

TOWN RETREAT NOTES – in two parts:

1. Report by Ken Willson of Coastal Planning & Engineering of NC, and discussion
2. Funding report by Chris Layton, Town Manager

Note: this is an abbreviated and unofficial summary of what was presented and discussed.

1. Erosion Mitigation and Shoreline Management Feasibility Study

The goals of the study are to:

Evaluate shoreline changes along all of the Town's shoreline

Develop a long-term shoreline management strategy for the Town

Investigate the cause, extent, and severity of the chronic erosion area or "Hot Spot" just north of the Research Pier

Develop an erosion mitigation strategy to address the "Hot Spot"

Evaluate storm damage vulnerability

For purposes of the study, Duck's oceanfront was divided into ten (10) "reaches" or segments. Carolina Dune is in the middle of segment no. 7, which – by far – has suffered the worst from recent storms. This is the so-called "hot spot." Segment 7 includes approximately 7,000 feet of shoreline, stretching from the Army Corps of Engineers pier north to Dianne Street. (Dianne is one block north of Old Squaw, in Carolina Dunes).

Segments and average loss in feet per year since 1996 and through 2011 are as follows:

SEGMENT	BOUNDARY	SHORELINE	LOSS/ Year
1	Dolphin Run to 9 th Avenue	8,000 feet	0.60
2	9 th Avenue to Four Seasons Drive	6,000 feet	-0.36
3	Four Seasons Drive to Duck Landing Lane	2,000 feet	1.82
4	Duck Landing Lane to Ships Watch Drive	4,000 feet	-1.04
5	Shops Watch Drive to the Pier	2,000 feet	0.15
6	Pier frontage (government property line)	1,000 feet	-1.68
7	Government northern property line to Dianne Street	5,000 feet	-4.82
8	Dianne Street to Martin Lane	8,000 feet	1.12
9	Martin Lane to Sanderling Resort	2,000 feet	-0.56
10	Sanderling Resort to Hampton Inn	14,000 feet	1.27

The total loss experienced by Segment 7 between 1996 and 2011 is 72.9 feet. Segment 6, the Army Corps of Engineers property, lost 25.4 feet. In contrast, Segment 3 gained 27.5 feet and Segment 10 gained 23.7 feet.

Two related charts project the current and going-forward impact of shoreline changes on Segment 7 to be as follows:

Economic Losses Due to Shoreline Change Rates

(Note: this chart appears to the proportion of Segment 7's loss to that of the Town total in each period.)

2011-2016	2016-2021	2021-2026	2026-2041	2041-2061	Overall (50 yrs)
82.8%	89.6%	94.9%	89.4%	77.4%	87.4%

STORM DAMAGE ANALYSIS

Structures Impacted during Storm Event under Existing Conditions

	1-Year	5-Year	10-Year	20-Year	25-Year	50-Year
Segment 7	15	19	23	27	32	36
Segment 8	2	6	14	20	22	23
All others*				2	4	12
TOTAL	17	25	37	49	58	71

* All in Segments 2, 3, and 4

Six conceptual alternatives were considered:

1. No Action Alternative
2. Retreat (e.g., relocation of homes: moving back)
3. Beach Restoration by Truck Haul. Cost to spread 60,000 cubic yards across Segment 7 was estimated at \$1.5 to \$2.0 million, and would provide one year of erosion mitigation and some fill along adjacent beaches.
4. Dune Replenishment by Truck Haul. Cost to add 30,000 cubic yards in Segment 7 was estimated at \$815,000, and would provide one year of erosion mitigation.
5. Erosion Mitigation Project by Offshore Dredging (Long-Term Erosion Mitigation Project). A “Nags Head style project” would add 842,000 cubic yards of fill over Segments 7 and 8 at a cost of \$11.35 to \$14 million, and would provide (a) 5 years of erosion mitigation and (b) limited storm damage reduction.
6. Storm Damage Reduction Project by Offshore Dredging. The cost for a project over Segments 7 and 8 would be:
 - o 10-year Storm Damage Reduction Project. 1,610,000 cubic yards, \$18.75 to \$22.5 million.
 - o 20-year Storm Damage Reduction Project. 2,091,000 cubic yards, \$23.35 to \$27.75 million.
 - o 25-year Storm Damage Reduction Project. 2,313,000 cubic yards, \$25.5 to \$30.25 million.

Note: although the erosion mitigation and storm damage projects would have an estimated project life of only 5 years, the cost to maintain the beach at the end of that period would be a lesser (but not currently estimated) cost.

The next step is a report to the Town by March 29, including (1) Final Updates to Conceptual Alternatives and (2) Final Recommendations.

Comments during discussion included the following:

- a) More sand is lost to the north and south than to the East (i.e., some adjacent neighborhoods or “segments” are the beneficiaries of sand from Segment 7).
- b) Dune replenishment is short-term storm protection for oceanfront homes; it is not “beach replenishment.”

- c) The lease expensive long-term project is two or three times the Town's current annual budget.
 - d) There is an immediate need for a short-term project as a bridge to completing any longer-term project.
 - e) When Caffey's Inlet closed ¹, a sand delta began to erode. The path of erosion continues to migrate south (e.g., towards Carolina Dunes). The shoreline eventually stabilizes – and the pattern of erosion decreases – but, for us, it could be 50 years before the shoreline “corrects itself.”
 - f) There is NO Federal or State money available for beach renourishment, in part, because of a Federal directive (and not because of budgetary concerns).
 - g) The best price for the longer-term solutions will be obtained by scheduling the work over the summer.
 - h) There was acknowledgment that this is a Town-wide concern and a potential public relations problem.
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2. FUNDING

Town Manager Chris Layton presented five alternatives:

1. Local option sales tax. This is not currently an option in North Carolina, although it is believe that legislation to enable this may be introduced during 2013. Note that any tax would likely apply to rentals, as well as other other items.
2. County occupancy tax. Reportely, 1% of the current tax goes to beach renourishment. The County add an additional 1% without voter approval. Some notes relative to County support:
 - o Public access is required on any project over \$3 million.
 - o Public access includes access points every ½ mile, and 10 parking spaces within ¼ mile of each public access point.
 - o County funding does not apply to engineering or permitting expenses.
 - o Then County only funds 75% of the cost of the project.
3. Real estate tax. Unlimited ability to raise funds. Perhaps a 1 ½ to 2 ½ cent tax increase for everyone?
4. Special assessment. Conditions include:
 - o Must be paid over 10 yers.
 - o Cannot be used to borrow (i.e., pay debt service).
 - o May not be imposed until the project is completed.
 - o Must be assessed proportionately (i.e., some formula to spread the cost equally over those who benefit).
 - o Requires a resolution and a public hearing, along with a petition approved by 66% of those affected (note: the “petition” requirement expires in July 2013, unless renewed or extended by the legislature).

¹ Caffey's Inlet is reported to have been created between 1790 and 1798; it closed between 1811 and 1829. It is believed to have been the last inlet to close on Currituck Sound, and fresh water (rather than salt water) increased after that time. Of further interest: Oregon Inlet was created by a hurricane in 1846.

5. Municipal services district (MSD).
 - o Requires a resolution.
 - o Can be used to pay debt.
 - o Work must start within one year of formation.
 - o Limited to \$1.50 per \$100 of assessed value.
 - o Could be virtually forever (i.e., no expiration date).

Of the alternatives mentioned earlier, Chris said that his preliminary thoughts relative to possible alternatives were:

- 1) No action. The Town would still need to budget funds for some level of support.
- 2) Retreat. The Town might look at purchasing some of the property, and, if legal, consider a “grant” to assist those desiring to move their structures back from the Ocean.
- 3) Dune replenishment. Cost to owners in Segment 7 only, through an MSD, might be \$2,441 per year for oceanfront owners and \$96 per year for non-oceanfront owners.
- 4) Beach replenishment. Cost to owners in Segment 7 only, through an MSC, might be \$3,329 for oceanfront owners and \$192 for non-oceanfront (or half that amount if paid over two years).
- 5) Erosion mitigation for Segments 7 and 8 (note: NOT including dune replenishment). Oceanfront, \$2,144 per year for 5 years, and non-oceanfront, \$225 per year for 5 years.
- 6) Storm damage mitigation for Segments 7 and 8. Oceanfront, \$3,062 per year for 5 years, and non-oceanfront, \$450 per year for 5 years.
- 7) 20-year storm protection for Segments 7 and 8. Oceanfront, \$4,083 per year, and non-oceanfront, \$631 per year, each for 5 years.
- 8) 25-year storm protection for Segments 7 and 8. Oceanfront \$4,491 per year, and non-oceanfront, \$631 per year, each for 5 years.

Important note: the above numbers were for illustration only, and not intended as a plan or proposal.

Among the comments during the discussion period:

- a) The Town would maintain walkways and stairs for public access points.
- b) Some neighborhoods have private roads and that might be a challenge to any requirement for public parking.
- c) Public parking on public streets (such as Carolina Dunes) is a Town decision, and not a neighborhood decision.
- d) The right-of-way in Carolina Dunes is 60 feet, although the width of the roads is only 22 feet.

During the break, I spoke separately with Chris and shared the results of the CDA survey.

Final notes: there were approximately 15 representatives of the Town present for the afternoon session, along with more than 40 persons in the audience. The general sentiment was that this was an issue that the Town needed to take on, and that it affected everyone. I would say that this was the overwhelming feeling, but it was not unanimous. Over time, the report suggests that the pattern of severe erosion will move south, so the financial need will likely be community wide.