therefore our nourishment geometry across this reach for Phase III. We will be taking a "trapezoid feeder" approach with berm widths and fill densities averaging roughly 50 feet and 30 cy/ft, respectively along the west half of East Emerald Isle, and roughly 115 feet and 70 cy/ft, respectively along the eastern half of East Emerald Isle. There is a little trial-and-error involved with this approach, but we can't keep employing the same uniform template for the hot spot zone and expect different results. The laser scanning surveys (if continued) will enable us to ascertain if this different nourishment geometry is beneficial or not by again enabling us to "look between the transects" to quantify loss or gains, changes in slope, the base of the dune, etc. I appreciate your attention to this long memorandum and look forward to our September meeting.

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